B. Community Groups, Non-Profit Organizations, and Private Organizations

Document No. B1

ECOS
ENVIRONMENTAL
• COUNCIL •
OF SACRAMENTO

909 12th Street, Suite 100 • Sacramento, CA • 95814 • (916) 444-0022

April 27, 2009

Michael Rosauer
California Public Utilities Commission (CPUC) c/o Dudek
605 Third Street
Encinitas, California 92024

Re: Sacramento Natural Gas Storage (SNGS) Project
CPCN Application No. 07-04-013
State Clearing House No. 2007112089
Comments for April 28 Public Hearing
Comments on Draft Environmental Impact Report (EIR)

The Environmental Council of Sacramento (ECOS) respectfully submits the following points of concern regarding the proposed underground SNGS Project. ECOS has been tracking this project for some time. We understand the potential benefits of additional natural gas storage in the metropolitan area. However, we have serious concerns about the potential safety issues and the location of the project as well as the limited amount of time given for public evaluation of and comment on the Draft EIR. B1-1

Although SNGS has committed to pursue extensive safety measures to minimize the risks of gas migration to the surface and potential catastrophic ignition, the reality is that even the safest project of this kind still presents extreme risks. The Draft EIR notes the possibility of gas migration to the surface and the risk of ignition. Given that this project is proposed to be located underneath a residential neighborhood, the risks associated with ignition of gas that has migrated to the surface include substantial loss of life and property. B1-2

Considering the issue of safety within the context of the project's proposed location — namely, underneath a lower-income and largely African-American neighborhood — one is left with the impression that this project is being pursued because the depleted gas field into which SNGS wishes to inject additional gas for storage happens to be situated where it is and not underneath a wealthier or more politically and economically influential neighborhood. The neighborhood that exists above the depleted gas field has long struggled with the impacts of less-than-desirable industries and facilities being sited in the area. Property values in the neighborhood have historically been depressed because of these realities. Should the SNGS Project be approved, property values in the neighborhood are likely to be further depressed. B1-3

ECOS urges the CPUC to fully investigate these points of concern as you consider the proposed project. The risks and downsides associated with this project are significant. Given the seriousness of the issues at hand, the people who live in the neighborhood above the depleted gas field — and all of us who care about community and neighborhood viability and equity — deserve more time to fully digest the potential ramifications of this project. B1-4

Thank you for your consideration. Please contact me with any questions.

Sincerely,

Graham Brownstein
Executive Director, ECOS

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Document No. B2

JUN 2 2 2009

June 5, 2009

Mr. Michael Rosauer,
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, CA 92024

RE: Letter of Support for the Sacramento Natural Gas Storage Project

Dear Mr. Rosauer:

In September of 2008 the residents of our community, who are located over the Florin Gas Field, were notified that Sacramento Natural Gas Storage, LLC would like to sponsor a neighborhood association for us. The first informational meeting was held in October at Frasinetti's Restaurant and Mr. Jim Fossum explained to us that it was important to him and his company to give back to the community. Prior to this initial meeting SNGS, LLC had already sponsored an ice cream social in Danny Nunn Park for neighborhood residents and to thank those property owners who had already signed leases. At that event they also presented a local soccer club, for under privileged youth, with a $2,500 check.

We have subsequently had nine monthly meetings of our neighborhood association and selected the name of Our Neighborhood Partnership. SNGS, LLC has provided us with support staff and funding to formalize our organization. We have selected our Board of Directors, adopted our bylaws and submitted our Articles of Incorporation to the Secretary of State, the first steps to becoming incorporated. B2-1

SNGS, LLC has kept us constantly updated on the progress of the project and we all look forward to the time when the project is fully operational as it will bring new jobs and hopefully new amenities to our area in addition to much needed revenue for the City of Sacramento. B2-2

Finally, let me be perfectly clear that we do not share the opinions of the opposition. We do not condone the tactics they have used to scare people. As an organization whose membership, in

most cases, does not live within our area we want it known they do not speak for us or the majority of our residents. It is our sincere desire that the City Planning Commission and City Council will expeditiously approve this project as we are all convinced that it is a much needed, desired, and safe project for all concerned.

B2-2 (Cont.)

Sincerely,

Luis Wu, President
Our Neighborhood Partnership
7890 Tierra Glen Way
Sacramento, CA 95828
(916) 541-0794

Document No. B3

JUN 18 2009

Pacific Gas and Electric Company®

Steven A. Whelan
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June 17, 2009

Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Re: Sacramento Natural Gas Storage LLC; CPCN Application No. 07-04-013; State Clearinghouse No. 2007112089

Dear Mr. Rosauer:

Pacific Gas and Electric Company ("PG&E") appreciates this opportunity to comment on the California Public Utilities Commission's ("CPUC" or "Commission") Draft Environmental Impact Report ("DEIR") in the above-referenced Application of Sacramento Natural Gas Storage, LLC ("SNGS") for a Certificate of Public Convenience and Necessity ("CPCN"). By its Application, SNGS seeks Commission authorization to construct and operate an underground natural gas storage facility in Sacramento, California.

PG&E generally supports the construction and operation of new storage facilities in California, consistent with the Commission's policies. In-state storage is a means to increase supply reliability during high demand times, and is useful for taking advantage of seasonally lower natural gas prices to be used at a later date. California has been fortunate to attract substantial development of storage with additional storage projects on the horizon. B3-1

Nevertheless, PG&E is concerned with certain characterizations of PG&E's gas system in the DEIR. PG&E's comments concern the portion of the DEIR that: (1) addresses the objectives and need for the storage project based on perceived future unreliability of gas supply to California; and (2) assumes future unreliable delivery of gas supply to the Sacramento metropolitan area, which is performed by the PG&E gas transmission system.

The DEIR (p.ES-1) lists as the stated objectives for the SNGS Facility:

1. Provide strategically located natural gas storage in California.
2. Provide a secure and reliable gas supply for the Sacramento metropolitan area in the event of a disruption of service from the main supply pipeline that services the area.
3. Satisfy the Sacramento Municipal Utility District's ("SMUD") natural gas storage needs to specifically provide a fuel supply to power SMUD's electrical generating plants. The total volumetric capacity available to SMUD under its Storage Service Agreement with SNGS, LLC is 4.0 Bcf, which yields approximately a 30-day supply. B3-2

On page ES-21, the DEIR discusses an alternative to the SNGS storage facility, citing the construction of a new gas supply pipeline to the Sacramento area, potentially from Canada or other western states. The objectives for SNGS's planned facility, and the potential alternative new gas supply pipeline, imply that: (1) there is a future danger that gas will cease flowing to California and specifically to Sacramento; and (2) there is a future and perhaps imminent danger that PG&E's major pipelines will be unable to bring gas supply to Sacramento, as it has for decades.

First, PG&E would like to clarify that its gas delivery system is an integrated and highly reliable gas supply network. The PG&E system is diverse, with many major out-of-state gas supply interconnections that have reliably provided gas supply from Southwest, Rocky Mountain and Canadian supply basins, and from in-state California production. In addition, PG&E's system also is interconnected to storage facilities located at various locations on its pipelines. A new interstate pipeline is proposed to interconnect with PG&E at the Oregon border in 2011 to deliver additional Rocky Mountain gas supply. B3-3

Second, PG&E would like to clarify that its integrated pipeline system has brought such gas supplies to all parts of its service territory, including Sacramento, without major interruption for decades. PG&E is responsible for planning, building and maintaining its system to provide reliable transportation service to its customers, including all customers in the Sacramento area. As its utility obligation, PG&E maintains existing facilities, and installs new facilities, sufficient to meet or exceed service to all of its customers in an efficient and cost-effective manner. PG&E has recently spent millions of dollars on new pipelines to serve Sacramento and the surrounding area.

PG&E stands on its record of providing and maintaining sufficient capacity to provide reliable service to all customers currently served from PG&E's Sacramento Valley transmission system. In addition, PG&E would also like to clarify that the proposed SNGS facility is to be physically connected to the SMUD pipeline, not the PG&E pipeline system which is responsible for delivering gas supply to Northern California, including the Sacramento metropolitan area. B3-4

In conclusion, PG&E supports storage development in California and is ready and able to deliver any gas supply, including storage gas, to any part of its system on a reliable basis.

Sincerely,

Steve Whelan
Senior Director, Wholesale Marketing and Business Development
Pacific Gas and Electric Co.
245 Market Street
San Francisco, CA 94105
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Document No. B4

June 18, 2009

Judge Richard Smith
Commissioner Timothy Simon
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, CA 92024

Dear Judge Richard Smith, Commissioner Timothy Simon, and Mr. Michael Rosauer,

We, the Tallac Village Neighborhood Association, are writing this letter because we oppose the Sacramento Natural Gas Storage (SNGS) project. Our neighborhood is close to the proposed project site and I live at 6011 Corva Way. We do not live within the project area, but we live very close to the proposed project area. B4-1

We are worried about the dangers associated with the project, such as the possibility of a leak or explosion. We are also concerned about the potential for water contamination. We don't want our community exposed to these dangers. We have children and schools in our community. We have lots of families in our community. We also have a lot of elderly residents in our community. B4-2

Even though we do not live in the project area we are still very concerned about the risks associated with the project. If there is a leak or an explosion it will affect us and our properties.

We are also concerned that the project will affect our property values and our ability to resell our property should we choose to do so. We are also worried that our insurance could go up if the project went through. B4-3

This project should not be placed in our community. It should not be placed where people live above or close to the project.

Thank you for the opportunity to submit these comments. We, the Tallac Village Neighborhood Association oppose the project and hope that you will consider our concerns in making your decision. B4-4

Sincerely,

Patti Uplinger

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Document No. B5

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June 22, 2009

Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Re: **Draft Environmental Impact Report for the Sacramento Natural Gas Storage Project, CPCN Application No. A.07-04-013 / SCH No. 2007112089**

Dear Mr. Rosauer:

On behalf of the Avondale Glen Elder Neighborhood Association ("AGENA") we are writing to urge the California Public Utilities Commission ("CPUC" or "Commission") to substantially revise the draft environmental impact report ("DEIR") for the Sacramento Natural Gas Storage Project, LLC ("SNGS") application to the CPUC for the proposed gas storage operation in South Sacramento, Certificate of Public Convenience and Necessity ("CPCN") Application No. A.07-04-013 ("Proposed Project"). As explained below, AGENA strongly agrees with the DEIR's conclusions that the Proposed Project has significant and unavoidable health & safety and water quality impacts. However, while AGENA agrees that the impact conclusions are correct (i.e. significant and unavoidable), AGENA believes the DEIR actually ***understates*** the potential health & safety and water quality impacts of the Proposed Project. AGENA also believes that the DEIR contains numerous other procedural and substantive flaws. Due to these inadequacies, the DEIR fails to satisfy the requirements of the California

B5-1a

Environmental Quality Act ("CEQA") (Pub. Resources Code, § 21000, et seq.) and the CEQA Guidelines (Cal. Code Regs., tit. 14, ch. 3, § 15000 et seq.).

This comment letter demonstrates that significant additional information must be included in the DEIR to satisfy the requirements of CEQA. The Commission cannot approve the Proposed Project until it has complied fully with the requirements of CEQA. As explained throughout this comment letter, the DEIR fails to provide all the information required by CEQA and does not disclose the full extent and magnitude of the environmental impacts associated with the Proposed Project. Therefore, the DEIR must be revised to comply with CEQA. B5-1a (Cont.)

Alternatively, the Commission may decide to deny the Proposed Project based upon the current EIR. A legally adequate EIR is not required in order for a lead agency to deny a project. (Pub. Resources Code, § 21080, subd. (b)(5).) Despite its inadequacies, the DEIR correctly concludes that the Proposed Project would have significant and unavoidable health & safety and water quality impacts. These conclusions alone provide the Commission with sufficient justification to deny the Proposed Project. Therefore, should the Commission agree that in light of these impacts the Proposed Project should not be approved, the Commission could deny the Proposed Project without expending additional resources to produce an adequate DEIR. B5-1b

I. The Proposed Project has significant and unavoidable health & safety and water quality impacts.

The DEIR correctly concludes that the Proposed Project would have significant and unavoidable health & safety and water quality impacts. The basis for these conclusions included numerous factors such as the potential for: 1) "possible localized imperfections (faults, fractures, course-grained channels with cap rock shale) . . . [that] could provide pathways for gas migration;" 2) "stored gas. . . seep[ing] from the edges of the reservoir;" 3) undetected weaknesses in the cap rock caused by the overlaying groundwater aquifers to "accumulate over time and result in gas leakage to the surface;" and 4) the cap rock to be incapable of handling gas storage especially in light of the pressure levels proposed by SNGS. (DEIR, p. D.6-24 to D.6-25.) The DEIR also acknowledges that the lack of available data concerning the reservoir increases the potential likelihood for an accident. (*Ibid.* [SNGS's safety conclusions were based on well and seismic data that "constitute[s] only a small portion of the reservoir area"].) B5-2

There are numerous other bases, in addition to those discussed in the DEIR, for concluding that the Proposed Project will have significant and unavoidable health & safety and water quality impacts. Experts in various fields including water quality, air quality, biology, geology, and oil and gas storage have reviewed the DEIR on behalf of B5-3

AGENA.[1] These experts have identified additional issues that were not disclosed or fully discussed in the DEIR. The expert letters demonstrate that the significant and unavoidable health & safety and water quality impacts are ***even more significant*** than the DEIR concludes. These comment letters are incorporated herein by reference and the topics addressed in the letter include but are not limited to the following: B5-3 (Cont.)

1. Dr. Roy J. Shlemon, Ph.D., is a Geologist with substantial experience in quaternary geology, soil stratigraphy, geomorphology, and geoarchaeology. Dr. Shlemon concludes that the DEIR fails to recognize multiple channel systems that overlie the proposed project area. Dr. Shlemon also states that the DEIR does not evaluate potential acceleration from the 1892 Winters earthquake or the inferred Sherman Island fault, and should do so. Dr. Shlemen states that these channels and faults offer routes for gas migration, diffusion and escape. B5-4

2. Dr. Alvin Greenberg, Ph.D., FAIC, REA, QEP, is a Toxicologist with substantial experience conducting human and ecological risk assessments, air quality assessments, hazardous materials handling and risk management/prevention, infrastructure vulnerability assessments, occupational safety and health, hazardous waste site characterization. Dr. Greenberg's letter focuses on the adequacy of the risk assessment included in the DEIR. Dr. Geenberg concludes that the analysis of hazardous materials in the DEIR is deficient for several reasons. Dr. Greenberg discusses flaws in the radiant heat exposure standard used in the DEIR, 1600 Btu/ft2, which is too high. Dr. Greenberg explains that the correct standard for assessing impact to human health is 450 Btu/hr-ft2. Application of this correct lower standard demonstrates increased risk of harm from the project. Dr. Greenberg further B5-5

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[1] Expert letters are incorporated by reference and attached to this comment letter as Attachments A through G as follows:

- Dr. John O. Robertson, Ph.D., P.E., President (retired 2008), Earth Engineering, Inc., Fallbrook, California. (Attachment A.)
- Dr. Roy J. Shlemon, Ph.D., Principal, Roy J. Shlemon & Associates, Inc., Newport, California. (Attachment B.)
- Alvin J. Greenberg, Ph.D., FAIC, REA, QEP, President and Principal Toxicologist, Risk Science Associates, San Rafael, California. (Attachment C.)
- Dr. Michael L. Johnson, Ph.D., Principal and President, Michael L. Johnson, LLC, Davis, California; Associate Director, Center for Watershed Sciences, John Muir Institute of the Environment, University of California at Davis, Davis, California. (Attachment D.)
- Dr. Clyde T. Williams, Ph.D., Consultant. (Attachment E.)
- Richard C. Casias, P.G., R.E.A., RCC Group, LLC, Davis, California. (Attachment F.)

B5-3 (Cont.)

explains that the air quality and transportation analysis are deficient for several reasons. B5-5 (Cont.)

3. Dr. Michael L. Johnson, Ph.D., is the Director of the John Muir Institute's Aquatic Ecosystems Laboratory and has substantial experience studying water quality and aquatic toxicology. Dr. Johnson concludes that the water quality and hydrology impacts discussed in the DEIR are not thorough, and for many impact statements there is no rationale or support for the conclusions reached in the DEIR. B5-6

4. Dr. Clyde T. Williams, Ph.D. is an oil and gas industry expert. Dr. Williams reviewed the DEIR and found methodological flaws in the opinions and studies relied upon to support the health and safety impact analysis, water quality analysis, and other impact sections of the DEIR. Dr. Williams also comments on the lack of evidence to support several of the conclusions in the opinions and studies submitted by SNGS in support of the Proposed Project. B5-7

5. Richard C. Casias, P.G. is the Managing Member and Principal Hydrogeologist of RCC Group, LLC, a California based environmental consulting practice with a focus on environmental management systems (EMS), hydrogeologic, watershed and environmental engineering studies. Mr. Casias concluded there are several substantial deficiencies in the DEIR including a failure to adequately address anticipated significant impacts of the proposed project on existing and future groundwater quality, a lack of a clear rationale for the conclusions of less-than-significant impacts, and inconsistent conclusions in related DEIR sections. Mr. Casias further found that Applicant Proposed Measures (APMs) underestimate the complexity involved with a groundwater monitoring plan design and are "insufficient to guarantee with reasonable certainty the quality of soil and shallow groundwater will be protected during and after construction." B5-8

6. Dr. John O. Robertson, Ph.D., P.E., is an engineer (registered with the State of California) with forty years of experience working in the various fields of petroleum, geothermal property evaluation, energy, computers and environmental engineering. Dr. Robertson's letter addresses a number of concerns including the inconsistent and various geologic models presented by the proponents, the presence of faults in the Florin Gas Reservoir, vertical permeability, gas pressurization and the risk of fracturing, the foot-print of the project, well abandonment, and the presence of BTEX in the field. Dr. Robertson concluded that there are numerous and significant questions that the DEIR fails to properly address and that the project poses serious risks of fire, B5-9

explosion and air contamination to the portion of the Sacramento community lying directly above the project and also that within a several mile radius.

B5-9 (Cont.)

Therefore, while the DEIR reaches the correct CEQA impact conclusion with respect to the health & safety and water quality impacts of the Proposed Project, the evidence indicates that the DEIR significantly underestimates the likelihood and severity of those impacts. The DEIR must be revised to acknowledge that the significance of the health & safety and water quality impacts are substantially greater than described in the DEIR.

B5-10

II. The DEIR demonstrates that the CPUC has improperly piecemealed the Proposed Project.

The DEIR neglects to evaluate the whole of the Proposed Project. Under CEQA, a project is defined as "the whole of the action" that may result in either a direct or reasonably foreseeable indirect physical change to the environment. (Pub. Resources Code, § 21065; CEQA Guidelines, § 15378, subd. (a).) This broad definition of "project" is intended to maximize protection of the environment. (*McQueen v. Bd. of Directors of the Midpeninsula Regional Open Space Dist.* (1988) 202 Cal.App.3d 1136, 1143 (disapproved on other grounds); *Tuolumne County Citizens for Responsible Growth v. City of Sonora* (2007) 155 Cal.App.4th 1214, 1223 (*Tuolumne*).) In performing its analysis, a lead agency must not "piecemeal" or "segment" a project by splitting it into two or more segments. (CEQA Guidelines, § 15165.) This approach ensures "that environmental considerations [do] not become submerged by chopping a large project into many little ones, each with a potential impact on the environment, which cumulatively may have disastrous consequences." (*Burbank-Glendale-Pasadena Airport Authority v. Hensler* (1991) 233 Cal.App.3d 577, 592; *Bozung v. Local Agency Formation Commission* (1975) 13 Cal.3d 263, 283-284.)

B5-11

A lease is a project subject to CEQA. (Pub. Resources Code, § 21065, subd. (c).) SNGS proposes to lease the use of pipelines owned by the Sacramento Municipal Utility District ("SMUD") to deliver gas stored by the Proposed Project. The DEIR should, therefore, consider use of these pipelines within the risk assessment analysis and throughout the remainder of the DEIR. (*San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 729-720 [holding a utility service required to operate a proposed project must be analyzed as part of the project within an EIR].)

B5-12

The DEIR should also discuss the available unused capacity of the SMUD pipeline. By using additional SMUD pipeline capacity the Proposed Project may lead to the need for future expansion of the SMUD pipeline to meet the needs of SMUD and

B5-13

SNGS. This foreseeable impact of the Proposed Project must be evaluated. Moreover, as SMUD is a publicly owned utility and its pipelines are not subject to all the same regulations as those owned by SNGS or PG&E, the DEIR should consider whether these issues would have the potential to result in any additional environmental impacts. B5-13 (Cont.)

Furthermore, additional direct connections to the Proposed Project are a reasonably foreseeable component of the project. In the Reply Testimony of Jim Fossum, Mr. Fossum acknowledges that other potential customers may "want a direct connect[ion] . . . to the compressor station." (See Reply Testimony of Jim Fossum, p. 5.) As SNGS acknowledges the potential for additional direct connections, this is a foreseeable future impact of the Proposed Project and must be analyzed in the DEIR. Since SMUD will only utilize up to half of the Proposed Project's capacity, approximately four billion cubic feet of storage capacity will remain available to other potential customers. The DEIR should discuss all potential impacts related to this additional storage capacity including consideration of likely users and uses for stored gas to evaluate foreseeable indirect impacts related to the Proposed Project. B5-14

Moreover, providing SNGS with the power to pursue the use of eminent domain has foreseeable environmental impacts that must be analyzed. (See *Burbank-Glendale-Pasadena Airport Authority*, *supra*, 233 Cal.App.3d 577 (holding that an airport authority violated CEQA by failing to conduct adequate environmental analysis prior to commencing condemnation proceedings against a property owner).) SNGS's claim that it does not plan to utilize eminent domain as part of the Proposed Project appears suspect at best. SNGS sponsored Senate Bill 814 (Ashburn) during the current legislative session. Senate Bill 814, if adopted into law, would amend the Public Utilities Code to reduce the length of time required before a public utility may utilize property during the pendency of an eminent domain action. If SNGS did not plan on exercising its right to use eminent domain once it was granted a CPCN, it likely would not be sponsoring this piece of legislation. B5-15

Not only do SNGS's actions suggest that it plans to use eminent domain, but several aspects of the Proposed Project may involve the use of eminent domain. For example, the Gas Detection Plan requires the development of an undisclosed number of monitoring wells at an undisclosed number of "key points." (DEIR, p. D.6-33 (Mitigation Measure HAZ-2aii).) It is foreseeable, especially in the absence of any analysis to the contrary in the DEIR, that at least some of these wells may need to be built on privately owned land, and that SNGS may pursue the use of eminent domain to construct the wells.

SNGS may also seek the right to utilize eminent domain to directly connect other potential customers to the Proposed Project. (See Reply Testimony of Jim Fossum, p. 5 [acknowledging that other potential customers may "want a direct connect[ion] . . . to the B5-16

compressor station"].) The DEIR must consider whether additional direct connections may require the use of eminent domain. The DEIR should mitigate the potential impacts associated with the use of eminent domain in connection with the Proposed Project by including a mitigation measure that prohibits the use of eminent domain by SNGS. B5-16 (Cont.)

Additionally, the Project Description in the DEIR briefly discusses the fact that the Proposed Project will have a limited lifespan and that a project abandonment process will be required at the conclusion of the project. (DEIR, p. B-28.) The Project Description provides that "pipelines will be flushed to remove any contaminants" and "[s]urface structures … will be removed." (*Ibid.*) Few other details regarding abandonment are included. Just as the environmental impacts associated with construction must be fully analyzed, so must the environmental impacts associated with abandonment. The DEIR, however, fails to analyze the impacts of activities required as part of abandonment of the Proposed Project. These activities are part of the project. (CEQA Guidelines, § 15378, subd. (a) [project means "the whole of an action, which has the potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment"]; see *Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307 [evaluating the adequacy of an EIR's consideration of a reclamation plan associated with a mining operation].) The DEIR should discuss the abandonment process in sufficient detail to understand the potential environmental impacts associated with abandonment including air quality, traffic, noise, and other impacts. This discussion should include a detailed abandonment plan. As abandonment is a known part of the Proposed Project there is no reason to defer development of this plan. Development of mitigation measures should only be deferred if "practical considerations prohibit devising such measures early in the planning process[.]" (*Sacramento Old City Ass'n v. City Council* (1991) 229 Cal.App.3d 1011, 1029.) Nothing prohibits development of the abandonment plan at this time. Such deferral further exacerbates the inadequacy of the consideration of impacts associated with abandonment. The DEIR must be revised to address these significant issues. B5-17

III. The Project Objectives fail to comply with the requirements of CEQA.

1. Because SNGS seeks to obtain a CPCN, the Proposed Project's objectives must comply with the statutory requirements for issuing a CPCN.

With its application SNGS seeks to obtain a CPCN and to become a public utility to provide a public utility service to the citizens of the State. When a project is proposed for a public purpose the lead agency must develop objectives consistent with the statutory scheme designed to advance the public purpose. (See *Westlands Water District v. United States Department of Interior* (2004) 376 F.3d 853, 866 ["Where an action is taken pursuant to a specific statute, the statutory objectives serve as a guide by which to B5-18

determine the reasonableness of objectives outlined in an EIS."]; *Mountain Lion Foundation v. Fish & Game Com.* (1997) 16 Cal.4th 105, 122 [a lead agency should "harmonize the objectives common to… [relevant] statutory schemes to the fullest extent the language of the statute fairly permits"].) Therefore, the Project Objectives set forth in the DEIR must be formulated to reflect the statutory requirements for issuing a CPCN.

To approve a CPCN for a project the CPUC must determine that the "present or future public convenience and necessity require or will require such construction." (Pub. Util. Code, § 1001.) That is, in formulating the Project Objectives, the EIR cannot simply assume that there is a need for additional natural gas storage and then determine whether the proposed project fulfills that need; rather, the EIR must consider and establish whether the facility is ***needed***. (Administrative Law Judge Richard Smith's Scoping Memo and Ruling in this Proceeding (July 25, 2008), p. 22 ("Scoping Ruling") [stating that the Commission must address this issue of need pursuant to §§ 1001 and 1002, and develop a record to determine whether or not there is evidence to support a finding of overriding consideration, if necessary, with respect to the final EIR]; see also *Northern California Power Agency v. Public Utilities Com.* (1971) 5 Cal. 3d 370, 380 [the CPUC "may and should consider … every element of public interest affected by facilities it is called upon to approve].) Moreover, the 2008 Energy Plan does not encourage the development of additional in-state natural gas storage. The 2008 Energy Plan discusses the potential environmental impacts associated with our reliance on natural gas, and recommends further ***examination*** of the need for additional storage -- ***not*** further ***development***. (2008 Energy Plan, pp. 17-18.) Even if studies established that statewide need required further development of gas storage facilities, a statewide need would not explain the need for a gas storage facility to be built in a densely urban South Sacramento community.

B5-18 (Cont.)

Additionally, "a principal goal of electric and natural gas utilities' resource planning and investment shall be to ***minimize the cost to society*** of the reliable energy services that are provided by natural gas." (Cal. Pub. Util. Code, § 701.1, subd. (a).) The Legislature has further mandated that "[i]n calculating the ***cost effectiveness of energy resources*** . . . the ***commission shall include*** . . . a ***value for any costs and benefits to the environment***, including air quality." (Cal. Pub. Util. Code, § 701.1, subd. (c) (emphasis added).) Thus, minimizing societal costs must be included as a project objective in the DEIR, and, in determining whether the proposed project meets that objective, the DEIR must account for any environmental costs associated with continued and/or expanded use of natural gas.

As explained in more detail below, the DEIR's Project Objectives were not formulated to address the statutory requirements for approving a CPCN. The DEIR, in fact, acknowledges that "the goals and objectives of this [proposed] project [were]

established by SNGS, LLC." (See, e.g., DEIR, p. ES-26.) The project proponent has proposed Project Objectives that are (1) based on unfounded assumptions, (2) self-servingly narrow, and (3) designed to advance its goal of developing its desired project, rather than complying with the statutory justifications for issuance of a CPCN. B5-18 (Cont.)

2. **The Project Objectives, as stated in the DEIR, fail to comply with the CPCN requirements because they assume, rather than establish, the need for the proposed project.**

The DEIR's discussion of the Project Objectives suggests that the main reason the Project Objectives are appropriate is because the Proposed Project is needed by SMUD. But, the Proposed Project is nearly two times larger than is required to meet SMUD's suggested 4.0 bcf needs. Moreover, AGENA is informed that SMUD plans to stop storing gas that it currently stores at other northern California gas storage facilities if the Proposed Project is developed. Therefore, the Proposed Project will ***replace rather than supplement*** SMUD's existing gas storage holdings. This additional fact provides strong evidence that, contrary to the Project Objectives, SMUD does not need 4.0 bcf of natural gas storage.

In the CPCN portion of this proceeding, SNGS argued that the Proposed Project is needed because of the presumptive need for storage space. SNGS asserts that an additional gas storage facility is needed *within* the Sacramento area, and that the storage facility must be of a specified size. As discussed above, the DEIR must establish that these assertions regarding the need for an additional gas storage facility to service the Sacramento area are actually well-founded, in order to comply with the statutory requirements for the issuance of a CPCN. However, the DEIR fails to do this; instead, the DEIR adopts SNGS's self-serving definition of the project objectives -- and the unfounded assumptions therein. (DEIR, pp. ES-1 to ES-2 [adopting "SNGS, LLC's stated objectives for the SNGS Facility"].) B5-19a

Objective #1 requires that the project "[p]rovide strategically located natural gas in California." (DEIR, p. ES-1.) The objective assumes that natural gas storage is necessary, and further assumes that some locations are more strategic than others. There is no evidence supporting either claim.

First, there is no reason that the underlying goal for the Proposed Project must necessarily be met by ensuring the availability of natural gas. The DEIR states that the underlying purpose of the project is to develop a backup energy supply for SMUD that would not be susceptible to disruption events. Yet the DEIR fails to provide any support for why this underlying objective may only be achieved using natural gas. Energy can be produced in many ways. Defining the Project Objectives to require natural gas use,

without any justification or explanation of why natural gas is necessary to achieve the asserted goal of the project, fails to satisfy the statutory requirements to issue a CPCN. B5-19a (Cont.)

Second, the DEIR does not define "strategic" or what constitutes "strategically located" natural gas. Without a workable definition, the public, reviewing agencies and the Commission cannot meaningfully consider whether potential alternatives satisfy Objective #1. Extrapolating from the description of alternatives included in the DEIR, it appears that "strategic" either means a supply of gas coming from a gas storage facility or a supply of gas coming from any source. AGENA reaches this conclusion because the alternatives analysis concludes that all gas storage alternatives, including gas storage outside of the Sacramento area, will achieve Objective # 1. (See DEIR, Section C.) If "strategic" only includes gas storage facilities, the DEIR must explain why these facilities are more strategic than other gas supply sources. Finally, the DEIR must explain why only a natural gas supply is a "strategic" energy source. B5-19b

Objective # 2, which is to "[p]rovide a secure and reliable gas supply for the Sacramento metropolitan area in the event of a disruption of service from the main supply pipeline that services the area" (DEIR, p. ES-1), is also based on a number of assumptions that are not supported or established by the DEIR. First, the objective assumes that the likelihood of a disruption in Sacramento is great enough that "present or future public convenience and necessity" would support the development of a project to address the concern. Second, based on the way the objective is interpreted in the DEIR, it apparently assumes that the only way to protect against disruption is to provide a local source of natural gas. Third, like Objective # 1, it assumes that a supply of natural gas is the only way to address issues associated with a disruption event in Sacramento.

These assumptions are questionable and are not supported by the DEIR. A disruption event presumably would be caused by a natural disaster, a manmade disaster, or a reduction in available supply. The DEIR does not provide any discussion of the likelihood of these events or the potential length and severity of any such disruption were it to were to occur. Without this information, it is simply impossible to determine if Objective #2 supports a finding that "present or future public convenience and necessity" requires development of the project. B5-20a

Indeed, the available information suggests that local gas storage is not necessary to protect against a potential disruption. The DEIR acknowledges that PG&E and Southern California Gas Company "have stored natural gas in various storage facilities around the state as a method of alleviating the effects of a supply shortage." (DEIR, p. A-4.) The DEIR does not explain why SMUD cannot store gas in facilities "around the state" like PG&E and Southern California Gas Company.

Additionally, the DEIR assumes that, absent some sort of action to address potential gas supply shortages resulting from a disruption event, "SNGS [2] and PG&E [would be required] to implement cutbacks on non-essential uses of energy." (DEIR, p. ES-23.) This assumption, however, finds no support in the DEIR. To justify this assumption, the DEIR would need, at a minimum, to discuss the likelihood of a disruption event, the foreseeable length of such a disruption, and how a disruption would most likely impact gas supplies to SMUD. Further, in assessing the the reliability of the supply, the DEIR would need to consider the anticipated lifespan for the Proposed Project and whether that lifespan is sufficient to meet the asserted objective of providing a reliable supply. B5-20b

It is worth pointing out that the suggestion that PG&E would benefit from this gas storage facility is questionable. AGENA is informed that PG&E has not expressed and does not have an interest in storing gas in SNGS's proposed facility. Therefore, any reliance on the suggestion that PG&E would benefit from the project cannot support the need the facility. The DEIR must be revised accordingly. B5-20c

The DEIR fails to establish that its assumptions regarding potential disruptions are justified. Indeed, SNGS has no documentation of any disruption of natural gas service to the Sacramento region. (SNGS Response to AGENA Data Request No. 1, Response 4.1 p.34, Ex. AGENA-19.) And, evidence demonstrates that PG&E can supply natural gas to the Sacramento region without interruption. (Letter from Steven A. Whalen to Jim Fossum, April 10, 2008, Ex. AGENA-17; TR 63 lines 2-10; see Sacramento 2030 General Plan, Draft Master Environmental Impact Report, July 2008, Ex. AGENA-4 [The City of Sacramento Year 2030 General Plan Draft Environmental Report concludes that PG&E can supply natural gas upon buildout of the general plan without jeopardizing service commitments.].) B5-20d

Moreover, the CPUC, as the State agency with the authority to permit gas pipeline projects, is the appropriate entity to consider the merits of disruption claims. The CPUC, unlike SNGS, is in a unique position to evaluate the assertion. Therefore, the DEIR should not rely on the claims made by SNGS. The DEIR should include a discussion of the likelihood of a disruption event based on the CPUC's own analysis.

The DEIR also alludes to the fact that gas storage is needed locally because SMUD gas delivered on PG&E pipes is "subject to transportation curtailment[.]" (DEIR, p. ES-20.) Without discussion, the DEIR asserts a "direct interconnection to SMUD's gas pipeline system" is necessary to resolve this curtailment concern. (*Ibid.*) Yet the DEIR provides no supporting evidence to justify the numerous assumptions underlying B5-21

[2] We assume that "SNGS" should be read to mean "SMUD." If this is correct, AGENA requests that the DEIR be corrected accordingly. B5-22

such an assertion. Tellingly, SNGS admits that PG&E has ***never*** taken SMUD's gas from a remote storage facility including SMUD's gas stored at the Wild Goose facility. (SNGS Responses to AGENA First Set of Interrogatories No. 2-11, pp. 2-9 and No. 12, p. 9, Ex. A to Direct Testimony of Sarah Ropelato, Ex. AGENA-34; SNGS Response to AGENA Data Request No. 2, Responses 13-16 pp. 5-8, Ex. B to Direct Testimony of Sarah Ropelato, Ex. AGENA-34.) SNGS further admits that PG&E only once has diverted gas from SMUD. (*Ibid.*)

Even though the DEIR relies on these assumed concerns about confiscation to justify the Proposed Project, in the event PG&E were to exercise its authority to confiscate natural gas, the SNGS facility would not be immune. PG&E Gas Rule No. 14 authorizes PG&E to confiscate natural gas stored at off-system storage facilities in the same manner as any other gas delivered through a PG&E interconnection. (PG&E Gas Rule No. 14, p.20 ¶ I, Ex. AGENA-9.) Gas coming to the SNGS facility would pass through the PG&E interconnection between PG&E line 400/401 and SMUD Line 700 from the SNGS facility. (TR 72 line 16 – 73 line 2.) And at least some of the gas coming out of the SNGS facility would pass through the interconnection between PG&E Line 400/401 and SMUD line 700. (*Ibid.*) SNGS gas would also be metered by PG&E. (TR line 61 line 2 – 62 line 13.) Therefore, some portion of the gas stored at the SNGS facility would remain subject to confiscation by PG&E. As the Proposed Project would be subject to gas confiscation like any other gas supply source, the Proposed Project is not "strategically located" to avoid this alleged concern. **B5-21 (Cont.)**

Additionally, in the section of the DEIR purported to discuss the purpose and need for the proposed project, the DEIR explains that "there is no storage in the Sacramento area[.]" (DEIR, pp. A-3 to A-4.) The DEIR does not explain whether this is abnormal. The DEIR should discuss how common it is for a metropolitan area in California to have its own urban gas storage facility. The DEIR should also discuss whether the nearest gas storage locations to Sacramento are unusually distant. In order for the reader to comprehend the need for the Proposed Project at this location, the DEIR should provide the information necessary to allow the reader to understand if the situation in Sacramento is uniquely problematic. AGENA is informed that, were this facility to be developed, SMUD would be one of the few utility providers in the State (if not the only) to be directly connected to a gas storage facility (i.e. connected using a system other than the State's backbone pipeline network). Therefore, SMUD's current reliance on the backbone pipeline network to deliver stored gas from facilities located outside the Sacramento metropolitan area is not unusual. On the other hand, development of the Proposed Project in the center of a densely urban area with preexisting homes located above the storage facility would be highly unusual, and pose significant and unavoidable hazards to human health & safety and water quality. **B5-23**

Project Objective #3 in the DEIR also relies on a series of unsubstantiated assumptions. Project Objective # 3 is to:

> Satisfy SMUD's natural gas storage needs to specifically provide a fuel supply to power their electrical generating plants. The total volumetric capacity available to SMUD under its Storage Service Agreement with SNGS, LLC is 4.0 bcf, which yields approximately a 30-day supply.

(DEIR, p. ES-1 to ES-2.)

First, this objective assumes that SMUD needs a 30-day supply of stored natural gas. Second, the objective assumes that 4.0 bcf of storage is required to provide this supply. Third, even though SMUD is an electric utility not a gas utility, this objective assumes that SMUD cannot meet or at least supplement its energy generating needs with any source other than natural gas. To demonstrate that the Project Objective is consistent with the CPUC's statutory obligations and not unduly narrow, the DEIR must discuss and provide evidence in support of each of these assumptions. It fails to do so.

The only support the DEIR provides for the assumptions underlying Objective #3 is found in an inadequate footnote. Footnote 1 on Page C-5 of the DEIR states: "SMUD's RFP No. 91-2, dated June 5, 1992, identified a minimum storage capacity of 3 bcf of working gas for approximately 45 days of projected supply. Since 1992, SMUD has added gas-fired electric generating facilities within their service area. SMUD currently has 5 plants that are fired by natural gas. Therefore, demand for stored natural gas has increased from 1992 to 2009." There is no explanation of why 4.0 bcf of natural gas storage is now necessary or appropriate. B5-24

In contrast to the lack of information provided by the DEIR, the history of the SMUD RFP actually provides strong evidence that the proposed ***storage capacity is not needed***. The RFP was issued in 1992 and expired not too long thereafter. SMUD never sought to renew the RFP. The fact that SMUD did not issue a new RFP for more than 12 years suggests SMUD no longer needs additional storage. Moreover, AGENA is informed that since issuing the RFP, SMUD has acquired a significant amount of gas storage space in Northern California. We are also informed that ***SMUD plans to stop storing gas in these other facilities if the Proposed Project is developed***. Thus, general storage availability for SMUD appears to have little if anything to do with why the proposed project is necessary. Indeed, Barry Brunelle, a Gas Supply Supervisor for SMUD, told the applicant "we are currently living without the project today so it must be recognized that we can exist without it." (Electronic mail message from Barry Brunell to Jim Fossum and Don Russell, November 30, 2007, Ex. AGENA-5; TR 64 line 18 – 66 line 4.)

Finally, in light of the City of Sacramento's alternative energy initiative, SMUD's initiative, and the 2008 Energy Plan goal to "minimize" reliance on natural gas, it is unclear why a natural gas storage source is the only way to achieve SMUD's backup energy supply goals. Certainly, the DEIR should provide some explanation of such a conclusion.

To support the merits of Objective #3, the DEIR needs to provide a substantial amount of additional information. The DEIR must demonstrate that the "present or future public convenience and necessity" require that SMUD have a 30-day backup energy supply and why this energy supply must be provided by natural gas. Even assuming that a 30-day back-up supply of natural gas is actually necessary, the DEIR must also provide data to support the assertion that 4.0 bcf is necessary to provide a 30-day supply for SMUD.

Next, assuming the DEIR concludes SMUD needs a gas storage supply, the DEIR should discuss the amount of storage space SMUD currently has at other locations as well as the amount of additional gas storage space that may be available to SMUD at these other existing storage facilities. This information may demonstrate that SMUD currently has or could obtain the entire 4.0 bcf of storage space it desires at other locations. In considering the availability of gas storage, the DEIR should discuss existing and foreseeable storage expansion projects. A 6.5 Bcf expansion of the Kirby Hills underground natural gas facility has already been approved by the PUC. (Decision Granting Amended Certificate of Public Conveyance and Necessity to Construct and Operate Phase II of the Kirby Hills Natural Gas Storage Facility at p.3 n.2, Ex. AGENA-7.) A 20 bcf Gill Ranch underground natural gas storage facility application is pending before the PUC. (Notice of Availability of Application of Gill Ranch Storage, LLC for a Certificate of Public Convenience and Necessity for Construction and Operation of Natural Gas Storage Facilities at p.2, Ex. AGENA-8.) Even if the entire 4.0 bcf of storage is not available at other facilities, it is likely that substantially less than 4.0 bcf is required to provide the 30-day supply SMUD apparently desires. **B5-25**

As discussed above, a substantial evidence suggests that the Project Objectives as currently drafted are not supportable in light of the CPUC's statutory requirements for the Proposed Project. Most significantly, the DEIR fails to discuss or provide any evidence of whether a meaningful risk of disruption or confiscation exists, and the evidence available actually suggests there is little or no risk. Even if a remote risk existed, the DEIR fails to explain why natural gas storage is the only way to address such a risk. If the objectives were properly tailored to comply with the CPUC's statutory requirements, a larger variety of potential alternatives would warrant consideration. Because the Project Objectives currently included in the DEIR are unnecessarily narrow, the DEIR's **B5-26**

B5-26 (Cont.)

analysis of alternatives is also unnecessarily narrow and flawed. (See Section IV, *infra*, for comments on the alternatives analysis.)

3. The Project Objectives fail to comply with the CPCN requirements because they are self-servingly narrow, and do not include the requisite broader objective of minimizing costs, including environmental costs.

B5-27

As noted above, Project Objective #3 is defined to include the specific terms of the Proposed Project. The objective references the existing "storage service agreement" and identifies a precise storage requirement for SMUD, 4.0 bcf. Project Objectives should not be limited to the terms of a contract the project proponent entered into prior to CEQA review. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 737.) The reliance on this improperly narrow objective has resulted in the DEIR excluding from further analysis a number of feasible alternatives that could legitimately achieve the broader asserted goal of providing a backup energy supply to SMUD and other select customers. (See *City of Santee v. County of San Diego* (1989) 214 Cal.App.3d 1438, 1455 [holding that because the project and its objectives were defined too narrowly, the EIR's treatment of alternatives was inadequate].)

IV. The discussion of alternatives included in the DEIR fails to comply with the requirements of CEQA.

B5-28

As discussed in Section III, *supra*, the Project Objectives are extremely narrow and fail to comply with the requirements of CEQA. When a project and its objectives are defined too narrowly, an EIR's treatment of alternatives may also be inadequate. (See, e.g., *City of Santee v. County of San Diego*, *supra*, 214 Cal.App.3d at p. 1455.) Therefore, the entire alternatives analysis must be redone to consider appropriately defined project objectives. As the CPUC has not yet considered alternatives in relation to adequate Project Objectives, additional comments on the alternatives analysis may be necessary once the DEIR is revised to include adequate Project Objectives. (See *Save Our Peninsula Committee v. Monterey County Board of Supervisors* (2001) 87 Cal. App. 4th 99, 120.)

This section of the comment letter provides a comprehensive discussion of the alternatives to the Proposed Project as those alternatives are currently discussed in the DEIR. Many of the issues identified in this discussion reoccur throughout the DEIR. Therefore, citations to the DEIR are used as examples and are not intended to point to each place in which the same flaw occurs within the DEIR. In redrafting the DEIR's alternatives analysis, the CPUC should ensure that an accurate and consistent analysis of the alternatives is included throughout the document.

1. The range of alternatives included in the DEIR is inadequate.

CEQA requires a DEIR to include a "range of reasonable alternatives." (CEQA Guidelines, § 15126.6, subd. (a).) Even if the Project Objectives were defined appropriately, and not unduly narrowed, the alternatives identified and discussed in the DEIR fail to represent a reasonable range of alternatives.

The DEIR includes two categories of alternatives for detailed consideration: 1) alternative locations for gas storage, and 2) alternative pipelines locations. This is not a reasonable range of alternatives

The first category of alternatives considered in detail in the DERIR is alternative locations for gas storage. These alternatives are important to the extent that the alternatives are feasible and reduce environmental impacts associated with the project. However, the DEIR expresses concerns regarding the feasibility of each of the alternative storage locations included in the DEIR. The DEIR must explain the reasons for selecting the alternative storage locations considered

B5-29

In 2007, the U.S. Geological Survey determined that nine trillion cubic feet of natural gas has been extracted from the Sacramento basin. (USGS. (Feb. 2007), Assessment of Undiscovered Natural Gas Resources of the Sacramento Basin Province of California, p. 1, http://pubs.usgs.gov/fs/2007/3014/fs2007-3014.pdf.) Additionally, the mean estimate of undiscovered, technically recoverable natural gas within the Sacramento basin is 534 billion cubic square feet, with the potential to be as much as 1.067 trillion cubic square feet. (*Id.* at pp. 1-2.) Therefore, the alternative storage locations included in the DEIR represent less than one billionth of one percent of all potential gas storage space in the Sacramento basin. Without a detailed explanation of the process used for identifying alternative storage locations, the DEIR fails to explain why, in light of all the potential storage locations in the Sacramento basin, the DEIR evaluates a small sample of potentially alternatives that the DEIR admits, for the most part, may be infeasible. The DEIR must be revised to justify the selection process. By choosing to analyze alternatives that may be infeasible, the DEIR fails to provide a reasonable range of alternatives.

The second category of alternative (alternative pipeline locations), as demonstrated by the DEIR, is less important because such alternatives will have no impact on the most critical significant and unavoidable impacts associated with the Proposed Project, the health and safety impacts or water quality impacts associated with potential migration of gas from the storage reservoir. The DEIR should evaluate alternatives that are likely to reduce the significant impacts of the Proposed Project.

B5-30

B5-30 (Cont.)

Accordingly, the two types of alternatives identified by the DEIR are not sufficient to constitute a reasonable range of alternatives.

B5-31

Several parallels can be drawn between the currently Proposed Project and the proposed project at issue in *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692 ("*Kings County*"). In *Kings County*, the project in question was a proposed coal-fired cogeneration power plant, which would provide steam to a manufacturing facility and allow energy to be sold to a private electricity utility. (*Id.* at pp. 730–737). As with the currently Proposed Project, prior to commencing environmental review, the applicant and utility in *King County* had signed a contract that required the project to provide a particular fuel source to produce electricity. In *Kings County*, the applicant attempted to excuse the lack of factual detail and analysis relating to the potential to use an alternative fuel source on the ground that the contract foreclosed the possibility of using a different fuel source. (*Ibid.*)

The court held that the EIR's treatment of a potential alternative fuel source was deficient because it omitted "substantial information" and quantitative comparison of the differences in the environmental impacts associated with such an alternative fuel. (*Kings County*, *supra*, 221 Cal.App.3d at p. 734.) The court emphasized that an agency cannot "avoid an objective consideration of an alternative simply because, prior to commencing CEQA review, an applicant made substantial investments in the hope of gaining approval for a particular alternative." (*Id.* at p. 736.) The court explained further that "[a]n applicant who proceeds with the project prior to the completion of the environmental review process in the expectation of certain approval runs the risk of incurring financial losses. . . . although applicants may enter into contracts and agreements prior to the completion of the environmental review process, such contracts or agreements cannot be used to avoid the scrutiny envisioned by CEQA." (*Id.* at pp. 736-737.) Therefore, the court found that by failing to provide an adequate level of analysis the City of Hanford abused its discretion pursuant to CEQA Guidelines section 15151. (*Id.* at pp. 733–734.) Here, SNGS defined the Project Objectives to include the contract and fuel source. This DEIR contains the same deficiencies as those described in *Kings County*. The DEIR must be revised to comply with CEQA.

B5-32

The 2008 Energy Plan provide some guidance on the alternative fuels that should be considered in order to for the DEIR to comply with the holding in *Kings County*. The 2008 Energy Plan sets a future goal of reducing reliance on natural gas. (2008 Energy Plan, pp. 18-19 ["California needs to consider means by which natural gas usage can be minimized to reduce total greenhouse gas emissions, while still meeting California's overall energy needs."].) The 2008 Energy Plan identifies potential alternatives that could replace the need for future gas storage facilities. These alternatives include increasing the use of certain biofuels, such as methane from cattle farms. (2008 Energy

Action Plan Update, p. 18.) Unlike the Proposed Project, these types of biofuel projects may actually reduce air quality and water quality impacts associated with both California's agricultural and energy sectors. Moreover, a conservation alternative may not only reduce the need for gas storage, but could also contribute to a moderation of natural gas price. (*Ibid.*) These are only a few of many potential alternative fuel sources; others include wind, heat, and solar electricity production. If the Project Objectives were properly tailored, it would become clear that these types of alternative sources should be analyzed in the DEIR. B5-32 (Cont.)

2. **The factors used for analyzing alternatives and rejecting alternatives from consideration are substantially flawed.**

As discussed above, errors relating to evaluation of the identified alternatives begin with the flawed Project Objectives. CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives or would be more costly." (CEQA Guidelines, § 15126.6, subd. (b).) The executive summary of the DEIR acknowledges that "economic feasibility" was considered in screening alternatives.[3] (DEIR, p. ES-9.) While economic consideration may be utilized to screen alternatives, the DEIR must provide evidence to support its conclusions. In revising the DEIR to include support for conclusions relating to economic feasibility of alternatives, the DEIR must calculate costs consistent with the requirements of Public Utilities Code section 701.1, subd. (c), which requires consideration of costs to the environment. B5-33a

The DEIR also states that jurisdictional boundaries and the proponent's control over alternative sites were also considered in evaluating alternatives. (DEIR, ES-9.) The CPUC is a State Agency and has jurisdiction to issue CPCNs throughout the entire state. Therefore, it is unclear how jurisdictional boundaries are relevant to consideration of the feasibility of alternatives. Additionally, especially in light of the professed public purpose of the proposed project, it is not appropriate to consider proponent's control over alternative sites in considering the feasibility of alternatives. (See, e.g., *Kings County*, *supra*, 221 Cal.App.3d at p. 736.) Moreover, the applicant does not have control over the Proposed Project location, which makes consideration of proponent control even more suspect. The applicant still requires numerous leases from property owners including residents, businesses, and the City of Sacramento. Additionally, in order to obtain B5-33b

[3] The DEIR also provides that "[t]he CPUC's CPCN proceedings may separately and specifically consider cost issues as they pertain to economic feasibility." (DEIR, pp. ES-24 to ES-25.) As the CPCN hearings have already occurred, the point at which the Project Alternatives should be evaluated based on CPCN standards has already passed. Therefore, it is unclear how the new alternatives evaluated in the DEIR will be analyzed and considered as part of the non-CEQA CPCN portion of the proceeding. B5-34

control over the proposed site, SNGS would need to secure numerous discretionary approvals by the City of Sacramento as well as other public agencies. Therefore, although the proponent has made clear that it desires the proposed project site, it does not have control over the proposed site as the DEIR inappropriately suggests. B5-33b (Cont.)

Table C-1 considers whether each of the alternatives is capable of providing 4 bcf of natural gas storage. (DEIR, pp. C-8 to C-11.) The alternatives analysis is flawed because it assesses the adequacy of the alternatives in light of each alternative's ability to achieve this seemingly arbitrary goal of storage capacity. Moreover, the DEIR explains that "SNGS, LLC estimates that in order to be economically viable, a natural gas reservoir needs to be able to contain approximately 5 to 10 billion cubic feet (bcf) of working gas." This assertion is without support in the DEIR and is flawed for several reasons. First, AGENA is informed that several gas storage operations in the State have been developed to operate at a significant lower capacity. For example, the Playa Del Rey facility was approved to operate at 2.6 bcf capacity and the Pleasant Creek facility was approved to operate at 2.3 bcf capacity. Additionally, the DEIR states that the Proposed Project would bring SNGS "projected annual revenue of $15 million." (DEIR, p. E-21.) Without further discussion, the projected revenue estimate seems to suggest that a much smaller facility may be financially feasible. B5-35a

The table also demonstrates that several alternatives, such as the Poppy Ridge and Stone Lake alternatives, were rejected from further consideration at least in part because of proximity to urban areas or other environmentally sensitive areas. (See, e.g., DEIR, p. C-8.) The DEIR should explain why these alternatives do "not meet environmental criteria," (*ibid.*) but the Proposed Project – located in an even more densely urban area – is an appropriate location for the project. B5-35b

Finally, the DEIR also indicates that many of the alternatives were "evaluated by SNGS, LLC." (DEIR p. C-12.) AGENA is concerned with the adequacy of the alternatives analysis due to its apparent reliance on information provided by SNGS. SNGS is the proponent of the Proposed Project. That SNGS was permitted to define the Project Objectives has already unduly limited the consideration of alternatives, and it should not be permitted to play the lead role in assessing the alternatives. AGENA therefore urges the CPUC independently to review the alternatives analysis conducted by SNGS. B5-35c

3. **The alternatives analyzed in the DEIR must be evaluated at a level of detail sufficient to allow for meaningful consideration and comparison to Proposed Project.** B5-36

"The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making." (CEQA Guidelines, § 15126.6, subd. (b).) With limited exception, the DEIR concludes that substantial additional information is required to consider the feasibility of the alternative storage locations included in the DEIR. The DEIR cannot draw conclusions based on an uninformed comparison of alternatives.

In *Kings County Farm Bureau v. City of Hanford*, *supra*, 221 Cal.App.3d 692, the Court of Appeal was asked to consider whether the City of Hanford failed to comply with CEQA by including insufficient "quantitative, comparative analysis" of a natural gas powered alternative to the coal-fired cogeneration power plant considered in the EIR. (*Id.* at pp. 730–737.) The court held that the EIR's treatment of the "natural gas alternative" was deficient because it omitted "substantial information" about the use of natural gas, and therefore failed to provide an accurate comparison of the relative environmental impacts of the use of coal and natural gas respectively. The document failed to provide quantitative, comparative analysis regarding the extent to which a natural gas facility would generate lower levels of sulfur dioxide, carbon monoxide, and particulates. The EIR not only should have provided more detailed information comparing the "stack emissions" from the two fuels, but it also should have analyzed the significance of the pollution reductions attributable to the elimination of secondary emissions. The court found that the city's failure to include this level of detail within the EIR constituted an abuse of discretion pursuant to CEQA Guidelines section 15151. (*Id.* at pp. 733–734.)

B5-36 (Cont.)

As explained by the court in *Kings County Farm Bureau*, to comply with CEQA, the DEIR must include a "quantitative, comparative analysis" of the differences between a proposed project and environmentally superior alternatives. (*Kings County Farm Bureau v. City of Hanford*, *supra*, 221 Cal. App. 3d at p. 735.) Here, the DEIR concludes that each of the alternative gas storage locations identified in the DEIR is environmentally superior to the Proposed Project. (DEIR, p. E-20.) Therefore, CEQA requires a "quantitative, comparative analysis" of each of those alternatives.

This information is critical to determining the feasibility of alternatives and their ability to reduce environmental impacts associated with the Proposed Project. The CPUC will abuse its discretion if it fails to include this type of quantitative, comparative analysis in the DEIR because "failure to include relevant information precludes informed decisionmaking and informed public participation, thereby thwarting the statutory goals of the EIR process." (*Kings County Farm Bureau v. City of Hanford*, *supra*, 221 Cal. App. 3d at p. 712; see also *Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1391.) Substantially revisions to the DEIR are required to address these issues in order to comply with CEQA.

4. The DEIR contains numerous errors relating to the discussion of the considered alternatives and those alternatives excluded from detailed consideration.

a. Freeport Gas Field Alternative

The summary of the Freeport Gas Field Alternative should provide information regarding any past or existing use of the reservoir and the similarities between its geologic makeup and that of the Proposed Project. The DEIR should also explain what is meant by the statement that the field is located on a "suburban fringe site." (DEIR, p. ES-10.) For example, how far from the nearest residential development is the reservoir? The discussion should include the total number of homes and residents located directly above the storage facility. The discussion should also discuss the population of the area surrounding the reservoir that may be affected by environmental impacts associated with the alternative. All of this information should be analytically compared to the Proposed Project. B5-37

Is the total population of Elk Grove the population that could be impacted by development of this alternative? If so, the DEIR should explain how this conclusion was reached. As Elk Grove is approximately 15.2 square miles, the discussion should also explain how many people live in the 15.2 square mile area surrounding the Florin Field. Without a comparative analysis, the magnitude of potential health and safety impacts associated with the Proposed Project in comparison to this alternative is unclear.

The discussion also states that "[d]evelopment of this field would involve constructing facilities similar to those required for the Proposed Project[.]" (DEIR, p. ES-10.) The DEIR should discuss the probable location of those facilities to allow meaningful consideration and comparison of potential impacts associated with the alternative. Figure C-2 provides a map of the reservoir. (DEIR, p. C-13.) The map should also include the probable location of the project components.[4] And, although the analysis discusses the distance to connect directly to the SMUD pipeline (*ibid.*), it should explain whether connection to the PG&E pipeline would be closer or further than connecting directly to the SMUD pipeline. B5-38

The DEIR's stated rationale for "full" analysis of this alternative gas field asserts that the alternative "would partially meet project objectives." (DEIR, p. C-13.) B5-39

[4] Figure C-1 provides a map showing all alternative locations and potential pipeline routes. A separate map should be provided for each reservoir that illustrates the pipeline route and other potential component locations. Figure C-1 depicts too large of an area to be able to illustrate the types of land uses that the pipelines will cross through. B5-38 (Cont.)

However, the discussion of this alternative demonstrates that it would meet the *majority* of the project objectives. Therefore, the text should be amended to stat that the alternative "would ~~partially~~ meet **the majority of the** project objectives." Additionally, once the Project Objectives have been revised to comply with CEQA and are not unduly narrow as in the current draft of the EIR, the discussion of whether the alternative meets the project's objectives will need to be revised accordingly. B5-39 (Cont.)

b. Snodgrass Slough Gas Field Alternative

The summary of the Snodgrass Slough Gas Field Alternative should provide information regarding any past or existing use of the reservoir and the similarities between its geologic makeup and that of the Proposed Project. It currently fails to do so. B5-40

The discussion of this alternative states that 669 people live within four miles of the site. (DEIR, p. C-13.) For comparative purposes, the total number of people living within a four mile radius of the Proposed Project should also be disclosed. Without a comparative analysis, the magnitude of potential health and safety impacts associated with the Proposed Project in comparison to this alternative is unclear. B5-41

The discussion also states that "[d]evelopment of this field would involve constructing facilities similar to those required for the Proposed Project[.]" (DEIR, p. ES-13.) The DEIR should discuss the probable location of those facilities in order to allow meaningful consideration and comparison of potential impacts associated with the alternative. Figure C-3 provides a map of the reservoir. (DEIR, p. C-13.) The map should also include the probable location of the project components. Additionally, although the analysis discusses the distance to connect directly to the SMUD pipeline (*ibid.*), the analysis should also consider whether connection to the PG&E pipeline would be closer or further than connecting directly to the SMUD pipeline. B5-42

The DEIR's stated rationale for full analysis of this alternative acknowledges that "potential technical limitations" may render the alternative infeasible. (DEIR, p. ES-17.) Yet the DEIR fails to provide complete or sufficient information to determine whether the alternative is likely to be feasible, or even to assess the potential obstacles to its feasibility. This cursory statement fails to comply with the *King County Farm Bureau* requirement of a quantitative, comparative analysis. (*Kings County Farm Bureau v. City of Hanford*, *supra*, 221 Cal. App. 3d at p. 735.) The analysis should also consider whether permitting issues related to proximity to the Reclamation District 551 Canal or the need to use HDD under I-5 and the UPRR tracks make the alternative infeasible. Carrying forward an alternative that is unlikely to be feasible is inappropriate and is not a real alternative. Without the information required to support that conclusion, the DEIR's discussion of this alternative is inadequate. To the extent, as the DEIR insinuates, this is B5-43

not a feasible alternative, it should not be used to create the appearance that a reasonable range of alternatives has been considered.

The DEIR's asserted rationale for full analysis of this alternative also suggests that, in order to determine the technical feasibility of this alternative, "*further* geological evaluation and special engineering" would be necessary. (DEIR, p. C-16 (emphasis added).) This indicates that some geological evaluation of the gas field has already occurred. The DEIR should summarize the existing geological evaluations include such studies as an appendix to the DEIR, thus permitting the public, interested agencies, and the Commission to evaluate the adequacy of existing evaluations. The DEIR should identify what specific further analysis is necessary to determine the alternative's feasibility, and should provide that analysis or explain why such further cannot be provided. **B5-43 (Cont.)**

Finally, the DEIR asserts that the alternative "partially" meets project objectives. (DEIR, p. ES-13.) However, the discussion of this alternative demonstrates that it would meet the *majority* of the project objectives. Therefore, the text should be amended to state that the alternative would meet "~~partially~~ . . . **the majority of the** project objectives ~~1, 2, and 3~~." Additionally, once the Project Objectives have been revised to comply with CEQA and are not unduly narrow as in the current draft of the EIR, the discussion of whether the alternative meets the project's objectives will need to be revised accordingly. **B5-44**

c. Thornton Gas Field Alternative

The summary of the Thornton Gas Field Alternative should provide information regarding any past or existing use of the reservoir and the similarities between its geologic makeup and that of the Proposed Project. It fails to do so. **B5-45**

The discussion provides that 4,650 people live within 1.5 miles from the alternative site. (DEIR, p. ES-13.) For comparative purposes, the total number of people living within a 1.5 mile radius of the Proposed Project should also be disclosed. Without a comparative analysis, the magnitude of potential health and safety impacts associated with the Proposed Project as compared to this alternative is unclear. **B5-46**

The discussion of this alternative also states that "[d]evelopment of this field would involve constructing facilities similar to those required for the Proposed Project[.]" (DEIR, p. ES-13.) The DEIR should discuss the probable locations for these facilities to allow meaningful consideration and comparison of potential impacts between the alternative and the Proposed Project. Figure C-4 provides a map of the reservoir. (DEIR, p. C-19.) The map should include the probable location of the project components. Additionally, although the analysis discusses the distance to connect directly to the **B5-47**

SMUD pipeline (*ibid.*), it should also consider whether connection to the PG&E pipeline would be closer or further than connecting directly to the SMUD pipeline. B5-47 (Cont.)

The discussion states that the reservoir is located adjacent to the Consumes River Preserve. (DEIR, p. ES-13.) The DEIR should discuss whether any additional permits or approvals associated with this location may be a likely barrier to development of the project at this location. Carrying forward an alternative that is not likely to be feasible is inappropriate and is not a real alternative. Without the information required to support a conclusion that this is a feasible alternative, the discussion of this alternative is inadequate and the DEIR should not include it simply to create the appearance that a reasonable range of alternatives has been considered. (See CEQA Guidelines, § 15126.6, subd. (d) [noting the discussion of alternatives must include sufficient information about each alternative o allow "meaningful evaluation, analysis, and comparison with the proposed project"].) B5-48

d. General Comments on Project Design Alternatives

The two most significant and unavoidable impacts associated with the Proposed Project are the health and safety impacts and water quality impacts related to using the reservoir. None of the project design alternatives address these significant and unavoidable impacts. Therefore, these alternatives do not fulfill the statutory requirement for CEQA alternatives. (See *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 566 (emphasis added) ["[A]n EIR for any project subject to CEQA review must consider a reasonable range of alternatives to the project, or to the location of the project, which (1) ***offer substantial environmental advantages over the project proposal***. . . ; and (2) may be 'feasibly accomplished in a successful manner' considering the economic, environmental, social and technological factors involved."].) Therefore, given that half of the alternatives considered in the DEIR are simply variations on the pipeline route, and in light of the DEIR's conclusory statements that some of the gas field locations discussed in detail may not actually be feasible alternatives, the DEIR creates the perception that a range of alternatives has been considered when, in fact, that is not the case. The DEIR must be revised to provide a reasonable range of alternatives in compliance with CEQA. B5-49

e. Stone Lake Gas Field Alternative

The discussion of the Stone Lake Gas Field Alternative provides that it "may not meet environmental screening criteria." (DEIR, p. ES-16.) The only potential environmental impact acknowledged in the DEIR for this alternative is the "impact to biological resources," which "may be greater" than the Proposed Project. (DEIR, p. C-25.) However, the DEIR does not provide any evidence to support this bare conclusion. B5-50

Moreover, even if the statement were accurate, the discussion fails to provide any justification for why mitigation measures could not be developed to avoid potentially significant impacts associated with the development of the site within the Stone Lake Refuge. Therefore, the discussion fails to include information necessary to support the conclusion that the alternative would not meet environmental screening criteria.

Additionally, the DEIR acknowledges that this alternative would reduce health and safety impacts associated with the Proposed Project. (*Ibid.*) When an alternative may achieve the goal of reducing or avoiding significant and unavoidable impacts of the proposed project, the fact that it may result in other significant impacts is not a justification to reject the alternative from further discussion. (CEQA Guidelines, § 15126.6, subd. (d).)

By failing to analyze this alternative on the sole basis that there may be potential biological impacts, the DEIR apparently concludes that these potential impacts are more significant than the admittedly significant and unmitigatable health and safety impacts associated with the Proposed Project. The DEIR must clarify why the environmental screening criteria support rejection of the alternative. The decisionmakers and the public should be provided with a "quantitative, comparative analysis" so they can weigh the pros and cons of alternatives that affect biological resources versus alternatives that affect human health.

B5-50 (Cont.)

The discussion of the alternative further states that three faults occur in the Stone Lake Field. (DEIR, p. ES-16.) The DEIR uses these faults as part of its justification for rejecting further consideration of this alternative. Documentary evidence should be provided to support this claim. Additionally, the DEIR acknowledges that the "possible localized" faults may be present in the Florin Field as well. (DEIR, p. D.6-24; see also DEIR, p. D.5-5 [Florin Field "may also support other older faults that are not considered active."].) Additionally, one of SNGS's own consultants has suggested that faults may exist at the Florin Field reservoir. (See Confidential Document, SNGS 2115.) The DEIR should explain why the faults identified at Stone Lake Field are a more significant concern than the faults that may be present in the Florin Field.

B5-51

Finally, the DEIR also states, without discussion, that the alternative fails to meet Project Objectives 2 and 3, and may not meet the technical feasibility criteria. (DEIR, p. ES-16.) The DEIR needs to provide evidence to support such bare assertions. Additionally, once the Project Objectives have been revised to comply with CEQA, and not unduly narrowed as they are in the current draft, it is possible that this alternative will meet the majority of the project objectives. Therefore, this alternative should be reconsidered in light of revised objectives.

B5-52

f. Poppy Ridge Gas Field Alternative

Unlike the Proposed Project, the Poppy Ridge Gas Field Alternative is located on the "urban fringe." (DIER, p. ES-16.) The DEIR nevertheless concludes that because the alternative "is located in an urban area… [it] would not substantially reduce potential health and safety impacts associated with the Proposed Project and therefore would not meet the CEQA screening criteria for environmental criteria." (*Id.* at p. ES-17.) The DEIR should explain why locating the storage reservoir on the urban fringe would not reduce the health and safety impacts associated with developing the Proposed Project in the center of an urban area within South Sacramento. Moreover, the discussion does not explain whether development of this alternative could result in reduced potential for impacts to a drinking water aquifer or reduce the potential for short-term noise impacts. If the alternative may reduce either of those impacts, then the DEIR should not have concluded that the alternative "would not meet the CEQA screening criteria for environmental criteria." (DEIR, p. C-26.) **B5-53**

g. Sacramento Airport Gas Field Alternative

The discussion of the Sacramento Airport Gas Field Alternative concludes that "[t]he geologic formation of the reservoir, which includes faults, discontinuous sand lenses, and massive discontinuity in the production zones throughout the field, preclude this alternative due to feasibility." (DEIR, p. ES-17.) However, no evidence or studies supporting this conclusion are provided. Without access to the information relied upon to reach this conclusion, the public, reviewing agencies, and the Commission are unable to verify the accuracy of DEIR's conclusion regarding the feasibility of this alternative. **B5-54**

Additionally, to the extent the DEIR discounts this alternative because it includes faults, the DEIR acknowledges that the "possible localized" faults may be present in the Florin Field as well. (DEIR, p. D.6-24; see also DEIR, p. D.5-5 [Florin Field "may also support other older faults that are not considered active."].) The DEIR must explain why the faults identified at Sacramento Airport Gas Field are a more significant concern than the faults that may be present in the Florin Field. Absent this additional information, the DEIR does not support the conclusion that use of the Sacramento Airport Gas Field is infeasible and the alternative should have been fully evaluated with the DEIR.

The DEIR also suggests that developing this alternative "could create potential siting conflicts with the airport[.]" (DEIR, p. C-27.) However, the DEIR provides no explanation or evaluation of the potential for siting conflicts. Even if there is some basis for potential siting conflicts, the DEIR wholly fails to explain why such a potential conflict is of a greater concern than the siting conflict associated with developing the **B5-55**

Proposed Project below an urban residential neighborhood. Before discounting this alternative on the basis of a siting conflict, the DEIR must provide a comparative analysis of the potential siting conflicts at the airport site and the Proposed Project's site. (CEQA Guidelines, § 15126.6, subd. (d).)

As the Sacramento Airport Gas Field Alternative appears to meet all the stated Project Objectives and may meet the environmental criteria, it should have been carried forward for detailed consideration in the DEIR. Without evidence demonstrating that development of the reservoir is not geologically feasible, the DEIR improperly excluded this alternative from further examination. If the alternative is carried forward for detailed evaluation in a revised DEIR, the geologic feasibility of the alternative should be one of the issues evaluated and vetted publicly as intended by CEQA. If, after full consideration and evaluation of this alternative, the CPUC concludes that it is not feasible should not be identified as one of the potential alternatives in the DEIR, the basis and evidence for this conclusion should be made clear in the DEIR and made available for consideration by the public, reviewing agencies, and the Commission. **B5-55 (Cont.)**

h. Combined Gas Field Alternatives

After the Project Objectives are revised to conform to the statutory standards for reviewing the Proposed Project, this alternative should be revisited. AGENA believes that properly defined Project Objectives will demonstrate that appropriate alternatives for consideration include not only a combination of gas fields, but also a combination of fuel sources and gas fields. For example, a feasible alternative might include a combination of gas fields, biofuels, wind, solar, geothermal, hydroelectric, anaerobic digestion, landfill gas, etc. When such alternatives are evaluated in light of revised Project Objectives, the CPUC may determine that some combinations of energy supply options are feasible and should be carried forward for detailed consideration. **B5-56**

i. Gas Fields Outside of Sacramento

The discussion of this alternative concludes that it would not meet Project Objectives 2 or 3 because they "require that the gas field be located in the Sacramento area in order to provide secure and reliable gas supply to the Sacramento metropolitan area in the event of a disruption of service[.]" (DEIR, pp. ES-19 to ES-20.) The discussion further states that an alternative must "provide storage needed to specifically supply SMUD natural gas storage needs[,]" must not be "subject to transportation curtailment[,]" and should have a "direct interconnection to SMUD's gas pipeline system." (DEIR, p. ES-20.) As discussed in Section III, *supra*, the Project Objectives are too narrowly defined and it is improper to reject alternatives based on the objectives **B5-57a**

currently set forth in the DEIR. Once the Project Objectives are revised to comply with CEQA, this alternative should be reconsidered. B5-57a (Cont.)

The DEIR provides that this alternative considered "Wild Goose in Colusa, and a number of other depleted or partially depleted gas or oil fields in the region[.]" (DEIR, p. C-29.) The DEIR should identify what other fields were considered and, in light of revised Project Objectives, determine if any of the alternative locations should be carried forward for full review. Additionally, upon revision of the Project Objectives, the discussion of this alternative should identify existing potential gas field alternatives outside of Sacramento. And, as SMUD already stores gas outside of the Sacramento area, the evidence suggests that storing gas outside of Sacramento is feasible. The DEIR should be revised to discuss this issue in greater detail. The DEIR should also explain the time it takes to transport gas from Wild Goose and other existing storage facilities versus the time it will take to distribute gas from the Proposed Project. This analysis will assist decisionmakers and the public in ascertaining whether the status quo or No Project alternative mandate denial of the Proposed Project. B5-57b

In addition, the DEIR's stated rationales for rejecting this alternative are inconsistent. (Compare DEIR, p. ES-20 to DEIR, p. C-29.) Section C suggests that the alternative does not provide sufficient reliability because of the necessary distance the pipeline would travel: "Natural gas storage under this alternative would be located over 13 miles from the Sacramento Metropolitan and SMUD service area. The reliability of storage of natural gas to SMUD and the Sacramento Metropolitan area during a disruption tends to decrease with pipeline distance[.]" (DIER, p. C-29.) The Executive Summary, however, does not include this statement, and instead suggests that "transportation curtailment" supports rejection of this alternative without further consideration. (DEIR, p. ES-20.) This difference in the rationales for rejecting the alternative should be resolved and explained. B5-58

Further, with respect to the claim included in Section C, the DEIR should explain why a storage facility 13 miles from the SMUD area would be less reliable than a more local storage facility. This discussion should be supported by evidence. As noted, SMUD currently uses storage facilities outside of Sacramento. If the evidence demonstrates that improved reliability is simply a minor issue, it is not appropriate for the CPUC to reject this alternative based on claimed reliability concerns. B5-59

With respect to curtailment concerns expressed in the Executive Summary, the DEIR should also provide additional details. The DEIR should discuss the likelihood of curtailment. In the event curtailment occurs, the DEIR should consider the likely reduction in gas deliveries resulting from the curtailment event. The DEIR must also consider whether other energy sources could be used to supplement gas supplies in the B5-60

event of curtailment. Finally, the DEIR should consider if the Proposed Project would actually avoid the curtailment concern. (See *supra* Section III [explaining that gas stored in the SNGS facility would also be subject to curtailment].) It should also be noted that SMUD has previously considered the possibility of directly connecting to a storage facility outside of Sacramento. AGENA understands that SMUD has conducted negotiations regarding this possibility. Although SMUD does not currently have plans to move forward with a direct connection option outside of the Sacramento area, SMUD's consideration of the possibility to directly connect with a more distant storage facility demonstrates that the alternative is not infeasible. Therefore, if the DEIR concludes that direct connection can avoid curtailment issues and is an appropriate aspect of the Project Objective, the DEIR should consider whether an alternative outside Sacramento that included direction connection should be evaluated in detail. **B5-60 (Cont.)**

Finally, in considering gas storage facilities outside of Sacramento, the DEIR should consider the expansion of natural gas facilities currently in operation and the potential for others to come online. The DEIR states that if the Proposed Project was not developed, "larger natural gas utilities, such as PG&E, may elect to expand their natural gas storage facilities in order to meet demand." (DEIR, p. D.9-15.) The DEIR thus admits that expansion of existing gas storage facilities could address the demand that the Proposed Project would otherwise fulfill, and demonstrates that expansion is a feasible alternative. In fact, several other gas storage facilities are already being developed including the 15 bcf Gill Ranch facility, 12 bcf Kirby Hills expansion, and 5 bcf Wild Goose expansion. Additionally, the evidence suggests that other potential storage reservoirs exist in the Sacramento basin. In 2007, the U.S. Geological Survey determined that nine trillion cubic feet of natural gas has been extracted from the Sacramento basin. (USGS. (Feb. 2007), Assessment of Undiscovered Natural Gas Resources of the Sacramento Basin Province of California, p. 1, http://pubs.usgs.gov/fs/2007/3014/fs2007-3014.pdf.) And, the mean estimate of undiscovered, technically recoverable natural gas within the Sacramento basin is 534 billion cubic square feet, with the potential to be as much as 1.067 trillion cubic square feet. (*Id.* at pp. 1-2.) Given the availability of existing, proposed, and potential reservoirs outside of the Sacramento area, a quantitative, comparative analysis of this alternative must be provided in the DEIR. **B5-61**

j. Use of Natural Gas Storage Tanks

The discussion of this alternative fails to consider that it may be possible to locate storage tanks in an area near the SMUD pipeline but remote from any population center. AGENA is also informed that some gas storage tanks have previously been buried. AGENA is aware that PG&E operates such a facility in the Sacramento area. It may also be possible to reduce tank size requirements by storing the natural gas in its liquid form. Thus, in addition to considering the remoteness of potential tank locations, the **B5-62**

alternatives discussion should consider the possibility of burying tanks and/or using liquid natural gas.

The discussion of this alternative does not demonstrate that the health and safety impacts of the alternative would be more significant than the potential impacts of the Proposed Project. Moreover, through the use of liquid natural gas, appropriate siting, and potentially burial of tanks, the health and safety impacts associated with this alternative may be significantly reduced as compared to the Proposed Project. The alternative might also reduce or avoid the potential water quality and noise impacts associated with the Proposed Project. Therefore, the evidence suggests that this alternative should have been fully analyzed in the DEIR. **B5-62 (Cont.)**

k. Alternative Compressor Station Locations 1 & 2

The DEIR should explain why these alternatives were considered for potential inclusion as meaningful alternatives. Only alternatives that may potentially reduce impacts should be considered in a DEIR. (CEQA Guidelines, § 15126.6, subd. (a) ["An EIR shall describe a range of reasonable alternatives to the project . . . which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project"]; *id.* § 15126.6, subd. (b) ["The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the projects"].) These alternatives on their face do not meet this criterion because they would relocate the compressor station to a location that is closer to residential areas and/or businesses, and one of them would even require existing businesses to relocate. (DEIR, p. ES-21.) **B5-63**

l. Alternative Wellhead Site at the Compressor Station Site

In discussing an alternative wellhead site, the DEIR fails to provide information supporting its assertion that a wellhead site must be located near the center of a natural gas field. (DEIR, p. ES-21.) Additionally, the DEIR should explain what distance from the center of a reservoir is feasible for a wellhead site. The DEIR should also explain why slant drilling or any other method could not be used to allow the wellhead site to be located further away from the center of the reservoir. **B5-64**

m. Energy Conservation and Demand-Side Management

The 2008 Energy Plan Update suggests potential alternatives that could replace the need for future gas storage facilities. (2008 Energy Plan, pp. 17-18.) The plan provides that a conservation alternative may not only reduce the need for gas storage, but could **B5-65**

also contribute to a moderation of natural gas price. (*Ibid.*) Therefore, as the conclusions drawn by the DEIR – that gas storage is necessary and appropriate – are inconsistent with the 2008 Energy Plan, the DEIR should provide information establishing that conservation – either on its own, or in addition to a smaller storage facility, or in conjunction with the use of other energy sources – could not replace the need for natural gas during a potential gas supply disruption event assuming such a disruption may actually occur. B5-65 (Cont.)

Additionally, the DEIR states that natural gas provides 30% of the electricity in the Sacramento area.[5] (DEIR, p. ES-22.) Does the 4.0 bdf / 30-day supply calculation assume that SMUD operates solely off of natural gas for 30-days? The DEIR must consider the likelihood of all energy sources becoming unavailable at the same time. If the 4.0 bcf / 30-day supply calculation only accounts for continued production of 30% of SMUD's electricity using natural gas, then this suggests that even if a disruption actually occurred, SMUD would still be able to supply 70% of its electricity requirements. Therefore, based on this scenario, at worst, a conservation and demand-side management alternative would only require a 30% reduction in overall energy consumption. The DEIR fails to provide any discussion to demonstrate that a 30% reduction in a time of disruption would not be feasible. In order to adequately discuss the feasibility of this reduction, the DEIR must consider how long a disruption might foreseeably last. B5-66

Moreover, SMUD has adopted a policy that it will provide 20% of its electricity from renewable sources by 2011. (DEIR, p. F-10.) The DEIR also acknowledges that the Climate Change Scoping Plan (Scoping Plan), approved by the California Air Resources Board (CARB) on December 11, 2008, includes a strategy to increase the Renewables Portfolio Standard for all electrical generation to 33% by 2020. (*Ibid.*) The 2008 Energy Plan and City of Sacramento also support efforts to decrease reliance on natural gas and increase use of renewable energy. Therefore, the evidence suggests that the percentage of SMUD's electricity that will come from natural gas should, in accordance with these plans, continue to decrease. As a result, the short term conservation and demand-side management that may be necessary to protect against any claimed disruption concern may require even less than a 30% overall energy reduction.

Additionally, the DEIR provides that if nothing were to be done to address the purported potential for gas supply shortages in the event of a disruption, "SNGS[6] and B5-67

[5] The DEIR states that the 30% of electricity in the Sacramento Area is provided by natural gas. The DEIR should clarify whether SMUD produced 30% of its electricity using natural gas or if this estimate includes other electricity providers in the Sacramento area. This information is critical to adequately considering the impact a disruption may have on SMUD's ability to provide electricity to its customers. B5-68

[6] See, supra, n. 2. B5-69

PG&E [would be required] to implement ***cutbacks on non-essential uses of energy***." (See, e.g., DEIR, pp. ES-23, ES-26 (emphasis added).) If the likely result of a disruption would only be cutbacks on non-essential uses of energy, then this suggests further that conservation and demand-side management may well be a feasible alternative to gas storage. This alternative should be considered and evaluated in greater detail in the DEIR. **B5-67 (Cont.)**

n. Alternative Energy Source Alternative

The Executive Summary acknowledges that "[a]lternatives to natural gas storage include methods of meeting project objectives that do not require development of a new underground natural gas storage facility (e.g., additional natural gas supply, energy conservation, and/or ***alternative fuels***)." (DEIR, pp. ES-9, C-2 (emphasis added).) However, while the DEIR identifies such alternatives, the DEIR routinely rejects these alternatives on the basis that they do not provide additional gas storage. (DEIR, p. C-11 [Table C-1].) This inconsistency in the DEIR apparently stems from the DEIR's improperly narrow Project Objectives. Once appropriate Project Alternatives have been defined, these alternatives should be reconsidered. AGENA believes that full consideration of these alternatives in light of appropriate Project Objectives will demonstrate that alternative fuels are a feasible alternative to the Proposed Project. **B5-70**

Presently, the DEIR provides only superficial consideration of alternative fuel options. For example, although most alternatives discussed and rejected from detailed consideration were evaluated in both the Executive Summary and in Section C, the DEIR fails to include alternative fuels in the Executive Summary. Instead, a table in Section C simply lists alternative fuel supply as a possibility, and rejects it out of hand. (DEIR, p. C-11; see also DEIR, p. C-12, which lists an "alternative fuel supply" alternative as an alternative considered and rejected from further consideration.) The DEIR's extremely cursory treatment of this alternative fails to comply with the holding in *Kings County*.

After the Project Objectives are revised to comply with the CPUC's statutory requirements for approving the Proposed Project, the DEIR should also be revised to include sufficient consideration of an alternative fuel option. Table C-1 states that an alternative fuel would not meet environmental criteria because "oil would increase air pollutants and would violate air quality standards[.]" (DEIR, p. C-11.) The 2008 Energy Plan has declared that natural gas, like oil, creates air quality concerns that require the consideration of alternative energy sources to reduce reliance on natural gas. (2008 Energy Plan, pp. 17-18.) Obviously "oil" is not the alternative that should be considered. But it is far from the only available alternative. The DEIR should consider alternatives such as biofuels, wind, solar, geothermal, hydroelectric, anaerobic digestion, landfill gas, **B5-71**

etc. Until the DEIR contains such an analysis, its consideration of an alternative fuel alternative is woefully inadequate. B5-71 (Cont.)

o. No Project Alternative

The focus of the "No Project" alternative should be on impacts that would be *avoided* if the Proposed Project is not approved. (CEQA Guidelines, § 15126.6., subd. (e).) The DEIR fails to provide this critical analysis. Instead, the DEIR largely focuses on claimed impacts that will be *caused* if the No Project alternative is adopted. Essentially, rather than providing a meaningful discussion of the No Project alternative, the DEIR simply provides an unsupported dooms day scenario if the Proposed Project is not adopted. For example, in no less than six separate sections, the DEIR states that under the No Project alternative "SMUD may be required to implement cutbacks on non-essential energy use and may run out of natural gas at some locations." (See, e.g., DEIR, p. ES-26.) The emphasis on claimed negative impacts of the No Project alternative skews the discussion. B5-72

The discussion of the No Project alternative further supports the importance of analyzing project need in the DEIR. The DEIR relies on the *assumed* need for gas storage to protect against the potential of a 30-day disruption to cast doubt on the feasibility of the "No Project" alternative. For example, the DEIR asserts that if "No Project" alternative were chosen it could "potentially affect[] population growth and housing in the Sacramento metropolitan area," "potentially result[] in significant impacts to utilities and public service systems in the Sacramento metropolitan area," and potentially reduce the "ability to meet the demand for natural-gas-generated electricity in the Sacramento area." (DEIR, pp. D.10-13, D.11-18, D.12-23.) Without a discussion of need, the DEIR cannot adequately and accurately hypothesize potential impacts if the Proposed Project were not developed. Therefore, the No Project alternative must also include a discussion of the assumptions upon which asserted need for the Proposed Project is based. B5-73

V. The DEIR improperly defers the development of a large number of mitigation measures.

Many of the mitigation measures included in the DEIR impermissibly defer mitigation. (See *Sundstrom v. County of Mendocino* (1988) 202 Cal.App.3d 296, 307; *Quail Botanical Gardens Foundation, Inc. v. City of Encinitas* (1994) 29 Cal.App.4th 1597, 1608-1609; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1396; CEQA Guidelines, § 15126.4, subd. (a)(1)(B).) For instance, the DEIR requires the future development of a Gas Detection Plan, Bore and Frac-Out Plan, Fire Protection Plan, and Emergency Response Plan. Requiring the applicant to work with a public agency to B5-74

develop a plan to overcome safety and operational challenges is a vague and unenforceable mitigation measure. (See *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1262 [mitigation measures must be incorporated into the project or required as a condition of project approval in a manner that would ensure their implementation and effectiveness].) Moreover, deferral of these measures is especially problematic considering that the existence and effectiveness of these plans go to the heart one of the most critical concerns regarding the project, namely health and safety issues. (*Mountain Lion Coalition v. Fish and Game Commission* (1989) 214 Cal.App.3d 1043, 1052 [a lead agency cannot release "a report for public consumption that hedges on important environmental issues while deferring a more detailed analysis to the final [environmental document] that is insulated from public review].) At a minimum, the DEIR must include meaningful and verifiable performance standards for these "plans."

By failing to describe these safety plans in any detail, the DEIR does not permit the public and Commission to determine the feasibility and adequacy of these mitigation measures. For instance, the Fire Protection Plan and Emergency Response Plan both must be approved by City of Sacramento Fire Department ("SFD"), and the SFD must determine the effectiveness of the measures set forth in the plan. However, the DEIR acknowledges that "SFD does not have adequate training for the types of emergencies that could occur at the facility, nor do they have a way to maintain any such training within the department at this time." (DEIR, p. D.11-11.) Without this knowledge, SFD's ability to approve a plan that will provide adequate mitigation is questionable. This issue is further exacerbated by the fact that the DEIR provides that SNGS may commence construction *prior to* development and approval of the Fire Protection Plan. (DEIR, p. D.6-39 (Mitigation Measure HAZ-6) [the plan must be approved by SFD "*during* the construction of the facilities"].) The failure of the DEIR to provide detailed fire and emergency plans means that the public, reviewing agencies, and the Commission are unable to perform any meaningful review of the effectiveness of these mitigation measures during the CEQA review. As such, the proposed mitigation measures are inadequate.

B5-74 (Cont.)

Additionally, Mitigation Measure HAZ-2aii requires the development of a Gas Detection Plan. (DEIR, p. D.6-33.) Mitigation Measure HAZ-2aii fails to define the Gas Detection Plan in sufficient detail to allow the public, reviewing agencies, and the Commission to understand the potential environmental impacts associated with the plan. For example, the Gas Detection Plan requires qualified petroleum industry and groundwater experts to determine the proper "number, location, depth, screened interval, and instrumentation of [] deep aquifer monitor wells" that are required "at key points within the area over the Florin Gas Field." (DEIR, p. D.6-33 (Mitigation Measure HAZ-2aii).) The DEIR provides no further analysis or discussion of these monitoring wells,

B5-75

including the potentially significant impacts of constructing and operating such wells. "An EIR is required to discuss the impacts of mitigation measures." (CEQA Guidelines, § 15126.4, subd. (a)(1)(D); *Save Our Peninsula Committee v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 130.) Therefore, the DEIR must be revised because undisclosed environmental impacts may result from development of this deferred mitigation plan.

The deferred Gas Detection Plan mitigation measure is also insufficient because it fails to include specific performance standards demonstrating that implementation of the measure would actually reduce the potential health and safety impacts of the project. The measure merely provides that "[i]f the data indicates that any detected surface gas is from the storage operation, then a plan will be developed to identify the leaking pipeline, well or reservoir, including procedures to further test and correct the situation." (DEIR, p. D.6-34 (Mitigation Measure HAZ-2aii).) The DEIR and measure provide no assurances or details to suggest that a reservoir leak could in fact be "correct[ed]."

B5-75 (Cont.)

Similarly, the DEIR requires development of a Sampling Plan. This plan requires the development of six sampling sites. Two sites will be located at the wellhead and two sites will be located at the compressor station. The remaining two sites will be at undisclosed locations. (DEIR, p. D.6-35.) Without disclosing the location of these required sampling sites, the DEIR cannot consider the environmental impacts associated with the use of the sites for sampling activities. The discussion of the Sampling Plan, thus, fails to comply with CEQA.

B5-76

Development of mitigation measures should only be deferred if "practical considerations prohibit devising such measures early in the planning process[.]" (*Sacramento Old City Ass'n v. City Council* (1991) 229 Cal.App.3d 1011, 1029.) Here, nothing suggests that these critical safety plans cannot be developed and analyzed within the DEIR. The DEIR should be amended to define, explain, and evaluate proposed mitigation measures that are critical to assessing the impacts of the Proposed Project on health and safety of the community. Until the DEIR includes this additional information, the DEIR is significantly deficient because it fails to provide information necessary for the public, interested agencies, or the Commission to fully evaluate the effectiveness of mitigation measures or the potential environmental impacts associated with the measures themselves.

B5-77

VI. The DEIR fails to include the information required to comply with CEQA.

The DEIR relies on a significant number of studies and reports to reach the conclusions contained in the DEIR. The vast majority of the project specific reports relied on in the DEIR have not been made available as part of the DEIR. "[H]ighly

B5-78

technical and specialized analysis and data [is not required] in the body of an EIR[.]" (CEQA Guidelines, § 15147.) However, these documents must be included as "appendices to the main body of the EIR." (*Ibid.*) The appendices must be "readily available for public examination and shall be submitted to all clearinghouses which assist in public review." (*Ibid.*) Project specific studies and reports cited in the DEIR, but which have not been made available for public examination in accordance with CEQA requirements, include, but are not limited to, the following:

1) EIP Associates. 2007a. Cultural Resources Technical Report. Prepared for SNGS.
2) PBS&J. 2006. Reconnaissance-level special-status species surveys. Prepared for SNGS, LLC.
3) PBS&J. 2007a. Reconnaissance-level field surveys. Sacramento, California: PBS&J. Prepared for SNGS, LLC.
4) PBS&J. 2007b. Pipeline alignment field survey. Sacramento, California: PBS&J. Prepared for SNGS, LLC.
5) Sycamore Environmental Consultants, Inc. 2008. Preliminary Jurisdictional Delineation Report for Sacramento Natural Gas Storage Project, Sacramento CA. Sacramento, California: Sycamore Environmental Consultants.
6) Tremaine and Associates. 2008. Cultural Resources Inventory for the Sacramento Natural Gas Storage (SNGS) Project, City of Sacramento, California.
7) Mannon, R. 2008. Letter to Mr. James Fossum, SNGS, LLC. Mannon Associates Petroleum Consultants.
8) Mannon Associates. 2008. Analysis of the Florin Gas Field for Gas Storage. Sacramento, California: Prepared by Mannon Associates for SNGS, LLC.
9) Ryder Scott Company. 2008. Letter providing results on injection and production cycles. Dated June 30, 2008.
10) Scott, R. 2008. Letter to Mr. James Fossum, SNGS, LLC. Ryder Scott Company Petroleum Consultants. Dated March 4, 2008.
11) Ryder Scott Company. 2008. Letter to Mr. Jim Fossum, SNGS, LLC. Dated May 16, 2008.
12) Golder Associates. 2008. Evaluation of Cap Rock Integrity and Risk of Gas Release. Redmond, Washington: Golder Associates. Prepared for SNGS, LLC.
13) Matthews, John F. 2006. Consulting Engineers, Letter to Mr. Jim Fossum, Florin Gas Storage.
14) Terracon. 2008. Geotechnical Engineering Report, Sacramento Natural Gas Compressor Facility and Wellhead Site. Sacramento, California: Terracon.
15) Weatherwax, R.K. 2008. Probabilistic Risk Assessment, Sacramento Natural Gas Storage Project. Roseville, California: Sierra Energy and Risk Assessment, Inc.
16) Weatherwax R.K., and M.R. Weatherwax. 2007. California Natural Gas Storage Facilities: A Contemporary History of Incidents. Roseville, California: Sierra Energy and Risk Assessment, Inc.

B5-78 (Cont.)

Additionally, the DEIR relies heavily on the Proponent's Environmental Assessment ("PEA").[7] The PEA, unlike the documents listed above, was made available to the public at various libraries. However, as with the other project specific technical documents relied on in the DEIR, the CPUC should have submitted the PEA to "all clearinghouses which assist in public review." (CEQA Guidelines, § 15147.) Nothing suggests that the PEA was submitted to the appropriate clearinghouses. Moreover, the documents relied in the PEA, like all technical data relied on by the DEIR, should also have been made available for the public and reviewing agencies. Documents relied on in the PEA include, but are not limited to, the following:

1) R.W. Boyd. PG 3623, Florin Gas Field, Canyon Oil & Gas, February 2007.
2) Reid, Robert A. Letter to Agnes V. List at Procter & Gamble Manufacturing Company, August 20, 1990.
3) Guerard, William F. Jr. Letter to Ronald L. Leineke, at Venada National, January 8, 1993.
4) Sullivan, John C., Letter to Ronald L. Leineke, at Venada National. March 13, 1981.
5) Reid, Robert A. Letter to Agnes V. List at Procter & Gamble Manufacturing Company, August 20, 1990.
6) Reid, Robert A. Letter to Bradley Govreau, at Union Oil Company of California, July 31, 1989.
7) Reid, Robert A. Letter to Robert M. Hinkel, at Union Oil Company of California, September 20, 1994.
8) Reid, Robert A. Letter to Robert M. Hinkel, at Union Oil Company of California, April 23, 1993.
9) Sullivan, John C. Letter to Tommy L. Knowles, at TX O Production Corporation, March 5, 1985.
10) Kleinfelder, Phase I Environmental Site Assessment, 6881 Power Inn Road, Sacramento, California. January 26, 2006.
11) National Assessment Corporation, Phase I Environmental Site Assessment Report Depot Park 16 Business Park Way Sacramento, California 95927, June 14, 2004.

B5-79

Because the appendices do not include the required technical data relied on in the DEIR, and because this information was not submitted to the clearinghouses which

B5-80

[7] AGENA requests that the DEIR discuss whether the CPUC independently verified the information contained in the PEA and whether the CPUC reviewed all the documents relied on by the PEA. As the PEA was developed by the applicant independent of the CPUC, the DEIR should not rely on the information contained in this document unless the conclusions of the PEA and the sources upon which those conclusions were based were independently reviewed and verified by the CPUC.

B5-81

assisted in public review of the DEIR, the DEIR is substantially deficient.[8] (CEQA Guidelines, § 15147; *Berkeley Keep Jets Over the Bay Committee v. Board of Port Commissioners* (2001) 91 Cal.App.4th 1344, 1382 ["CEQA requires that … [the lead agency] and the inquiring public obtain the technical information needed to assess" the significance of a project's environmental impacts].) "The data in an EIR must not only be sufficient in quantity, it must be presented in a manner calculated to adequately inform the public and the decision makers, who may not be previously familiar with the details of the project. Information scattered here and there in EIR appendices, or a report buried in an appendix, is not a substitute for a good faith reasoned analysis. Similarly, . . . contents . . . scattered over a voluminous administrative record does not allow the public and decision makers to readily know those contents and . . . the purposes for which. . . [the information] was intended. And the fact that the information and analysis contained in [] various environmental documents . . . is so extensive makes the need for an easily identifiable document all the greater." (*Environmental Protection & Information Center v. California Dept. of Forestry & Fire Protection* (2008) 44 Cal.4th 459, 493-494.) Therefore, the CPUC must revise the DEIR to include documents relied upon in the DEIR. In revising the DEIR, the CPUC must ensure that the supporting material is provided in a clear and good faith manner as opposed to being "scattered here and there in EIR appendices." (*Id.* at p. 493, quoting *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 442.) **B5-80 (Cont.)**

VII. The Executive Summary and Project Description do not provide the public, reviewing agencies, or the Commission with an accurate understanding of the Proposed Project.

Section A.2, Environmental Setting of the Proposed Project, acknowledges that the Florin Gas Field is one of the four main components of the Proposed Project. (DEIR, ES-5.) Nevertheless, Section A.2 only summarizes the environmental setting for the other three main components. By eliminating the discussion of the relationship of the Florin Gas Field to the surrounding community, the DEIR fails to provide the public and reviewing agencies with a clear and sufficient understanding of the Proposed Project. Similarly, the Executive Summary states that the Proposed Project includes "four primary components." (DEIR, p. ES-5.) The Project Description states that the Proposed Project **B5-82**

[8] CEQA also requires that the Notice of Preparation ("NOP") provide an address where "all documents referenced in the draft environmental impact report" may be reviewed. (Pub. Resources Code, § 21092, subd. (b)(1).) The NOP states that copies of the DEIR are available for review at Dudek's office at 11521 Blocker Drive, Suite 200, Auburn, California 95603; City of Sacramento Public Library, 828 I Street, Sacramento, California 95814; Southgate Public Library, 6132 66th Avenue, Sacramento, California 95823; and Colonial Heights Library, 4799 Stockton Boulevard, Sacramento, California 95820. "[A]ll documents referenced in the draft environmental impact report" where not made available at the locations listed in the NOP. **B5-83**

is "divided into three distinct components." (DEIR, p. B-1.) The DEIR should be amended to ensure consistency of the project description throughout the document. "An accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR." (*County of Inyo v. City of Los Angeles* (1977) 71 Cal.App.3d 185, 193.) **B5-82 (Cont.)**

The DEIR frequently identifies the types of land uses located in proximity to the project components, but actual distances are rarely discussed. (See, e.g., DEIR, p. B-9.) The DEIR should provide distances between the various neighboring uses to allow the public, interested agencies, and the Commission to better understand the proximity of the Proposed Project to the surrounding uses. The Project Description states that land above the reservoir includes residential uses. (DEIR, p. B-2.) Given the known areas of controversy, the project description should include detailed information regarding the total number of homes and residential population located directly above the Florin Gas Field as well as the residential population in the immediate vicinity of the Proposed Project. The DEIR should further discuss the number of people that utilize the park areas directly above the reservoir as well as the parks in the immediate area. Without a discussion of this important information the Project Description is severely flawed: **B5-84**

> A curtailed or distorted project description may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e., the "no project" alternative) and weigh other alternatives in the balance.

(*County of Inyo*, *supra*, 71 Cal.App.3d at pp. 192–193.)

The DEIR lists the prior reservoir pressure, existing pressure, and anticipated operational pressure for the reservoir, but does not include any information to justify why operational pressures will exceed historical pressure levels. (DEIR, p. B-2.) To help the public, reviewing agencies, and the Commission understand how the operation works, this information should be included. In discussing these operational details, the DEIR should discuss how the operation differs from a normal gas extraction operation. Moreover, the DEIR provides that "up to six new injection/withdrawal wells" may be developed. (DEIR, p. B-10.) The project description should explain why numerous wells are required and why the exact number is not known. **B5-85**

Table B-1 provides that the use of Florin Field will not have temporary or permanent impacts on any land. (DEIR, B-20.) This conclusion is flawed for several reasons. First, the DEIR correctly concludes that the potential for gas migration will **B5-86**

result in significant and unavoidable health and safety impacts. Health and safety impacts are impacts to land in particular water resources as the DEIR acknowledges. The DEIR should list the amount of land that is impacted by this significant and unavoidable impact. If the DEIR concludes that only land directly above the reservoir is impacted, the DEIR should include a discussion and supporting evidence to explain why significant and unavoidable impacts associated with gas migration would not impact land in the areas surrounding the reservoir. Moreover, storage rights are part of the bundle of rights that make up land within this State. As the Proposed Project would require SNGS to purchase or lease storage rights from all landowners above the reservoir, this land is impacted by the Proposed Project. Table B-1 and the associated discussion, thus, should be revised to discuss this impact. Finally, as currently written, the table suggests that the reservoir is located entirely within the County. The table should be amended to clarify that the reservoir is located in the County and City. **B5-86 (Cont.)**

The Public Scoping Section of the DEIR provides a very short summary of the issues raised during the public scoping process.[9] (DEIR, p. ES-6 to ES-7.) The DEIR should provide a more detailed summary of issues raised during the scoping process. Additionally, the Appendices should include a summary of all comments made during the public scoping meeting held on December 6, 2007, as well as copies of each of the letters received on the Notice of Preparation ("NOP"). To the degree that comments in scoping letters have not been fully addressed in the DEIR, the Final EIR must address these comments to demonstrate that the CPUC has considered and responded to all comments on environmental impacts of the Proposed Project. (See Exhibit 1 [copies of each of the scoping letters].) **B5-87**

In listing the purported known areas of controversy, the DEIR identifies only five areas. (DEIR, p. ES-8.) AGENA would like to emphasize that the DEIR concludes that the Proposed Project would result in significant and unavoidable impacts with respect to two of those five areas. AGENA believes this is strong evidence that the Proposed Project should not be approved at its current location. Additionally, while AGENA agrees that the five areas identified are some of the primary areas of concern expressed in comments on the NOP, they are certainly not the only areas on which comments were received. Several other issues, such as the environmental justice impacts and the legitimacy of assumed need for the project, were addressed in detail as part of public scoping information and testimony before the CPUC. The CEQA Guidelines provide that the summary "shall" include "[a]reas of controversy known to the lead agency **B5-88**

[9] We would also like to note that the Public Scoping Section of the Execute Summary lists Remy, Thomas, Moose, & Manley, LLP ("RTMM") as a separate commentator than AGENA. (DEIR, ES-7.) AGENA has retained RTMM to represent them as their co-counsel. RTMM's comments during public scoping, as well as these current comments, are being submitted on AGENA's behalf. **B5-89**

including issues raised by agencies and the public[.]" (CEQA Guidelines, § 15123, subd. (b), (b)(2).) Accordingly, the summary should list all areas of known controversy, and not simply a handful of issues. B5-88 (Cont.)

The DEIR states that one of the issues to be resolved is the "level of approvals… needed for the use of Depot Park for the Proposed Project." (DEIR, ES-27.) This statement is confusing and inappropriate for inclusion in the Executive Summary without further detail or explanation. B5-90

The Overview of the Proposed Project states that the oil and gas wells in the vicinity of the project site were "capped and abandoned in accordance with regulations[.]" (DEIR, p. A-2.) By including this statement in the Overview, the DEIR implies that there are no concerns stemming from the previous uses of the site. Yet no citation or evidence is included to support this claim. If this statement is to remain in the Overview, the appendices should include evidence supporting this claim so the public, reviewing agencies, and the Commission may evaluate the accuracy of this determination. B5-91

The Project Description states that "aboveground piping components would be maintained to minimize leakage of odorized gas." (DEIR, p. B-28.) The DEIR should disclose who (SNGS, SMUD, others) will conduct this maintenance work and what the work likely entails including how often inspections will occur. The DEIR also requires that "[a] log of all third-party notifications regarding gas odors would be kept." (DEIR, p. B-28.) AGENA requests that the log be available through the internet at a location that is available to the public at all times. B5-92

The Project Description discusses employment related to construction of the Proposed Project, but does not discuss operational employment. To the extent the Project Description includes information about employment created by the project, it is misleading to include only construction-related employment, and not operational employment. A discussion of the number and types of jobs that will be created by the Proposed Project should be in included in the Project Description. B5-93

VIII. The DEIR fails to consider the mandatory findings of significance required by CEQA.

The DEIR does not consider the mandatory findings of significance set forth in CEQA Guidelines section 15065. Failure to consider these mandatory findings and to apply the appropriate standard is a failure to proceed in the manner required by law. (*Endangered Habitats League v. County of Orange* (2005) 131 Cal.App.4th 777, 793 [holding an EIR was invalid because it failed to apply the mandatory findings of B5-94

significance contained in CEQA Guidelines section 15065].) The DEIR must be revised to consider all of the mandatory findings set forth in CEQA Guidelines section 15065.

For example, a lead agency must find that a project has a significant impact if a project "has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals." (CEQA Guidelines, § 15065, subd. (a)(2).) In recognition of the environmental impacts associated with the continued use of natural gas as an energy source, the California Public Utilities Commission and the California Energy Commission have declared that "California needs to consider means by which natural gas usage can be minimized . . . while still meeting California's overall energy needs." (Cal. Energy Com. & Cal. Pub. Util. Com., 2008 Energy Action Plan Update, Feb. 2008, pp. 17-18, at http://www.energy.ca.gov/2008publications/CEC-100-2008-001/CEC-100-2008-001.PDF (last visited June 2, 2009) ("2008 Energy Plan").) Therefore, as demonstrated by the 2008 Energy Plan, the goal is to have California move away from reliance on natural gas in order to reduce the State's contribution to climate change. (*Ibid.*) In light of this long-term environmental goal, at best, the Proposed Project has short term benefits at the expense of long term goals. Therefore, the DEIR must conclude that this is a significant and unavoidable impact of the Proposed Project. B5-94 (Cont.)

IX. The evidence suggests that the CPUC failed to comply with the consulting requirements of CEQA.

In producing a DEIR, the lead agency must consult with, and request comments from, certain public agencies. (CEQA Guidelines, § 15086, subd. (a).) The agencies that a lead agency must consult with include all responsible agencies, trustee agencies, cities and counties within which the proposed project is located, and the appropriate transportation planning agencies for projects of statewide, regional, or areawide significance. (CEQA Guidelines, § 15086, subd. (a).) A "responsible agency" is an agency that is responsible for carrying out or approving a project. (Pub. Resources Code, § 21069.) Table A-1 of the DEIR lists numerous agencies that will be required to issue permits or take other actions required for SNGS to carry out the Proposed Project. (DEIR, p. A-6 to A-7.) The DEIR provides no indication that the CPUC consulted with all of these responsible agencies prior to releasing the Draft EIR. Moreover, Table A-1 fails to list the Sacramento Metropolitan Air Quality Management District ("SMAQMD")[10] or the Sacramento Municipal Utility District ("SMUD").[11] Therefore, it can be assumed that the CPUC failed to consult with these agencies prior to releasing the DEIR. B5-95

[10] SMAQMD is responsible for approving air quality control plans required for the Proposed Project.
[11] SMUD is responsible for approving a lease to use its pipeline to deliver natural gas to SNGS's customers. B5-96

The Proposed Project is an industrial project "occupying more than 40 acres of land." (CEQA Guidelines, §15206, subd. (b)(2)(E).) Therefore, the Proposed Project is a project of statewide, regional, or areawide significance. (*Ibid.*) As a project of statewide, regional, or areawide significance, the CPUC was required to consult with "transportation planning agencies" and "public agencies which have transportation facilities within their jurisdictions which could be affected by the project." (Pub. Resources Code, § 21092.4, subd. (a); CEQA Guidelines, § 15086, subd. (a)(5).) "Transportation facilities" include "major local arterials and public transit within five miles of the project site and freeways, highways, and rail transit service within 10 miles of the project site." (Pub. Resources Code, § 21092.4, subd. (b); CEQA Guidelines, § 15086, subd. (a)(5).) The DEIR fails to provide any evidence that the CPUC complied with this requirement prior to releasing the DEIR.

Failure to comply with the consultation requirements for responsible and trustee agencies deprives a lead agency of the information necessary to informed decisionmaking and informed public participation. (*Fall River Wild Trout Foundation v. County of Shasta* (1999) 70 Cal. App. 4th 482, 493.) "[W]here the lack of notice. . . results in the failure to elicit a response to the … [DEIR] the prejudice is manifest." (*Id.* at p. 492.) Therefore, the DEIR must disclose whether all responsible and trustee agencies were properly consulted prior to release of the DEIR.

B5-95 (Cont.)

Additionally, AGENA understands that the CPUC complied with the requirement to consult with the City of Sacramento before releasing the DEIR and provided the City with an opportunity to submit comments on an administrative DEIR. AGENA was not provided the opportunity to review the comments submitted by the City. However, AGENA understands that the version of the DEIR released publicly by the CPUC does not respond to all of the comments made by the City. The DEIR is deficient to the extent comments submitted by the City, which the CPUC elected not to address in the public DEIR, related to environmental information that is germane to the statutory responsibilities of the City. (Pub. Resources Code, § 21080.4, subd. (a).) AGENA requests that the City's comment letter on the administrative DEIR be included in the Final EIR and that the Final EIR respond to all comments included in the letter.

B5-97

X. The public hearing held on the DEIR was inadequate.

On April 28, 2009, the CPUC held a Public Participation Hearing on the Proposed Project. When a lead agency holds a public hearing on a project "the agency should include environmental review as one of the subjects of the hearing." (CEQA Guidelines, § 15202, subd. (b); see also *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1200-1201 [noting that it was error for the lead agency to

B5-98

hold a hearing on the project but not on the environmental document for the project].) The purpose of the April 28, 2009 hearing was to address the environmental and non-environmental aspects of the Proposed Project. This purpose, however, was frustrated by actions of the applicant.

Prior to the hearing, SNGS mailed a flier to the community regarding the project and the upcoming meeting. The flyer stated, in bold font, "**bring this flier with you to the meeting to get through the security gate**." (See Exhibit 2, 2009 SNGS flyer (emphasis in original).) AGENA believes the flyer and statement may have deterred some residents from attending the public meeting. The flyer and statement also may have led some residents to believe that it was not a public meeting, but just another proponent sponsored event instead. At the meeting, CPUC Commissioner Simon expressed concern regarding the flyer due to the implication that it was necessary to gain access to the public meeting. (See Transcript of the April 28, 2009 Public Participation Hearing held by the Public Utilities Commission, p. 298.) AGENA agrees with Commissioner Simon's concerns. Because of the misleading flyer, the meeting violated the Bagley-Keene Open Meeting Act. (See Gov. Code, § 11124 [conditions of entry are prohibited at public meetings held by State agencies].) A CEQA public meeting must be open to the public to ensure that all interested citizens have the opportunity to be heard.[12] As a result of SNGS's misleading flyer and statements to community members, the meeting failed to comply with CEQA and the open meeting laws.

B5-98 (Cont.)

XI. The DEIR fails to accurately list all relevant public agencies and entities that may need to provide permits or other approvals for the Proposed Project to be developed the DEIR.

The DEIR is not only required to list agencies that will need to issues permits for the Proposed Project, it must also explain which agencies are responsible agencies, trustee agencies, and federal agencies. Additionally, CEQA Guidelines section 15124, subdivision (d)(1)(B), requires the DEIR to list "permits and ***other approvals*** required to implement the project." Therefore, to the extent any private actors must also provide approvals for the Proposed Project, the DEIR must list these private entities. Table A-1 of the DEIR is therefore deficient. It should, at a minimum, include the following additional entities and required approvals: (See DEIR, pp. A-6 to A-7.)

B5-99

[12] It should also be noted that certain community members were told that they would not have an opportunity to speak at the public hearing because they had already provided testimony in the CPCN portion of the proceeding. Parties were directed that the CPCN portion of the proceeding was designed solely to address non-environmental impacts of the Proposed Project. These residents should not have been denied the right to comment orally on the environmental impacts of the Proposed Project at the April 28 public hearing.

B5-100

1) Union Pacific Railroad for the right to have the gas pipeline cross under the tracks;
2) SMUD for the pipeline capacity lease required by SNGS;
3) City of Sacramento for approval of the traffic control plan;
4) City of Sacramento for approval of the erosion sediment control plan;
5) City of Sacramento Fire Department for approval of fire and emergency plans;
6) City of Sacramento for storage right lease(s) for City owned property above the reservoir;
7) Storage right leases from the County and City residents and businesses located above the reservoir and/or approval to exercise eminent domain;
8) Federal Department of Transportation for review and approvals required by the Office of Pipeline Safety;
9) Division of Oil, Gas, and Geothermal Resources ("DOGGR") for gas well approvals and the approval of the water injection plan; and
10) Sacramento Metropolitan Air Quality Management District for approval of the air quality plans.

In addition to the approvals included in the above list, the DEIR must include "[a] list of … consultation requirements required by federal, state, or local laws, regulations, or policies." (CEQA Guidelines, § 15124, subd. (d)(1)(C).) The DEIR fails to include this information. Nothing in the DEIR suggests that the CPUC complied with all the consulting requirements required by CEQA and other applicable laws. B5-99 (Cont.)

XII. The DEIR discussion of construction activities associated with the Proposed Project are extremely vague and insufficient to allow an adequate analysis of environmental impacts.

The DEIR states that Table B-2 provides "the approximate length of each construction phase." (DEIR, p. B-20.) Assuming the table lists construction phases as stated, then development of the Proposed Project will take up to 14 months. (DEIR, p. B-21 [Table B-2].) However, the discussion states that construction will be completed "within 6 to 9 months." (DEIR, p. B-20.) Therefore, the Project Description is inconsistent with respect to the timing and length of construction. Information about the proposed construction activities is critical to an understanding of impacts that might be associated with construction, including noise, traffic, and air quality. The DEIR must be amended to clarify the construction phases, and should include information as to which, if in any, components will be constructed simultaneously. To the degree the environmental analysis contained in the DEIR relies on an incorrect phasing schedule, the data upon which the DEIR conclusions are based must be recalculated and reassessed. B5-101

The DEIR states that the "drilling rig to be used would be self-contained and would be relocated and used to construct each well. Typical equipment includes non- B5-102

resident driller's quarters, a "doghouse" and tool pusher trailer, and power supply." (DEIR, p. B-21.) With respect to construction of the compressor station, the DEIR states that necessary equipment would include "glycol dehydration units, reboilers, and coolers." (DEIR, p. 22.) This equipment as well as all other equipment related to development of project components should be discussed at a level of detail that allows the average reader to understand what this equipment looks like and how it operates. More importantly, more detail is required so that SCAQMD can accurately assess the air quality impacts related to construction. B5-102 (Cont.) B5-103

The DEIR also states that "[a]ll fluids used in or for the drilling operation would be contained in temporary mobile tanks or drums stored on site. Drilling residue (liquids, mud, and other material from the wells) would be trucked in vacuum trucks to an approved disposal site." (DEIR, p. B-21.) The DEIR fails to identify any "approved disposal site," the route that would be used to travel to the disposal site once identified, and the quantities of waste from construction or operation that would be classified as hazardous waste. The Project Description should also discuss the content of "drilling mud" and the number of deliveries of mud including a discussion of the routes used. B5-104

The Project Description also acknowledges that the "mobile tanks or 55-gallon drums" may be stored on- or off- site, and that "pipe racks" would be located on the project site during construction. (DEIR, p. B-22.) The onsite location of these storage areas must be identified. If the tanks or drums may be stored offsite, the location must be identified and the DEIR must consider the potential environmental impacts associated with using the offsite location for this storage purpose. B5-105

Deliveries of construction materials must also be discussed in the Project Description and in the Traffic analysis. The DEIR provides no information regarding the quantity or frequency of deliveries of pipes and other construction materials and equipment. (See, e.g., DEIR, p. B-23.) This information is necessary to fully understand the environmental impacts associated with the construction activities. The Project Description includes a table entitled "Estimated Construction Vehicle Types and Duration of use," but the table provides little useful information. (DEIR, p. B-27 [Table B-3].) For the majority of vehicle types listed, the table includes a "---" under the duration column. The DEIR explains that this means the "vehicle would be used for the duration of the project." (*Ibid.*) While the number of days is important, an equally if not more important question is the number of trips (including the destination and route) and/or hours of operation for each vehicle type. This type of information is not included in the DEIR for the vast majority of the vehicle types included in the table. Without this information, the environmental impacts associated with construction cannot be adequately measured. B5-106

The DEIR asserts that "excess soils would be used onsite." (DEIR, p. B-22.) The DEIR does not explain how the soils will be used. This additional information must be included. If it is foreseeable that all the "excess" soil will not be used onsite, then the DEIR should discuss hauling of this additional soil offsite including associated air quality and traffic impacts. With respect to pipeline construction, the DEIR admits that some soils may need to be disposed of offsite. (DEIR, p. B-23.) However, the Project Description fails to explain how an "appropriate disposal facility" is defined or where such facilities may be located. Moreover, the DEIR should also discuss how many trips are anticipated to haul the excess soils and the routes that will be used. This same issue presents itself again when the Project Description discusses the need to dispose of excess drilling mud. (DEIR, p. B-24.) **B5-107**

The DEIR provides that in constructing the pipelines a 70-foot construction easement would be used "[e]xcept along the railroads and in areas that support sensitive resources[.]" (DEIR, p. B-22.) The Project Description should explain what will happen in these railroad and sensitive resource areas. If a 70-foot construction easement is necessary in other areas, how will construction avoid potential significant impacts without the easement in the railroad and sensitive resource areas? Additionally, the Project Description should explain which areas are considered to be along the railroad or in sensitive resource areas. A map would be helpful in providing these additional details. Similarly, the DEIR acknowledges that staging areas will be required for construction activities. (DEIR, p. B-27.) However, the DEIR does not discuss the location of these staging areas or consider the potential environmental impacts related to construction staging. The DEIR must discuss this information and consider the associated environmental impacts. **B5-108**

The Project Description provides that pipes would be built 6 feet below the surface or deeper if necessary to "avoid existing utilities." (DEIR, p. B-23.) The Project Description should discuss whether there is any potential to encounter ground water along the pipeline route due to the depths required for the project pipelines. The Project Description also states that pipelines will be tested "in accordance with industry standards." (DEIR, p. B-24.) Yet the DEIR fails to identify or discuss these industry standards. The DEIR should discuss the adequacy of these standards or, at the very least, describe the appropriate standards. The DEIR also states that the water used in the pipeline testing will, "be filtered prior to discharge in the storm drain system to comply with the General Order for Dewatering and Other Low Threat Discharges to Surface Waters" if necessary. (DEIR, p. B-24.) The Project Description must explain how the water will be filtered, if the process will occur onsite, discuss the equipment used in the process, and consider the potential impacts associated with this process. **B5-109**

The DEIR also provides that SNGS has already entered a Project Stabilization Agreement with the Sacramento-Sierra's Building and Construction Trades Council. (DEIR, p. B-24.) The content of this agreement should be discussed in the DEIR. In several places within the DEIR it is asserted that 70% of the workforce will be "local labor." (See, e.g., *ibid.*) The DEIR relies on this assertion to reach several conclusions especially in relation to consistency with applicable general plans. The DEIR should explain how "local labor" is defined and should include and analyze this mandate as a mitigation measure. B5-110

XIII. The DEIR's consideration of the Proposed Project's impacts on air quality is inadequate for several reasons.

The DEIR's analysis of air quality impacts is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider air quality impacts associated with a proposed project. Yet the DEIR fails properly to consider and analyze all air quality impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, and the use of SMUD's pipeline to deliver stored gas. Additionally, while the DEIR considers the Proposed Project's impacts on air quality in light of the 1988 City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. B5-111

The remainder of this section addresses the numerous other substantive flaws with the DEIR's air quality analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. The DEIR fails to provide a consistent description of the project as it relates to air quality impacts.

The discussion of the environmental baseline for Air Quality states that "[t]he project area is located primarily in the City of Sacramento, with portions of the project in the unincorporated County of Sacramento[.]" (DEIR, p. D.2-1.) The DEIR previously acknowledged that "[a]pproximately 43% of the field is in the City of Sacramento and 57% is in Sacramento County." (DEIR, p. A-2.) These statements are inconsistent. Without an accurate and steady description of the area impacted by the Proposed Project, the DEIR fails to comply with CEQA. (*County of Inyo*, *supra*, 71 Cal.App.3d at p. 193 ["An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR."].) B5-112

2. The DEIR should adopt the SMAQMD sensitive receptor impact standards discussed in the air quality analysis as standards of significance.

A lead agency should develop standards of significance with the goal to "resolve every fair argument that can be made about the possible significant environmental effects of a project[.]" (*Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1109.) In this instance, the DEIR acknowledges that "[a]ir quality problems arise when sources of air pollutants and sensitive receptors are located near one another. SMAQMD notes that there are several types of land use conflicts that should be avoided . . . [including a] sensitive receptor close to . . . a ***potential source of accidental releases of hazardous materials***." (DEIR, p. D.2-6 (emphasis added).) The DEIR also discusses several other land use conflicts determined by SMAQMD. (*Ibid.*) B5-113

The standards of significance included in the DEIR do not include these SMAQMD standards, nor does the DEIR explain why they are not included. As the Proposed Project would be a "potential source of accidental releases" of natural gas, a hazardous material pursuant to the above- quoted SMAQMD standard, the Proposed Project would cause a significant and unavoidable air quality impact. The DEIR should be revised to include the SMAQMD standards, and to analyze air quality impacts related to accidental releases of natural gas.

3. The DEIR's assessment of whether the Proposed Project will obstruct implementation of the local air quality plans and significantly affect the region's nonattainment status is flawed because it fails to assess the actual impacts of the Proposed Project on current air quality.

The DEIR asserts that the Proposed Project will not obstruct implementation of SMAQMD's plan because the Proposed Project is consistent with the existing land use designation. (DEIR, p. D.2-21.) Similarly, in discussing the impact identified as A-3 — the net increase on pollutants for which the region is in nonattainment — the DEIR reasons that a project in the air quality region will be "considered to have significant cumulative air quality impacts if . . . [p]rojected emissions (ROG and NO_x) or emission concentrations (criteria pollutants) of a proposed project are greater than the emissions anticipated for the site *if developed under the existing land use designation*." (*Id.*, p. D.2-27 (emphasis added).) In other words, the DEIR compares potential emissions of the Proposed Project "to emissions resulting from development under the current zoning." (*Ibid.*) Instead of using the current air quality conditions, the DEIR assumes the project area will be developed as an industrial park and, thus, fails to properly assess the Proposed Project's impact on air quality. (*Ibid.*) The DEIR then concludes that, because some industrial uses that might be built on the project site could result in greater operational emissions than the Proposed Project, the Proposed Project will not have a B5-114

significant impact on air quality or on the region's ability to come into compliance with air quality standards.

This analysis is fundamentally flawed and does not comply with CEQA's requirements. As courts consistently have recognized, CEQA requires an assessment of a project's impact on the environment, not on the ability of a region to comply with a particular plan. The impacts of a proposed project are those of the impacts on the existing physical conditions of the affected area. (*Environmental Planning & Information Council v. County of El Dorado* (1982) 131 Cal.App.3d 350). Here, the project site is currently vacant, and the air quality effects of the Proposed Project should be compared to this current physical condition – not to a possible future industrial use. By comparing the project's effects on air quality to a baseline that assumes industrial construction on the project site, the DEIR improperly attempts to understate the project's impacts on regional air quality.

Furthermore, the DEIR concludes that "the construction emissions in Sacramento County would be greater than the SMAQMD significance threshold for NO_x and would be potentially significant." (DEIR, p. D.2-21.) However, the DEIR then suggests that because such construction emissions are "generally accounted for in the air quality plans for the Sacramento region," the emissions are not significant. Again, this analysis wholly fails to take into account the effect of the anticipated emissions on the actual air quality, as opposed to the effect on the air quality plan. Therefore, the baseline must be revised to reflect a proper baseline that would permit a legally adequate analysis.

B5-114 (Cont.)

4. The DEIR fails to explain how the Proposed Project will comply with national emission standards for oil and gas storage projects.

The DEIR fails to explain how the Proposed Project will satisfy the applicable National Emissions Standards for Hazardous Air Pollutants ("NESHAP"). Although the DEIR notes the existence of NESHAP for natural gas transmission and storage facilities, it provides no discussion or explanation of whether the Proposed Project will satisfy those standards. Instead, the DEIR notes only that there is an exemption to the national standards where the actual annual average throughput to the glycol dehydration unit is less than a certain amount. (DEIR, p. D.2-13.) It is unclear whether the DEIR is suggesting that the Proposed Project would qualify for this exemption. However, this exemption to the NESHAP's control requirements for glycol dehydration unit process vents, monitoring requirements, and recordkeeping and reporting requirements, applies to facilities with less than an annual average of 283,000 cubic meters of natural gas throughput per day. (*Ibid.*; *see also* Title 40, CFR, §§63.1274(d)(1), 63.1275(a).)

B5-115

According to the Health Risk Assessment ("HRA") contained in the DEIR, the Proposed Project does not qualify for the NESHAP exemption. The HRA shows that the anticipated average dry gas flow rate is 225 million standard cubic feet per day, and the maximum flow rate is 314 million standard cubic feet per day. (DEIR, Appendix A-3, Table 1.) This is equivalent to an average flow rate of 6.37 million cubic meters per day, and a maximum flow rate of 8.89 million cubic meters per day. Assuming that the flow rates reflected in the HRA are accurate, the Proposed Project clearly does not fall within the exemption noted by the DEIR.

B5-115 (Cont.)

Failure to comply with the NESHAP is significant and could greatly impact the effect of the Proposed Project on air quality. As the DEIR recognizes, the NESHAP is intended to control and minimize emissions of primary hazardous air pollutants (HAPs) associated with oil and natural gas, specifically BTEX (benzene, toluene, ethyl benzene, and xylenes) and N-hexane. The NESHAP requires projects to comply with certain maximum available control technologies ("MACT") requirements. Yet the DEIR wholly fails to explain whether the Proposed Project will comply with these requirements and, to the extent the project as currently designed will *not* satisfy the MACT requirements, the resulting effects of that non-compliance on air quality. Therefore, the analysis must be revised to consider these issues.

5. **The DEIR fails adequately to assess the air quality impacts of the Proposed Project because it assumes compliance with all applicable rules without identifying whether the Proposed Project is designed to comply with those rules.**

The DEIR asserts that the SMAQMD cannot issue authority to construct and operate the Proposed Project until SNGS has demonstrated it will comply with all applicable rules. The DEIR then concludes that, because SNGS must demonstrate compliance, the DEIR will anticipate compliance in assessing the air quality impacts of the Project. (DEIR, p. D.2-31 ["In the absence of evidence to the contrary, it is anticipated that SNGS, LLC would demonstrate compliance with all applicable rules and regulations and would continue to maintain compliance during the operation of the Proposed Project."].)

B5-116

This methodology does not comply with CEQA's mandate that the EIR assess the proposed project's effects on the environment. The EIR should evaluate whether the Proposed project, as currently designed and proposed, will comply with federal, state and regional air quality requirements. The DEIR states that the Proposed Project will have a significant air quality impact if it violates "any air quality standard." (DEIR, p. D.2-17.) This is an appropriate standard of significance: "[A] lead agency's use of existing environmental standards in determining the significance of a project's environmental

impacts is an effective means of promoting consistency in significance determinations and integrating CEQA environmental review activities with other environmental program planning and resolution." (*Protect the Historic Amador Waterways*, *supra*, 116 Cal.App.4th at p. 1107.)

Despite this standard of significance, the DEIR fails to measure the Proposed Project against all applicable standards. Thus, for example, it is not sufficient for the DEIR to state that the federal NESHAP may apply if the annual average natural gas throughput is less than 283 thousand standard cubic meters per day, without then assessing whether the NESHAP will apply to the Proposed Project, as designed, whether the project will satisfy the MACT requirements imposed by the NESHAP, and whether the project's compliance or non-compliance will have an effect on air quality. Based on the standards of significance set forth in the DEIR, if the Proposed Project cannot satisfy the MACT requirements, the Proposed Project will have a significant and unavoidable air quality impact.

Accordingly, the DEIR's conclusion that it can be assumed the Proposed Project will comply with applicable district, state and federal air quality rules is flawed and must be revised.

B5-116 (Cont.)

6. The DEIR recognizes that the Proposed Project will exceed SMAQMD significance thresholds for NO_x emissions and fails to demonstrate why mitigation fees are sufficient to counteract this significant effect.

The DEIR concludes that the maximum construction-related NO_x emissions would exceed the SMQMD significance threshold and would "result in significant air quality impacts." (DEIR, p. D.2-23.) However, the DEIR further asserts that mitigation payments would reduce this impact to less than significant. (*Ibid.*) The DEIR fails to explain why payment of mitigation fees would reduce the significant air quality impacts of the Proposed Project. Moreover, the DEIR fails to explain why the fees are based only on the emissions occurring during weeks 16 and 17 of the construction schedule (*see id.*, p. D.2-26), when the DEIR's finding that NO_x emissions would exceed thresholds does not appear to be limited to weeks 16 and 17 of the schedule.

B5-117

Additionally, APM 3 provides that one of the measures that will be implemented to reduce this impact to a less than significant level is to "limit idling time . . . where feasible." (DEIR, p. D.2-20.) A mitigation measure cannot include unenforceable standards. (*Federation of Hillside and Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1262.) Without further discussion of how this will be implemented and who will determine the feasibility of "idling time" this measure is

B5-118

inadequate to ensure that the Proposed Project's impact is reduced to a less than significant level. B5-118 (Cont.)

7. The DEIR's assessment of the emissions associated with the Proposed Project fails to account for the proposed use of a diesel generator.

The Proposed Project relies on a back-up 75-kilowatt diesel engine generator. However, in assessing the emissions associated with the project, the DEIR wholly fails to account for the use of this diesel generator. As Dr. Alvin Greenberg explains in his expert comments, this generator must be tested at certain intervals according to code. The DEIR should have considered how often the generator needed to be tested, and also how often it is foreseeable the generator would be required. Significant emissions of diesel particulate matter emissions will be associated with the use of this generator. As Dr. Greenberg explains, air dispersion models should have been used to quantify the impacts of the engine on federal and state air quality standards. Additionally, the Health Risk Screening Analysis should have taken the emissions associated with the emergency power generator into account. B5-119

8. The DEIR fails to consider the air quality impacts associated with implementation of APMs and Mitigation Measures.

CEQA requires that an EIR analyze any potential impacts that will be caused by mitigation measures. (CEQA Guidelines, § 15126.4, subd. (a)(1)(D).) Several APMs and Mitigation Measures discussed in the DEIR will require additional construction and operation activities. The air quality analysis fails to take these activities into account. For example, the Gas Detection Plan requires the development of an undisclosed number of monitoring wells at an undisclosed number of "key points." (DEIR, p. D.6-33 (Mitigation Measure HAZ-2aii).) Additionally, APM 13 requires "[a]ll disturbed areas of paved roadways would be repaved." (DIER, p. D.3-33.) These activities will result in additional air quality impacts. The air quality analysis must be updated to account for all air quality impacts associated with implementation of APMs and Mitigation Measures. B5-120

9. The DEIR fails to fully address the exposure of sensitive receptors to substantial pollutant concentrations caused by the Proposed Project.

First, in assessing the exposure of sensitive receptors to pollutants caused by the Proposed Project, the DEIR does not account for the traffic routes that will be traveled by construction equipment and trucks carrying methyl mercaptan. Many of the likely routes along which these vehicles will travel will go through neighborhoods with schools, child care facilities, and parks. B5-121

Second, the DEIR states that "[l]ocalized impacts to sensitive receptors generally occur. . . [if a] new source of air pollutants is proposed to be located close to existing sensitive receptors. For example, an industrial facility is proposed for a site near a school." (DEIR, p. D.2-7.) The Proposed Project would build oil and gas wells along Power Inn Road "with existing residences directly across Power Inn Road within approximately 100 feet of the property boundary." (DEIR, p. D.2-7.) The Sacramento County Zoning Code provides that "[o]il and/or gas well sites proposed to be developed on either industrial or agriculturally zoned land shall not be located within one thousand ***(1000) feet of the boundary of property zoned for residential***, interim residential, interim estate, ***or recreational purposes***." (Sacramento County Zoning Code, Title III, Ch. 1, § 301-19 (emphasis added).) Especially in light of this policy, the DEIR fails to explain why the air quality impacts on sensitive receptors located only 100 feet from the wellhead site would not be a significant and unavoidable impact. **B5-122**

Third, the DEIR acknowledges that a project may have a variety of air quality impacts on sensitive receptors. (See, e.g., DEIR, p. D.2-6 ["High concentrations of CO, PM2.5, or TACs are the most common concerns."].) However, the DEIR's discussion of impacts on sensitive receptors is limited to the potential impact of TAC emissions from the Proposed Project. (DEIR, pp. D.2-28 to D.2-29.) By failing to consider all potential air quality impacts on sensitive receptors, the analysis is flawed. **B5-123**

Fourth, the discussion of TAC impacts on sensitive receptors is also flawed. The standards of significance in the DEIR states that a project has a significant impact if "[t]he project results in construction or operational emissions of TACs that cause a lifetime cancer risk greater than 10 in one million (***one in one million if BACT is not applied***) or ground-level concentrations of noncarcinogenic TACs with a Hazard Index greater than one." (DEIR, p. D.2-18 (emphasis added).) Based on the analysis included in the DEIR, the project will cause a six in one million lifetime cancer risk for maximum exposed individual residents. (DEIR, p. D.2-29.) Therefore, the Proposed Project exceeds the one in one million threshold applicable when BACT technology is not adopted. The DEIR does not include mitigation to require the use of BACT technology. As a result, the TAC impact caused by the location of the compressor station is significant. The DEIR fails to acknowledge and mitigate this significant impact. **B5-124**

Fifth, the discussion of TAC impacts is also flawed because the analysis of potential TAC impacts only "evaluated the emissions of TAC emissions associated with the glycol dehydration unit[.]" (DEIR, p. D.2-6.) Even if the glycol dehydration unit is the only routine source of TAC emissions, the DEIR must consider the other potential sources, such as operations at the wellhead site, pipeline leaks, and gas migration, in determining the impact. This analysis should not only consider the regularity of the emission but also the magnitude of emissions when and if they occur. **B5-125**

10. The DEIR fails to identify sufficient mechanisms for monitoring and reporting objectionable odors affecting the community.

The DEIR recognizes that the glycol reboiler may produce odors, in particular because of the methyl mercapatan that will be added to the natural gas at the compressor station before it is injected into the storage field. (DEIR, pp. D.2-29 to D.2-30.) However, the DEIR concludes that these odors will not constitute a significant impact because the compressor station would be monitored for leaks by operations personnel, and because SMAQMD has a proposed rule that would establish inspection and repair requirements for leaking components of compressors. (*Id.*, at pp. D.2-30 to D.2-31.) This is an entirely inadequate assessment of the Proposed Project's impacts.

That SMAQMD may adopt a rule requiring inspection and repair of leaks is not a sufficient basis for the DEIR to assume that the Proposed Project will be implemented in accordance with that proposed rule. Moreover, a mitigation measure cannot rely on a proposed rule for mitigation. (*Federation of Hillside and Canyon Associations*, *supra*, 83 Cal.App.4th at p. 1262 [finding an EIR inadequate where the city had not "made a binding commitment to implement the mitigation measures" thus making them practically unenforceable].) Furthermore, the DEIR fails to provide sufficient information about the project's proposed monitoring to determine whether those activities will be sufficient to reduce the impacts associated with methyl mercapatan leaks. (See DEIR, p. D.2-31 [DEIR simply provides that "control measures" have been proposed.].) The Proposed Project fails to identify what reporting system would be available to the local community for reporting odors, or what sort of monitoring would be conducted by operations personnel. The lack of a community feedback or monitoring mechanism is particularly troubling because of the significant environmental justice concerns associated with this project as discussed, *infra*, Section XXI. In the absence of a discussion of the control measures, the DEIR is inadequate. B5-126

11. The DEIR fails to consider whether the Proposed Project will have a significant impact on PM2.5 emissions.

The DEIR attempts to evade the need to consider the significance of PM2.5 emissions associated with the Proposed Project. The DEIR admits that "Sacramento County is a nonattainment area with respect to the CAAQS for PM2.5." (DEIR, p. D.2-24.) The DEIR next states that "no significance thresholds for either construction or operation have been adopted." (*Ibid.*) The DEIR's discussion of PM2.5 emissions ends there. Absence of federal, state, or local standards relating to an impact is not dispositive evidence that the impact will not be significant. (*Laurel Heights Improvement Association of San Francisco, Inc. v. Regents of the University of California* (1988) 47 B5-127

Cal.3d 376, 411-412.) The DEIR must make a significance determination relating to PM2.5 emissions associated with the Proposed Project and the CPUC must reach its own determination regarding the significance of this impact.

As Dr. Alvin Greenberg's expert comments explain, the DEIR fails to recognize the deleterious impact fine particulates have for public health. To address these impacts, the DEIR should have identified fugitive dust mitigation measures that would effectively reduce the air quality impacts associated with dust. As detailed in Dr. Greenberg's comments, appropriate mitigation measures would include the retention of an on-site Air Quality Control Mitigation Monitor, development and implementation of an Air Quality Construction Mitigation Plan, a Construction Fugitive Dust Control Plan, and a Dust Plume Response Requirement. B5-127 (Cont.)

12. The DEIR fails to consider the Proposed Project's reasonably foreseeable indirect impacts on air quality.

Pursuant to CEQA, reasonably foreseeable indirect impacts of a project must be analyzed as part of the project. (Pub. Resources Code, § 21065.) An indirect physical change in the environment is "not immediately related to the project, but. . . is caused indirectly by the project. . . . For example, the construction of a new sewage treatment plant may facilitate population growth in the service area due to the increase in sewage treatment capacity and may lead to an increase in air pollution." (CEQA Guidelines, § 15064, subd. (d)(2).) The DEIR fails to consider the reasonably foreseeable indirect impacts associated with SMUD, and other potential customers, using the Proposed Project. The air quality analysis must consider how the stored natural gas will be used and must evaluate the air quality impacts of this use as part of the Proposed Project's impacts. B5-128

13. The DEIR fails to consider the full impact of construction employee traffic impacts on air quality.

The Population and Housing analysis suggests that construction employees may be travelling a one- to two- hour commute to get to work. (DEIR, p. D.10-7.) The air quality analysis is not based on one- to two- hour commuter trips for construction workers. The air quality analysis must explain how it determined average trip lengths for the purpose of calculating the air quality impacts from construction worker traffic. B5-129

Furthermore, the DEIR states without support that the 200 worker trips plus 20 truck trips per day "would not add substantially to congestion on local roads." (DEIR, p. D.2-25.) This unsubstantiated assertion is critical to an accurate analysis of CO and SOx emissions because idling time and car speed are important factors in determining the

emissions levels. Conclusions without supporting data are insufficient to determine that an impact is less than significant. The DEIR must be revised to include supporting evidence. B5-129 (Cont.)

14. The DEIR fails to adequately address the cumulative impact of the Proposed Project on emissions of greenhouse gases.

The DEIR's assessment of the Proposed Project's impacts on GHG emissions is flawed in several respects.

First, although the DEIR accurately states that the project would result in direct emissions of GHGs due to "fuel combustion in motor vehicles and mobile construction equipment associated with the project" (DEIR, p. D.2-33), it does not appear to account for methane leakage from glycol reboiler. Indeed, in discussing the glycol reboiler, the DEIR notes only that it would be fueled with natural gas, and assesses the emissions associated with the reboiler's operations. The DEIR contains no discussion of the well-known concerns associated with methane leakage from glycol reboilers.

According to the U.S. EPA, dehydrators and pumps account for 13 bcf of methane emissions in the production, gathering and boosting sector. (*See* U.S. EPA Natural Gas STAR Program, Feb. 27, 2009, powerpoint presentation, "Natural Gas Dehydration," available at < http://www.epa.gov/gasstar/documents/workshops/2008-tech-transfer/charleston_dehydration.pdf > (hereinafter "STAR Program").) This is because glycol dehydrators, which remove water from gas before it is processed, generally emit methane both from the reboiler vent and from pneumatic controllers. And yet the DEIR provides no assessment of the methane emissions associated with the glycol reboiler. B5-130

In describing mitigation measures, the DEIR does appear to recognize that there is a need to control methane emissions. The DEIR notes that SNGS will participate in the U.S. EPA's Natural Gas STAR program, and that SNGS will sign a memorandum of understanding with EPA prior to initial startup of the compressor station. (DEIR, p. F-10.) One of the issues addressed by the STAR program is methane emissions associated with natural gas dehydration. (*See* STAR Program.) However, the DEIR provides only that an implementation plan identifying "Best Management Practices" will be put in place within 6 months after SNGS signs the memorandum of understanding with EPA. (DEIR, p. F-10.) There is no discussion of what these best practices would be, or what their anticipated effect on the methane emissions associated with the glycol reboiler would be, as is required under CEQA. (See CEQA Guidelines, § 15126.4, subd. (a)(1)(B); *Endangered Habitats League, Inc. v. County of Orange* (2005) 131 Cal.App.4th 777, 793-796; *Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, 1275.) Moreover, the DEIR articulates no requirement that SNGS implement any particular best

practices, or that it implement any measures at all until at least 6 months after the compressor station comes on line. The DEIR fails to explain why the methane emissions associated with the glycol reboiler are not significant. Further, the DEIR must discuss identifiable best management practices to demonstrate that mitigation measures will reduce methane emissions to a less than significant level. B5-130 (Cont.)

Second, the DEIR utilizes an inappropriately low global warming potential factor for methane. The DEIR states that methane has 21 times the global warming potential of carbon dioxide. (DEIR, p. D.2-15.) The 2008 Energy Plan, which was jointly produced by the CPUC and the Energy Commission, states that methane has "23 times the global warming potential of carbon dioxide in the atmosphere." (2008 Energy Plan, p. 18.) The DEIR fails to explain why the CPUC has utilized a factor that is inconsistent with its own 2008 Energy Plan. B5-131

Third, the DEIR provides that the standard of significance is whether the "Project would impede or conflict with the emissions reduction targets and strategies prescribed in or developed to implement AB 32[.]" The air quality impact section of the DEIR fails to provide a detailed discussion of the AB 32 strategies that make up the asserted standard of significance. The SMAQMD wrote to the PUC regarding this project on May 21, 2009, and noted that the AB-32 scoping plan includes measures for the natural gas sector, and that the DEIR should "include an analysis of typical GHG reduction measures and the mitigation measures for the Natural Gas sector from the AB-32 scoping plan and make specific findings as to why individual measures are or are not feasible for this project." Without providing this information the DEIR does not provide sufficient detail for the public, interested agencies, or the Commission to consider the adequacy of the DEIR's analysis. B5-132

Fourth, as SMAQMD noted in its May 21, 2009 letter, the DEIR's qualitative thresholds for GHGs should be revised. As the District explained, "any findings of significance for the emissions of GHGs should be based on a project[']s potential global warming impacts, not on its lack of interference with a particular policy. If the analysis demonstrates that a project may have a significant impact, there are many practical climate mitigation measures available to reduce or eliminate the project impacts." B5-133

Fifth, a June 18, 2008 Technical Advisory issued by the State's Office of Planning and Research provides guidance on calculating GHG emissions, determining potential significance, and implementing mitigation measures for purposes of CEQA. It instructs: B5-134

> When assessing whether a project's effects on climate change are "cumulatively considerable" even though its GHG contribution may be individually limited, the lead agency must consider the impact of the

> project when viewed in connection with the effects of past, current, and probably future projects.

(Governor's Office of Planning & Research, State of California, "CEQA and Climate Change: Addressing Climate Change through CEQA Review," issued June 19, 2008 (hereinafter "*CEQA and Climate Change*"), at p. 5.)

The DEIR correctly notes that the Proposed Project's contribution to state, national, and global GHG "emission inventories and the resultant effect on global climate should be evaluated on a cumulative basis." (DEIR, p. F-4.) However, the DEIR's cumulative impact analysis looks only at other projects "in the same immediate vicinity and [which] are expected to be constructed during the same time period as the SNGS Facility." (DEIR, p. F-4 (citing CEQA §15130(b)(1).). This approach to assessing cumulative impacts is improperly limited because it fails to take into consideration existing or future projects that are related to the Proposed Project, although they may not be physically located close to the project. As the DEIR notes, GHG emissions are a global issue. Therefore, the cumulative impact analysis in the DEIR should at least consider the statewide impacts associated "related past, present, and reasonable foreseeable probably future projects[.]" (CEQA Guidelines, § 15355.) In this context, the DEIR should consider the global warming impacts associated with all gas storage facilities in the state. This type of statewide evaluation is further supported by the 2008 Energy Plan, which provides that the state must "consider means by which natural gas usage can be minimized to reduce total greenhouse gas emissions." (2008 Energy Plan, pp. 17-18.) The DEIR fails to identify or discuss existing natural gas storage fields such as Wild Goose Storage, located to the north of Sacramento, and Lodi Gas Storage's facilities in Lodi and Fairfield (Kirby Hills Storage facility). (Other existing storage fields include Honor Rancho Storage Field, La Goleta, Playa del Rey, Aliso Canyon, Los Medanos, McDonald Island and Pleasant Creek.) The DEIR also fails to discuss the proposed Wild Goose Storage facility expansion, or the construction of Gill Ranch Storage, which is expected to begin operating in 2010.

B5-134 (Cont.)

Sixth, while GHG emissions are a global issue, the DEIR only considers the local cumulative GHG impacts. The DEIR, in turn, compares these local cumulative emissions to the State's emissions. This is improper. The EIR for the City of Sacramento's 2030 General Plan includes GHG analysis for the region. (See, e.g., City 2030 General Plan, Appendix B.) The DEIR should compare cumulative local emissions against the regions GHG emissions. It should be noted that the 2030 General Plan EIR concludes that the region will have a significant and unavoidable impact on GHG emissions. The DEIR must explain why the Proposed Project's incremental addition to the regional significant and unavoidable GHG impact is allegedly not cumulatively considerable.

B5-135

Seventh, the DEIR also fails to consider the effect that adding to the region's capacity to store natural gas will have on the use of natural gas and on the market for renewable sources of energy. Although the very purpose of the Proposed Project is purportedly to ensure sufficient reserves of natural gas, the DEIR wholly fails to assess what effect increasing the capacity to store, and thus use, natural gas will have on the State's long-term goals of decreasing its energy dependence on fuel sources that result in GHG emissions. B5-136

Eighth, in assessing the cumulative impacts of the Proposed Project, the DEIR fails to take into account the life-cycle emissions associated with the Proposed Project. The upstream and downstream emissions caused by the Proposed Project should be considered in determining whether there are feasible alternatives to the project and in determining the significance of the project's effect on air quality and GHG emissions. However, the models used by the DEIR do not incorporate emissions that will occur off-site at utility providers associated with the Proposed Project's energy demands. Additionally, the DEIR does not account for the GHG emissions associated with the downstream use of natural gas that will be made available for consumption as a result of this project. B5-137

In sum, the DEIR's assessment of the GHG emissions associated with the project is inadequate. Even without accounting for methane emissions associated with the glycol reboiler, the project's anticipated effect on the use of natural gas, or the life-cycle emissions associated with the project, the DEIR calculates that the Proposed Project would result in the emissions of 2,500 metric tons of GHG each year. (DEIR, p. F-7.) The DEIR concludes that this constitutes a "minor" contribution to global climate change, albeit one that "may be cumulatively considerable …." (DEIR, p. F-9.) The DEIR fails to provide a well-reasoned explanation as to why 2,500 metric tons should be deemed a "minor" contribution. B5-138

XIV. The DEIR's consideration of the Proposed Project's impacts on biological resources is inadequate for several reasons.

The DEIR's analysis of impacts on biological resources is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all biological resource impacts associated with a proposed project. Yet the DEIR fails properly to consider and analyze biological resource impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, and construction and operation of required monitoring wells. Additionally, while the DEIR considers the B5-139

Proposed Project's impacts on biological resources in light of the 1988 City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. B5-139 (Cont.)

The remainder of this section addresses the numerous other substantive flaws with the DEIR's biological resources analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. **The DEIR fails to discuss the environmental setting for the entire project area.**

CEQA requires that an EIR "include a description of the physical environmental conditions in the vicinity of the project[.]" (CEQA Guidelines, § 15125, subd. (a).) The Florin Gas Field is one of the four main components of the Proposed Project. (DEIR, ES-5.) However, the biological resources analysis fails to include any discussion of the Florin Gas Field project area. Biological resources in this area may be impacted by the Proposed Project for several reasons. Impacts may be associated with construction and operation of the monitoring wells required to be developed as part of the mitigation measures for the Proposed Project. Moreover, the DEIR concludes that the Proposed Project has significant and unavoidable impacts to health & safety and water quality. These impacts could affect the entire area above the Florin Gas Field and perhaps an even larger area. Therefore, the DEIR must discuss the environmental setting above the Florin Gas Field and determine if the Proposed Project will result in significant impacts to biological resources within that area. B5-140

2. **The DEIR fails to include the proper standards of significance for evaluating impacts to biological resources.**

The CEQA Guidelines includes a list of categories requiring a mandatory finding of significance. (CEQA Guidelines, § 15065.) "Under CEQA, an agency contemplating an action having 'the potential to . . . reduce the . . . number or restrict the range of an endangered, rare or threatened species' (Guidelines, § 15065, subd. (a)) *must* find that the project 'may have a significant effect on the environment.'" (*Mountain Lion Foundation v. Fish & Game Com.* (1997) 16 Cal.4th 105, 124 (emphasis in original).) The standards of significance included in the DEIR do not address impacts to the range of an endangered, rare or threatened species and are generally less stringent than is required by CEQA Guidelines section 15065. (DEIR, p. D.3-32.) Therefore, the DEIR's evaluation of biological resources impacts is inadequate because it fails to consider impacts to endangered, rare or threatened species in light of CEQA's mandatory standards of significance. B5-141

Further, Appendix G to the CEQA Guidelines provides that a project has a significant impact if it "[c]onflicts with any local policies or ordinances protecting biological resources[.]" (CEQA Guidelines, App. G.) The DEIR fails to include this standard of significance. (DEIR, p. D.3-32 to D.3-33.) The DEIR provides no justification for failing to include this standard of significance. With the exception of briefly mentioning the City's tree ordinance, the biological resources analysis fails to provide any discussion of local policies or ordinances protecting biological resources. The DEIR must include this information and reach a significance conclusion based on the Proposed Project's consistency with local policies. B5-141 (Cont.)

Additionally, although the DEIR acknowledges that the South Sacramento Habitat Conservation Plan is being finalized by the County of Sacramento, it fails to provide any discussion of the plan. (DEIR, p. D.3-2.) The DEIR justifies its omission of this discussion because the "Proposed Project is generally located outside the Urban Service Boundary of the County of Sacramento." (*Ibid.*) However, the DEIR also states that "[a]pproximately 43% of the field is in the City of Sacramento and 57% is in Sacramento County." (DEIR, p. A-2.) Therefore, at least according to this statement, a substantial portion of the Proposed Project is located with the County. In any event, the DEIR should include a detailed summary of the Conservation Plan and whether the Proposed Project will affect the plan's species protection measures. B5-142

3. The DEIR fails to discuss the Proposed Project's impact on the vernal pool tadpole shrimp, a federally listed endangered species.

The DEIR acknowledges that the vernal pool tadpole shrimp "has been recorded along pipeline segments one and two and may occur within the proposed compressor station site." (DEIR, p. D.3-25.) First, as discussed above, the DEIR fails to include the appropriate standard of significance for determining the significance of the Proposed Project's impacts on the vernal pool tadpole shrimp. Second, the DEIR does not include a significance conclusion to address impacts to this species nor does it include mitigation measures to address impacts to the species. Therefore, the biological resources analysis is substantially flawed. B5-143

4. The DEIR does not provide for adequate mitigation measures for the vernal pool fairy shrimp, a federally listed threatened species.

As an initial matter, as a result of the DEIR's failure to include the proper standards of significance, the impact discussions for the vernal pool fairy shrimp, a federally listed threatened species. Further, Mitigation Measure B-1b suggests impacts to the vernal pool fairy shrimp may not be avoidable. (DEIR, p. D.3-35.) The proposed mitigation measure for the vernal pool fairy shrimp provide that state that "[a] protocol- B5-144

level VPFS survey ***shall*** be conducted[.]" (DEIR, p. D.3-35 (emphasis added).) The very next sentence begins "[i]f this [survey] is not conducted. . ." (*Ibid.*) As noted in the first sentence, these surveys must be conducted. The measure must be revised to clarify that the survey is mandatory. B5-144 (Cont.)

5. The DEIR does not provide for adequate mitigation measures for the giant garter snake, a federal and state threatened species.

The DEIR finds that the Proposed Project will have significant impacts on the giant garter snake, which is listed as a federal and state threatened species. (DEIR, pp. D.3-25, D.3-34.) The DEIR asserts that implementation of Mitigation Measure B-1c will reduce the project's impact on the giant garter snake to a "less-than-significant level." (DEIR, p. D.3-35.) As noted above, the DEIR fails to include the appropriate standard of significance for determining the significance of an impact to the giant garter snake. The mitigation measure proposed to reduce the impact to the giant garter snake to a less than significant level is inadequate. The U.S. Army Corps of Engineers standard avoidance and mitigation measures require that construction personnel receive Service-approved worker environmental awareness training to teach construction workers to recognize the giant garter snake and its habitat. The Corps also requires that, if a snake is encountered, all construction activities must cease until a qualified biologist determines that the snake will not be harmed. Finally, upon completion of construction, all temporary fill and construction debris must be removed and, to the extent possible, SNGS should restore disturbed areas to pre-project conditions. (See U.S. Army Corps of Engineers, 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake, Appendix C.) Merely requiring that giant garter snakes encountered are avoided is not sufficient mitigation. Therefore, the mitigation measure must be revised to comply with the Corps requirements. B5-145

6. The DEIR does not provide for adequate mitigation measures for the Swainson's hawk, a state-listed threatened species.

As a state threatened species, the standard of significance established by CEQA Guidelines section 15065 also applies to the Swainson's hawk. (See CEQA Guidelines, § 15380.) The DEIR proposes a 0.75:1 ratio for mitigating the loss of Swainson's hawk habitat. (DEIR, p. D.3-36.) However, the DEIR includes no evidence to substantiate that a 0.75:1 ratio is adequate to mitigate this impact to a less than significant level. The County Code of the County of Sacramento requires a 1:1 mitigation through conservation easement(s) or fee title for projects less than forty acres. (Sacramento County Code, § 16.130.040(A)(2)(a)(i); see also County of Sacramento. (2006) Swainson's Hawk: Environmental Impacts and Issues.) The California Department of Fish and Game ("CDFG") has also established a mitigation strategy for impacts to the Swainson's hawk B5-146

that includes 1:1 mitigation. (CDFG, Mitigation Guidelines for Swainson's Hawk.) The DEIR fails to discuss the CDFG strategy or County Code. As currently proposed, the mitigation included in the DEIR to address impacts to Swainson's hawk habitat is insufficient. The DEIR must establish that the mitigation ratio proposed is consistent with the County Code and CDFG policies. B5-146 (Cont.)

7. The DEIR does not provide for adequate mitigation measures for the impacts to wetlands.

a. Mitigation Measure B-3a is insufficient.

Mitigation Measure B-3a is too vague to support the conclusion that impacts will be reduced to a less than significant level. (DEIR, p. D.3-37.) First, the measure provides that wetlands will be avoided "where feasible." (*Ibid.*) The measure provides no indication of how feasibility will be determined or who will make the determination. Moreover, the DEIR fails to explain why a study conducted as part of the DEIR could not determine if it will be infeasible to avoid any wetlands. The DEIR must provide this additional information.

Second, the measure provides that impacts will be compensated through "restoration of the wetlands or through creation of the wetlands elsewhere." (*Ibid.*) To the extent environmental impacts may be associated with either the restoration process or wetland replacement, including air quality impacts form construction, the DEIR must analyze these impacts as part of the Proposed Project. (*California Farm Bureau Federation v. California Wildlife Conservation Bd.* (2006) 143 Cal. App. 4th 173 [holding that despite the "the intended beneficial environmental purpose" behind the development of wetlands, CEQA requires that environmental impacts associated with active construction and ongoing maintenance of the wetlands be considered].) B5-147

Third, the measure provides that "it is estimated that the mitigation ratios will be between 2 to 1 and 3 to 1. (*Ibid.*; see also DEIR, p. D.3-39.) Mitigation measures must be enforceable. *Estimating* a range without committing the project to anything specific amount is vague and inadequate.

b. Mitigation Measure B-3b is insufficient.

Mitigation Measure B-3b fails to provide the level of detail necessary to ensure that the measure is adequate mitigation. (DEIR, p. D.3-38.) First, the measure requires that "[a] spill kit shall be maintained on site at all times" to clean up any potential hazardous material spills. The DEIR fails to discuss the contents of this kit, the actual proximity of the kit to the wetlands that may be impacted, or the likely effectiveness of B5-148

any such cleanup effort. Moreover, the measure does not require that employees are trained how to use the spill kit or even ensure that employees will know where the kit is in case of an accident.

Second, the measure provides that permits issued for HDD activities "will involve methods to avoid or remediate frac-outs." (*Ibid.*) The DEIR should include methods to avoid or remediate frac-outs within the mitigation measure itself to allow the public, reviewing agencies, and the Commission to determine the adequacy of the proposed methods. Without a detailed discussion of the methods, or at least supportable performance standards, this measure is insufficient. (*Endangered Habitats League v. County of Orange* (2005) 131 Cal.App.4th 777, 793-794.) B5-148 (Cont.)

8. The DEIR does not adequately analyze the Proposed Project's cumulative impacts on biological resources.

The DEIR's cumulative impact analysis is found in Section F.4.2. The DEIR states that the cumulative impact of the Proposed Project on biological resources, combined with all other approved and pending projects in the area (the "cumulative baseline"), would be significant, but then assumes that mitigation measures will be implemented for all of these projects, and thus concludes that the cumulative impact would ultimately be less than significant. At best, this analysis is cursory and conclusive, and appears based on the unsupported assumption that mitigation for all projects will be effective. (*Los Angeles Unified School Dist. v. City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1025.) Even if all project level mitigation measures are sufficient to reduce project level impacts to a less than significant level, the DEIR cannot assume that cumulative impacts will also be less than significant. The DEIR must be revised to provide an analysis of cumulative biological resources impacts that is consistent with CEQA. B5-149

XV. The DEIR's consideration of the Proposed Project's impacts on cultural resources is inadequate for several reasons.

The DEIR's analysis of impacts on cultural resources is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all cultural resource impacts associated with a proposed project. (CEQA Guidelines, § 15064.5.) Yet the DEIR fails properly to consider and analyze cultural resources impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, and construction of monitoring wells. Additionally, while the DEIR considers the Proposed B5-150

Project's impacts on cultural resources in light of the 1988 City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. B5-150 (Cont.)

The remainder of this section addresses the numerous other flaws with the DEIR's cultural resources analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. The significance criteria for cultural resources impacts are insufficient.

The DEIR utilizes standards of significance included in Appendix G of the CEQA Guidelines as guidance for the significance criteria for cultural resources. (Compare DEIR, p. D.4-11 to D.4-12 to CEQA Guidelines, App. G.) Without explanation, the DEIR only list the first two of four standards of significance included in Appendix G for cultural resources impacts. The DEIR should either explain why all four standards are not being adopted as significance criteria or amend the section listing the significance criteria to include the full list included in Appendix G. B5-151

2. The DEIR's description of the cultural resources search is insufficient.

The DEIR identifies 15 cultural resources adjacent to the Proposed Project, stating that all but one of these resources have "been evaluated for [their] significance and found to be ineligible for listing on the national and California register of historic places." (DEIR, p. D.4-8.) The DEIR neither states who conducted this evaluation nor what criteria or methodology were used. As a result, the DEIR's representation that the identified sites are not of historical or cultural significance is neither sufficiently supported nor adequately described. B5-152

3. The DEIR does not adequately support its finding of a less than significant impact for undiscovered cultural resources.

The DEIR's impact analysis for undiscovered cultural resources is incomplete. First, the DEIR acknowledges the possibility that the construction of the Proposed Project may uncover previously unidentified cultural resources (DEIR, p. D.4-12), and identifies this potential impact as "Impact C-2." (*Id.*) The DEIR states that the preparation of a Cultural Resources Treatment Plan ("CRTP") and the conducting of construction monitoring will reduce the impact on previously unidentified cultural resources "to less than significant." (DEIR, p. D.4-13.) However, the DEIR does not provide any explanation of or support for this conclusion. Without a discussion of performance standards associated with the CRTP, the measure is not sufficient to demonstrate that the impact will be reduced to a less than significant level. B5-153

Second, Mitigation Measure C-2a provides that the CRTP will provide "procedures for protection and avoidance of Environmentally Sensitive Areas (ESAs) and archaeological high-probability areas[.]" (DEIR, p. D.4-13.) This statement includes a variety of ambiguities that must be clarified in the DEIR. The DEIR must explain the criteria for determining when an ESA or archaeological high-probability area must be protected versus avoided. The DEIR must also explain what protection entails and the ultimate procedure if neither avoidance nor protection is determined to be possible. The definitions of ESAs and archaeological high-probability areas are also missing from the DEIR. As the information necessary to determine and discuss whether an area qualifies as an ESA or archaeological high-probability area should already exist, determination of these areas should not be deferred; the DEIR should include a map depicting their locations. If the DEIR concludes that this information cannot be determined at this time, the DEIR must explain who will be responsible with making this determination and why they are qualified. B5-154

Third, the measure states that the CRTP will require "detailed reporting requirements by the project archaelogist[.]" (DEIR, p. D.4-13.) The DEIR fails to discuss these reporting requirements in detail or, at least, to provide performance standards for creating these requirements. (See *Endangered Habitats League, Inc.*, *supra*, Cal.App.4th at pp. 793-796; *Defend the Bay*, *supra*, 119 Cal.App.4th at p. 1275.) Similarly, the CRTP is required to "define construction procedure[.]" (DEIR, p. D.4-13.) However, the DEIR fails to discuss these procedures in detail or even to provide performance standards for establishing such procedures.

4. The DEIR does not adequately support its finding of a less than significant impact for historical resources.

The DEIR fails to adequately consider the historical value of the Army Depot. The DEIR relies on U.S. Army Corps of Engineers report from 1993 to conclude that the Army Depot does not include any historical resources. (DEIR, p D.4-6.) The DEIR admits that this report was conducted prior to the 50th anniversary of the opening of the Army Depot. (*Ibid.*) The Army Depot was built in 1945 and is currently 64 years old. It has been described as an "Historic California Post[]" by the California State Military Museum. (Starbuck (2002) Historic California Posts, http://www.militarymuseum.org/SacramentoArmyDepot.html#1.) Therefore, the DEIR must evaluate whether the Army Depot or a portion thereof is a historically significant site. Reliance on the 1993 Corps study to conclude that it is not historically significant is insufficient. B5-155

All impact discussion and mitigation measures are titled to suggest that they address cultural resources impacts. However, the analysis following the headings appears to combine the discussion of cultural and historical resources. (See DEIR, pp. B5-156

D.4-12 to D.4-14.) As a result, the DEIR is more difficult to read and the full extent of potential historical resources impacts is difficult to ascertain. Moreover, Mitigation Measure C-2b provides that "[i]f a finding is determined to be a significant historical resource, and if avoidance of the resource is not feasible, then a data recovery program shall be performed pursuant to the CRTP." (DEIR, p. D.4-13.) This measure is inadequate to reduce impacts to historical resources to a less than significant level. (See *Architectural Heritage Assn. v. County of Monterey* (2004) 122 Cal.App.4th 1095, 1120 [holding that measures requiring documentation of a historical resource that would be destroyed by a project did not reduce the impact to a less than significant level].) The measure also fails to explain the standard upon which a determination of feasibility would be made, who would make it, and why they are qualified. To the extent this mitigation is left in the DEIR to address cultural resource impacts, this additional information is should be included. **B5-156 (Cont.)**

5. The DEIR does not account for the possibility that future maintenance operations will uncover unidentified cultural resources.

The DEIR analysis of the effect maintenance operations may have on cultural resources fails to consider the potential impact on unidentified cultural resources. The DEIR reasons that "[b]ecause no cultural resources have been identified and future maintenance operations would take place within the connecting pipeline segments right-of-way, no impacts to cultural resources would occur due to future maintenance operations." (DEIR, p. D.4-14.) This conclusion, however, is unsound because it does not account for the possibility that future maintenance operations will uncover previously unidentified cultural resources. The EIR must account for the possibility that future maintenance operations will uncover and impact previously unidentified cultural resources. **B5-157**

6. The DEIR fails to comply with legally required procedures for identifying Native American remains and fails to provide reasonable procedures for making such identifications.

The DEIR provides that if human remains uncovered in the process of construction "are found to be Native American," the county coroner will notify the Native American Heritage Commission ("NAHC"). The NAHC will then have 24 hours to identify the most likely descendant and to allow for him or her to make a recommendation as to proper disposition of the remains. In the event SNGS rejects the recommendations, the DEIR provides that "NAHC will mediate." **B5-158**

The time periods provided by the DEIR are practically and legally insufficient. Health & Safety Code section 7050.5, subdivision (b), allows a coroner "two working

days" to make an inspection of discovered human remains. If the coroner determines the remains are Native American, Health & Safety Code section 7050.5, subdivision (c) allows the coroner twenty-four hours to contact the NAHC. Public Resources Code section 5097.98, in turn, allows descendants forty-eight hours after notification by the NAHC to make a recommendation as to proper disposition of remains. Therefore, at a minimum, California law provides for "two working days," followed by a seventy-two hour period before a final decision on Native American remains is made. This period is not reflected in the DEIR, which allows only for twenty-four hours for the making of such a decision. B5-158 (Cont.)

Additionally, although the DEIR provides for mediation by NAHC in the event SNGS rejects the most likely descendant's recommendations as to proper disposition of human remains, the DEIR does not state whether SNGS will accept the results of mediation by NAHC as binding. NAHC is a public agency that is uniquely situated and competent to understand and evaluate developers' and Native Americans' concerns as well as the public interest in questions concerning proper disposition of Native American human remains. In order to ensure its commitment to safeguarding against unlawful and/or culturally insensitive destruction of human remains, SNGS should agree to accept as binding the outcome of mediation by NAHC, including, in the event the parties are unable to come to an agreement, a disposition recommended by NAHC. B5-159

XVI. The DEIR's consideration of the Proposed Project's impacts on geology and soil is inadequate for several reasons.

The DEIR's analysis of impacts on geology and soils is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all geology and soils impacts associated with a proposed project. Yet the DEIR fails properly to consider and analyze geology and soils impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, and construction of monitoring wells. Additionally, while the DEIR considers the Proposed Project's impacts on geology and soils in light of the 1988 City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. B5-160

The remainder of this section addresses the numerous other flaws with the DEIR's cultural resources analysis. The DEIR must be substantially revised to address each of the issues discussed below. B5-161

1. The description of the underground field conditions is inadequate.

Data relating to conditions of Florin Field is critical to an accurate analysis of potential impacts associated with use of the reservoir for gas storage. The DEIR includes only two paragraphs to discuss the field conditions. And, these paragraphs cite solely to the PEA produced by SNGS. This is problematic for several reasons. First, the DEIR provides no indication that the CPUC reviewed and verified the accuracy of the claims made in the PEA. Second, the reports and data upon which conclusions in the PEA are based have not been made available to the public. Third, the discussion omits critical information discussed in other portions of the DEIR, which acknowledges that substantial gaps exist relating to the underground conditions of the reservoir. For example, other sections of the DEIR confirm that "possible localized imperfections (faults, fractures, course-grained channels with cap rock shale) . . . could provide pathways for gas migration[,]" the potential exists for "stored gas. . . [to] seep from the edges of the reservoir[,]" undetected effects caused by the overlaying groundwater aquifers may "accumulate over time and result in gas leakage to the surface[,]" and the ability for the cap rock to handle the pressure levels proposed by project are unknown. (DEIR, p. D.6-24 to D.6-25.) The environmental setting for geology and soil impacts must provide an accurate discussion of the environmental setting. To the extent the above questions can be answered through further studies, the studies must be conducted and the DEIR must discuss them as part of this environmental setting. To the extent that the above questions and the many others identified in the expert comments cannot be answered, the discussion of the underground field conditions must identify the information that is unknown and explain why it cannot be determined. **B5-161 (Cont.)**

The DEIR also reaches conclusions concerning seismic impacts based on "available published geologic and seismic hazard maps[.]" (DEIR, p. D.5-4) These maps should be included in the appendices or, at the very least, the DEIR should provide citations sufficient to allow interested members of the public and reviewing agencies to located the maps that were reviewed in producing the DEIR. Furthermore, the DEIR concludes that the "area may also support other older faults that are not considered active." (DEIR, p. D.5-5.) Additionally, one of SNGS's own consultants has suggested that faults may exist at the Florin Field reservoir. (See Confidential Document, SNGS 2115.) To the extent that information exists on these faults, the DEIR should include a discussion concerning them and their location in relationship to the Florin Field and other project components. Simply stating that the faults may exist is not sufficient. **B5-162**

2. The Significance Criteria established for geology and soil impacts are insufficient.

The DEIR states that it used Appendix G of the CEQA Guidelines as guidance in establishing the significance criteria for the Proposed Project. (DEIR, p. D.5-15.) There **B5-163**

are several inconsistencies between Appendix G and the criteria set forth in the DEIR. For instance, the DEIR states that there must be a "[h]igh potential for earthquake-induced ground shaking[.]" (DEIR, p. D.5-16.) Appendix G does not require that the potential for an earthquake be "high" for the impact to be significant. Appendix G also includes several other standards that are not included in the DEIR. For example, Appendix G asks whether a project may:

- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

The DEIR must explain why these additional standards of significance where not included. The significance criteria allow the public and reviewing agencies to understand the standards upon which potential impacts were measured. Without an accurate and complete list of standards, a DEIR fails to fulfill the requirements of CEQA.

B5-163 (Cont.)

3. The DEIR's discussion of liquefaction impacts is insufficient.

In the discussion of the potential for geological hazards the DEIR states that the chance of liquefaction is "about 2%." (DEIR, p. D.5-7.) "However, as part of the construction permitting process, the City of Sacramento and the California Public Utilities Commission (CPUC) would require complete reports of soil conditions at the specific construction sites of the Proposed Project area[.]" (*Ibid.*) In other words, the geologic hazards discussion acknowledges that the chance of liquefaction is great enough to require a soil condition report as mitigation.

Impact G-3 is the impact analysis included to consider liquefaction. The discussion does not discuss the information contained in the geologic hazard discussion in the DEIR. Impact G-3 provides that the Proposed Project will result in a less than significant impact without mitigation. (DEIR, p. D.5-19.) The soil conditions report included in the geologic hazards discussion must be adopted as a mitigation measure to address the potential liquefaction impact. The requirements of these soil reports should either be discussed as part of the mitigation measure or, if available, the DEIR should cite to the statutory and regulatory requirements for these reports.

B5-164

Impact G-6 also addresses the potential for liquefaction. (DEIR, p. D.5-21.) This impact analysis is also inconsistent with the geologic hazards section of the DEIR. Impact G-6 states that there is "no impact" related to soil that is unstable and chance of liquefaction. The DEIR must explain how development in an area with a 2% chance of liquefaction has "no impact," and why the impact discussion does not discuss the soil condition report required by the geologic hazards section. Unless the soil condition report is actually included as a mitigation measure, as opposed to being listed as "required" in the general discussion, the measure will not be enforceable. **B5-164 (Cont.)**

4. The DEIR's discussion of expansive soil impacts is insufficient.

In the discussion of the potential for geological hazards the DEIR states that the "presence of expansive soil in the Proposed Project area increases the possibility of expansive soils occurring along the pipeline alignments and causing foundation-stability issues at the wellhead and compressor station sites." (DEIR, p. D.5-8.) However, Impact G-7 suggests, based solely on studies at the compressor station and wellhead sites, that expansive soils are unlikely to be encountered at any location. (DEIR, p. D.-5-21.) Impact G-7 provides no discussion of conditions along pipelines routes. In comparing Impact G-7 to the geologic hazards discussion, the impact analysis appears to understate the actual potential that expansive soils will be encountered. (Compare DEIR, p. D.5-8 *to* DEIR, p. D.5-21.) The DEIR should be revised to address the inconsistency between these two sections. **B5-165**

5. The DEIR should discuss the appropriateness of relying on standards established in the Alquist–Priolo Earthquake Fault Zoning Act to consider fault hazards for a project of this nature.

The Alquist–Priolo Earthquake Fault Zoning Act was developed to regulate development and construction of buildings intended for human occupancy. (DEIR, p. D.5-12.) The Act was not designed to regulate gas pipelines or natural gas storage facilities. (*Ibid.*) The potential ramifications of an earthquake in an area including a gas storage reservoir could be substantially greater than a typical urban residential or business area. The standards established in the Act may not be stringent enough to demonstrate that a significant impact would not be caused by development of the Proposed Project. Therefore, the DEIR must include a discussion of why the standards included in the Act are sufficient to properly consider the Proposed Project's impacts. **B5-166**

6. The DEIR's discussion of seismic ground shaking impacts is insufficient.

The DEIR relies in part on APM 4 to reduce potential impacts associated with seismic ground shaking to a less than significant level. APM 4 provides that the **B5-167**

Proposed Project will be required to "implement design specifications as identified in the geotechnical engineers report (Terracon 2008)." (DEIR, p. D.5-16.) The DEIR asserts that these measures will "reduce the primary and secondary risks associated with seismically induced ground shaking." (DEIR, p. D.5-18.) The Terracon report is not included as an appendix to the DEIR nor are the design specifications alleged to be required in the report discussed in the DEIR. The design specifications must be listed to allow the public and reviewing agencies to consider the adequacy of the measure. The APM 4, thus, is not sufficient as currently written. Moreover, as the court explained in *Endangered Habitats League v. County of Orange* (2005) 131 Cal.App.4th 777, 793 an agency does not comply with CEQA when it merely "requires a project applicant to obtain [an expert's] report and then comply with any recommendations that may be made in the report." (Citing *Defend the Bay v. City of Irvine* (2004) 119 Cal.App.4th 1261, 1275.) **B5-167 (Cont.)**

Impact G-2 also relies on reports not included in the DEIR or appendices to support the conclusion that active faulting is not present in the project area. (DEIR, p. D.5-18.) The reports that are the basis for this conclusion should have been included as part of the appendices. The DEIR also concludes that "the observed abrupt lateral changes in subsurface lithology (sand/shale contact) have been attributed to stratigraphic variation as opposed to structural-fault-related causes." (DEIR, p. D.5-19.) The DEIR does not cite any source for this conclusion or provide any explanation for how it was reached. Additional information is essential to evaluating the accuracy of the bare conclusion. Therefore, additional information must be included in the DEIR. **B5-168**

7. The DEIR's discussion of subsidence impacts is insufficient.

In discussing the possibility of subsidence, the DEIR again relies on the Terracon Report. The validity of the conclusion reached regarding the potential for subsidence cannot be verified by the public and interested agencies because the report upon which the conclusion is based was not included as an appendix. As a result, the discussion of this impact in the DEIR is inadequate. The CPUC should include this information in the Draft EIR. **B5-169**

XVII. The DEIR's consideration of the Proposed Project's impacts on hazardous materials, public health and safety is inadequate for several reasons.

The DEIR's analysis of impacts on hazardous materials, public health and safety is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all hazardous materials, public health and safety impacts associated with a proposed project. **B5-170**

Yet the DEIR fails properly to consider and analyze hazardous materials, public health and safety impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, use and maintenance of the SMUD pipeline, and construction and operation of monitoring wells. Additionally, while the DEIR considers the Proposed Project's impacts on hazardous materials, public health and safety in light of the 1988 City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. It is thus deficient. **B5-170 (Cont.)**

The remainder of this section addresses the numerous other flaws with the DEIR's hazards analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. The DEIR fails to consider risks associated with residual gas.

The DEIR does not consider any additional risk based on the composition of the residual gas in the Florin Field. SNGS states that it performed no tests on the composition of the residual gas. (SNGS Responses to AGENA's Third Set of Data Requests, Request No. 30, June 18, 2009.) SNGS justifies this lack of testing at least in part based on the "general discussion regarding the chemical composition of natural gas" in the DEIR. (*Id.*) However, "[t]he composition of natural gas varies widely depending on the source of the gas. . . ." (Direct Testimony of Dr. Jerry Havens in *Weaver's Cove Energy LLC*, FERC Docket No. CP04-36 at p.14 lines 9-10, available at http://elibrary.ferc.gov/idmws/docket_sheet.asp and excerpts of which are attached hereto [hereinafter Havens Testimony].) As there is no set chemical composition for natural gas, it is impossible to know what the composition of the residual gas is absent testing. Without this additional information, the full risk associated with the Proposed Project is unknown. The DEIR must be revised to address this issue. **B5-171**

2. The DEIR should provide additional information regarding hazards associated with the railroad.

The Proposed Project will require construction of the pipeline underneath the railroad track. The DEIR acknowledges that railroads "carry a wide range of hazardous and toxic material that could result in release of toxic gases and liquids, or result in fire or explosion." (DEIR, p. D.6-2.) However, the DEIR states without explanation that "specific records are not available for this portion of the railway[.]" (*Ibid.*) The DEIR should explain why this information is not available. The DEIR should also explain whether construction of the Proposed Project will increase the potential for a railroad related release or explosion, or otherwise increase the potential scope of harm should a railroad upset occur. If the DEIR finds that the Proposed Project will increase the risk of **B5-172**

such an accident, or the extent of harm related to such an accident, the DEIR should consider mitigation measures to avoid the impact. B5-172 (Cont.)

3. The DEIR does not describe the risks of fire associated with the Proposed Project.

The DEIR correctly finds that the risk of fire and explosion is a significant and unmitigatable risk because of the devastating impact of such a fire or explosion despite the DEIR's finding of a low risk of explosion. Dr. Havens supports this conclusion by stating that even if the risk of an explosion is low, the analysis "doesn't or shouldn't end there" because of the "truly disasterous results" of an explosion. (Havens Testimony, at p.21 lines 15-16, p. 22 line 1, available at http://elibrary.ferc.gov/idmws/docket_sheet.asp.)

While reaching the correct impact conclusion, the DEIR fails to discuss the health and environmental risks of a potential fire beyond generalized terms. As a result, there is no discussion of the actual environmental and human health risks posed by the Proposed Project. The DEIR summarizes the radiant heat flux effects of "torch fires," providing only the varying levels of Btu/ft^2-hr, which are hazardous to human health. (DEIR, p. D.6-20.) However, the DEIR does not state what level of Btu/ft^2-hr exposure a torch fire at the Proposed Project could reasonably be expected to result in. The EIR should take into consideration the volumes of natural gas to be transported and stored at the Proposed Project, the pipeline diameters of all pipelines expected to carry natural gas, the proximity of nearby homes and public spaces and all other relevant factors in order to calculate the expected level of Btu/ft^2-hr exposure in which a torch fire at the Proposed Project may result. B5-173

The DEIR's discussion of the possibility of a "flash fire" is also unacceptably vague, explaining only the generally accepted hazard level for explosion overpressures in pounds per square inch (psig). It does discuss what levels of psig are to be expected by explosion overpressures at the Proposed Project. Additionally, the DEIR only states the generally accepted hazard level in psig for people inside buildings. The EIR should explain what the generally accepted hazard level is for people outside of buildings. More importantly, the EIR should apply this generalized information to the facts of the specific project under consideration. The EIR should take into consideration the location of pipelines and buildings in which natural gas could potentially become trapped, the location of nearby homes and public spaces as well as all other relevant factors in order to calculate the expected levels of psig to which a flash fire may expose members of the public. The EIR must apply the generalized information regarding these impacts to the circumstances of the Proposed Project in order to provide for meaningful public disclosure of the Proposed Project's human health and environmental risks. AGENA B5-174

agrees with the conclusion in the DEIR that the health and safety impacts for pipelines and the reservoir are significant and unavoidable. However, without a detailed discussion of the potential magnitude of potential accidents, the DEIR fails to provide an accurate account of the actual dangers. B5-174 (Cont.)

The DEIR also admits that "[s]hould population density or traffic volumes increase over the life of the project, the resulting likelihood of serious injuries and fatalities would increase accordingly." (DEIR, p. D.6-30.) The DEIR should discuss the likely increase in risk that corresponds with population and traffic increases anticipated in the City and County 2030 General Plans. This analysis must be conducted for both pipeline risk and reservoir risk. B5-175

4. The DEIR does not describe all potential hazards that may be caused by a natural gas leak from the reservoir.

The DEIR analyzes the risk of a gas release from the reservoir solely in terms of risk of fire and explosion. There are many different types of gas releases that could occurred if the Proposed Project was developed. Dr. Havens identifies three primary hazards to the public from a liquefied natural gas release: fire hazard from liquid pool fires, fire hazard from vapor cloud fires and vapor cloud explosion. (Havens Testimony, at p.13 lines 15-17.) Dr. Havens also identifies three other hazards from a liquefied natural gas release that require identification and consideration: toxicity hazard, cryogenic ('cold' burn) hazard and rapid phase transition (flameless explosion). Because the DEIR fails to discuss each of these potential hazards and the related impacts of each, the DEIR fails to provide the public, reviewing agencies, and the Commission with the information necessary to understand the extent to the Proposed Project's significant and unavoidable health and safety impacts. The DEIR must be revised to discuss these various hazards. B5-176

5. The DEIR does not adequately support or explain how significance determinations were reached for hazardous materials, public health and safety impacts.

At numerous points in the analysis, the DEIR states that many of the Proposed Project's significant impacts can be reduced to a less-than-significant impact through the implementation of mitigation measures. (*See e.g.*, DEIR, p. D.6-15 (Impact Haz-1a); DEIR, p. D.6-16 (Impact Haz-1b at compressor station); DEIR, p. D.6-18 (Impact Haz-1c at wellhead site).) However, the DEIR does not explain what methodology it used to determination the effectiveness of the mitigation measures. Therefore, it is impossible to evaluate the DEIR's assertions that the mitigation measures will be effective in reducing the impact to less than significant. Moreover, much of the information contained in this B5-177 B5-178

section cites the Kleinfelder report. (DEIR, p. D.6-1.) The DEIR does not summarize the report nor is it included in the appendices. Therefore, the DEIR is inadequate. Moreover, as the court explained in *Endangered Habitats League, supra,* 131 Cal.App.4th 777, 793 an agency does not comply with CEQA when it merely "requires a project applicant to obtain [an expert's] report and then comply with any recommendations that may be made in the report." (Citing *Defend the Bay, supra,* 119 Cal.App.4th at p.1275.) **B5-178 (Cont.)**

6. Test stations to generate baseline measurements must be installed prior to initiation of any work that may influence natural gas baselines.

The DEIR provides for the installation of test stations to monitor natural gas levels and identify potential leakage. The DEIR provides that "[b]aseline measurements, using portable analytical gas instruments, will be made within 48 hours of the installation of the test station." (DEIR, p. D.6-35.) The DEIR does not set a timeframe for the installation of the test stations. The test stations must be installed before any work is begun that may influence natural gas levels, in order to ensure accurate baseline measurements. If possible, portable analytical gas instruments should be used to establish a baseline prior even to the installation of the test stations. If this is not possible, the DEIR should explain why it is not possible. Inaccurate baseline measurements would significantly reduce the effectiveness of monitoring as a mitigation measure. **B5-179**

The DEIR also states that in addition to the two sites located at the wellhead site and the two sites located at the compressor station, the Sampling Plan will require two additional sampling sites. (DEIR, p. D.6-35.) The DEIR fails to state where these additional two sites will be located. This information is required to determine the full potential impacts of the Proposed Project. To avoid piecemealed review, the DEIR must provide a detailed discussion relating to these other two testing sites including potential environmental impacts associated with conducting testing activities on the sites, if any. The DEIR is inadequate until it is revised to include this information.

7. Mitigation Measure Haz-2b*i* should specify qualifications required by monitoring personnel.

Mitigation measure Haz-2b*i* provides, among other things, that "the station's control center . . . shall be manned 24 hours per day." (DEIR, p. D.6-35.) This mitigation measure should more clearly state the level of qualifications required of control center staff in order for this mitigation measure to be deemed adequate. If control center personnel do not have the requisite level of qualifications, this mitigation measure will be ineffectual. **B5-180**

8. The DEIR fails to explain the risks of methyl mercaptan.

The DEIR states that methyl mercaptan would be transported, stored and used at the compressor station and the wellhead site. (DEIR, p. D.6-16.) The DEIR designates such transportation, storage and use of methyl mercaptan as "Impact Haz-1c." However, the DEIR does not explain the potential human health or environmental effects of a release of methyl mercaptan, nor otherwise explain why methyl mercaptan is considered a hazard. In the interests of meaningful public disclosure of all the potential risks of the Proposed Project, the EIR should contain a description of the possible threats to human health posed by methyl mercaptan.

According to the United States Department of Health and Human Services, "Methyl mercaptan is highly irritant when it contacts moist tissues such as the eyes, skin, and upper respiratory tract. It can also induce headache, dizziness, nausea, vomiting, coma, and death." (http://www.atsdr.cdc.gov/mhmi/mmg139.html.) As the court explained in *Berkeley Keep Jets Over the Bay Com. v. Board of Port Cmrs.* (2001) 91 Cal.App.4th 1344, 1371, an EIR that simply labels an effect as "'significant' without [an] accompanying analysis of the project's impact on the health of [a project's] employees and nearby residents is inadequate to meet the environmental assessment requirements of CEQA". B5-181

9. The DEIR should better explain existing potential sources of release of hazardous or toxic materials associated with the Proposed Project.

The DEIR identifies "two large-diameter pipelines" along Fruitridge Road maintained by the SMUD and PG&E as existing potential sources of release of hazardous or toxic materials. (DEIR, p. D.6-2.) The DEIR states only that "[a] pipeline leak or rupture due to operator error, physical damage, or pipeline failure would impact areas in the vicinity of the release." (*Ibid.*) Although not explicitly discussed in the DEIR, development of the Proposed Project, due to proximity of the proposed pipeline to the PG&E pipeline and the connection to the SMUD pipeline, could result in an increase risk of leak or rupture of these existing pipelines. The DEIR must discuss this risk, including the likely result of a leak or rupture that may occur. B5-182

10. The DEIR must provide evidence supporting the claim that there is little potential for gas to migrate or leak through abandoned wells.

The DEIR asserts that gas is unlikely to leak out of the abandoned wells because "the wells were abandoned according to DOGGR standards[.]" (DEIR, p. D.6-2.) The DEIR does not include evidence support this assertion. The DEIR must include additional information regarding the well abandonments. Our experts have determined B5-183

that the evidence does not support the claim that the wells were abandoned according to DOGGR standards. (See Dr. Robertson's Comment Letter, Attachment A; see also Dr. Williams' Comment Letter, Attachment E.) Moreover, even if the wells were abandoned according the DOGGR standards, the evidence demonstrates that gas leakage may be a significant impact. A study conducted in 1989 determined that "[t]ests show that even when the most up-to-date cement types and techniques are used leakage can and will occur in a significant number of cases . . . . [A] study of 250 casing jobs over a 15-month period with new compressible cements [showed that] 15% of the wells leaked." (G. V. Chilingar and B. Endres. (Jan. 2005) *Environmental hazards posed by the Los Angeles Basin urban oilfields: an historical perspective of lessons learned*, Environmental Geology, vol. 47, no. 2.) A 2005 report considering the potential risks of abandoned well leakage concluded that even "properly sealed wells are subject to leakage[.]" (Taku Ide, S. Julio Friedann, and Howard J. Herzog. (2005) *CO2 Leakage Through Existing Wells: Current Technology and Regulations*. Laboratory for Energy and the Environment, MIT. Cambridge MA.) A 2008 article discussing well blowout rates in California Oil and Gas District 4 from 1991 to 2005 acknowledges that at least two well blowouts occurred at abandoned wells with "approved plugs." (Preston D. Jordan and Sally M. Benson. (May 2009) *Well blowout rates and consequences in California Oil and Gas District 4 from 1991 to 2005*, Environmental Geology, vol. 57, no. 5, p. 15.) Therefore, abandonment using DOGGR standards, in and of itself, does not support the conclusion that the potential for leakage is less than significant.

B5-183 (Cont.)

AGENA requests that studies are performed to determine the integrity of the abandoned wells. These studies should use a variety of measurement methods to verify well integrity including multifinger caliper log, reservoir saturation tool, accelerator porosity sonde, natural gamme ray spectroscopy tool, ultrasonic imaging tool, isolation scanner, cement bond tool, cased hole dynamic tester, and modular sidewall coring tool. Without conducting these tests there is insufficient evidence to support the conclusion that there is "little potential for gas to . . . leak through the abandoned wells." Additionally, a mitigation measure should be adopted to require that wells are monitored throughout the operational life of the Proposed Project to ensure that future leaks do not occur.

11. The DEIR fails to consider the potential for release of existing contaminated groundwater during construction.

B5-184

The DEIR states that "[t]he area is known to have perched groundwater tables and other shallow ground water. These may be encountered during construction." (DEIR, p. D.5-9.) The DEIR also states that the groundwater beneath the wellhead and compressor station sites is being treated for contamination. (DEIR, p. D.6-3.) Therefore, the DEIR must explain whether contaminated water may be encountered during construction. This

discussion should consider whether contaminated water encountered during construction could cause health and safety impacts for construction workers, contamination of surface waters or soil, or cause any other potential impacts. Additionally, the discussion should explain whether the project has the potential to exacerbate or speed the existing groundwater contamination by establishing new conveyance routes along pipelines, wells, etc., for the contamination plumes. Although APM 8 requires development Health and Safety Plan to reduce impacts associated with hazardous materials encountered during construction, the DEIR must still discuss the potential for such an encounter and the potential impacts. (See, e.g., *Endangered Habitats League, supra,* 131 Cal.App.4th at p. 793 [an agency does not comply with CEQA when it merely "requires a project applicant to obtain [an expert's] report and then comply with any recommendations that may be made in the report"]; *Defend the Bay, supra,* 119 Cal.App.4th at p. 1275 [same].) **B5-184 (Cont.)**

12. The DEIR fails to acknowledge the portion of the pipeline that is located in a high consequence area.

The DEIR states that higher standards of maintenance and inspection are required in high consequence areas ("HCAs"). (DEIR, p. D.6-7.) Mitigation Measure Haz 2bix requires that SNGS develop an integrity management program for HCA portions of the pipeline. (DEIR, p. D.6-38.) The DEIR fails to discuss what portion of the pipeline is in an HCA. HCAs designate areas in which "a gas pipeline accident could do considerable harm to people and their property." (DEIR, p. D.6-7.) Without further discussion of the percentage of the Proposed Pipeline that would quality as HCA, the DEIR fails to provide an adequate environmental setting for considering the full extent of the impacts associated with the Proposed Project. (*Galante Vineyards v. Monterey Peninsula Water Management Dist.* (1997) 60 Cal.App.4th 1109, 1121-1122 ["[d]ue to the inadequate description of the environmental setting for the project, a proper analysis of project impacts [is] impossible"].) **B5-185**

The DEIR should also discuss available data regarding natural gas pipeline accidents. For example, between 1970 and 1984 there were 5,862 reportable gas pipeline incidents resulting in 438 injuries and 74 deaths. From 1984 to 2004 there were 2,845 incidents causing 1,523 injuries and 340 deaths. (PG&E Line 406/407 Natural Gas Pipeline Draft EIR, p. 4.7-46 [concluding that the 406/407 pipeline would result in significant and unavoidable health and safety impacts].) This discussion should be updated to include more recent accidents including the December 2008 Rancho Cordova that killed one and injured five. Without this type of informatoin it is difficult for the public and reviewing agencies to understand the extent of the risks associated with the Proposed Project. **B5-186**

Finally, Appendix B of the DEIR demonstrates that the discussion of impacts associated with pipeline leaks and explosion underestimates the potential significance of these impacts. The appendix conditions its conclusion on the assumption of "existing level of land development and traffic volumes. Should population density or traffic volumes increase over the life of the project, the resulting likelihood of serious injuries and fatalities will increase accordingly." (DEIR, p. B-45.) The DEIR must consider risks based on project population growth and traffic counts in the project area under the approved land use plans. The DEIR must consider the level of risk over the projected lifespan of the Proposed Project. B5-187

13. Mitigation Measures established to address hazardous materials and public health & safety impacts improperly defer development of mitigation plans.

As discussed *supra* Section V and elsewhere, many of the measures that are included in this section of the DEIR improperly defer development of mitigation plans. This section discusses numerous additional flaws with the APMs and mitigation measures included to address hazardous materials and public health & safety impacts.

a) APM 5 improperly defers development of a Hazardous Materials Contingency Plan.

APM 5 requires SNGS to develop several studies and an injection plan that would describe: 1) the well drilling and abandonment plans, 2) reservoir characteristics, 3) geologic zones, 4) aquifers, 5) oil and gas zones, and 6) monitoring system to ensure that injected gas is confined to the intended zones. (DEIR, p. D.6-23.) The above list of information is the type of information required to accurately determine the full impacts associated with the Proposed Project. For example, the depth of the wells that will be drilled in the reservoir is extremely important for evaluating the types of problems that could occur during operation of the storage facility. (See Dr. Robertson's Comment Letter, Attachment A.) Moreover, availability of the abandonment plan is necessary to ensure the DEIR discusses all foreseeable impacts associated with development of the Proposed Project. Development of mitigation measures should only be deferred if "practical considerations prohibit devising such measures early in the planning process[.]" (*Sacramento Old City Ass'n v. City Council* (1991) 229 Cal.App.3d 1011, 1029.) There is no reason that these plans cannot be prepared and included in the DEIR. Therefore, the DEIR must be revised to include the studies and plans required by APM 5. B5-188

b) APM 8 improperly defers development of a Hazardous Materials Contingency Plan. B5-189

APM 8 requires SNGS to develop a Hazardous Material Contingency ("HCM") Plan to address "primary, secondary, and final cleanup" of spills or hazardous materials encountered during construction. The DEIR provides no further details regarding the content of this HCM Plan. Development of mitigation measures should only be deferred if "practical considerations prohibit devising such measures early in the planning process[.]" (*Sacramento Old City Ass'n v. City Council* (1991) 229 Cal.App.3d 1011, 1029.) There is no reason that the HCM Plan could not have been developed for inclusion in the DEIR. Even if a mitigation measure is deferred, performance standards should be included to demonstrate the effectiveness of the deferred plan. (*Endangered Habitats League, Inc.*, *supra*, 131 Cal.App.4th at p. 793-796; *Defend the Bay*, *supra*, 119 Cal.App.4th at p. 1275.) The DEIR fails to provide any evidence that undisclosed "primary, secondary, and final cleanup" measures will effectively reduce this impact to a less than significant level. **B5-189 (Cont.)**

c) Mitigation Measure HAZ-2ai fails to include necessary performance standards.

HAZ-2ai states that DOGGR must approve test required by the mitigation measure. (DEIR, p. D.6-33.) The DEIR does not explain the standards by which DOGGR will review the adequacy of the tests. If there are regulations that DOGGR will follow in considering the adequacy of the tests required by HAZ-2ai, these regulations should be discussed or at least cited. If there are no applicable regulations, performance standards should be discussed. (*Endangered Habitats League, Inc.*, *supra*, 131 Cal.App.4th at p. 793-796; *Defend the Bay*, *supra*, 119 Cal.App.4th at p. 1275.) Additionally, the HAZ-2ai provides that the required tests should include data on cycling of gas pressure "if possible." The DEIR should explain why this data may not be possible to produce. **B5-190**

d) Mitigation Measure HAZ-2aii is insufficient.

Many of the flaws with this measure are discussed *supra* Section V (relating to improper deferral), however there are several other flaws with the measure. The measure provides that "natural gas detectors [shall be required] at strategic locations." (DEIR, p. D.6-33.) The DEIR fails to discuss the meaning of "strategic locations." As the risk of explosion is greatest when natural gas builds up in structures gas detectors should be required to be installed in every home, business, and public building above or near the reservoir. Additional detectors should be required at strategic locations within the impacted parks. The DEIR should be revised to specify these requirements. **B5-191**

Mitigation Measure HAZ-2aii also states that "if gas is detected and confirmed to be seeping from the reservoir, the gas reservoir shall be reduced to lessen and eliminate the potential seepage." (DEIR, p. D.6-33.) AGENA assumes the quote refers to a

reduction in pressure at the reservoir. The DEIR must discuss the level of pressure decrease that will be required in case a leak is detected and why the decrease would prevent future leakage. Unless the DEIR demonstrates that the reduced pressure will stop continued leaking, the DEIR should amend the measure to require that the facility is shut down in the event that seepage is discovered. Requiring that the Proposed Project be shut down in the event of seepage would not reduce the impact of gas migration to a less than significant level because it is after-the-fact mitigation. But, CEQA requires that all feasible mitigation measures are adopted to reduce a significant and unavoidable impact as much as possible. (See CEQA Guidelines, §15370.) Therefore, HAZ-2aii should require the Proposed Project be shut down in the event that seepage is detected.

Additionally, Mitigation Measure HAZ-2aii requires that, in the event of leakage, SNGS shall "further test and correct the situation." (DEIR, D.6-34.) The DEIR must discuss methods that can be used to correct gas leakage. If case leakage cannot be prevented once leakage has been detected, then the DEIR should explain that gas leakage from the reservoir cannot be prevented.

Finally, the "5 year" limitation on the monitoring program should be removed from the mitigation measure. The DEIR acknowledges that overtime pathways for gas to leak to the surface could be created. (DEIR, p. D.6-24.) Therefore, even if leakage did not occur in the first 5 years of operation this fact would not justify ending the monitoring program.

B5-191 (Cont.)

e) HAZ-2bvii must include additional information regarding the frequency of inspections.

Mitigation Measure HAZ-2bvii provides that under certain circumstances in-line inspections will be required for the pipelines. (DEIR, p. D.6-37.) The DEIR states that the inspections will be required at "regular intervals." (*Ibid.*) The DEIR must explain how these intervals will be determined.

B5-192

14. More information is necessary to support the significance conclusion reached for Impact Haz-1a.

The list of hazardous materials that will be used during construction included in Impact Haz-1a is not accurate. (DEIR, p. D.6-15.) The discussion should list all hazardous materials that may be used. The section fails, for example, to list natural gas. Impact Haz-1a also acknowledges that, even after mitigation measures are adopted, the potential for a spill to occur will still exist. (DEIR, p. D.6-16.) Especially in light of the inadequacy of the mitigation measures adopted to address this impact (see *supra* Sections

B5-193

V, XII), the DEIR fails to demonstrate that the impact has been reduced to a less than significant level. B5-193 (Cont.)

15. The DEIR fails to sufficiently discuss the quantity of hazardous materials produced during construction of the Proposed Project.

Impact Haz-1b acknowledges that "drill mud and cuttings would become contaminated and will require proper disposal." (DEIR, p. D.6-16.) The DEIR fails to discuss the quantity of contaminated mud and cutting that will be produced during construction. The DEIR also fails to discuss the location of "proper disposal" sites or the capacity of those sites to accept the contaminated waste that will be produced by during project construction. Without this additional information, the public and reviewing agencies cannot verify the accuracy of the significance conclusion included in the DEIR. B5-194

16. The DEIR fails to accurately consider the impacts associated with the delivery of hazardous materials associated with construction and operation of the Proposed Project.

First, the analysis only considers impacts associated with the delivery of methyl mercapatan. (DEIR, p. D.6-17.) The DEIR should consider the impacts associated with the delivery of contaminated mud, contaminated cuttings, and any other hazardous materials or wastes that would be delivered to or shipped by the Proposed Project. Therefore, the DEIR fails to consider the total level of risk associated with delivery of hazardous materials. B5-195

Second, the analysis of the risk associated with delivery of methyl mercapatan only considers the risk associated with delivery from the point the shipment exits the freeway to the point it reaches the project site. (*Ibid.*) The DEIR must consider the risk associated with the entire route not simply the risk on local streets. Therefore, the analysis is substantially deficient. Additionally, both the 2030 General Plan and the DEIR acknowledge that traffic counts on the roadway and highway network in Sacramento will continue to increase over the time. The DEIR must consider the risk over the projected lifespan of the Proposed Project. B5-196

Third, the DEIR discusses several different routes that can be used to deliver methyl mercapatan to the compressor station and wellhead site. The DEIR concludes that before mitigation the "impacts associated with hazardous materials delivery are considered significant due to the close proximity along travel routes to area schools and parks." (DEIR, p. D.6-17.) However, after mitigation, the DEIR concludes the impact would be less than significant. This conclusion is flawed for a variety of reasons. Mitigation Measures HAZ-1ci and HAZ-1cii are the measures adopted to reduce this B5-197

impact to a less than significant level. But, neither measure is in fact a meaningful mitigation measure. HAZ-1ci requires that methyl transportation comply with all regulations for transporting inhalation hazards. But the Battelle risk estimates discussed in the DEIR were derived from historical data relating to accidents and assume compliance with applicable regulations. Therefore, requiring compliance with applicable regulations does not reduce the identified risk.

HAZ-cii requires the use of a specific route analyzed in the impact discussion. Specifically, it requires the Howe Avenue or Folsom Boulevard route from US-50 is used. (DEIR, p. D.6-19.) The impact discussion concluded after discussing every route, including the route required by HAZ-cii, that "impacts associated with hazardous materials delivery are considered significant due to the close proximity along travel routes to area schools and parks." (DEIR, p. D.6-17.) It is, thus, unclear how requiring a specific route, use of which the DEIR states would result in a significant impact, is sufficient mitigation. Moreover, the impact discussion provides that for deliveries to the wellhead site "the route from SR-99 is preferable." (DEIR, p. D.6-18.) Therefore, it is unclear how requiring the non-preferred route could reduce the impact to a less than significant level. The impact analysis also acknowledges that the "US-50 [Route] passed by a school[.]" (*Ibid.*) The DEIR concludes that the impact is significant before mitigation because it requires deliveries on "routes to area schools and parks[.]" (DEIR, p. D.6-17.) The DEIR admits the mitigated route passes within 0.15 miles of at least one school, the Elder Creek Elementary School. (DEIR, pp. D.6-18, D.6-38.) Therefore, the evidence demonstrates that, under the DEIR's standards, the impact still remains significant after implementation of the mitigation measures. **B5-197 (Cont.)**

Fourth, the DEIR fails to consider private schools, preschools, and day care facilities in determining whether the methyl mercapatan deliveries will use routes that are also used to reach area school. If these additional school facilities were properly considered, then several additional schools would be within close proximity to the delivery route including Eliezer Christian Academy, Child Action, and numerous churches (some of which likely have child care facilities). Additionally, the mitigated route may also pass by Granite Park and/or Danny Nunn Park. **B5-198**

Fifth, the DEIR asserts that deliveries of methyl mercapatan to the wellhead site would use "only a small portion of Power Inn Road" than deliveries to the compressor station. (DEIR, D.6-19.) As the compressor station is located further north, deliveries to the wellhead station would require a longer distance to be travelled on Power Inn Road. Therefore, this conclusion is not accurate. **B5-199**

In addressing all the issues discussed above, AGENA requests that the DEIR be also revised to include route maps both for the local routes that will be used and regional **B5-200**

routes depicting the trips from the origin of the delivery. These maps should also identify all schoolsites and parks located within ¼ mile from the proposed routes. B5-200 (Cont.)

17. The DEIR fails to provide a sufficient discussion concerning methyl mercapatan storage at the wellhead site.

The DEIR provides that methyl mercapatan will only be stored at the wellhead site if it is not feasible to store and inject all methyl mercapatan at the compressor station. (DEIR, p. D.6-19.) The DEIR should discuss why it may not be feasible to store and inject all methyl mercapatan at the compressor station. If use and storage of methyl mercapatan may occur at the wellhead site as currently stated in the DEIR, then additional information must be provided in the DEIR. The DEIR states that the methyl mercapatan stored at the wellhead site would be stored in "a specialized structure." The structure(s) have not been described in the DEIR. The DEIR must describe the location of this storage area, discuss its design features, and analyze the impacts of development of the structure. B5-201

18. The DEIR fails to include mitigation to ensure that methyl mercapatan will be stored safely at the compressor station.

The DEIR concludes that storage of the methyl mercapatan at the compressor station will be a less than significant impact. The DEIR reaches this conclusion in part because "methyl mercapatan will be contained within the specially designed compressor station structure." (DEIR. p. D.6-18.) This is the first and only mention of a "specially designed compressor station" included in the DEIR. As this specially designed structure was not discussed as part of the Project Description, this design requirement must be properly considered as a mitigation measure. In addition to requiring a special design as a mitigation measure, the DEIR must explain why the special design ensures that the impact of methyl mercapatan storage is less than significant. B5-202

19. The DEIR fails to discuss the potential ramifications associated with the lack of information concerning the bottom and sides of the reservoir.

The DEIR acknowledges that "[n]either the bottom of the reservoir nor the sides has been well defined in detail." (DEIR, p. D.6-25.) Thus, the DEIR concludes that "it is not known whether stored gas could seep from the edges of the reservoir." (*Ibid.*) The DEIR should consider the potential ramifications of leakage from the sides of the reservoir. Based on the possibility of gas migration into geologic zones and ground water systems that could carry the gas miles from the reservoir, the zone of danger from the reservoir encompasses a far larger area than the area directly above the reservoir as identified by the proponent. The deadly natural gas explosion in Hutchinson, Kansas B5-203

shows that the danger of gas travelling miles form a leaking storage facility is very real. (See Oil & Gas Journal, April 9, 2001, Testimony of Stephen Goldberg, Ex. AGENA-32, Ex. B [describing underground natural gas explosion in Hutchinson, Kansas].) B5-203 (Cont.)

20. The Proposed Project will result in a significant impact as a result of proximity to schools.

The DEIR concludes that because no schools are located directly above the reservoir that the Proposed Project would result in a less than significant impact from locating a project with the potential to emit hazardous emissions within 0.25 miles of an existing school. First, Impact HAZ-3 asks whether there is a "Potential for the Project to Emit Hazardous Emissions or Handle Acutely Hazardous Waste within 0.25 Mile of an Existing or Proposed School." ((DEIR, p. D.6-38.) The discussion acknowledges that "[t]he Florin Elementary School and the Samuel Kennedy Elementary School are located approximately 0.12 mile beyond the gas field boundary." (*Ibid.*) The DEIR also concludes that the impact of gas leakage from the reservoir is significant and unavoidable. Therefore, by its own terms the DEIR acknowledges that the Proposed Project has the potential to "emit hazardous emissions … within 0.25 Mile of an Existing or Proposed School." (*Ibid.*) The statement that "it is not expected that gas would migrate" the 0.12 miles to the Florin Elementary School or the Samuel Kennedy Elementary School does not reduce the impact. (DEIR, p. D.6-38.) Even if gas did not migrate the additional 0.12 miles, gas leaking from the reservoir could still leak within 0.25 miles of the schools. B5-204

Moreover, as discussed above, the bottom and sides of the reservoir are not well defined and leakage from the sides may be possible. (DEIR, p. D.6-25.) Once gas leaks from the sides it could travel miles before finding its way to the surface. (See Oil & Gas Journal, April 9, 2001, Testimony of Stephen Goldberg, Ex. AGENA-32, Ex. B [describing underground natural gas explosion in Hutchinson, Kansas].) Therefore, the schools located 0.12 miles from the edge of the reservoir are within the area that could be impacted by gas migration.

Second, there is a dispute amongst experts regarding the size of the reservoir. (DEIR, p. B-2.) Given this dispute, it is reasonable to assume that the reservoir may actually encompass the schools that are only located 0.12 miles from the reservoir as defined by SNGS. B5-205

Third, the DEIR is incorrect in concluding that schools are not located above the reservoir. Impact HAZ-3 is included in the DEIR to respond to the CEQA's heightened standards for the development of projects that may cause potential health impacts at schoolsites. (Pub. Resources Code, § 21151.8; CEQA Guidelines, § 15186.) CEQA was B5-206

amended to include these heightened standards for projects near schoolsites to ensure consistency with the California Education Code. (Educ. Code, § 17213.) The California Education Code defines schoolsites as "any facility used as a child day care facility, as defined in Section 1596.750 of the Health and Safety Code, or for kindergarten, elementary, or secondary school purposes. The term includes the buildings or structures, playgrounds, athletic fields, vehicles, or any other property visited or used by pupils." (Educ. Code, § 17609, subd. (e).) A child day care facility is, in turn, defined as "a facility that provides nonmedical care to children under 18 years of age in need of personal services, supervision, or assistance essential for sustaining activities of daily living or for the protection of the individual on less than 24-hour basis. Child day care facility includes day care centers, employer-sponsored child care centers, and family day care centers." (Health & Saf. Code, § 1596.750.) Schoolsites above the reservoir include, but are not limited to, Jefferson Family Day Care (8035 Tierra Wood Way), Little Treasure Day Care (8144 Florin Road), Noah's Ark Christian Academy (8201 Florin Road), and Kid'z Academy (8150 Florin Road). Therefore, the DEIR must be revised to acknowledge that this is a significant impact. **B5-206 (Cont.)**

Fourth, the DEIR should also consider schoolbus routes with respect to all potential hazardous material emission sources associated with the Proposed Project. If methly mercapatan deliveries, hazardous waste shipments, pipeline routes, or the reservoir overlap with schoolbus routes, then the DEIR should adopt mitigation measures, if available, to reduce this impact to a less than significant level. **B5-207**

21. The alternatives discussion should discuss the difference the in level of risk associated with an urban versus a rural natural gas storage facility.

Dr. Williams letter questions the conclusion in the Weatherax report commissioned by SNGS based upon the Playa Del Rey and Montabello incidences. (Dr. Williams Letter, Exhibit E, Comment MN 4-4.) As Dr. Williams letter points out, SNGS's study of depleted natural gas field incidents in California acknowledges several occasions where gas has migrated or other hazardous situations have occurred. In particular, SNGS's report discusses the explosion at the McDonald Island facility. SNGS's report demonstrates that the McDonald Island incident did not cause deaths *only* because it occurred in an unpopulated area. The incident would have been devastating had it occurred in a densely populated urban area such as the area proposed for this project. The McDonald Island incident bolsters Dr. William's conclusion that the Weatherax report substantially underestimates the potential risk of the proposed project. To allow the public, reviewing agencies, and the Commission better understand the differences in potential health and safety impacts between alternatives and the Proposed Project the DEIR must provide a detailed comparison including a discussion of the **B5-208**

number of people living and working above the reservoir as well as the daily traffic count on roads above the reservoirs. B5-208 (Cont.)

XVIII. The DEIR's consideration of the Proposed Project's impacts on hydrology and water quality is inadequate for several reasons.

The DEIR's analysis of impacts on hydrology and water quality is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all hydrology and water quality impacts associated with a proposed project. Yet the DEIR fails properly to consider and analyze hydrology and water quality impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, use and maintenance of the SMUD pipeline, and construction and operation of monitoring wells. Additionally, while the DEIR considers the Proposed Project's impacts on hydrology and water quality in light of the 1988 City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. B5-209

The remainder of this section addresses the numerous other flaws with the DEIR's hydrology and water quality analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. The DEIR fails to provide an adequate environmental setting for the hydrology and water quality analysis.

The DEIR concludes that development of the Proposed Project (1) would result in some risk of gas migration into an aquifer above the storage reservoir, (2) if such gas migration occurred, "contamination could be substantial requiring a prolonged period of remediation," (3) that the contamination would "impact[] the water quality of a major potable aquifer," and (4) as a result, the DEIR concludes that the project would result in a significant and unavoidable impact to groundwater quality. (DEIR, p. D.7-23 (emphasis added).) It appears that in 1991 at least 56,000 people obtained water from the deep aquifer overlaying the reservoir. (See EPA. (December 1991) Superfund Record of Decision (EPA Region 9): Sacramento Army Depot, Operable Unit 3, Sacramento, CA.) The DEIR must provide a detailed discussion concerning this aquifer, including the quantity of water extracted from it, the current number of people that rely on it, as well as the potential extent of contamination in the event of an accident. To the extent possible, the discussion should provide separate information relating to the lower and upper aquifers; both of which are suitable for municipal water supplies. (DEIR, p. D.7-5.) Without this information, the public and the Commission cannot fully understand the B5-210

potential magnitude of this significant and unavoidable impact. (See *Cadiz Land Co. v. Rail Cycle* (2000) 83 Cal.App.4th 74, 92 [holding that an EIR was inadequate for failing to include a discussion of the volume of water contained in the aquifer or the size of the aquifer].) B5-210 (Cont.)

2. The DEIR fails to consider potential contamination of runoff.

Impact H-4 discusses water runoff from the project site. The DEIR states that construction of the Proposed Project would increase runoff at the wellhead site by 11% and by 22% at the compressor station. (DEIR, pp. D.7-18 to D.7-19.) The DEIR fails to consider the potential that the runoff may become contaminated at the project sites resulting in polluted and possible hazardous runoff. The DEIR should discuss the potential for this to occur, and should discuss measures that would be adopted to address the impact. B5-211

3. The DEIR fails to adequately consider the potential for drilling mud to contaminate the groundwater.

Impact H-5 states that the Proposed Project will have a less than significant impact on groundwater quality if nontoxic mud is used and procedure are adopted to reduce the potential for hazardous material spills to occur during construction. (DEIR, p. D.7-20.) Impact Haz-1b acknowledges that "drill mud and cuttings would become contaminated and will require proper disposal." (DEIR, p. D.6-16.) Impact Haz-1b found that contamination could occur because the mud may come into contact with contamination during the drilling process. For example, the DEIR states that "[t]he area is known to have perched groundwater tables and other shallow ground water. These may be encountered during construction." (DEIR, p. D.5-9.) The DEIR also states that the groundwater beneath the wellhead and compressor station sites is being treated for contamination. (DEIR, p. D.6-3.) Therefore, subsurface contaminates could mix with the mud and lead to groundwater contamination. Therefore, Impact H-5 should consider whether the drilling mud could become contaminated and spread contamination to uncontaminated groundwater. B5-212

4. The DEIR fails to consider all feasible mitigation measures to address contamination of a major potable aquifer resulting from gas migration.

The DEIR provides that gas migration could lead to "substantial [contamination] require[ing] a prolonged period of remediation." (DEIR, p. D.7-23.) The DEIR must include a more detailed discussion regarding the remediation process and the estimated time that the process may take. Without this additional information the magnitude of this significant and unavoidable impact is not fully disclosed. The DEIR also fails to explain B5-213

who would be responsible for paying for the remediation during the prolonged remediation period. The DEIR must include a mitigation measure requiring SNGS to post of bond for the estimated cost of the entire remediation effort.

Mitigation Measure H-8b requires, in the case of water contamination, that the Proposed Project is suspended until the source of the leak can be found and corrected. (DEIR, p. D.7-24.) The DEIR should discuss methods that could be used to stop a leak into the groundwater. If no methods are available, the measure must require that the Proposed Project is permanently shut down in the event of contamination to the groundwater. Requiring the Proposed Project to permanently shut down in the event of groundwater contamination would not reduce the impact of gas migration to a less than significant level because it represents after-the-fact mitigation. Howeer, CEQA requires that all feasible mitigation measures are adopted to reduce a significant and unavoidable impact to the extent possible. (See CEQA Guidelines, §15370.)

B5-213 (Cont.)

5. An alternative should be chosen that does not jeopardize water quality of a major potable aquifer.

The 2008 Energy Action Plan concludes that the need for gas storage requires further examination. (2008 Energy Plan, p. 18.) On the other hand, the need and importance of this State's groundwater supplies is clear. "Water in California is a scarce and precious resource." (Governor's veto message to Sen. on Sen. Bill No. 1640 (2005-2006 Reg. Sess.) Sen. Daily File (Sept. 30, 2006), available at http://gov.ca.gov/pdf/press/ sb_1640_veto.pdf (last visited June 2, 2009).) The United States Geologic Survey has even declared that "[g]round water . . . is one of the Nation's most important natural resources." (USGS, Water Q&A, at http://ga.water.usgs.gov/edu/ qausage.html (last visited June 2, 2009).)

To approve the Proposed Project, the Commission would need to adopt a statement of overriding considerations setting forth the specific reasons why the agency finds the project's "benefits" render "acceptable" its "unavoidable adverse environmental effects." (CEQA Guidelines, §§ 15093, 15043, subd. (b); see also Pub. Resources Code, § 21081, subd. (b).) The California Legislature has declared that "a principal goal of electric and natural gas utilities' resource planning and investment shall be to minimize the cost to society of the reliable energy services that are provided by natural gas and electricity, and to improve the environment[.]" (Cal. Pub. Util. Code, § 701.1, subd. (a) (emphasis added).) Impacts to a "major potable aquifer" (DEIR, p. D.7-23) one of the State's most precious resources—groundwater aquifers—is an extremely high potential cost. Considering the unquestionable importance of California's groundwater supplies and the 2008 Energy Plan Update's declaration that the need for future gas storage facilities must be further evaluated, the analysis in the DEIR is simply not adequate to

B5-214

allow the Commission to draft a statement of overriding considerations that would comply with the requirements of CEQA and the CPUC's statutory requirement for approving a CPCN. Therefore, the CPUC must adopt an alternative to the Proposed Project. B5-214 (Cont.)

XIX. The DEIR's consideration of the Proposed Project's impacts on land use, agriculture, and recreational resources is inadequate for several reasons.

The DEIR's analysis of impacts on land use, agriculture, and recreational resources is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all land use, agriculture, and recreational resources impacts associated with a proposed project. Yet the DEIR fails properly to consider and analyze land use, agriculture, and recreational resources impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, and construction and operation of monitoring wells. B5-215

The remainder of this section addresses the numerous other flaws with the DEIR's land use, agriculture, and recreational resources analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. The environmental setting relevant to an analysis of land use and recreational resources impacts is inconsistent.

Several different sections of the DEIR discuss the fact that Depot Park is located within 0.25 miles of the compressor station. (See, e.g., DEIR, pp. D.8-16, D.9-11, D.13-4.) Depot Park is described as two parkland sites located within the former Army Depot. Specifically, the inconsistencies include, but are not limited to, the following: Section D.8 describes Depot Park as being comprised of two park areas, an eastern area and a western area, and then notes that the eastern area is developed, "including a ball field, bleachers, and scoreboard." (DEIR, p. D.8-16.) Section D.8 further states that "[t]he park on the eastern side of the former Army Depot is approximately 22 acres and includes a ball field used for Little League and other recreational organizations." (DEIR, p. D.8-17.) In contrast, Section D-9 states that both areas comprising Depot Park "are currently not developed." (DEIR, p. D.9-5.) In another example of the apparently contradictory characterizations of the park, while recognizing that there are recreational users of the park, the DEIR also describes uses of the park as "generally employees maintaining/using the on-site industrial storage facilities." (DEIR, D.13-10). B5-216

In yet another variation, Section D.13 states that the proposed compressor station "is situated within Depot Park, which is currently a controlled-access industrial business park." (DEIR, p. D.13-4.) Notably, the DEIR goes on to find that there will be no visual resource impact by the compressor station because of the limited public access to Depot Park. (DEIR, p. D.13-4 ["Due to the site's location within Depot Park and its limited access, the compressor site is not visible to the general public."].) However, Section D.13 appears to contradict its previous statement that Depo Park is an industrial business park by noting that "Depot Park consists of two facilities within the park, both under the jurisdiction of the City of Sacramento." (DEIR, p. D.13-10.) That same section then describes that the eastern side of Depot Park includes a ball field, bleachers, and scoreboard, and states that users of the ball park "may experience middleground views of the compressor station site looking northwest" but then asserts that "intervening buildings pose obstructions." (DEIR, p. D.13-10.) This, of course, contradicts the earlier statement that the compressor site "is not visible to the general public." (DEIR, p.D.13-4).

Figure D.13-2, KOP 6, which is a photograph described as the "view of compressor station site looking northwest from Army Depot Park baseball fields," does not appear to show any "intervening buildings," as described by Section D.13, although the DEIR fails to clearly identify the compressor station site in the photograph.

Without an accurate description of the environmental setting, the public, reviewing agencies, and the Commission cannot verify the adequacy of conclusions reached in the DEIR. (*Galante Vineyards*, *supra*, 60 Cal.App.4th at pp. 1121-1122.)

B5-216 (Cont.)

2. The Proposed Project is Inconsistent with the City of Sacramento's 1988 General Plan.

The DEIR discusses both the City of Sacramento's 1988 General Plan (the "1988 Plan") and the 2030 General Plan. The 2030 General Plan was adopted by the City on March 3, 2009. Therefore, it is the current General Plan for the City of Sacramento, and the Proposed Project must be consistent with it. The DEIR appears to focus its analysis on the 1988 Plan because its policies are more favorable to the Proposed Project than the 2030 General Plan. (See, *infra*, Section XIX.3.) However, the Proposed Project is not even consistent with the 1988 Plan. Although the DEIR concludes that the Proposed Project is consistent in all ways with the 1988 Plan, the Proposed Project is in fact inconsistent with many of its provisions. For instance, one goal of the 1988 Plan is to "allow industrial development only in those areas where potential impacts can be expected to be minimized" (DEIR, p. D.8-32), and another goal is to "eliminate health and safety hazards wherever possible." (DEIR, p. D.8-36.) But, as the DEIR elsewhere acknowledges, the Proposed Project will create significant health and safety hazards (*see, e.g.*, DEIR, pp. D.6-27, D.6-30, D.6-32 [all acknowledging that Proposed Project will

B5-217

have significant unmitigatable risks]), hazards which could be eliminated, avoided or at least reduced by implementation of one of the Project Alternatives. (*See, e.g.*, DEIR, pp. D.6-40 to D.6-41 [discussing lower impacts of project alternatives].) B5-217 (Cont.)

Additionally, the 1988 Plan calls for the promotion and "use of solar and energy renewable technologies." (DEIR, p. D.8-32.)[13] However, the Proposed Project is a major infrastructure investment in a *non*-renewable energy technology: natural gas. Implementation of the Proposed Project will increase the attractiveness of using a non-renewable energy technology in Sacramento, thereby decreasing incentives to "use solar and energy renewable technologies." (*Ibid.*) This is inconsistent with the goals of the 1988 Plan. B5-218

Numerous other flaws in the DEIR's analysis are iterative of flaws discussed elsewhere in this letter. For instance, the DEIR concludes that the Proposed Project is consistent with the 1988 Plan's goal of "encourag[ing] citizens [sic] and stakeholder participation in development decisions." As discussed *supra* Section X, the opportunities for community and stakeholder participation have been inadequate. Similarly, the Proposed Project conflicts with the 1988 Plan's goal of preventing "unacceptable risk of hazard due to seismic and geologic activity to the maximum extent feasible." (See, *supra*, XVI.) Better protection against such risk, as acknowledged by the DEIR, *is* feasible and would be achieved by one of the project alternatives or by the No Project alternative. (*Ibid.*) B5-219

3. The Proposed Project is Inconsistent with the City of Sacramento's 2030 General Plan.

The Sacramento City Council adopted the City of Sacramento's 2030 General Plan (the "2030 General Plan") on March 3, 2009. The DEIR evaluates the Proposed Project in light of the goals of a draft version of the 2030 Plan. Now that the plan has been finalized and adopted, the EIR must evaluate the Proposed Project in light of the 2030 General Plan. The Proposed Project is not consistent with several policies in the 2030 General Plan. B5-220

Putting aside the fact that the DEIR inappropriately evaluated the Proposed project in light of the draft 2030 plan, and not the finalized plan, the DEIR also incorrectly determined that it was consistent with portions of the draft plan. For example, the 2030 General Plan provides that "the City shall avoid the concentration of high impacts uses

[13] The DEIR mistakenly concludes that this goal is "not applicable since few buildings will be developed." (DEIR, p. D.8-32.) The 1988 Plan nowhere states that this goal only applies to the development of buildings, or only to the development of more than a "few" buildings. In any case, the Proposed Project *does* involve the development of buildings. B5-221

and facilities in a manner that disproportionately affects a particular neighborhood . . . to ensure that such uses do not result in an inequitable environmental burden being placed on low-income or minority neighborhoods." (DEIR, p. D.8-40.) The DEIR determines that the Proposed Project is consistent with this Land Use Element because it is being built on "lands designated for such uses" and mitigation measures "assure minimal adverse impact on surrounding land uses." (DEIR, p. D.8-40.) This analysis is flawed. This project will have significant, unmitigable and disproportionate impacts on a low-income minority neighborhood. (*See* DEIR, pp. D.6-29 to D.6-30, D.6-32 [describing significant unmitigable impacts]; DEIR, p. D.10-8 [neighboring communities are disadvantaged per EPA guidelines]; see *infra*, Section XXI [discussing environmental justice of proposed project].) That some adverse impacts may be minimized is beside the point, as many adverse impacts of the Proposed Project are significant and unmitigable. **B5-220 (Cont.)**

The DEIR also misplaces reliance on the light industry/employment designation of the land where the wellheads and compressor station are proposed to be located. This conclusion is highly misleading and misstates the project's footprint. First, the land above most of the proposed *gas reservoir* consists of residential homes. Second, the proposed wellhead and compressor station sites are designated for *light* industrial and employment land uses; not *high* impact light industrial uses. Most light industrial and employment uses do not lead to significant human health and environmental impacts on surrounding communities. The designation of such lands for light industrial/employment uses is therefore irrelevant to a determination of whether the Proposed Project complies with the 2030 General Plan's directive to avoid the concentration of high impact uses in low-income or minority neighborhoods. **B5-222**

Additionally, as noted in the DEIR, the Fruitridge Broadway Community Plan designates the project area as Employment Center (Low Rise). (DEIR, p. D.8-8.) In considering the consistency between this land use designation and the Proposed Project, the DEIR concludes that "[w]ith the zone change to Employment Center (low rise), the aboveground structures in the Proposed Project will be compatible with future surrounding commercial and light industrial uses." (DEIR, p. D.8-40.) The DEIR provides no justification for this conclusion. The 2030 General Plan includes a detailed description of the Employment Center (Low Rise) land use designation, including illustrations of the envisioned zone. (2030 General Plan, pp. 2-100 to 2-101.) The 2030 General Plan's illustrations of the envisioned zone do not appear consistent with the Proposed Project. **B5-223**

Moreover, the goal of the designation of the zone as "Employment Center (Low Rise)" is to "provide[] for employment generating uses that generally do not produce loud noise or noxious odor[.]" (*Id.* at p. 2-100.) The DEIR reveals that the Proposed Project will not satisfy this goal. The DEIR states that the Proposed Project would

require very few employees once construction is complete, which suggests that it is not an "employment generating use." And the DEIR suggests the Proposed Project would have significant noise and odor impacts at neighboring Employment Center (low rise) properties. The DEIR fails to consider how the significant land use, noise, and odor impacts associated with the Proposed Project will adversely affect the ability of the project site to comply with the 2030 plan. B5-223 (Cont.)

Finally, in adopting the 2030 General Plan, the City Council adopted a policy explicitly to address the types of issues that the City will consider in reviewing projects like the one proposed by SNGS. The following policy was adopted as part of the Hazardous Materials section in the Public Health and Safety Element of the 2030 General Plan:

> **Risks from Hazardous Materials Facilities**. When appropriate in light of the City's responsibilities regarding permitting, the City shall review proposed facilities that would produce or store hazardous materials, gas, natural gas, or other fuels to identify, and provide feasible mitigation for any significant risks. The review shall consider, at a minimum, the following: presence of seismic or geologic hazards; presence of hazardous materials; ***proximity to residential development areas in which substantial concentrations of people would occur***; and nature and level of risk and hazard associated with the proposed project.

B5-224

(City Staff Report for the March 3, 2009 City of Sacramento City Council Hearing, p. 8; personal communication with City Attorney [Explaining that the City adopted the above policy but inadvertently published the 2030 General Plan without including the policy. In the coming months, the City will consider a "clean up resolution" to correct this omission and other errors included in the 2030 General Plan published on March 3, 2009.].)

The DEIR should consider the Proposed Project's consistency with this 2030 General Plan Policy and with all policies. As acknowledged in the DEIR, the Proposed Project is located in close proximity to residential development areas in which substantial concentrations of people would occur. Therefore, the Proposed Project does not appear to be consistent with this policy. (See *Families Unafraid to Uphold Rural El Dorado County v. Board of Supervisors* (1998) 62 Cal.App.4th 1332, 1342.)

4. The Proposed Project is Inconsistent with the County of Sacramento's 1993 General Plan.

B5-225

The County of Sacramento is currently undergoing its own General Plan update process, and a draft County General Plan is available for public review. The DEIR

provides no explanation for why it omits a discussion of this draft planning document. The DEIR should be updated to include an analysis of the 2030 General Plan. Moreover, the DEIR incorrectly concludes that the Proposed Project is consistent with the County of Sacramento's 1993 Plan (the "1993 Plan"). B5-225 (Cont.)

The 1993 Plan requires the County to support activities that "do not pose a significant risk to water, air or other natural resources" (DEIR, p. D.8-44), and to "continue the effort to prevent groundwater and soil contamination." (DEIR, p. D.8-46.) However, the Proposed Project poses a significant risk to water and air quality, as well as to biological resources despite the DEIR's contrary conclusion. (See, *supra*, Sections I, XIII, XIV.) The 1993 Plan also requires that "residents who live adjacent to industrial commercial facilities are protected from accidents and the mishandling of hazardous materials" and that "storage . . . of hazardous materials shall be conducted in a manner so as not to compromise public health and safety standards." (DEIR, p. D.8-46.) Accordingly, the DEIR must explain how constructing a project with significant and unavoidable health and safety impacts does not compromise health and safety standards. B5-226

Additionally, the Proposed Project conflicts with the 1993 Plan's directive to "minimize the loss of life, injury and property damage due to fire hazards" (DEIR, p. D.8-45), as the Proposed Project presents significant, unmitigable fire hazard risks, the danger of which to persons and property could be minimized by implementation of an alternatives located in less a populated area or a non-gas storage alternative. B5-227

In considering consistency with the County 1993 Plan, the DEIR states that the Proposed Project "is not introducing a new land use and would concentrate industrial development where it already exists[.]" (DEIR, p. D.8-44.) However, a natural gas storage operation has never existed in this area. No oil or gas wells are in operation in the immediate area surrounding the Proposed Project. The DEIR must explain how this is not a "new land use." B5-228

The DEIR finds that the Proposed Project is consistent with LU-40 from the County 1993 Plan because "the project with mitigation would not pose a significant risk of polluting the soil and aquifer due to gas migration." (DEIR, p. D.8-45.) The Hydrology and Water Quality section of the DEIR, however, reaches the exact opposite conclusion. The Proposed Project will have a significant and unavoidable impact to water quality because "[i]mplementation of the Proposed Project will present the potential of contamination of the groundwater aquifer through the storage of natural gas." (DEIR, p. D.7-22.) B5-229

5. The Proposed Project is Inconsistent with the County Zoning Code. B5-230

The Sacramento County Zoning Code provides that "[o]il and/or gas well sites proposed to be developed on either industrial or agriculturally zoned land shall not be located within one thousand ***(1000) feet of the boundary of property zoned for residential***, interim residential, interim estate, ***or recreational purposes***." (Sacramento County Zoning Code, Title III, Ch. 1, § 301-19 (emphasis added).) As the Proposed Project crosses jurisdictional boundaries, the DEIR should consider whether the Proposed Project meets the standards established under both County and City regulations. "It is a policy of the City to cooperate with the region's various public jurisdictions on matters of mutual interest including social, economic, and environmental issues[.]" (DEIR, p. D.8-31.) Moreover, the DEIR even suggests that "the Proposed Project encourages inter-jurisdiction coordination[.]" (DEIR, p. D.8-33.) Therefore, the DEIR should apply the Sacramento County policy of avoiding impacts to sensitive receptors by locating oil and gas wells a reasonable distance from parks and homes to the Proposed Project. Because both a community park and homes are located barely 100 feet from the wellhead site, the Proposed Project falls extremely short of complying with this County requirement. (DEIR, p. D.2-7.) This is a significant and unavoidable impact, and one that the DEIR fails to discuss. **B5-230 (Cont.)**

6. The Proposed Project May Substantially Deteriorate a Recreational Facility.

The Proposed Project involves construction of a wellhead and a natural gas pipeline adjacent to Danny Nunn Park. The DEIR nonetheless concludes that there will be no significant impacts on Danny Nunn Park or any other recreational facility. (DEIR, p. D.8-51.) The DEIR's conclusion is inadequately substantiated since it does not consider all the impacts that a natural gas pipeline and wellhead site (including significant human health and environmental risks), may have on the use of Danny Nunn Park. The DEIR correctly describes the standard of deterioration as a "reduc[tion] of the value of . . . use" (DEIR, p. D.8-51), but does not consider, for instance, the possibility that park patronage will decrease due to its location directly above a natural gas reservoir. It is foreseeable that the Proposed Project would result in such an impact because the Proposed Project objectively presents an increased risk of fire, explosion, leaks or other hazards, and subjectively increases the fear of such incidents; as a result, residents of the City may choose not to utilize the park due to the heightened dangers. Decrease in park patronage could lead to increases in park patronage in other areas of the City as residents seek safer options, which would further exacerbate the existing shortage of available community parks within the region. **B5-231**

The DEIR also fails to consider the effects of the Proposed Project on the two city-owned parkland sites within Depot Park and on George Sim Park. One of the Depot Park sites includes a ball field and bleachers; it may be substantially deteriorated by the Proposed Project due, for instance, to noise and odor impacts. (*Quail Botanical Gardens* **B5-232**

Found. v. City of Encinitas (1994)29 Cal. App. 4th 1597, 1607 [holding impacts to "views and the beauty of the setting" at a park may be a significant environmental impact].) Although the other Depot Park site apparently is not yet developed as a park by the city, it is located less than one-quarter mile from the proposed compressor station and is an existing parkland site and, as such, is a recreational facility that may be impacted by the Proposed Project. The DEIR should also consider whether development of the Proposed Project may impact the potential for future development of this park site. (*City of Antioch v. City Council* (1986) 187 Cal.App.3d 1325, 1333-1336.) If development of the Proposed Project creates an incompatibility with development of a neighboring park, the Proposed Project would result in a reduction of available land for future urban parkland development. This is a significant impact as recreational land is a limited and important commodity in Sacramento. **B5-232 (Cont.)**

Additionally, George Sim Park is a City of Sacramento park that is also located within the vicinity of the Proposed Project. The EIR, therefore, should consider the effect of the Proposed Project on George Sim Park and on the two Depot Park parkland sites and their potential to be developed into parks.

The South Sacramento Community Plan requires that "[p]ark facilities should be convenient and safe." (DEIR, p. D.8-39.) The DEIR concludes that the Proposed Project is consistent with this requirement because the "[o]peration of the Proposed Project would not interfere with convenience or safety of nearby park facilities." (DEIR, p. D.8-39.) This claim cannot be reconciled with the Proposed Project's significant and unavoidable health and safety impacts. The Proposed Project is not consistent with this goal from South Sacramento Community Plan. **B5-233**

Finally, the DEIR concludes that the Proposed Project would result in "[n]o permanent impacts to parkland within the City of Sacramento[.]" (DEIR, p. D.8-42.) A significant and unavoidable health and safety impact *is* an impact to affected parks. As parkland is located directly above the reservoir, parkland is impacted by the health and safety impacts. Therefore, the Proposed Project will have a significant impact on recreational resources.

7. The DEIR lists several measures that are not included in the Mitigation Monitoring and Reporting plan to demonstrate compliance with several local land use policies.

Many local land use policies discuss issues concerning local employment and the local economy. (See, e.g., DEIR, p. D.8-30.) The DEIR asserts that the Proposed Project is consistent with these policies because "approximately 70% (between 105 and 140 employees) would be from the local population." (*Ibid.*) However, no mitigation **B5-234**

measures require SNGS to use local employment. Therefore, this assertion is not enforceable. The DEIR should include a mitigation measure to require the use of local employees if this measure is used as evidence of consistency with general plan policies. The DEIR must also define "local population." The Population and Housing analysis suggests that local population may be defined as people living within a one- to two- hour commute of the project. (DEIR, p. D.10-7.) This is certainly not a common-sense understanding of "local" hiring, and hiring employees from these distances suggests that employees will be hired from outside the City and County, which would not help to achieve the local planning goals evaluated in the DEIR. B5-234 (Cont.)

The DEIR also asserts that the Proposed Project will use materials during construction and operation that are "recycled where feasible" to demonstrate compliance with a City policy from the 1988 General Plan. (DEIR, p. D.8-35; see also 2030 General Plan, p. 2-235 (Policy U 5.1.15) [including a similar recycling requirement as the 1988 General Plan, but not discussed in the DEIR].) The 2030 General Plan also "require[s] recycling and reuse of construction wastes," but the DEIR fails to consider this mandatory policy. (2030 General Plan, p. 2-235 (Policy U 5.1.16).) No mitigation measures identified in the DEIR require SNGS to use recycled materials. Therefore, this assertion is not enforceable. Moreover, the DEIR fails to define feasibility or provide measures for determining feasibility. The DEIR should include a mitigation measure that requires recycling if the claim that SNGS will use recycled materials is relied upon to demonstrate consistency with applicable local planning documents. B5-235

8. The DEIR incorrectly concludes that the Proposed Project will not displace existing land uses.

As discussed, *supra*, Section VII, the Project Description was substantially flawed because it failed to discuss the potential for the development of additional pipelines to directly connect new gas storage customers. The development of additional pipelines could require the displacement of existing land uses. Moreover, mitigation measure HAZ-2aii requires the development of an undisclosed number of monitoring wells that would need to be located throughout the reservoir area. The development of these wells could also require the displacement of existing land uses. Therefore, it is foreseeable that the Proposed Project could result in the displacement of existing land uses. (CEQA Guidelines, § 15126.4, subd. (a)(1)(D).) This possibility should be addressed by the DEIR. B5-236

XX. The DEIR's consideration of the Proposed Project's impacts on noise and vibrations is inadequate for several reasons. B5-237

The DEIR's analysis of impacts on noise and vibration is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all noise and vibration impacts associated with a proposed project. Yet the DEIR fails properly to consider and analyze noise and vibration impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, use and maintenance of the SMUD pipeline, and construction and operation of monitoring wells. Additionally, while the DEIR considers the Proposed Project's impacts on noise and vibration in light of the 1988 City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. **B5-237 (Cont.)**

The remainder of this section addresses the numerous other flaws with the DEIR's noise and vibration analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. The construction noise analysis is flawed because it is based on an inconsistently defined construction phasing schedule.

The DEIR states that Table B-2 provides "the approximate length of each construction phase." (DEIR, p. B-20.) Assuming the table in fact lists construction phases as stated, then development of the Proposed Project will take up to 14 months. (DEIR, p. B-21 [Table B-2].) However, the discussion states that construction will be completed "within 6 to 9 months." (DEIR, p. B-20.) Therefore, the Project Description is inconsistent with respect to the timing and length of construction. The adequacy and accuracy of the noise impact analysis cannot be verified without clarification of the actual project construction schedule. The DEIR should include information regarding all the activities that would occur simultaneously in each phase of construction. **B5-238**

2. Construction of the Proposed Project should not take place on weekends in order to reduce noise impacts and exceptions should not apply to horizontal directional drilling construction.

The DEIR acknowledges that development of the wellhead site will cause significant, unmitigable noise impacts to nearby sensitive receptors (i.e., residences). (DEIR, p. D.9-8.) In order to reduce the impact the construction will cause, SNGS should commit to a weekday-only construction schedule. Noise impacts on residences are greater on weekends, when residents are more likely to be at home during working hours; a week-day only construction schedule would lessen the significant noise impact that construction of the Proposed Project will cause. **B5-239**

Mitigation Measure N-1a exempts horizontal directional drilling construction from all time limitations otherwise applicable to the Proposed Project construction. (DEIR, p. D.9-9.) Construction noise impacts caused by the Proposed Project are significant and unavoidable. All feasible mitigation measures must be implemented to reduce this noise impact to a less than significant level. Requiring horizontal directional drilling construction to conform to the same construction time limitations as the remainder of the construction activities would substantially reduce construction noise impacts by reducing noise impacts cause during the night. Therefore, this additional mitigation measure should be adopted. **B5-239 (Cont.)**

3. The DEIR's discussion of operational noise impacts is substantially deficient.

The impact discussion for noise impacts from the wellhead site consists of three total sentences. (DEIR, p. D.9-11.) The DEIR simply concludes that noise at the wellhead site is "anticipated to be below the City's allowable noise thresholds." (*Ibid.*) The DEIR must include a detailed discussion and analysis of the noise impacts. The DEIR provides no justification from basing the impact conclusion on "anticipated" impacts rather than on information derived from an analytical analysis. In conducting this analysis, the DEIR must take into account the fact that the City's noise standards must be reduced by 5 dBA for "impulsive or simple tone noises[.]" (DEIR, p. D.9-6.) Noises created at the wellhead site will include impulsive or simple tone noises. Therefore, the noise analysis must utilize noise standards that account for this 5 dBA limit. **B5-240**

XXI. The DEIR's consideration of the Proposed Project's impacts on population and housing is inadequate for several reasons.

The DEIR considers the Proposed Project's impacts on population and housing in light of the 1988 City of Sacramento General Plan. However, it omits discussion of the adopted City of Sacramento 2030 General Plan. The remainder of this section addresses the numerous other flaws with the DEIR's population and housing analysis. The DEIR must be substantially revised to address each of the issues discussed below. **B5-241**

1. The DEIR's environmental justice analysis fails to account for the increased health and safety risks when weighing whether there will be a disproportionate impact on low-income/minority communities.

The DEIR acknowledges that the federal environmental justice standard requires "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income." (DEIR, p. D.10-4 (citing *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (1998); Exec. **B5-242**

Order No. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7629 (1994) (federal agencies must consider "disproportionately high and adverse human health or environmental effects" of programs as part of environmental justice)).) California law also defines "environmental justice" as "[t]he fair treatment of people of all races, cultures and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations and policies." (Gov. Code, § 65040.12.) To meet the requirement of "fair treatment," a proposed project must not have a disproportionate impact on low-income/minority communities. (DEIR, p. D.10-4; *accord* 8 C.F.R. §7.35 (EPA Title VI regulations setting disproportionate impact standard).)

Although the DEIR correctly notes that disproportionate impacts on low-income/minority communities violate the substantive environmental justice standard, its analysis of whether the Proposed Project would have a disproportionate impact in violation of the applicable environmental justice standards is seriously flawed.

B5-242 (Cont.)

First, the DEIR concludes that "[g]iven that the project is compatible from a land-use perspective . . . and would not displace existing uses, it would not disproportionally [sic] degrade minority or low-income communities." (DEIR, p. D.10-8.) This analysis wholly fails to account for the fact that the Proposed Project will involve an increased risk of fire, explosion, and the release of toxic substances that *will* disproportionately affect a minority community. The DEIR suggests that such increased risks need not be taken into account because the Proposed Project is compatible with the existing land-use plan. However, not only is the Proposed Project inconsistent with governing land use plans (*see* discussion *supra*, Section XIX), but the reality is that the Proposed Project's site is currently vacant and therefore it currently poses *no* threats to the public health and safety. Thus, the Proposed Project would in fact create significant *new* dangers to the public health and safety that disproportionately impact the low-income and minority communities located above and around the Project. The mere fact that the site is currently zoned for light industrial uses does not negate this fact.

B5-243

The DEIR also improperly uses historical information relating to development in the project area, rather than the existing environmental setting, to evaluate the impact of the Proposed Project. (CEQA Guidelines, § 15125, subds. (a), (e) [an EIR's analysis should generally compare the impacts of the project against the "existing physical conditions"].) In response to public concern about the Proposed Project's impact on health and safety, the DEIR states that "Many houses were located over the Florin Gas Field when it was an operating gas field." (DEIR, p. D.10-8.) But the Florin Gas Field is no longer operating, and therefore the relevant baseline is the level of health and environmental risks faced by neighboring communities today, with a non-operating gas field. It is improper to deny the current project has a disproportionate impact on

B5-244

disadvantaged communities simply because the level of environmental and health risks faced by those communities is better today than it once was. B5-244 (Cont.)

Indeed, the DEIR's analysis directly conflicts with the purpose of environmental justice standards. Environmental justice standards have been adopted to redress the fact that, historically, environmental hazards have been inequitably distributed to low-income/minority communities, such communities are disproportionately located near areas zoned for industrial use, and the ability of low-income/minority individuals to find housing free of environmental hazards or far from industrial zones has been constrained. (*See* Direct Testimony of Luke W. Cole, Ex AGENA-35 at pp. 6-7, 19-21 (hereinafter Cole Testimony).) But the DEIR perversely reasons that the Proposed Project will *not* have a disproportionate impact on the surrounding low-income/minority communities precisely *because* they have been exposed to such risks in the past and/or because they live in or near an area that is already zoned for industrial uses. That is, the DEIR suggests that environmental hazards *should* be sited where they have been historically sited. Because low-income/minority communities have historically been exposed to a disproportionate share of environmental hazards, the DEIR's reasoning would only compound the problem of environmental injustice. B5-245

2. The DEIR's conclusion that the Proposed Project will produce equity of economic benefits is unacceptably vague and unsupported.

The DEIR also asserts that the royalties offered by SNGS are sufficient to produce "equity of economic benefits" (DEIR, p. D.10-8), but this conclusion is an unacceptably vague assumption that is made without explanation or support. Although the DEIR states that SNGS has proposed to pay royalties to "each property owner living above the Florin Gas Field" (DEIR, p. D.10-2), it fails to show that the amount offered is sufficient or fair in light of the economic benefits accruing to others (including SNGS), or that it properly compensates the area residents for the increases in risk to their health and safety. The DEIR does not even indicate how the royalty is to be calculated or whether SNGS's royalty agreements will be enforceable. B5-246

The DEIR also ignores the fact that the royalty will be paid only to "property owners" (*see* Reply Testimony of David Baker, Ex. SNGS-7, Q5, p.1), and not to renters, even though rental units comprise at least 37% of housing units within the six census tracts within 0.5 of the Florin Gas Field, according to the 2000 U.S. Census (DEIR, p. D.10-2). While absentee landlords who sign leases with SNGS and collect royalties have a greater incentive to accept the risks posed by the Proposed Project, it is the uncompensated renter-residents who must bear the increased risks to their health and safety. (Cole Testimony, Ex. AGENA-35, p. 23, ¶¶ 1-2.) Further, the DEIR states that SNGS has proposed to pay a royalty only to property owners "above the Florin Gas

Field," and not to those residing the immediate vicinity and who may face equal or similar environmental and health risks. For these reasons, the DEIR lacks sufficient information to determine whether the environmental justice requirement of equity benefits will be satisfied by the Proposed Project. **B5-246 (Cont.)**

3. The Proposed Project will cause economic harm that could lead to urban decay in the residential areas surrounding the reservoir.

As discussed above, the small royalty that will be paid to a small percentage of actual residents that are put at risk as a result of the Proposed Project is not a meaningful economic benefit. However, the economic harm that will result from development of the Proposed Project is very real. The DEIR concludes that "there is not a measurable relationship between physical changes and property values." (DEIR, p. D.10-6.) This is not correct. As the Proposed Project will create a significant and unavoidable risk to health and safety of the residents in the area and add to the industrial environment in the area, residential property values in the area will be impacted by its development. It is foreseeable that further depreciation of home values would exacerbate urban decay issues. The DEIR should consider these potential physical environmental impacts of the Proposed Project. (See *Bakersfield Citizens for Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184 [holding that secondary urban decay and blight is an environmental impact].) **B5-247**

4. The DEIR's analysis also fails to account for the psychological and emotional harm caused by the both the perceived and actual environmental hazard created by the Proposed Project.

Proximity to an actual or potential environmental hazard creates a pervasive psychological and emotional burden on the impacted community. (Cole Testimony, Ex. AGENA-35, pp. 25-26.) That is, a community's perception that they will or could be harmed by an environmental hazard sited in or near their community actually harms that community. (*Id.*; *see also* Comments by Julie Sze, submitted to the CPUC, Apr. 28, 2009.) The DEIR's environmental justice analysis does not take into account such harms, which, in this case, will fall disproportionately on low-income and minority communities. Nor does it account for the fact that, in this case, the affected communities' perception of danger is not only subjectively, but also objectively, valid; as the DEIR itself acknowledges, the Proposed Project will create significant, unavoidable risks to public health and safety. (*Id.*) Because the DEIR fails to take such harms into account, its conclusion that the Proposed Project will not disproportionately degrade low-income or minority communities is unsupported and should be rejected. **B5-248**

5. The DEIR's analysis is also flawed because it does not consider the procedural requirements of environmental justice.

Environmental justice involves both avoiding disproportionate environmental degradation in low-income/minority communities, and ensuring that such communities have equal access to and opportunity to participate in environmental decisionmaking processes. The U.S. EPA defines environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws and policies, *and their meaningful involvement in the decisionmaking processes of the government*." (Memorandum from Administrator Whitman on Environmental Justice Policy, Aug. 9, 2001, *available at* http://www.epa.gov/oswer/ej/html-doc/ejmemo.htm (emphasis added); *See* Exec. Order No. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7629 (1994) (federal environmental justice strategy must ensure persons are not "excluded from participation in" decisionmaking on account of race and other factors); Memorandum from Administrator Stephen L. Johnson, Reaffirming the U.S. Environmental Protection Agency's Commitment to Environmental Justice, Nov. 4, 2005 ("Ensuring environmental justice means not only protecting human health, but also ensuring that all people are treated fairly *and are given the opportunity to participate meaningfully* in the development . . . of environmental . . . policies") (emphasis added); California Environmental Protection Agency, Intra-Agency Environmental Justice Strategy (Cal/EPA's environmental justice "vision" is to ensure "[a]ll Californians, regardless of race, age, culture, income, or geographic location, are protected from environmental and health hazards, and *afforded accessibility to and fair treatment in our decision-making processes*") (emphasis added); Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 Envir. L. Rep. 10681, 10688-10693 (discussing procedural aspect of environmental justice).) B5-249

The environmental justice standard used in the DEIR does not take into account the procedural aspect of environmental justice. The DEIR states that environmental justice concerns would be implicated if the Proposed Project either results in "disproportionate environmental degradation in low-income/minority communities" or "does not result in equity of economic benefits of the proposed project in low income/minority communities." (DEIR, p. D.10-6.) This is a solely substantive standard. While consideration of the substantive impact of a project is essential to evaluating the project in terms of environmental justice, it is equally indispensable that low-income/minority communities be assured participation in decisions that will affect the environmental and human health risks they face.

While the DEIR does address issues of public participation in Section H, the opportunities for public participation were inadequate in their own right (*see supra* B5-250

Section X), and do not take into account the special concerns that arise in low-income/minority communities. As acknowledged by the DEIR, both the "125 census blocks within 0.5 mile of the Florin Gas Field" and "the 6 census tracts within 0.5 mile of the field" are majority minority, and 22% of the residents of the 6 census tracts live below the poverty level. (DEIR, p. D.10-2.) The DEIR further acknowledges that the residential neighborhoods located above the Proposed Project's natural gas reservoir "would be considered disadvantaged according to EPA guidelines." (DEIR, p. D.10-8.) However, the DEIR does not indicate that any particular steps were taken to ensure that members from these communities had the same access to the decisionmaking and siting processes as would residents of a non-minority, higher income community.

It is widely acknowledged that communities of color and economically disadvantaged communities face special hurdles to participation in environmental decisionmaking and siting procedures. (*See*, *e.g.*, National Environmental Justice Advisory Committee, Future Mechanisms to Enhance Stakeholder Involvement and Engagement to Address Environmental Injustice 4 (2006), *available at* http://www.epa.gov/compliance/resources/publications/ej/nejac/stakeholder-involv-9-27-06.pdf ("people of color and low-income community members have not had equal voice in public policy deliberations"); Eileen Guana, *The Environmental Justice Misfit: Public Participation and the Paradigm Paradox*, 17 Stan. Envir. L.J. 3, 12 (1998) (communities of color and the poor lack "political influence, expertise and money" compared to other participants in environmental decision-making processes); Robert Bullard, *Environmental Blackmail in Minority Communities*, *in* RACE AND THE INCIDENCE OF ENVIRONMENTAL HAZARDS 85-86, 90-91 (1992) (noting that when the middle- and upper-income neighborhoods defeat proposed hazardous waste sites, the siting effort shifts toward more historically powerless neighborhoods, such as poor minority neighborhoods).) Since communities affected by the Proposed Project are disadvantaged, SNGS needs to make a greater effort at explaining the project, soliciting public comments, and adapting the project to local concerns in order to ensure such the affected, disadvantaged communities have the same access to environmental decisionmaking processes as would a non-disadvantaged community. **B5-250 (Cont.)**

The failure to consider the participatory aspect of environmental justice gives rise to several specific concerns regarding the level of community participation and involvement described in the DEIR. For instance, the DEIR states that the Notice of Preparation ("NOP") was published in the *Sacramento Bee* on November 16, 2007 and was posted on the CPUC environmental website. (DEIR, p. H-2.) The DEIR does not indicate if SNGS took any measures to distribute the NOP to members of affected communities that would compensate for lower levels of newspaper readership or access to the internet in those communities. The National Environmental Justice Advisory Council recommends that religious and spiritual communities as well as community and **B5-251**

neighborhood groups should participate in decisions affecting the environment and human health. (*See* National Environmental Justice Advisory Council, The Model Plan for Public Participation 9 (2000), *available at* www.epa.gov/compliance/resources/publications/ej/model_public_part_plan.pdf.) The DEIR fails to indicate whether SNGS sought the participation of such groups at a level at least equal to that which such groups would participate in a non-disadvantaged, non-minority community

B5-251 (Cont.)

In addition, the DEIR reflects that only one public scoping meeting was held, which only "fifteen individuals not part of the project team attended." Despite noting the low level of attendance, the DEIR does not indicate the time of day at which this meeting was held (or day of the week), nor does it explain whether any efforts were made to accommodate the non-standard working hours which are more common in low-income/disadvantaged communities than elsewhere. The procedural aspect of environmental justice requires that such steps be taken to ensure that disadvantaged communities have the same access to environmental decisionmaking processes as other communities.

B5-252

Finally, the DEIR's discussion of public participation in review of the project fails to take into account that SNGS made various misleading statements to the affected communities regarding the Proposed Project, which impaired, rather than enhanced, the participation of the impacted communities in the decision-making process. For example, in early 2008, SNGS sent a flier to community members claiming that "[r]espected Sacramento Fire and Safety Officials testified … that the project is safe." (See Exhibit 3, SNGS, (Feb. 2008) SNGS Flyer.) However, AGENA believes this was a false statement, and notes that the City of Sacramento demanded that SNGS stop distributing that statement in its flier. SNGS also misrepresented the benefit of the Proposed Project to the community by stating in a January 15, 2009 flier that the project will decrease natural gas prices (see Exhibit 4, SNGS (Jan. 2009) Letter to Community, p. 1), even though SNGS's sworn testimony on record with the CPUC is that SNGS has no idea whether its project, if approved, would impact gas prices. (Fossum testimony, TR 193, lines 1-8; Community Questionnaire Q13, Ex. G to Hoyt Reply Testimony, Ex. SNGS-31.) And, an April 2009 flier distributed by SNGS further misrepresented the economic benefit of signing a lease to homeowners—this time by saying its offer exceeded by 62% figures from the City of Sacramento's storage lease study (see Exhibit 5, SNGS (Apr. 2009) Letter to Community, p. 1), even though the City's study expressly stated that it evaluated the rental storage value of undeveloped municipal property, and that that evaluation could not be used to evaluate developed residential property. (see Exhibit 6, Inegra Realty Inc. (January 1, 2009) *Market Rent Survey Regarding Land Over the Florin Gas Field*, prepared for the City of Sacramento, p. 3 [study of 10 to 20 acre municipal-owned properties and "not intended for any other use or user"].) Because SNGS has repeatedly made misleading statements to the affected low-income/minority

B5-253

communities, it cannot be said that those communities have been treated fairly and had meaningful involvement in the decision-making process for the Proposed Project. B5-253 (Cont.)

6. The DEIR's comparison of project alternatives also fails to account for differences in environmental justice impacts.

The DEIR asserts that "[w]ith the exception of environmental justice impacts, the population and housing impacts" of each examined alternative (aside from the no project alternative) "would not be substantially different." (DEIR, p. D.10-11-13.) Although the DEIR seems to acknowledge that the environmental justice impacts would differ, it does not explain what these differences would be or account for them before ultimately concluding that each alternative "would not be substantially different from the Proposed Project." (*Ibid.*) Presumably, the environmental justice impacts of the alternatives located in less populated areas would be significantly reduced as compared to that of the Proposed Project, because the alternatives would not be sited in or near low-income/minority communities. However, the DEIR fails to account for this difference in its assessment of any of the alternatives. B5-254

7. The DEIR's conclusion that the Proposed Project would not facilitate population growth is flawed.

The DEIR states that the "Proposed Project would be supporting anticipated regional growth rather than facilitating energy development[.]" (DEIR, p. D.10-7.) The DEIR also asserts that if the Proposed Project were not developed it could "potentially affect[] population growth and housing in the Sacramento metropolitan area." (DEIR, pp. D.10-13, D.11-18.) The 2030 General Plan DEIR concludes that PG&E can supply natural gas upon buildout of the general plan without jeopardizing service commitments. (Sacramento 2030 General Plan, Draft Master Environmental Impact Report, July 2008, Ex. AGENA-4.) If buildout of the general plan is possible without the Proposed Project, and the No Project alternative could affect population growth and housing in Sacramento, then the Proposed Project must have the potential to facilitate growth beyond that considered by buildout of the general plan. Therefore, the DEIR's discussion of direct and indirect population growth is inadequate. (See CEQA Guidelines, § 15064, subd. (d); *id.* § 15126.2, subd. (d).) B5-255

XXII. The DEIR's consideration of the Proposed Project's impacts on public services and utilities is inadequate for several reasons. B5-256

The DEIR's analysis of impacts on public services and utilities is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed

approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all public services and utilities impacts associated with a proposed project. Yet the DEIR fails properly to consider and analyze public services and utilities impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, use and maintenance of the SMUD pipeline, and construction and operation of monitoring wells. Additionally, while the DEIR considers the Proposed Project's impacts on public services and utilities in light of the 1988 City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. **B5-256 (Cont.)**

The remainder of this section addresses the numerous other flaws with the DEIR's public services and utilities analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. The DEIR omits many CEQA Appendix G standards from its evaluation of public services and utilities impacts of the Proposed Project.

The DEIR states that it adopts its significance criteria for public services and utilities impacts from those established in Appendix G of the CEQA Guidelines. (DEIR, p. D.11-7.) In fact, the standards used by the DEIR do not correspond to those in Appendix G. The EIR should evaluate the potential public services and utilities impacts based on the significance criteria in Appendix G, namely:

- Does the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

- Does the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

- Does the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

- Does the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

- Does the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity

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to serve the project's projected demand in addition to the provider's existing commitments?

- Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

- Does the project comply with federal, state, and local statutes and regulations related to solid waste?

- Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

  - Fire protection?
  - Police protection?
  - Schools?
  - Parks?
  - Other public facilities?

The DEIR should therefore evaluate the Proposed Project using the full range of Appendix G standards or, alternatively, explain why such evaluation is unnecessary.

B5-257 (Cont.)

2. The DEIR improperly limits its discussion of the environmental setting in the public services and utilities impacts analysis.

The DEIR asserts that national security issues require that the DEIR omit "specific data" relating to utility systems that may serve or become customers of the Proposed Project. (DEIR, p. D.11-1.) The DEIR also argues that while "specific data would provide a better picture of the existing utilities within the project study area, in large part, this level of detail is unnecessary for the analysis needed to determine the impacts generated by the Proposed Project." (*Ibid.*)

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The DEIR asserts that one category of information that should not be disclosed is "capacity" issues. (*Ibid.*) A discussion of available capacity for utilities to serve the Proposed Project is critical to understanding the potential impacts of the Proposed Project. For instance, the DEIR cannot simply "assume[] that sufficient water service is available to provide the necessary fire flow in the event of a fire or explosion." (DEIR, p. D.11-13.) The DEIR must evaluate whether or not there is in fact sufficient capacity.

This discussion must estimate the amount of water that would be needed in the event of an accident both in terms of flow rate and quantity.

The DEIR should discuss utilities to the extent possible without implicating the purported national security concerns. The DEIR cannot omit a discussion in its entirety based on these claimed national security concerns. "[N]oncompliance with the information disclosure provisions" of CEQA may be prejudicial "regardless of whether a different outcome would have resulted if the public agency had complied with those provisions." (Pub. Resources Code, § 21055.) Therefore, the DEIR must be revised to include an adequate discussion of the baseline conditions of utilities and services that would be utilized by the Proposed Project. To the extent that the CPUC finds it necessary to withhold specific information about utilities, the DEIR should explain the type of information withheld and the basis for its withholding. **B5-258 (Cont.)**

3. The DEIR fails adequately to discuss solid waste impacts associated with the Proposed Project.

Solid waste produced by the Proposed Project will include undisclosed quantities of hazardous waste. The DEIR discusses this waste, but fails to consider the quantities that will be produced from construction, operation, and abandonment of the Proposed Project. The DEIR must discuss where the waste will be disposed and whether capacity exists to serve the Proposed Project's foreseeable need for hazardous waste disposal. This information is also necessary to provide a full discussion of potential impacts associated with shipment of hazardous waste using the local and state road and highway networks. **B5-259**

4. The Mitigation Measure included in the DEIR to protect against pipeline corrosion is inadequate.

The DEIR provides that "SNGS, LLC shall evaluate the potential for the underground pipelines to increase corrosion on existing pipelines." (DEIR, p. D.11-10.) The DEIR provides no performance standards or explanation for how SNGS will conduct such an evaluation. (See *Defend the Bay*, *supra*, 119 Cal.App.4th at p. 1275.) The DEIR should include this additional information, including information regarding the qualifications of the persons charged with making such an evaluation. Without this additional information, it is not possible for the public, reviewing agencies, or the Commission to evaluate the adequacy of this measure. **B5-260**

5. The Impact Discussion and Mitigation Measure included in the DEIR to protect against public service system disruptions are inadequate. **B5-261**

The DEIR provides that SNGS will be required to "reimburse the city for their fair share of additional equipment and personnel as determined by the city's needs study." (DEIR, p. D.11-12.) The DEIR must include the needs study and summarize its conclusions. If approved, the Proposed Project would be the only natural gas storage facility in the City of Sacramento. It is, therefore, unclear how a "fair share" calculation will be determined. SNGS should provide the full cost of all additional equipment, personnel, and training required to ensure that the City is equipped to handle any accidents caused by construction and operation of the Proposed Project. If the city's needs study is not yet available, the DEIR must at least develop performance standards for determining how fees that must be paid by SNGS for 1) equipment, 2) personnel, 3) training, and 4) emergency response. (*Sacramento Old City Assn. v. City Council of Sacramento* (1991) 229 Cal.App.3d 1011, 1028-1029.) The feasibility of this mitigation measure is dependent on this information. Therefore, the measure is currently inadequate.

The analysis of disruption should not only include potential disruption of public service systems, but must also consider potential disruption of utilities associated with the Proposed Project. The DEIR concludes that development of the Proposed Project would have a significant and unavoidable impact on groundwater contamination of a municipal aquifer: "This contamination could be substantial requiring a prolonged period of remediation and impacting the water quality of a major potable aquifer." (DEIR, p. D.7-23.) The DEIR must consider the potential impacts of this disruption on local water utilities that utilize the municipal aquifer. The discussion should, at a minimum, include an explanation of how many people may be impacted and how long the impact may last, as should establish mitigation measures for reducing impacts to affected water utilities and their customers.

B5-261 (Cont.)

XXIII. The DEIR's consideration of the Proposed Project's impacts on transportation and traffic is inadequate for several reasons.

The DEIR's analysis of impacts on traffic impacts is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all traffic impacts impacts associated with a proposed project. Yet the DEIR fails properly to consider and analyze traffic impacts impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, use and maintenance of the SMUD pipeline, and construction and operation of monitoring wells. Additionally, while the DEIR considers the Proposed Project's impacts on traffic impacts in light of the 1988

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City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. B5-262 (Cont.)

The remainder of this section addresses the numerous other flaws with the DEIR's traffic analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. The DEIR fails to consider all the policies regulating or planning for traffic level of service in the vicinity of the project area.

The DEIR fails to consider the Proposed Project's effects on traffic level of service (LOS) in light of the relevant government plans and policies. The DEIR considers only the level of service goals in the 1993 County of Sacramento General Plan and the 1988 City of Sacramento General Plan. (DEIR, p. D.12-5.) The DEIR should have considered the 2030 City General Plan, and the 2030 County General Plan. The DEIR is inadequate without a discussion and evaluation of the Proposed Project based on the LOS included in these plans. B5-263

The City of Sacramento 2030 General Plan, which is the governing general plan, sets level of service goals for neighborhoods throughout the city for different times of day. (2030 General Plan at 162-165, *available at* http://www.sacgp.org/.) This LOS goal should have been considered and evaluated in the DEIR.

As supported by the 2030 General Plan EIR, the DEIR should also consider the Proposed Project's effects on level of service goals established by the 2010 Sacramento City/County Bikeway Master Plan and the Sacramento Area Council of Governments' Regional Bicycle, Pedestrian and Trails Master Plan. (2030 General Plan EIR, pp. 6.12-18 to 6.12-21, 6.12-34; *see* Sacramento City/County Bikeway Master Plan, April 11, 1995, *available at* http://www.cityofsacramento.org/transportation/dot_media/engineer_media/pdf/bmp_final.pdf (the "City/County" Plan); Sacramento Area Council of Governments, Amended Regional Bicycle, Pedestrian, and Trails Master Plan, July 19, 2007, *available at* < http://www.sacog.org/bikeinfo/download_bike_ped_trails_mp.cfm > (the "SACOG Plan"); .) While neither the City/County Plan, nor the SACOG Plan use the Transportation Research Board's formal level of service rating system, their central goal is to improve bicycle and/or pedestrian levels of service in areas including that surrounding the Proposed Project. The SACOG Plan sets goals for pedestrian and B5-264

bicycle level of service throughout the multi-county Sacramento region,[14] while the City/County Plan is focused on the City and County of Sacramento.[15] The DEIR should have evaluated the Proposed Project's consistency with the SACOG Plan's and the City/County Plan's goals and objectives for pedestrian and bicycle access. B5-264 (Cont.)

2. The DEIR fails to adequately describe the transportation and traffic impacts associated with the Proposed Project.

The DEIR does not include the information necessary to assess the Proposed Project's actual traffic impacts. Although Appendix A provides a model of emissions resulting from vehicle traffic resulting from the project, the discussion of the transportation and traffic impacts provides no clear description of the actual number and types of trips that will be required for various activities related to construction or operation of the Proposed Project. The DEIR should include a list of all anticipated activities requiring vehicle trips. For example, the DEIR's discussion of traffic impacts should describe the construction fleet, and the number of vehicles anticipated, the time of day of anticipated trips, and the average distance of the trips. The same information should be provided for traffic associated with operation of the Proposed Project, and for any traffic associated with abandonment of the Proposed Project. In revising the traffic impact discussion, the DEIR should include a detailed discussion of the assumptions behind the URBEMIS2007 air quality analysis for each phases of the Proposed Project. B5-265

3. The DEIR misstates the number of airports in the vicinity of the Proposed Project.

The DEIR states that only "one airport is located in the vicinity of the Proposed Project: The Sacramento International Airport." (DEIR, p. D.12-3.) The Sacramento International Airport is approximately twenty miles from the Proposed Project site, while B5-266

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[14] Among the objectives of the SACOG Plan are to:

> 5. Improve the time convenience of walking and bicycling, for example with shortcuts or special facilities such as bike/pedestrian boulevards.
> 6. Improve the safety and security of walking and bicycling where needed for utilitarian purposes.
> 7. Provide an aesthetic, pleasant, or more comfortable biking or walking experience.

(SACOG Plan, p. 3.) These and other objectives fundamentally touch on transportation level of service. B5-267

[15] The City/County Plan establishes as it goals the establishment of convenient, safe, and pleasant bicycle transportation throughout the City and County of Sacramento. (City/County Plan, p. Chapter 3.) These objectives touch on transportation level of service. B5-268

two other airports are located less than ten miles from the Proposed Project site: Sacramento Mather Airport and Sacramento Executive Airport. The EIR should correct this oversight and re-evaluate any assessments in the DEIR that flowed from this assertion.

B5-266 (Cont.)

4. The DEIR omits many CEQA Appendix G standards from its evaluation of the Proposed Project's transportation and traffic impacts.

The DEIR states that it adopts its significance criteria for transportation and traffic impacts from those established in Appendix G of the CEQA Guidelines. (DEIR, p. D.12-6.) In fact, several significance criteria in Appendix G are missing from the DEIR. The DEIR should be revised to include an evaluation of the potential traffic impacts in accordance with the significance criteria in Appendix G, namely:

- Will the project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?
- Will the project cause traffic that will exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?
- Will the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?
- Will the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- Will the project result in inadequate emergency access?
- Will the project result in inadequate parking capacity?
- Will the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

The DEIR should evaluate the project in terms of the above Appendix G criteria or, alternatively, explain why such evaluation is unnecessary.

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5. The DEIR's discussion of construction generated traffic impact is inadequate.

The DEIR concludes without detailed analysis that the traffic impacts from construction can be reduced to a less than significant level though mitigation. (DEIR, p. D.12-11.) The DEIR admits that construction traffic could "affect the LOS or volume-to-capacity ratio on the study area roadways." (*Ibid.*) However, the DEIR fails to explain whether this effect would result in a failure to meet any LOS or volume-to-capacity standards. Mitigation Measure T-2 merely provides that it will attempt to "minimize[] [impacts] by incorporating features[.]" (*Ibid.*) The DEIR does not explain whether such minimization efforts could actually avoid the potential failure to meet any LOS or volume-to-capacity standards resulting from construction of the Proposed Project. Without more meaningful discussion of the traffic data, it is impossible for the public, reviewing agencies, or the Commission to determine the adequacy of the mitigation measures. (See DEIR, Appendix A-5 [GHG analysis providing construction GHG emissions, but fails to disclose assumptions regarding types of trips, frequency, etc.].) Therefore, the DEIR does not support the conclusion that construction traffic impacts will be less than significant after mitigation.

In reaching the conclusion that construction related traffic impacts will be less than significant, the DEIR provides a cursory discussion of construction workforce traffic. The DEIR provides that 105 to 140 of the 150 to 200 construction employees are expected to be local. (DEIR, p. D.12-11.) The DEIR, thus, concludes that there will be greater "opportunit[ies] for carpooling." (*Ibid.*) Although the DEIR does not define "local," as discussed above, the Population and Housing analysis suggests that 'local" means people living within a one- to two- hour commute of the project. (DEIR, p. D.10-7.) In light of the possibility that workers will be traveling from significant distances, the DEIR should discuss the likelihood that such distant commuters will actually carpool. Additionally, the DEIR must provide more details on the workforce and its associated traffic impacts. This discussion should include an estimate of the average commuter trip for the entire 150 to 200 employees, likely routes that will be used by these workers, and the likely overlap between these commuter trips. B5-270

The DEIR also states without support that the 200 worker trips plus 20 truck trips per day "would not add substantially to congestion on local roads." (DEIR, p. D.2-25.) The DEIR cannot simply make this conclusion without evidence or analysis. Given the lengthy construction period, the traffic analysis must demonstrate this to be the case. Conclusions without supporting data are insufficient to determine that an impact is less than significant. The DEIR must be revised to include supporting evidence.

XXIV. The DEIR's consideration of the Proposed Project's impacts on visual resources is inadequate for several reasons. B5-271

The DEIR's analysis of impacts on visual resources is inadequate for numerous reasons. As a general matter, the analysis is flawed because it relies on a project description that is unduly limited and represents an improperly piecemealed approach. (See, *supra*, Section II.) CEQA requires an EIR to consider all visual resources impacts associated with a proposed project. Yet the DEIR fails properly to consider and analyze visual resources impacts associated with the SNGS project including, but not limited to, impacts associated with activities required at the end of the Proposed Project life, construction of additional undisclosed pipelines, use and maintenance of the SMUD pipeline, and construction and operation of monitoring wells. Additionally, while the DEIR considers the Proposed Project's impacts on visual resources in light of the 1988 City of Sacramento General Plan, it omits discussion of the adopted City of Sacramento 2030 General Plan. **B5-271 (Cont.)**

The remainder of this section addresses the numerous other flaws with the DEIR's visual resources analysis. The DEIR must be substantially revised to address each of the issues discussed below.

1. The EIR should evaluate the Proposed Project in light of the City of Sacramento 2030 General Plan.

While the DEIR considers the Proposed Project's impacts on visual resources in light of the 1988 City of Sacramento General Plan, it omits discussion of the City of Sacramento 2030 General Plan. The 2030 General Plan identifies six distinct "aesthetic resources" goals. (2030 General Plan, p. 325-327, *available at* http://www.sacgp.org/.) The 2030 General Plan was approved on March 3, 2009, and is the governing planning document for the City of Sacramento. The EIR should evaluate the Proposed Project in light of the 2030 General Plan and each of the plan's six distinct aesthetic resources goals. The DEIR should also compare the Proposed Project's consistency with the goals and aesthetic plan for Employment Center (Low Rise), the land use designation applicable to the compressor station and wellhead sites. (See 2030 General Plan, pp. 2-100 to 2-101.) **B5-272**

2. The DEIR must consider the visual impacts associated with construction and operation of the undisclosed number of required monitoring wells.

The Gas Detection Plan requires the development of an undisclosed number of monitoring wells at an undisclosed number of "key points" in the project area. (DEIR, p. D.6-33 (Mitigation Measure HAZ-2aii).) The DEIR fails to consider any potential impacts associated with the development of these monitoring wells. Construction and **B5-273**

operation of these wells may result in significant visual impacts. Without further discussion of these potential impacts, the DEIR is deficient. B5-273 (Cont.)

3. The DEIR fails to consider the significant visual impact created by development of the walls and fences associated with the Proposed Project.

The DEIR requires the construction of a "10-foot-high masonry wall[.]" (DEIR, p. D.13-17; see also DEIR, p. D.9-11 [concluding that noise impacts would be less than significant at the wellhead site, in part, because the noise sources would be "behind block walls"].) Due to potential aesthetic impacts of walls, the City of Sacramento has enacted an ordinance declaring "walls shall be required only as a last design option" along major public streets. (City Code, § 17.76.080.) The City Code also requires that a wall along a major public street is a "maximum height of eight feet above the adjacent finished grade along major streets." (City Code, § 17.76.100(C).) The DEIR fails to consider these City standards. As the wall is not consistent with the City Code, it is a significant visual impact. B5-274

It should also be noted that the visual resources analysis concludes that "[m]ost construction activities would be screened *once* the 10-foot-high masonry wall is constructed[.]" (DEIR, p. D.13-17.) This raises the question, when will the wall be constructed? The DEIR should include a mitigation measure requiring that the wall be constructed before any construction activities may commence at the wellhead site. If the DEIR does not include such a mitigation measure, the DEIR should explain which construction activities will commence prior to the construction of the wall, and how many total days of construction could occur prior to completion of the wall. B5-275

The Redevelopment Plan for the Sacramento Army Depot Project includes a goal to "[e]liminate the ugliness" within the Army Depot. (DEIR, p. D.13-13.) However, the Proposed Project includes the development of a "6-foot-high chain-link security fence surround[ing] the compressor station." (DEIR, p. D.11-11.) The DEIR fails to consider whether the installation of such a chain link fence around the compressor station is consistent with the redevelopment plan and its goal of eliminating "ugliness." Moreover, the DEIR fails to consider that the compressor station and the associated chain link fence would be located less than a quarter mile from an area designated for park uses, and thus are likely to have visual impacts on that area. To reduce visual impacts associated with the compressor station, a masonry wall including landscaping and required setbacks, consistent with the City Code standards, should be constructed in place of the chain link. B5-276

4. The DEIR fails to discuss nighttime lighting impacts in sufficient detail. B5-277

The DEIR states that "[n]ighttime lighting would occur on a daily basis during wellhead drilling." (DEIR, p. D.13-17.) The DEIR fails to explain how tall these lights will be or how much light spillage will result. The DEIR also fails to consider if the nighttime light will impact the neighboring residential uses. If the nighttime light will impact the neighboring residential uses, the effect of that lighting would remain significant even with implementation of the mitigation measure requiring that the lights be "hooded and directed." (DEIR, p. D.13-17.) Therefore, the DEIR includes inadequate detail for the public, reviewing agencies, or the Commission to determine whether the mitigation measure is sufficient to reduce the impact to a less than significant level. **B5-277 (Cont.)**

5. The DEIR fails to discuss visual impacts from pipeline construction in a sufficient level of detail.

The pipelines will be developed in areas visible to the "Glen Elder residential neighborhood, Danny Nunn park users, and travelers along Power Inn Road." (DEIR, p. D.13-17.) The DEIR concludes that, "[w]hile construction activities would be visible, they are not expected to significantly diminish the visual resources in the project area[.]" (DEIR, p. D.13-17.) The DEIR fails to include any justification or explanation for this conclusion. A more detailed discussion and analysis is necessary before this conclusion can be considered correct. Additionally, to the extent pipeline construction will occur at the same time as other construction and operational activities, these impacts must not be considered in isolation, but rather must be considered as part of the whole project's visual impacts on the community. **B5-278**

6. A Mitigation Measure should be adopted to reduce visual impacts associated with construction equipment operation and storage.

The DEIR provides no mitigation measures to reduce the visual impacts from construction related to any component of the Proposed Project other than the wellhead site. The DEIR should include a mitigation measure to visually shield all construction activities, construction equipment, and temporary construction related storage areas. Without such shielding, visual impacts associated with construction will be significant. **B5-279**

XXV. The DEIR's consideration of the Proposed Project's growth inducing impacts is inadequate for several reasons.

The DEIR's discussion of potential growth inducement is inadequate. The DEIR states that the Proposed Project will have a growth inducing impact if it "stimulates population growth." (DEIR, p. F-1.) Assuming that all assertions made in the DEIR are correct, the DEIR demonstrates that the Proposed Project will stimulate growth. This point is illustrated by the DEIR's discussion of the No Project alternative. The DEIR **B5-280**

asserts that if "No Project" alternative were chosen, it could potentially reduce the "ability to meet the demand for natural-gas-generated electricity in the Sacramento area." (DEIR, p. D.12-23.) The 2030 General Plan DEIR for the City of Sacramento concludes that PG&E can supply natural gas upon buildout of the general plan without jeopardizing service commitments. (Sacramento 2030 General Plan, Draft Master Environmental Impact Report, July 2008, Ex. AGENA-4.) Therefore, the demand that purportedly would not be met under the "No Project" alternative must be presumed to be demand beyond that which is anticipated by buildout of the General Plan. The DEIR must explain why this is not a growth inducing impact. **B5-280 (Cont.)**

The discussion of growth inducement also asserts that the Proposed Project will not create a "new natural gas supply[.]" (DEIR, p. F-1.) Although it is correct that the Proposed Project does not create gas, it is incorrect to state that the Proposed Project does not create a new natural gas supply. The Project Objectives explicitly identify the goal of the project as "[p]rovid[ing] a secure and reliable gas supply for the Sacramento metropolitan[.]" (DEIR, p. ES-1.) As discussed *supra* Section III, AGENA questions the need for this supply. Nevertheless, if the Proposed Project were approved and constructed, it would create a new gas supply. This additional gas supply could incentivize the expansion or relocation in the project area of industrial businesses that rely heavily on natural gas and might reap financial benefits from direct connection to a natural gas supply. (See Reply Testimony of Jim Fossum, p. 5 [acknowledging that other potential customers may "want a direct connect[ion] . . . to the compressor station"].) This would be a growth inducing effect. The DEIR must consider these issues. (*City of Antioch v. City Council of the City of Pittsburg* (1986) 187 Cal.App.3d 1325, 1335 ["[c]onstruction of the road way and utilities cannot be considered in isolation from the development it presages"].) **B5-281**

XXVI. The DEIR's consideration of the Proposed Project's cumulative impacts is inadequate for several reasons.

The DEIR's cumulative impacts analysis is severely deficient. The analysis merely parrots the discussion of the Proposed Project's impacts as discussed in the descriptions of each impact category.

There are several well established steps that should be followed in conducting an adequate cumulative impact analysis. First, the lead agency must determine the appropriate environmental baseline. (CEQA Guidelines, § 15125.) This baseline should be discussed within the cumulative impact analysis. Second, the lead agency must consider the effects of various past, present, and probable future projects proposed for an area or with similar impacts. (CEQA Guidelines, § 15355, subd. (b); *Los Angeles Unified School Dist. v. City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1024-1025.) An EIR **B5-282**

may either: (1) provide a list of past, present, and probable future projects producing related or cumulative impacts, or (2) provide a summary of projections contained in the general plan, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. (CEQA Guidelines, § 15130, subd. (b)(1).) For whichever method is used, the EIR should "define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used." (*Id.* at subd. (b)(5).) Therefore, different impact categories might implicate different (larger or smaller) geographic areas. This information must in turn be used to ask whether the combined impacts of all of those projects, taken together with the impacts of the proposed project, will constitute a significant cumulative impact.

If the cumulative impact will be significant, the lead agency must next consider whether a particular project's "incremental" contribution to that significant cumulative impact is "cumulatively considerable" (and thus significant in and of itself). In other words, is this project's contribution to the combined impact cumulatively considerable? (See CEQA Guidelines, §§ 15064, subd. (i)(1) ("the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable"); 15130, subd. (a)(2) ("When the combined cumulative impacts associated with the project's incremental effect is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR"); 15065, subd. (c) (mandatory finding for "cumulatively considerable" incremental effect); *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 120 ("the lead agency shall consider whether the cumulative impact is significant and whether the proposed project's incremental effects are cumulatively considerable").)

Further, if the project's contribution is found to be cumulatively considerable, the project's incremental contribution can be rendered less than cumulatively considerable through the adoption of mitigation measures. (CEQA Guidelines, § 15064, subd. (i)(2).) Sometimes mitigation for cumulative impacts is outlined in applicable general plan EIRs or other planning level EIRs. (See CEQA Guidelines, §§ 15130, subds. (d), (e).) It is not necessarily true that mitigation sufficient to render a project-specific effect less than significant is sufficient to render a "cumulatively considerable" incremental impact "less than cumulatively considerable." And, it cannot be assumed that, because the project would have no direct impacts in a specific area, it would have no cumulative impacts in that area. Even if the project itself will not cause a potentially significant impact, the EIR must still analyze whether the project, taken together with other past, present, and reasonably foreseeable future projects, will create a significant cumulative impact and whether the project's incremental contribution to the potentially significant impact is cumulatively considerable.

B5-282 (Cont.)

The DEIR's cumulative impact analysis does not comply with these requirements and is woefully inadequate. First, the section includes Table F-1, which is purported to represent the "Cumulative Scenario" (DEIR, pp. F-5 to F-6), which is described as the basis for the DEIR's analysis of cumulative impacts within each category of impacts. This method is substantially flawed. The DEIR must "define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used." (CEQA Guidelines, § 15130, subd. (b)(3).) The DEIR fails to acknowledge that the geographic scope of each cumulative effect may and should vary depending on the types of effects considered. (*Ibid.*)

For example, 1) for localized air quality impacts, the geographic scope of the cumulative impact analysis should consider past, present, and probable future projects in the air quality basin; 2) for biological resources, the geographic scope of the cumulative impact analysis should include, but not be limited to, all past, present, and probable future projects in the same watershed, which in this instance would require consideration of cumulative impacts to Morrison Creek; 3) for land use, recreational resources, and population and housing impacts, the geographic scope of the cumulative impact analysis should include all past, present, and probable future projects within the County and City; 4) for public services and utilities impacts, the geographic scope of the cumulative impact analysis should include all past, present, and probable future projects within the relevant public service and utility districts; and 5) for hazardous materials, public health and safety impacts, the geographic scope of the cumulative impact analysis should include all past, present, and probable future projects that may require transport hazardous substances on the same traffic routes or that may rely on the same hazardous waste disposal site(s). Instead, the DEIR merely lists fifteen pending projects in the immediate area and claims to consider the impacts from these projects in the cumulative impact analysis of all the project's impacts. Not only is this method flawed, but even if these projects actually were the relevant projects to be considered, and represented an adequate geographic scope, the DEIR fails entirely to provide sufficient information about these projects and their environmental impacts to permit an adequate cumulative impact analysis. **B5-283**

With respect to cumulative air quality impacts, the DEIR must explain why the Proposed Project will not represent a cumulatively considerable incremental increase in air quality impacts. The 2030 General Plan EIR concludes that development within the City of Sacramento will result in significant and unavoidable air quality impacts as a result of emissions of PM10, NOx, ROG, and ozone precursors. Once the Air Quality analysis is amended to address the flaws discussed in this DEIR, the CPUC must analytically consider whether the Proposed Project's impacts will be a cumulatively considerable incremental increase. In light of the analysis of these impacts included in **B5-284**

the 2030 General Plan EIR, AGENA asserts that the Proposed Project will have cumulatively considerable incremental impacts on NOx, ROG, ozone precursors, and GHG emissions. B5-284 (Cont.)

The analysis of cumulative GHG emissions is also flawed because it improperly relies on a comparison of the Proposed Project's emissions to statewide emissions. While GHG is a global issue, comparing the Proposed Project to statewide emissions is inappropriate because it causes the Proposed Project's incremental impacts to be perceived as less significant. This drop-in-the-bucket approach to cumulative impacts analysis has been roundly criticized in the courts. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 718 (*Kings County*).) In that case, the City had dismissed certain impacts because they appeared minimal in the context of the overall problem. The Court condemned this approach: "Under … [this] 'ratio' theory, the greater the over-all problem, the less significance a project has in a cumulative impacts analysis." (*Ibid.*; see also *Los Angeles Unified School District v. City of Los Angeles* (1997) 58 Cal.App.4th 1019, 1025 ["One of the most important environmental lessons evident from past experience is that environmental damage often occurs incrementally from a variety of small sources. These sources appear insignificant, assuming threatening dimensions only when considered in light of the other sources with which they interact."].) Given the serious global nature of the problem, the DEIR must grapple with the level of emissions that will be directly generated by the project as well as the emissions that will be facilitated by the project in determining whether the project's contribution to this obvious and very serious cumulative impact is cumulatively considerable. B5-285

Even after the mitigation measures are implemented, the Proposed Project will result in substantial direct and indirect GHG emissions. (See, e.g., DEIR, p. F-10.) Yet the DEIR concludes, without any analytical discussion of the actual reduction that will be achieved by the proposed mitigation measures, that the residual impact will be less than significant. The DEIR must provide evidence to support this conclusion. The conclusion appears even more questionable considering all the flaws in the air quality analysis contained in the DEIR. (See, *supra*, Section XIII.)

XXVII. Confidential documents reviewed by AGENA and its experts demonstrate that the analysis included in the DEIR is flawed.

Documents obtained through discovery as part of the CPCN proceeding have been labeled as confidential by SNGS. Many of these documents represent the underlying analysis upon which conclusions in the DEIR were based. Others represent documents that SNGS withheld because the conclusions contained therein hurt their position that the Proposed Project is in fact safe. As these documents are the basis of conclusions reached B5-286

in the DIER or the PEA, upon which the DEIR relies heavily, and/or relate to the accuracy of impact conclusions made in the DEIR, the vast majority, if not all, of these documents are not appropriately withheld as confidential for the purposes of CEQA.

Furthermore, various comments rely upon documents designated SNGS 2118-2131, AFJ 9637, AFJ 9641-9645, AFJ9572 and AFJ9628. These documents are designated confidential despite that fact that they were provided to the CPUC as part of SNGS's PEA. By providing these documents to the CPUC, SNGS waived any claim of confidentiality or other privilege. In accordance with ALJ Smith's order, the CPUC must deem these documents not to be privileged or confidential and to allow AGENA to submit its comments, and the comments of its experts, with the sections that include discussion of these documents unredacted. **B5-286 (Cont.)**

AGENA and its experts have drafted extensive comments on these documents to demonstrate why conclusions contained in the DEIR are flawed. ALJ Smith's June 17, 2009, Ruling denying the AGENA's motion for an order permitting submission of confidential information with public comments on the Draft Environmental Impact Report prohibits AGENA from submitting comments that address the substantive claims included in SNGS's confidential documents because it did not provide AGENA with a way to submit any of its comments confidentially. (See ruling; personal communication with ALJ Smith to verify procedure.) In accordance with ALJ Smith's order, AGENA has redacted expert comments to remove any information that identifies the contents of any documents designated confidential. This section complies with ALJ Smith's Ruling by listing those documents currently designated as confidential pursuant to a Confidentiality Agreement between AGENA and SNGS, either are relied on as the basis for conclusions in the DEIR or are both relevant to the evaluation of the Proposed Project's environmental impacts and that bolster those sections of the DEIR that found significant, unavoidable impacts and demonstrate that other analyses that resulted in preliminary conclusions of less than impacts contained in the DEIR are flawed, incomplete, or, otherwise, inadequate. **B5-287**

Document List:

1. Terracon. 2008. Geotechnical Engineering Report, Sacramento Natural Gas Compressor Facility and Wellhead Site. Sacramento, California: Terracon. March 26, 2008. The entire report at SNGS 1746-1842 is marked confidential as produced to AGENA, discussed in Williams comments.
2. SNGS 1100, discussed in Clark comments.
3. SNGS 1156, discussed in Robertson comments.
4. SNGS 1159, discussed in Robertson comments.
5. SNGS 1171, discussed in Robertson comments.

6. SNGS 1173, discussed in Clark comments.
7. SNGS 1191-1193, discussed in Robertson comments.
8. SNGS 1424, discussed in Robertson comments.
9. SNGS 2101-2102, discussed in Robertson and Clark comments.
10. SNGS 2115-2116, discussed in Robertson, Williams and Clark comments.
11. SNGS 2118-2131, discussed in Williams comments.
12. AGENA expert Dr. John Roberton believes that confidential documents SNGS numbers 1100, 1136, 1166, 1167, 1173, 1191, 1193, 1199, 1203, 1204, 1221, 1230 and 1243 are important to analysis of the project and should be obtained by the PUC from SNGS.
13. SNGS documents bates numbers 1099-2102 were designated confidential when produced. AGENA believes these documents are also highly relevant to the EIR analysis and should be obtained from SNGS by the PUC.

B5-287 (Cont.)

As AGENA cannot submit its full comments related to these documents, AGENA either requests 1) the right to submit its additional comments once the confidentiality issues has been resolved to be responded to by the CPUC as part of the FEIR; or 2) that the CPUC review each document in its entirety and, for every document that is determined not to be confidential, to provide a discussion of the non-confidential document within the Final EIR. This discussion should explain whether each document is consistent with the conclusions reached in the DEIR. If the CPUC finds that any of the documents provides evidence that contradicts the information in the DEIR, AGENA requests that the Final EIR discusses the inconsistency in detail and reach a determination as to why the inconsistency does or does not impact the analyses and conclusions contained in the DEIR.

XXVIII. Conclusion

B5-288

Thank you for the opportunity to comment on the DEIR for the Sacramento Natural Gas Storage Project, CPCN Application No. A.07-04-013 / SCH No. 2007112089. Please let us know if you have questions or if we can assist further by providing additional information to the CPUC as it undertakes the process of revising the DEIR. We look forward to the opportunity to review the responses to our comments.

Sincerely,

/s/

Tina A. Thomas

EXHIBIT 1

B5-289

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December 17, 2007

VIA FACSIMILE [800-371-8797]
Original to Follow by Mail

California Public Utilities Commission
c/o Dudek
Attn: Michael Rosauer
605 Third Street
Encinitas, California 92024

Re: Comments regarding Notice of Preparation of a Draft Environmental Impact Report for the Sacramento Natural Gas Storage Project

Dear Mr. Rosauer:

On behalf of the Avondale Glen-Elder Neighborhood ("AGENA"), we have reviewed the Notice of Preparation ("NOP") of a Draft Environmental Impact Report ("DEIR") for the Sacramento Natural Gas Storage Project ("Project") circulated by the California Public Utilities Commission ("CPUC") for the Project pursuant to the California Environmental Quality Act, Public Resources Code §§ 21000 et seq. ("CEQA"), and the CEQA Guidelines, California Code of Regulations, title 14, §§ 15000 et seq. ("CEQA Guidelines"). The Project consists of the construction and operation of a natural gas storage facility and related infrastructure located within the City of Sacramento, County of Sacramento, and Yolo County. The underground storage facility is located beneath approximately 700 residential, and 40 commercial and industrial, properties.

In AGENA's view, the Project cannot be made safe and will have potentially significant unavoidable impacts at the currently proposed underground storage facility site location. The Project is located in the middle of an urban area directly below approximately 700 residences. There is no question that the location of this Project exacerbates the risk and severity of any

B5-289
(Cont.)

potential accidents. Despite this serious concern, the NOP fails to recognize that potential accidents associated with the Project will cause significant environmental impacts. AGENA appreciates your consideration of the following comments concerning the NOP and scope of the DEIR for this Project.

I. An Alternative Non-Urban Underground Natural Gas Storage Facility Site Location Should be Chosen

A report submitted to the CPUC by the Sacramento Natural Gas Storage, LLC ("Project Proponent") acknowledges that several accidents have occurred at natural gas storage facilities including at least two failures causing surface explosions and fire. (International Gas Consulting, Safety Record Study of Underground Gas Storage in Depleted Gas Reservoirs (May 4, 2007), pp. 2-4.) An explosion in San Joaquin County in 1993, for example, caused "approximately $2 million of damage." In addition, the report acknowledges that "there have been occasional problems with storage gas migrating beyond [an] intended reservoir." (*Id.*, at p. 4.) Further, "[s]ince 1990, there have been nearly 2,300 major natural gas pipeline accidents resulting in over 200 deaths." (Clarke et al., The Forgotten Homeland: A Century Foundation Task Force Report (2006), p. 106.) The loss of a single life is clearly a significant environmental impact. Thus, "irreversible damage can result from environmental accidents associated with the [P]roject." (CEQA Guidelines, § 15126.2, subd. (c).)

For these reasons, it is clear that mitigation measures will not be able to reduce potentially significant impacts of the Project to a less-than-significant level if the Project goes forward at the currently proposed urban location. The PUC should not approve the Project at the current proposed urban site. An alternative non-urban location should be chosen for the underground storage facility due in part to the unavoidable safety concerns associated with operating an underground natural gas storage facility in an urban setting. Therefore, in AGENA's view, the analysis of alternative underground storage facility locations will be one of the most important sections of the DEIR.

The NOP does not include any alternative non-urban locations for the underground storage facility. Non-urban underground storage facility alternatives must be included in the DEIR. Further, the DEIR must provide an equal level of analysis for alternative non-urban underground storage locations. This analysis must include quantitative and comparative data between the currently proposed urban location and the proposed alternative non-urban locations to allow for meaningful consideration and comparison of the alternatives. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal. App. 3d 692.) Without this level of detail, the DEIR will fail to comply with CEQA.

II. Specific Comments on the NOP

A. Project Description

B5-289 (Cont.)

The Project description must include a detailed map with the precise location and boundaries of the proposed Project, as well as a regional map showing the location of the Project. (CEQA Guidelines, § 15124, subd. (a).) The required maps should outline the full area covered by the underground storage facility, and illustrate the location of the underground storage facility in relationship to residential properties and any nearby schools. Further, it would be helpful if the properties included in the Project area were keyed to an appendix that listed the property owner names and addresses. The Project description must also include, "[a] list of permits and other approvals required to implement the Project." (Pub. Res. Code, § 15124, subd. (c).) And, the Project description should describe all infrastructure requirements. (*San Joaquin Raptor Wildlife Rescue Ctr. v. County of Stanislaus* (1996) 42 Cal. App. 4th 608.)

B. Environmental Baseline

According to CEQA Guidelines section 15125, subdivision (a), issuance of the NOP for the Project generally defines the date for the "environmental baseline." The DEIR's analysis of all potential environmental impacts, therefore, must begin with an accurate description of existing conditions current as of November 14, 2007, the date the NOP was issued. The CPUC must conduct comprehensive air quality, geology and soil, hydrology and water quality, and transportation studies, so that the current baseline for analyzing the impacts of the Project is based upon real data and not outdated conjecture.

B5-289 (Cont.)

C. Areas of Controversy

The executive summary for the DEIR must identify AGENA's concerns regarding hazardous materials, water quality, geology and soil, health and safety, land use and planning, and non-urban alternative Project locations as "areas of controversy," as required by CEQA Guidelines section 15123, subdivision (b)(2).

D. Mandatory Findings of Significance

Potentially significant cumulative impacts will be caused by the Project, which require a "mandatory finding of significance." (CEQA Guidelines, § 15065.) Both individually significant and cumulative impacts are certain to occur since the Project contemplates injecting large quantities of natural gas, a hazardous material, into an underground storage reservoir in an urban area below 700 residences. Further, "(t)he environmental effects of [the] [P]roject will cause substantial adverse effects on human beings… directly or indirectly" due the health and safety concerns caused by the proposed site location. (CEQA Guidelines, § 15065, subd. (a)(3)-(4).) As the Project triggers the requirement to make "mandatory findings of significance," the CPUC must make the necessary CEQA findings and modify the Project where feasible to lessen or avoid significant impacts. (*Los Angeles Unified School District v. City of Los Angeles* (1997) 58 Cal. App. 4th 1019, 1024, fn. 6.)

E. Mitigation

As described in Part I, *supra*, we believe mitigation measures will not reduce the potentially significant environmental impacts at the current urban site location to a less than significant level. Off-site underground storage alternatives must be considered in the DEIR. (*San Joaquin Raptor/Wildlife Rescue Ctr. v. County of Stanislaus* (1996) 42 Cal. App. 4th 608.) And, an off-site non-urban location should be chosen for the Project.

None-the-less, for the DEIR to comply with CEQA it must include analysis of, and mitigation measures for, potentially significant impacts relating to hazardous materials, water quality, geology and soils, land use planning, and health and safety issues. The remainder of this letter will discuss the environmental analysis and proposed mitigation measures that the DEIR must include to comply with CEQA. But, AGENA urges the CPUC to require an alternative non-urban location for the underground storage facility. No level of mitigation measures could make the Project safe at its current proposed location.

CEQA requires that the DEIR thoroughly analyze and mitigate all of the Project's potentially significant direct, indirect, and cumulative impacts. Mitigation measures included in the DEIR must address potential accidents and related secondary impacts. The mitigation measures proposed in the DEIR to reduce the potentially significant environmental impacts of accidents need to include monitoring plans with funding mechanisms in place to ensure the monitoring continues throughout the lifespan of the Project, and continues for an appropriate period of time after operations terminate at the facility. Mitigation measures requiring future environmental monitoring should provide for oversight and review by a designated third-party organization. The remainder of the letter discusses studies, analysis, and mitigation requirements that need to be included in the DEIR.

B5-289 (Cont.)

a. Air Quality

AGENA encourages construction mitigation measures such as using alternative fuel construction equipment and a dust control plan. Further, an air quality study should be conducted to establish an accurate description of existing conditions current as of November 14, 2007, the date the NOP was issued, to establish baseline conditions. Monitoring programs must be established to guard against natural gas migration, leak or emission of noxious odors, and leak or emission of carcinogenic chemicals from the Project.

b. Biological Resources

A biological resources study should be conducted to establish an accurate description of existing conditions current as of November 14, 2007, the date the NOP was issued. The biological resource study must determine whether any plant or animal resources may potentially

be disturbed by the Project. This study should include an ecological analysis of the subsurface plant, fungi, and animal life, including insects, in the Project area. A study should also be conducted to determine if Project operations, or accidental gas or chemical leaks from the Project, could impact the above-, and below-, ground biological resources in the area, or if potential water contamination caused by the Project could impact biological resources on-, or off-, site.

c. Cultural Resources

AGENA encourages the CPUC to contact Native American Heritage Commission regarding cultural resources and include mitigation to address potential issues. The DEIR should include a plan for recovery in case cultural resources are discovered during Project construction.

Further, "a resource shall be considered by the lead agency to be "historically significant" if the resource … [i]s associated with events that have made a significant contribution to the broad patterns of California's history … [or] [i]s associated with the lives of persons important in our past." (CEQA Guidelines, § 15064.5, subd. (a)(3)(A)-(B).) The Sacramento Army Depot was established in 1945. It has been described as a "Historic California Post[]" by the California State Military Museum. (Starbuck, Historic California Posts, http: www.militarymuseum.org SacramentoArmyDepot.html.) The Army Depot is a "historically significant" site. The DEIR must analyze potential impacts at the Army Depot accordingly.

In addition, a study must be conducted to determine if the underground reservoir is a "unique geological feature." If the underground reservoir is a unique geological feature, direct and indirect impacts of the Project on the reservoir need to be analyzed in the DEIR. (CEQA Guidelines, Appendix G, Cultural Resources.) The DEIR must include mitigation measures to address these potentially significant environmental impacts on cultural resources within the Project area.

B5-289 (Cont.)

d. Geology and Soils

A geology and soil study should be conducted to establish an accurate description of existing conditions current as of November 14, 2007, the date the NOP was issued. The study should include careful analysis of fracture zones and imperfections in the earth's geological layers and any other potential conduits through which natural gas might travel between geological layers zones whether currently in existence or having the potential to develop in the future and whether naturally occurring or the result of human activity. The study should also consider the possibility of the Project directly or indirectly causing subsidence of land in the Project area. Mitigation measures must be established to address the potential of gas migration and other gas or chemical leaks caused by geologic conditions in the Project area.

e. Hazards and Hazardous Materials

For the purposes of CEQA, the term "hazardous materials" refers to both hazardous materials and hazardous wastes. A hazardous material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local regulatory agency, or if it has

characteristics defined as hazardous by such an agency. The California Health & Safety Code, section 25501, subdivision (o) defines hazardous materials as follows:

> "Hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. (*Ibid.*)

Under the California Health & Safety Code, businesses "operating an unstaffed remote facility located in an isolated sparsely populated area" are exempt from certain hazardous materials safety planning requirements "if the quantities of materials onsite are limited to… [f]ive hundred standard cubic feet of compressed inert gases." (Health & Safety Code, § 25503.5, subdivisions (c)(6), (c)(6)(i).) The Project is not an unstaffed facility, is located in an urban area, and involves the storage of non-inert natural gas. Therefore, the Project is not covered by an exemption. The Project is designed to store and handle large quantities of natural gas, a hazardous material. The DEIR should analyze the chemical makeup of all substances added to the natural gas that is injected into the underground storage facility to determine if any of these chemicals are also hazardous materials. Mitigation measures should reduce the number of hazardous materials handled at the Project facilities and must establish monitoring programs to monitor for migration or leak of any hazardous materials. **B5-289 (Cont.)**

As recognized in Attachment 2 of the NOP, Appendix G of the CEQA Guidelines asks whether a Project "handle[s] hazardous… materials… within one-quarter mile of an existing or proposed school." The Education Code similarly emphasizes that hazardous materials and gas pipelines, specifically, should not be located near schools. (See, e.g., Educ. Code, § 17213, subd. (a)(2)-(3).) Therefore, the DEIR must determine whether any public or private schools exist within one-quarter mile of the boundaries of the underground storage facility. If schools are located within one-quarter mile of the boundaries of the underground storage facility, this is a significant and unavoidable environmental impact.

In addition, Appendix G of the CEQA Guidelines recommends that a public agency consider whether a Project "[c]reate[s] a significant hazard to the public or the environment through the routine transport [of or]… reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment." As discussed earlier, the location of this Project exacerbates the risk and severity of any potential accidents. Given the quantity of natural gas proposed to be stored at the facility and its sensitive urban location, potentially significant environmental impacts of the currently proposed Project cannot be mitigated to a less-than-significant level.

The California Health & Safety Code, section 25503.5, subdivision (a)(1), requires that the Project "establish and implement a business plan for emergency response to a release or threatened release of a hazardous material in accordance with the standards prescribed in the regulations adopted pursuant to Section 25503." (*Ibid.*) This emergency response plan should include a fund to cover the costs of damage to property and life in the case of an accident at the Project facilities.

f. Hydrology and Water Quality

A hydrology and water quality study should be conducted to establish an accurate description of existing conditions current as of November 14, 2007, the date the NOP was issued. The study should illustrate where the storage facility is located in relationship to the water table and measure ground water quality in the Project area to establish baseline conditions for future water quality monitoring. Finally, a monitoring program should be established to monitor the Project's impacts on ground water. The secondary effects of the Project caused water pollution on biological resources and human health must also be studied and mitigated in the DEIR.

g. Land Use and Planning

Given the issue of land use compatibility between natural gas storage and urban residential land uses, the DEIR must carefully consider all potential environmental impacts of possible conflicts with existing local and regional plans. In addition, the CPUC should consider how safety concerns may impact residential property values. The CPUC should also consider how the natural gas storage leases, or other methods used to acquire rights to store the natural gas beneath residential properties, may impact the residential property values in the area. Potential impacts on residential property values could cause secondary urban decay and blight impacts. (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal. App. 4th 1184.) Mitigation measures must be incorporated that address this potentially significant impact.

h. Public Services

The DEIR must consider the Project's impacts on fire protection services and water services. The DEIR should consider the potential impacts on these services in case of an accident. If natural gas fires and related accidents would require the use of chemicals or other methods, in addition water, to control accidental fires, then the DEIR must evaluate the availability of these additional resources as well as the potential environmental impacts of using the resources in case of an accident.

In closing, I request that the CPUC include my name on the CPUC's mailing list to receive copies of all public notices relating to the Project, especially any notices prepared pursuant to the requirements of the California Environmental Quality Act. (Pub. Resources Code, § 21092.2.)

B5-289 (Cont.)

Thank you again for the opportunity to comment on the proposed Project. I would be pleased to discuss these matters further at your convenience.

Very truly yours,

Tina Thomas

B5-289 (Cont.)

City

B5-289
(Cont.)

CITY OF

DEVELOPMENT SERVICES DEPARTMENT

SACRAMENTO

2101 ARENA BOULEVARD
SUITE 200
SACRAMENTO, CA
95834

December 17, 2007

Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

SUBJECT: Sacramento Natural Gas Storage Project Notice of Preparation
PUC Proceeding No. 07-04-013
City of Sacramento Project No. P07-111

Dear Mr. Rosauer:

The City of Sacramento (City), Environmental Planning Services, has received the Notice of Preparation (NOP) for the Sacramento Natural Gas Storage project (Project). This letter sets forth our response to the NOP, and provides information that relates to the processing the application by the City. Sacramento Natural Gas Storage LLC is identified here as the Applicant.

1. Project Applicant References: Our references to the Applicant and the Project include requirements relating to the planning, construction, operation and de-commissioning or abandonment of the Project. It is our understanding that, although the PUC has circulated a NOP for the project, you have not deemed the application complete, and are requesting more information from the project applicant. Our comments are based on what has been provided to the public and our agency to date. We reserve the right to submit additional comments on the scope of the EIR in the event the Applicant submits information that results in the identification of new significant effects, increase in the severity of effects, new mitigation measures or new alternatives.

2. Responsible Agency: The City of Sacramento Zoning Code requires approval of a Special Permit for the construction or operation of oil or gas wells. We have attached a copy of the zoning matrix and Chapter 17.212 of the City's Zoning Code. The Special Permit is heard by the City Planning Commission. Approval requires the following findings by the Planning Commission: (a) the Project is consistent with sound principles of land use; (b) the Project is consistent with the health, safety and general welfare of the community; and (c) the Project is consistent with the City's General Plan.

At this time the City has not received a description or footprint of the compressor station and wellhead facilities. We have requested this information from the applicant in order to determine project specifics. Additional entitlements may be required depending on facility details such as height.

B5-289
(Cont.)

The majority of the project, including the compressor station, the well field, the majority of the gas field, and much of the pipeline, falls within the City limits and will require City approval for construction. As such, all Environmental Issue Areas excluding "Agricultural Resources" are germane to the City's statutory responsibilities.

The Applicant has filed an application with the City for approval of the required Special Permit. The application is being processed by the Development Services Department. The Public Utilities Commission (PUC) will take the initial action on the project, and has determined that they are the Lead Agency under the California Environmental Quality Act (CEQA). The PUC had identified the City as a Responsible Agency as defined under CEQA Section 21069 and CEQA Guidelines Section 15096. The City has expressed concern with regard to this determination and requested, pursuant to CEQA Guidelines Section 15051(d), an agreement to provide for a cooperative effort as co-lead agencies. The City believes, as the public agency with the greatest responsibility for supervising, approving and monitoring the project as a whole, it is appropriate to have more involvement in the preparation and processing of the EIR than granted to responsible agencies.

At a minimum, it is the City's practice as a responsible agency to receive and review a copy of the Administrative Draft of the Draft Environmental Impact Report (ADEIR) and the Administrative Draft of the Final EIR (AFEIR), and to participate and communicate with the Lead Agency throughout the EIR process. If this procedure is not consistent with the procedures the PUC intends to follow in this project, please advise the undersigned immediately so we may begin discussions to resolve the issue.

3. Scoping Meeting Comments: Our comments at the Scoping Meeting confirmed that we would submit this written response to the NOP. Substantive comments on the scope of the EIR were submitted by others. Because no transcript was prepared for the meeting, we summarize those comments here to ensure they are included in the record:

Councilman Kevin McCarty, who represents the Sixth Council District, in which the project is located, requested discussion of the following issues in the EIR:

- A history of gas migration
- Evaluation of risk of explosion and fire and identification of any fracture zones
- Proposed monitoring procedure for gas leaks
- Health risk assessment for the project
- Alternative that includes non-residential sites
- Analysis of effect on property values
- Environmental justice analysis

Chris Butcher, an attorney with Remy, Thomas, Moose & Manley, indicated that the alternatives for the project should include an off-site alternative.

Constance Slider, representing the Avondale Glen Elder Neighborhood Association included the following in the list of issues that should be covered in the EIR:

- What is the capacity and role of the Fire Department, Building & Safety Department and PUC in safety and response to emergencies that could occur as part of the project?
- What are the other agencies that have a role in safety oversight and enforcement?
- There appears to be no enforcement of regulations concerning gas migration from well heads
- What is the worst-case scenario, and who would be liable?
- Explanation of what happened in other fields, such as the Bellmont and South Salt Lake Field, is needed
- The PUC should examine the chemicals in the gas and ground
- What is the chemical makeup of the injected gas
- What are the current testing standards

B5-289 (Cont.)

- An early-warning system for pipeline corrosion is needed

4. Project Description: In order to consider the project for approval, the City will be required to find that the CEQA document adequately identifies and evaluates the environmental effects of the project as described. We encourage your close cooperation with our agency to ensure that the project description adequately describes the project components and operations.

As noted above, the Project includes construction, operation and de-commissioning and abandonment, and these should be reflected in the Project Description. All staging areas should be identified.

The EIR should include, either as part of the Project Description or separate discussion, a clear explanation of the regulatory and enforcement responsibilities of the various agencies involved. These include, but are not limited to:

- Public Utilities Commission, including authority exercised pursuant to state authority and federal delegation;
- Department of Conservation, Division of Oil, Gas and Geothermal Regulation (DOGGR);
- City of Sacramento;
- City of West Sacramento;
- County of Sacramento; and
- County of Yolo.

The EIR should also include a discussion of the manner in which the responsibility of agencies may overlap, and the pre-emption of any authority by state statutes or decisions. These discussions will respond to concerns that have been identified in our public workshops relating to the enforcement of regulations and the monitoring of project activities.

5. Other Issues: The following should also be addressed:

- The EIR should include a detailed description of the reservoir, including the geology of the relevant area. The public discussion has included references to the risks of gas leakage and migration in areas where faults and fractures occur.

- Figure 1, Regional Map, should be revised to add a graphic showing the extent of the storage field area and the approximate locations of the pipelines and river crossings. This map should also show jurisdictional boundaries.

- The EIR should include a complete description of the pipelines, including location and depth, and the compressor station and wellhead facilities so that all impacts can be properly analyzed. The footprint of the compressor station and wellhead facilities should be depicted in a map.

- Table 1 is illustrative and assists in understanding the impacts. It should also include the gas storage field component and all pipelines, not just the connections to SMUD. Pipeline construction may cause temporary disruption to local services, but the pipelines should also be analyzed for permanent impacts in the areas of emergency response and public safety. Specific questions that could effect impact interpretation are: how deep will the pipeline be buried, how many wells will be constructed, how large is each well, what are the components of the compressor station, and how will each of these facilities be operated.

- The construction start date of June 2008, indicated in the "Project Construction" section, should be corrected. The schedule distributed by the PUC estimates that circulation of the Final EIR will occur in September 2008. We anticipate that the City Planning Commission hearing will be scheduled approximately 60 days following CUP approval of the project, if that in fact occurs. In addition, analysis should account for larger construction windows due to delays that may occur if cultural/paleontological

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resources are discovered, or if sensitive species are encountered.

- The preferred alternative should be indicated in the EIR so that there is a basis for comparison to the alternatives. Each alternative should describe how the impacts will be changed. For example, would any of the pipeline crossing alternatives avoid crossing waterways?

- The Air Quality section should include an analysis of climate change, specifically as it relates to the methane gas associated with the project.

- Frac-out and sedimentation should be addressed in the Biological Resources section in addition to the Hydrology and Water Quality Section in order to analyze temporary impacts to special status species that may be discovered in creek and river crossings.

- Potential gas migration issues should be analyzed in the Hazards and Hazardous Materials, and the Hydrology and Water Quality sections.

- A Threat Assessment should be prepared in order to analyze the potential for increased terrorist threats associated with the project.

- The Land Use and Planning section should also address impacts to Sacramento County and Yolo County.

- Potential public health impacts and other impacts associated with potential utility conflicts should be analyzed.

- The need for additional emergency response services coordinated through the City and County should be addressed in the Public Services and Utilities section. This analysis should incorporate:

    - An effective Emergency Action Plan, similar in scope to what was prepared for the Wild Goose and Kirby Hills sites. The applicant has been in regular communication with the City Fire Department to prepare this document to ensure they have adequate input on the plan and that it covers the topics in the detail that the Fire Department deems appropriate. The City will also be coordinating with the County of Sacramento on the preparation of this document.

    - Equipment and training. The EIR should examine the additional risk of explosion and fire, and mitigation in the form of training and equipment to reduce the impact.

- Although impacts associated with the pipeline construction and staging areas may be temporary, they should be analyzed. As discussed in the above section, specific areas of concern included sedimentation near creek and river crossings, frac-out, encroachment of equipment into habitat areas, cultural and paleontological resource issues with river crossing, traffic and emergency response disruption during construction along Power Line Road, and aesthetic impacts to residents.
- The applicant has indicated that drilling for installation of wells could occur 24 hours per day, 7 days per week. This should be analyzed for additional impacts in areas such as noise and air quality. A description of monitoring requirements for the well construction and operation should be included.

- The Depot Park site has a history of various uses, and current project proposals.

    - The SNGS project EIR should reference the EIR that was previously prepared for the Army Depot Re-Use project, which analyzed the entire Depot Park site. This document identified special status species and habitat in the area. New surveys will be needed to determine suitability for special status species.

    - We have been advised that a water pipeline project and an ethanol plant have been proposed at

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the Depot Park site. The EIR should incorporate information regarding these proposed projects in order to avoid infrastructure conflicts, and to analyze cumulative impacts. The water pipeline project consists of a 54-inch potable water transmission main, a portion of which crosses the western boundary of the Depot Park site. The SNGS project may overlap with the City water pipeline project.

- There is no confirmation of adequate water service for the project. A water study including existing water flows in the area should be completed in consultation with the City Department of Utilities.
- The project will be required to comply with all City and State construction and post construction water quality requirements
- The area is currently in shaded Zone X. The EIR should address any changes to the drainage patterns and base flood elevation in the area due to the construction of the proposed project.
- The EIR should include a discussion of ownership rights regarding the natural gas stored under a property.
- Potential impacts to park facilities should be addressed, including direct impacts if project associated construction occurs within park facilities, and indirect impacts if access to project components is required via park facilities. The document should address actions required for installation and repairs as well as timing of any necessary maintenance activities.

City staff has been actively involved in the project review, including substantial community outreach. We have worked with the applicant and community associations to organize public meetings to inform the community about the scope of the project and to allow the community to ask questions about safety and other concerns. We also have regular meetings with the applicant, City representatives, community groups, business groups, and local experts on different topics of concern. This outreach has been effective, and will continue. We would be pleased to cooperate with any effort on your part for continued public outreach or communication relating to the project. B5-289 (Cont.)

Thank you for your consideration of our comments. Please let me know if we can provide any additional information.

Sincerely,

Ellie Buford

Ellie Buford, Principal Planner
Environmental Planning Services

Cc: Kevin McCarty, City Councilmember, District 6
Cassandra Jennings, Assistant City Manager
David Kwong, Planning Manager

Eb/tb

Chapter 17.212

SPECIAL PERMITS

Sections:

17.212.010	Definition, authority and findings.
17.212.020	General provisions.
17.212.030	Planning commission special permit.
17.212.040	Zoning administrator's special permit.
17.212.050	Planning director's special permit.
17.212.060	Special permit approved by city council.
17.212.070	Modification of a special permit.
17.212.080	Revocation of a special permit.
17.212.090	Modification or discontinuance of a use established prior to special permit requirements.
17.212.100	Terms and extensions.

17.212.010 Definition, authority and findings.

A special permit is a zoning instrument used primarily to review the location, site development, or conduct of certain land uses. These are uses which generally have a distinct impact on the area in which they are located, or are capable of creating special problems for bordering properties unless given special attention. A special permit may be granted at the discretion of the zoning administrator, planning commission or city council and is not the automatic right of any applicant. In considering an application for a special permit, the following guidelines shall be observed:

A. Sound Principles of Land Use. A special permit shall be granted upon sound principles of land use.

B. Not Injurious. A special permit shall not be granted if it will be detrimental to the public health, safety or welfare, or if it results in the creation of a nuisance.

C. Must Relate to a Plan. A special permit use must comply with the objectives of the general or specific plan for the area in which it is to be located. (Ord. 99-015 § 7-5-A)

17.212.020 General provisions.

The following general provisions shall apply to any request for a zoning administrator's, planning director's or planning commission special permit or modification, revocation, or time extension of a special permit:

A. Application. The applicant shall submit an application and plans for the proposed use. Such plans shall be in sufficient detail to allow the zoning administrator, planning director, or planning commission to determine the exact nature and extent of the use. Such plans shall in all cases include a site plan clearly indicating the area of the subject property that will be utilized for the proposed use and the nature of the use in each portion of said area.

B. Permits May Not Be Issued. No building permit involving a special permit granted by the planning director, zoning administrator or planning commission may be issued until the ten (10) day appeal period has expired. No building permit, license, or other permit shall be issued while a special permit hearing or appeal therefrom is pending.

C. Fees. The applicant shall pay a filing and investigation fee as established in the fee and charge report at the time the application is filed.

D. Conditions May Be Imposed. In granting any special permit, the planning director, zoning administrator, planning commission, or city council, as applicable, may impose such conditions as deemed necessary to carry out the intent of this title and implement the guidelines set forth in Section 17.212.010 of this chapter.

E. Appeal of a Decision. An appeal of a decision made by the zoning administrator or planning commission related to a special permit, or modification, revocation, or extension of a special permit may be made in accordance with Chapter 17.200 of this title.

F. Withdrawal of Application. The planning director, zoning administrator, planning commission or city council may permit the withdrawal of an application for a special permit, provided such request is made in writing by the applicant. Further, any hearing for which public notice is given shall be held.

G. Resubmittal of Application. If an application for a special permit has been denied wholly or in part by the planning director, zoning administrator, planning commission, or city council, no new application for substantially the same special permit shall be resubmitted for a period of one year from the effective date of the final denial of the application, unless approval for filing has been granted by the zoning administrator or planning commission prior to expiration of the one year period. (Ord. 99-015 § 7-5-B)

17.212.030 Planning commission special permit.

The planning commission shall not grant a special permit unless the commission finds that the project complies with the guidelines set forth under Section 17.212.010 of this chapter. The general provisions set

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forth in Section 17.212.020 of this chapter shall apply to a special permit request. An application for a special permit to be considered by the planning commission shall be subject to the following requirements:

A. Notice and Hearing. At least one public hearing shall be held on an application to the planning commission for a special permit. The procedural requirements for any hearing and the contents of the notice required by the provisions of this chapter shall be governed by the provisions of Chapter 17.200 of this title. Notice of the hearing shall be given in the following manner:

1. The planning director shall post notice of the hearing on the property involved in the proceedings in a conspicuous place for a period of seven days prior to the date of the hearing.

2. Written notice of the hearing shall be mailed by the planning director at least ten (10) days prior to the hearing to the following property owners, using for notification purposes names and mailing addresses as shown on the latest equalized assessment roll in existence of the date application is filed:

a. All owners of property located within a radius of five hundred (500) feet from the property involved in the proceedings.

b. The owners of all property which adjoins the property in the same ownership as that involved in the proceedings or is separated only by a street, alley, right-of-way, or other easement.

B. Adult-Related Establishments. Notwithstanding the provisions of subsections (A)(2)(a) and (b) of this section, in the case of an application for a special permit for an adult-related establishment under the provisions of Section 17.24.050(24)(a) or (b) of this title, notice shall be given to all owners of property located within one thousand (1,000) feet from the property involved in the proceedings.

C. Antennas and Telecommunications Facilities in Residential Zones. Notwithstanding the provisions of subsections (A)(2)(a) and (b) of this section, in the case of an application for a special permit for an antenna or telecommunications facility in residential zones under the provisions of Section 17.24.050(58)(d)(iii)(B) of this title, notice shall be given to all owners of property located within one thousand (1,000) feet from the property involved in the proceedings. (Ord. 99-015 § 7-5-C)

17.212.040 Zoning administrator's special permit.

Except as provided for below, a request for a zoning administrator's special permit required by this title shall be decided by the zoning administrator. The zoning administrator shall not grant a zoning administrator's special permit unless he or she finds that the proposed project complies with the guidelines set forth under Section 17.212.010 of this chapter. The general provisions set forth in Section 17.212.020 of this chapter shall apply to a zoning administrator's special permit. An application for a zoning administrator's special permit to be considered by the zoning administrator shall be subject to the following requirements:

A. Planning Commission Shall Act If Any Entitlement Requires Commission or Council Approval. For a zoning administrator's special permit sought as part of a development project requiring approval of one or more entitlements by the planning commission or city council, the planning commission shall act upon such permit. Special permits to be approved by the planning commission shall be processed in the same manner as a planning commission special permit pursuant to Sections 17.212.020 and 17.212.030 of this chapter.

B. Discretion to Elevate to Planning Commission. At the discretion of the zoning administrator, a zoning administrator's special permit may be determined by the planning commission. Special permits to be approved by the planning commission shall be processed in the same manner as a planning commission special permit pursuant to Sections 17.212.020 and 17.212.030 of this chapter.

C. Notice and Hearing. At least one public hearing shall be held on an application to the zoning administrator for a special permit. The procedural requirements for any hearing and the contents of the notice required by the provisions of this chapter shall be governed by the provisions of Chapter 17.200 of this title. Notice of the hearing shall be given in the following manner:

1. The zoning administrator shall post notice of the hearing on the property involved in the proceedings in a conspicuous place for a period of seven days prior to the date of the hearing.

2. Written notice of the hearing shall be mailed by the zoning administrator at least ten (10) days prior to the hearing to all owners of property located within a radius of one hundred (100) feet from the exterior boundaries of the subject property, using for notification purposes the names and mailing addresses as shown on the latest equalized assessment roll in existence of the date application is filed. (Ord. 99-015 § 7-5-D)

17.212.050 Planning director's special permit.

The planning director shall not grant a planning director's special permit unless the director finds that the proposed project complies with the guidelines set forth under Section 17.212.010 of this chapter. The general provisions set forth in Section 17.212.020 of this chapter shall apply to a planning director's special permit request.

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An application for a planning director's special permit to be considered by the planning director shall be subject to the following requirements:

A. Application. Applications for a planning director's special permit under this chapter shall be filed with the planning director and shall be subject to a filing and investigation fee. The application shall be accompanied by sufficient copies of the development plans and such other materials determined by the planning director to be necessary to consider the application, including but not limited to, necessary studies, transportation systems management plan, air quality mitigation plan, phasing plans, and executed agreements with other local agencies.

B. Notice, Procedure and Appeal. No public hearing shall be required. The application for a planning director's special permit shall be accompanied by proof that the applicant has given notice to the owners of all property within one hundred (100) feet of the subject property. The notice shall describe the scope and nature of the requested special permit. After the decision on the planning director's special permit, the planning director shall provide written notice by mail to all the property owners within one hundred (100) feet of the subject property and their right to appeal the decision to the planning commission within ten (10) days of the notice pursuant to Chapter 17.200 of this title. No fee shall be charged for the appeal to the planning commission by any aggrieved person other than the applicant.

C. Planning Commission Shall Act If Any Entitlement Requires Commission or Council Approval. For a planning director's special permit sought as part of a development project requiring approval of one or more entitlements by the planning commission or city council, the planning commission shall act upon such permit. Special permits to be approved by the planning commission shall be processed in the same manner as a planning commission special permit pursuant to Sections 17.212.020 and 17.212.030.

D. Modification. Upon application by the holder of a planning director's special permit, the planning director may approve modifications to the original planning director's special permit as provided in this section. The planning director shall not grant the proposed modification unless the planning director finds that the guidelines set forth under Section 17.212.010 of this chapter are satisfied. The general provisions set forth in Section 17.212.020 of this chapter shall apply to a planning director's special permit modification.

1. Determination of Major or Minor Modification. The planning director shall determine whether a proposed modification to an approved planning director's special permit is a major or minor modification, and the application for the proposed modification shall be decided by the planning director under the provisions of this section. No hearing shall be required for the determination and the decision of the planning director on whether the proposed modification is major or minor shall be final and shall not be subject to appeal.

2. Definition of Major Modification. A major modification is one that will result in material change in the nature of the project when all circumstances surrounding the issuance of the special permit are considered. The planning director shall apply the criteria in subsection 17.212.070(B) in the same manner as would the zoning administrator in making the determination of whether a proposed modification is major or minor.

3. Review and Approval of Proposed Modification.

a. Minor Modifications. If the planning director determines that a proposed modification is a minor modification of an approved planning director special permit, then a planning director's special permit modification, with no required public hearing, is required for approval. In granting a minor modification to a planning director's special permit, the planning director may impose such additional conditions as may be required to mitigate any deleterious effects of the modification.

b. Major Modifications. If the planning director determines that a proposed modification is a major modification of an approved planning director's special permit, then the application shall be noticed, processed, and subject to appeal in the same manner as an application for a planning director's special permit. In granting a major modification to a planning director's special permit, the planning director may impose such additional conditions as may be required to mitigate any deleterious effects of the modification.

E. Term. Except as provided in this section, the term of the planning director's special permit shall be governed by the provisions of Section 17.212.100; provided that the special permit shall vest as to a particular building only when a building permit has been issued for construction of that building and construction pursuant to that permit has physically commenced. The planning director may approve the phasing of development of a project for which a planning director's special permit has been issued. The provisions of Section 17.212.100(E) shall govern the phasing of development by the planning director.

F. Time Extension. Applications for time extensions shall be noticed, processed, and subject to appeal in the same manner as applications of planning director's special permits. An application for a planning director's special permit time extension shall be submitted in writing at least thirty (30) days prior to the expiration of the special permit.

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G. Issuance of Building Permit upon Recordation of Final Map. Except as specifically provided otherwise in this title, no building permit may be issued to construct a residential unit which is a part of a development project for which a planning director's special permit has been approved and for which a tentative map has been approved but no final map been recorded, unless and until the final map is recorded, either in its entirety or for a phase which includes the lot for which the building permit is sought. (Ord. 2003-050 § 14; Ord. 99-015 § 7-5-E)

17.212.060 Special permit approved by city council.

A. Notwithstanding the foregoing provisions, the city council may, as a condition of an ordinance rezoning property or of a resolution approving a PUD pursuant to Chapter 17.180, require approval by the city council of a special permit for specified uses on the affected property that would otherwise require planning commission approval.

B. Applications for special permits requiring city council approval under this section or any other section of this title shall be noticed and heard in the same manner as applications for special permits are noticed and heard by the planning commission. The planning commission shall make recommendations on applications for special permit requiring council approval. The planning commission shall make its recommendation following a hearing noticed in the manner specified in Sections 17.212.020 and 17.212.030. (Ord. 2004-060 § 16; Ord. 99-015 § 7-5-F)

17.212.070 Modification of a special permit.

No modification of a project for which a special permit is granted may be made unless prior approval for the modification is granted by the zoning administrator or planning commission as provided in this section. The zoning administrator or planning commission shall not grant a proposed modification unless the zoning administrator or commission finds that the guidelines set forth under Section 17.212.010 are satisfied. The general provisions set forth in Section 17.212.020 shall apply to a zoning administrator's special permit modification or special permit modification.

A. Determination of Major or Minor Modification. The zoning administrator shall determine whether a proposed modification to an approved special permit is a major or minor modification, and the application for proposed modification shall thereafter be decided by the zoning administrator or planning commission pursuant to the provisions of this section. No hearing shall be required for the determination and the decision of the zoning administrator on whether the proposed modification is major or minor shall be final and shall not be subject to appeal.

B. Definition of Major Modification. A major modification is one which will result in material change in the nature of the project when all circumstances surrounding the issuance of the special permit are considered. Set forth below is a list of changes which, by definition, shall be deemed to constitute major modifications for purposes of this provision. This list is not intended to be inclusive, and the fact that a particular change is not included does not limit discretion or authority of the zoning administrator to determine that a particular proposed change or set of changes to a special permit constitutes a major modification. The following changes constitute major modifications for purposes of this provision:

1. Any major change in the pattern or volume of traffic flow either on or off any property covered by the special permit;

2. Any change in the nature of the use;

3. Any increase in height of a structure which exceeds ten (10) percent of the height of such structure as approved or which exceeds one story, whichever is less;

4. Any increase in gross floor area of a building which exceeds ten (10) percent of the approved gross floor area;

5. Any increase in the density of dwelling units per acre;

6. Any material changes in the orientation or location of structures on the parcel.

C. Review and Approval of Proposed Modifications—Zoning Administrator Authority. The zoning administrator shall have the authority to review and approve proposed modifications to special permits, pursuant to the following provisions.

1. Minor Modification(s) to a Special Permit. If the zoning administrator determines that a proposed modification is a minor modification of an approved zoning administrator's special permit or planning commission special permit, then a zoning administrator's special permit modification, with no required public hearing, is required for approval of the minor modification. In considering a modification to an existing special permit, the zoning administrator or planning commission shall apply the standards set forth in Section 17.212.010 for the issuance of a special permit. When granting a modification to a special permit, the zoning administrator or planning commission may impose such additional conditions as may be required to mitigate any deleterious effect of the modification. An application for a zoning administrator's special permit modification shall be subject to the general provisions and requirements set forth in Section 17.212.020.

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2. Major Modification(s) to a Special Permit. If the zoning administrator determines that a proposed modification is a major modification of an approved zoning administrator's special permit or planning commission special permit, than a zoning administrator's special permit modification, with a required public hearing, is required for approval of the major modification. At the discretion of the zoning administrator, a major modification of a planning commission special permit may be determined by the planning commission. The public hearing shall be noticed and heard in the same manner described in Section 17.212.030 for planning commission hearing and Section 17.212.040 for zoning administrator's hearing. In considering a modification to an existing special permit, the zoning administrator or planning commission shall apply the standards set forth in Section 17.212.010 for the issuance of a special permit. When granting a modification to a special permit, the zoning administrator or planning commission may impose such additional conditions as may be required to mitigate any deleterious effect of the modification. An application for a zoning administrator's special permit modification shall be subject to the general provisions and requirements set forth in Sections 17.212.020 and 17.212.040. (Ord. 99-015 § 7-5-G)

17.212.080 Revocation of a special permit.

A zoning administrator's special permit or special permit may be revoked or modified in lieu of revocation only under the following circumstances:

A. Planning Director May Set Hearing on Revocation of Special Permit. When in the discretion of the planning director a use permitted by a zoning administrator's special permit or special permit is being conducted in a manner detrimental to the public health, safety or general welfare, or in such a manner as to constitute a public nuisance, or in violation of any condition imposed by the zoning administrator or planning commission on the use, or if conditions specified in the permit as limiting the duration of the permit have occurred (other than the passage of time as provided in Section 17.212.050 of this chapter), the planning director shall set a hearing before the zoning administrator or planning commission to consider revocation of the special permit. Notice of such hearing shall be given in the manner prescribed by Section 17.212.040(C)(1) and (2) of this chapter for a zoning administrator's special permit or Section 17.212.030(A)(1) and (2) of this chapter for a special permit. In addition, notice shall be given to the owner of the property upon which the use is conducted, and to the person in possession of said property if other than the owner, which shall include a specific statement of the conditions which are deemed to constitute a detriment to the public health, safety or welfare, or which constitutes a public nuisance, or which are in violation of imposed conditions.

B. Zoning Administrator or Planning Commission May Revoke or Modify Special Permit. Upon a determination by the zoning administrator or planning commission that the use is being conducted in a manner detrimental to the public health, safety or welfare, or in a manner so as to constitute a public nuisance, or in violation of any imposed condition the zoning administrator or planning commission may revoke the special permit. If the zoning administrator or planning commission determines that the detrimental aspects of the use which exist may be alleviated through a modification to the special permit, it may make such modification in lieu of revocation, including, but not limited to, imposition of conditions which must be complied with if the use is to continue.

C. Appeal. In the case of a revocation or modification of a special permit or a zoning administrator's special permit, an appeal may be taken in accordance with Chapter 17.200 of this title within ten (10) days after the decision of the zoning administrator or planning commission to revoke or modify said permit. (Ord. 99-015 § 7-5-H)

17.212.090 Modification or discontinuance of a use established prior to special permit requirements.

A. Planning Commission May Order Modification or Discontinuance of Any Use Established Prior to Special Permit Requirements. An existing use which would require a special permit, but for the fact that it was lawfully established without a special permit before the special permit requirement became effective, or at the time of annexation or consolidation into the city, may be ordered modified or discontinued if it is determined:

1. That the use is being conducted in a manner detrimental to the public peace, health or safety; or

2. That the use is being conducted in a manner so as to constitute a public nuisance; or

3. That the use as operated or maintained has resulted in repeated nuisance activities, including, but not limited to, public inebriation, drinking in public, loitering, excessive littering, public urination, disturbances of the peace, harassment of passersby, excessive noise, illegal drug activity, gambling, prostitution, sale of stolen property, theft, assaults, batteries, vandalism, or police detentions and arrests.

B. Applies to Any Use. This section shall apply to any use in the city as provided in subsection A of this section, whether commercial or residential, and whether the use is presently conforming or nonconforming, including, but not limited to, the sale of alcoholic beverages for on-premises or off-premises sales.

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C. Conduct of the Proceedings. The proceeding shall be conducted in the same manner as a proceeding to revoke or modify a special permit as set forth in Section 17.212.080 of this chapter.

D. Zoning Administrator's or Planning Commission's Order. Upon a determination by the zoning administrator or planning commission that the use is being conducted in a manner so as to constitute a public nuisance, the zoning administrator or planning commission may order that the use be discontinued, or if the use is to continue, that it only do so if the person or entity maintaining the use complies with conditions approved by the zoning administrator or planning commission. The zoning administrator's and planning commission's authority for imposition of conditions shall include, but not be limited to, imposition of any reasonable condition upon the continued operation of the use, for compliance, and the period of time the conditions will remain in effect.

E. Failure to Comply with Order. Where a continued use has been conditioned by the zoning administrator or planning commission and the person or entity maintaining or operating the use fails to fully comply with the conditions imposed, the city may take legal or administrative action. The city's legal or administrative remedies shall include, but not be limited to, seeking a further order of the zoning administrator or planning commission to order the use discontinued or further modified or conditioned, legal or equitable action, and imposition of administrative penalties in accordance with this title or this code.

F. Appeal. An appeal of an order of the zoning administrator or planning commission issued pursuant to this chapter may be taken in accordance with Chapter 17.200 of this title. The appeal must be requested within ten (10) days of the decision of the zoning administrator or planning commission or the decision of the zoning administrator or planning commission is final. (Ord. 99-015 § 7-5-I)

17.212.100 Terms and extensions.

The following regulations pertain to the initial term and time extensions of a special permit approved by the planning director, zoning administrator, planning commission or city council:

A. No Time Limit Unless Stated in Permit. Special permits, once utilized, are of indefinite duration unless an expiration date has been specifically stated as a condition of the permit as provided in subsections C or D of this section. Once established, such permits may only be modified or revoked as provided in Section 17.212.070 or 17.212.080 of this chapter.

B. Expiration for Failure to Establish Use. A use for which a special permit is granted must be established within three years from the date of final approval of the special permit. If such use is not so established the special permit shall be deemed to have expired and shall be null and void. A special permit use which requires a building permit shall be deemed established when such building permit is secured and construction thereunder physically commenced. If no building permit is required, the use shall be deemed established when the activity permitted has been commenced. The planning director shall determine whether the use has been commenced as required in subsection A of this section. The owner may appeal the determination of the planning director in the manner provided in Chapter 17.212 of this title.

C. Temporary Permits. Where application is made for a use which is temporary in nature, the planning director, zoning administrator, planning commission, or city council, as applicable, may condition the special permit to expire automatically at a stated period of time after the issuance of the permit.

D. Time Restricted Permits. The planning director, zoning administrator, planning commission, or city council, as applicable, may condition approval of a special permit for a use which is not temporary in nature by imposing a time restriction of not less than one year. The special permit may be conditioned to either expire automatically or to be renewable after the stated time period has lapsed. In order to impose such time restrictions as a condition of permit approval, one or more of the following findings must be made:

1. The proposed use is compatible with existing developments but may become incompatible once anticipated development or redevelopment of the area occurs.

2. The proposed use has the potential to create adverse environmental impacts to surrounding land uses and it is necessary to evaluate whether such impacts have occurred once the use has been in operation.

3. It is necessary to evaluate whether the proposed use has complied with the conditions imposed upon permit approval because such conditions are essential for mitigating the impacts generated by the use.

E. Exception for Phased Projects. Notwithstanding the requirements of subsection B of this section, where the nature of the proposed use or plans for its development are such that the commencement of construction of facilities is expected, in whole or in part, to be delayed in excess of two years, the planning director, zoning administrator, planning commission, or city council, as applicable, may provide that the special permit shall remain in full force and effect beyond three years if specific steps in the completion of the phased project are completed within specific time limits. Such steps may be, but are not limited to, the securing of specific building permits or the construction or establishment of specific portions of the permitted use. A

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project is not considered a phased project unless the special permit conditions of approval so indicate.

F. Extensions of Time Limits. Upon a show of good cause by the applicant, the zoning administrator may grant an extension of time for a zoning administrator's or planning commission special permit not to exceed two years in instances arising under subsection B, C, D or E of this section upon application in writing a minimum of thirty (30) days prior to expiration. An application for a time extension shall be noticed and heard, and shall be subject to appeal, in the same manner as an application for a zoning administrator's special permit. At the discretion of the zoning administrator, the application for time extension shall be subject to planning commission approval. An application for an extension of time referred by the zoning administrator to the planning commission shall be noticed and heard, and shall be subject to appeal, in the same manner as an application for a planning commission special permit. A request for an extension of time shall be subject to a filing and investigation fee.

G. Discontinuance. Any special permit, the exercise of which is voluntarily or involuntarily interrupted for a period in excess of two years, shall be deemed automatically revoked. (Ord. 2005-050 § 15; Ord. 99-015 § 7-5-J)

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(Cont.)

CITY OF
WEST SACRAMENTO

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Human Resources
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Fax (916) 372-8765

Building
(916) 617-4663
Fax (916) 371-0845

Community Development
Planning
Engineering
(916) 617-4645
Fax (916) 371-0846

Finance
(916) 617-4589
Fax (916) 373-9006

Fire Administration
(916) 617-4600
Fax (916) 371-5017

Housing & Community Investment
(916) 617-4555
Fax (916) 372-1584

Information Technology
(916) 617-4526
Fax (916) 372-8765

Parks & Recreation
(916) 617-4620
Fax (916) 373-5329

Redevelopment
Economic Development
(916) 617-4535
Fax (916) 373-5848

Refuse & Recycling
(916) 617-4590
Fax (916) 373-9006

Utility Billing
(916) 617-4589
Fax (916) 373-9006

POLICE
550 Jefferson Boulevard
West Sacramento, CA 95605

Administration
(916) 617-4900
Fax (916) 373-2377

Code Enforcement
(916) 617-4925
Fax (916) 617-4340

PUBLIC WORKS
1951 South River Road
West Sacramento, CA 95691

(916) 617-4850
Fax (916) 371-1516

December 14, 2007

Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Re: Comments to, Notice of Preparation Environmental Impact Report for the Sacramento Natural Gas Storage Project proposed by Sacramento Natural Gas Storage, LLC, Application No. 07-04-013

Dear Mr. Rosauer,

The City of West Sacramento Redevelopment Agency and Department of Parks & Recreation submit the following initial comments in response to the Notice of Preparation for the proposed Sacramento Natural Gas Storage Project referenced above.

First, the proposed project as sited will not fit within the boundaries of the city owned parcel. However, there may be alternative locations for the proposed facility on the parcel. Any site selection should be large enough and properly configured to accommodate the proposed facility and not interfere with other uses and activities on the parcel. The proposed project as sited may adversely impact access to the existing Kinder-Morgan and Wickland Oil facilities.

Second, the environmental impact report (EIR) should evaluate the effects of the proposed project's location, improvements, and activities on the class 1 bike path, as well as access to other uses of the city's property. Additionally, the EIR should detail site restoration and any potential improvements to the city's property that will mitigate the aesthetic or recreational impacts caused by the facility.

Lastly, the EIR should evaluate any potential effects upon levee maintenance or flood control activities that might be caused by the location or presence of the proposed facility.

Cordially,

Val Toppenberg
Director of Redevelopment

B5-289
(Cont.)

County of Sacramento

B5-289
(Cont.)

Municipal Services Agency

Department of Transportation
Tom Zlotkowski, Director

Terry Schutten, County Executive
Paul J. Hahn, Agency Administrator

County of Sacramento

November 27, 2007

Mr. Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, CA 92024

SUBJECT: COMMENTS ON THE NOTICE OF PREPARATION (NOP) FOR AN ENVIRONMENTAL IMPACT REPORT (EIR) FOR THE SACRAMENTO NATURAL GAS STORAGE PROJECT PROPOSED BY SACRAMENTO NATURAL GAS STORAGE, LLC (APPLICATION Number 07-04-013)

Dear Mr. Rosauer:

The Sacramento County Department of Transportation has reviewed the Notice of Preparation for the EIR for the EIR mentioned above. We appreciate the opportunity to the review this NOP. We would request that the EIR address the potential impacts to any roadways in Sacramento County that are caused by this project and identify and necessary mitigation measures. These impacts should not be limited to the operation of the project but should also be identified in the construction phase. If you have any questions, please feel free to contact me at (916) 874-7052. **B5-289 (Cont.)**

Sincerely,

Matthew G. Darrow
Senior Transportation Engineer
Department of Transportation

MGD:mgd

cc: Steve Hong, IFS
Rizaldy Manarquil, DOT

PG&E

B5-289
(Cont.)

M-26, N-26
L-26-18, 19

PG&E File # 07-123 Plat # [illegible] TBM # _____

Date Customer Plans Received 11-9-07

NOTE: Please incorporate the gas and/or electric facilities from the attached plat maps into your plans. Check your plans for conflicts. It is the responsibility of the agency or developer to pothole existing facilities if needed to determine if there are any conflicts. An Application for Gas Service is required and you must allow 6 to 8 weeks to remedy any conflicts. If any pipe coating is damaged during excavation, please contact Gas Maintenance & Operations in your County and we will send someone to repair the damaged pipe wrap.

Sacramento County	(916) 386-5153
Solano County	(707) 440-5759
Yolo County	(530) 661-5157

_____ NOTE: No gas facilities within your project site.

_____ NOTE: No PG&E electric facilities within your project site.

_____ If you have any questions regarding conflicts with our existing facilities or regarding new service to your project, you can contact me at

Name	Address	Phone
Larry Schlaht	5555 Florin-Perkins Rd. Sacramento 95826	916-386-5371

_____ If you have any mapping questions you can contact

Pete Miskovich	5555 Florin-Perkins Rd. Sacramento 95826	916-386-5429

_____ It appears that highlighted gas facilities located within your project may require special construction equipment weight limits when working over or near these facilities. Please contact our office to review these equipment weight restrictions.

_____ PG&E has overhead electric transmission facilities, which are covered by easements within the project boundaries. Land use is restricted within the easements. Please contact our Land Department at (530) 889-3162 and provide a complete set of plans so we may consider a consent agreement.

B5-289 (Cont.)

State

B5-289
(Cont.)

DEPARTMENT OF TRANSPORTATION
DISTRICT 3 – SACRAMENTO AREA OFFICE
VENTURE OAKS, MS 15
P. O. BOX 942874
SACRAMENTO, CA 94274-0001
PHONE (916) 274-0614
FAX (916) 274-0648
TTY (530) 741-4509

Flex your power!
Be energy efficient!

December 12, 2007

07SAC0215
03 SAC-80 P.M. 9.083
Sacramento Natural Gas Storage Project
Notice of Preparation
SCH#2007112089

Mr. Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, CA 92024

Dear Mr. Rosauer:

B5-289 (Cont.)

Thank you for the opportunity to review and comment on the Sacramento Natural Gas Storage Project proposed by Sacramento Natural Gas Storage, LLC. These comments pertain to Application No. 07-04-013. Our comments are as follows:

- This project proposes to construct and operate natural gas storage and transport facilities in the City of Sacramento, the City of West Sacramento, Sacramento County, and Yolo County. Any project work to be performed within State highway right of way will require an encroachment permit. For encroachment permit assistance, please contact Julio Elvir at (530) 741-4204.

- Please clarify if it is proposed that any of the interconnecting pipelines or associated facilities will be buried within highway right of way. Pipeline construction near Interstate 80 may need a Transportation Management Plan, depending on the impacts to the highway. The TMP should be submitted to Paul Wilkinson, the Caltrans District 3 Traffic Manager, by contacting him at (916) 859-7978.

- The "Attachment 1, Summary of Potential Issues or Impacts, Sacramento Natural Gas Storage Project", addresses transportation and traffic. Among the issues are traffic flow and potential closure of bicycle lanes. The project component located adjacent to the juncture of West Capital Avenue/Enterprise and the westbound on-ramp to Interstate 80 could have significant impacts to this ramp. The adjacent bicycle trail, consisting of Caltrans and the City of West Sacramento facilities, could also be significantly impacted by this project. The bicycle trail is a relatively heavily used bicycle commute facility that must be kept open or a detour route provided during construction. Caltrans requests further detail about planned construction at this location and potential mitigation plans.

Please provide our office with any further project actions and detailed information. If you have any questions regarding these comments, please contact Ken Champion at (916) 274-0615.

Sincerely,

Bruce De Terra, Office Chief
Office of Transportation Planning – South

c: Scott Morgan, State Clearinghouse
Steve Patek, Director of Public Works, City of W. Sacto.
Raymond Santiago, City of West Sacramento

B5-289 (Cont.)

State of California

Department of Transportation

Transportation Management Plan Guidelines

B5-289 (Cont.)

Prepared By:

Division of Traffic Operations

Office of Systems Management Operations

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B5-289 (Cont.)

I. INTRODUCTION

A. BACKGROUND

With the construction of California's state highway system virtually complete, the California Department of Transportation (Department) major emphasis on transportation projects has largely shifted from new construction to reconstruction, operation, and maintenance of existing facilities. As traffic demand steadily increases, Department work activities can create significant additional traffic delay and safety concerns on already congested highways. Planning work activities and balancing traffic demand with highway capacity becomes more critical.

In order to prevent unreasonable traffic delays resulting from planned work, Transportation Management Plans (TMPs) must be carefully developed and implemented in order to maintain acceptable levels of service and safety during all work activities on the state highway system.

B. WHAT ARE TRANSPORTATION MANAGEMENT PLANS?

A TMP is a method for minimizing activity-related traffic delay and accidents by the effective application of traditional traffic handling practices and an innovative combination of public and motorist information, demand management, incident management, system management, construction strategies, alternate routes and other strategies.

All TMPs share the common goal of congestion relief during the project period by managing traffic flow and balancing traffic demand with highway capacity through the project area, or by using the entire corridor. Certain low-impact Maintenance and Encroachment Permit activities do not require the development of individual TMPs. "Blanket" TMPs are developed for those activities. A blanket TMP is a generic list of actions that would be taken to keep delay below the delay threshold when performing activities on highways. Each district Maintenance and Encroachment Permit office should have a list of activities to which blanket TMPs apply.

All Capital projects require individual TMPs. Blanket TMPs are suitable for minor projects. Major TMPs are required for high-impact projects. Generally, major TMPs are distinguished by being:

- Multi-jurisdictional in scope, encompassing the Department of California Highway Patrol (CHP), city, county and regional governments, state DOTs, employers, merchants, developers, transit operators, ridesharing agencies, neighborhood and special interest groups, emergency services, and Transportation Management Associations;
- Multi-faceted, comprised of an innovative mix of traffic operations, facility enhancement, demand-management and public relations strategies, as well as more traditional work zone actions, construction methods and contract incentives, customized to meet the unique needs of the impacted corridor;
- In place over a longer period of time, sometimes implemented up to a year or more prior to the start of actual construction, with specific elements often implemented incrementally to coincide with construction phasing.

C. POLICY

B5-289 (Cont.)

Department Deputy Directive 60 (DD-60) titled Transportation Management Plans (see APPENDIX) requires TMPs and contingency plans for all state highway activities.

Policy Statement:

The Department minimizes motorist delays when implementing projects or performing other activities on the state highway system. This is accomplished without compromising public or worker safety, or the quality of the work being performed.

TMPs, including contingency plans, are required for all construction, maintenance, encroachment permit, planned emergency restoration, locally or specially-funded, or other activities on the state highway system. Where several consecutive or linking projects or activities within a region or corridor create a cumulative need for a TMP, the Department coordinates individual TMPs or develops a single interregional TMP.

TMPs are considered early, during the project initiation or planning stage.

Major lane closures require District Lane Closure Review Committee (DLCRC) approval.

Definitions:

Major lane closures are those that are expected to result in significant traffic impacts despite the implementation of TMPs.

Significant traffic impact is 30 minutes above normal recurring traffic delay on the existing facility or the delay threshold set by the District Traffic Manager (DTM), whichever is less.

Contingency Plans address specific actions that will be taken to restore or minimize effects on traffic when congestion or delays exceed original estimates due to unforeseen events such as work-zone accidents, higher than predicted traffic demand, or delayed lane closures.

II. TMP DEVELOPMENT AND IMPLEMENTATION

A. OVERVIEW

Responsibilities:

The DTM:

- Acts as the single focal point for all traffic impact decisions resulting from planned activities on the state highway system.
- Determines the extent of a TMP.
- Facilitates review and approval of TMP measures and planned lane closure requests.
- Directs the termination or modification of active planned lane closure operations when traffic impact becomes significant, without compromising traveler or worker safety.

B5-289 (Cont.)

The TMP Manager:

- Acts as the single focal point for development and implementation of TMPs.

The Construction Traffic Manager (CTM):

- Serves as a liaison between Construction, the DTM and the TMP Manager.
- Reviews the TMP and traffic contingency plan for constructability issues.
- Act as a resource for the Resident Engineer, DTM and TMP Manager during TMP implementation and reviews the contractor's contingency plan.

The extent of a TMP is determined by the DTM during the preliminary studies of a capital project. For all TMPs, an itemized estimate of the proposed strategies and their respective costs are included in the Project Study Report (PSR) or Project Study Scoping Report (PSSR) for proper funding consideration. The workload required to develop and implement TMPs is estimated in advance and captured in the district work plan.

For major TMPs, a TMP team may need to be formed and led by the TMP Manager. The itemized strategies and costs are further refined in the project report stage as determined by the TMP team and appropriate functional units using the most current geometric information available. Those elements of the TMP not included as part of the main construction contract should be itemized under State Furnished Material and Expenses using the appropriate Basic Engineers Estimate System (BEES) codes in the plans, specifications and estimates. During construction, TMP activities are to be monitored and evaluated by the TMP team and those elements found not to be cost effective should be modified as deemed appropriate or eliminated. The TMP process is explained in detail in the following sections.

B5-289 (Cont.)

B. FUNDING AND PROGRAMMING

When identifying funding for various TMP elements, it is important to distinguish between capital outlay and capital outlay support.

Work done by district staff for the planning and designing of TMP activities for capital projects are a normal part of the project development process and should be captured as capital outlay support. The TMP Manager and each functional manager should work closely with the project manager to ensure that TMP activities are included in all project work plans. TMP support activities to consider include ridesharing programs, Freeway Service Patrol (FSP) contracts, public awareness campaigns, parallel route improvements and the Request for Proposal (RFP) process up to award of the contract. Note that some of these activities may also have a capital component in addition to the support component discussed here. Workload hours for TMP activities must be included in the Capital Outlay Support (COS) project's work plan in order to be resourced (funded) by COS. These activities should then be charged to each project's expenditure authorization (EA), using the appropriate Work Breakdown Structure (WBS) code for that stage of the project. TMP-related work should be charged only to the WBS codes reserved for those activities. These codes can be found on the Department's Division of Project Management's Intranet web page.

Work done by district staff for implementing TMP elements during construction of capital projects are also a normal part of the project development process. Again, workload (hours) for implementing TMP activities must be included in the COS project's work plan in order to be resourced (funded) by COS. These activities should then be charged to the appropriate project's phase three EA, and WBS code 270 (Perform Construction Engineering and Contract Administration).

Some funds necessary to implement TMP elements not done by the Department staff, including consultant contracts, can be sourced from capital outlay funds allocated by the California Transportation Commission (CTC) as itemized in the plans, specifications and estimates. Some TMP elements, such as parallel route improvements and highway advisory radios, could be a phase of the construction contract or separate construction contracts while others such as public awareness campaigns and transit subsidies must be separate contracts or cooperative agreements.

The TMP elements that need to be in place prior to start of construction are identified and funded as stage construction or first order of work under a single package presented to the CTC. If approved, the Division of Budgets may assign specific amounts for each TMP activity. All TMP activities may not necessarily be included under the main contract. Service contracts such as those for freeway service patrols, public service or consultant contracts, information campaigns, or establishing telephone hotlines must be arranged separately with consultants and other providers. For most projects, it takes four to six months to get a service contract in place. This means that all consultant contracts have been advertised, the consultant selected, and the contract ready for signature and award immediately following CTC allocation of funds. Other activities such as parallel route improvements are usually included in the main construction contract and as a first order of work under a cooperative agreement.

In some cases, the CTC can be petitioned to fund a portion of the TMP as an initial phase of the main project. This is usually for a high priority project where plans, specifications, and estimates for the main project are not yet finalized, but early funds are needed to initiate TMP activities such as making transit arrangements with local governments. The petition to fund an initial phase comes from the district, explaining why a portion of the project must proceed before funding for the main project is allocated. These early funds reduce the programmed funds for the main project accordingly.

The Federal Highway Administration (FHWA) supports the TMP concept and views major reconstruction projects as an excellent opportunity to initiate continuing traffic management strategies that provide improved traffic operations long beyond the completion of work. Examples include: installation of permanent Changeable Message Sign (CMS), full structural section shoulders, continuing auxiliary lanes, and wider shoulders for incident management during construction if cost-effective in the long term. All cost-effective transportation management activities that address the problem of delay or safety are eligible for 100 percent Federal Aid funding.

TMPs and contingency plans for Encroachment Permit projects are developed by the permittee or by Department staff. Staff time for development, review and implementation of TMPs for Encroachment Permits is charged to the permit. Maintenance normally develops TMPs for its projects; Maintenance and staff from other functional areas that expend time on Maintenance TMP charge to the designated Maintenance EA.

C. TMP IN PROJECT INITIATION DOCUMENT

The TMP is part of the normal project development process and must be considered in the Project Initiation Document (PID) or planning stage (project K phase). Since projects are generally programmed, budgeted, and given an Expenditure Authorization (EA) upon PID approval, it is important to allow for the proper cost, scope and scheduling of the TMP activities at this early stage of development. TMPs that are retrofitted to projects already programmed must be handled on a case by case basis and may require a contract change order.

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Prior to PID approval, the initiating unit sends conceptual geometrics to the district Division of Operations for evaluation. The DTM estimates the extent of the TMP required and determines whether potential traffic delays are anticipated that cannot be mitigated by traditional traffic handling practices or well-planned construction staging. The TMP Manager must sign-off on the TMP DATA SHEET in the PID. A TMP cost estimate should be developed for each alternative being considered. An estimate should not be based only on the project cost. The cost of a TMP could range from a small percentage of project cost to 20 percent or more. Further guidance can be obtained from the following publications "Wilbur Smith & Associates TMP Effectiveness Study" and Frank Wilson & Associates "A Traffic Management Plan Study for State Route 91" located in Headquarters Traffic Operations, Office of System Management Operations.

TMP Elements

A list of potential TMP strategies with their respective elements is categorized in TABLE 1. As many different elements as are feasible should be considered for the proposed project's preliminary TMP.

When developing a preliminary TMP at this early stage, use the most current layout of the roadway (geometrics) information available and consider:

Contingency Plans
Lane closure policies and procedures
TMC coordination
Multi-jurisdictional communication and buy-in
CHP and local law enforcement involvement
Emergency closures
Clearance of alternate routes for STAA and oversized
Special training or workforce development
Duration of construction (months)
Length of project (miles)
Number of major construction phases
Urbanization (urban, suburban, or rural)
Traffic volumes
Expected vehicle delay (from data sheet)
Public/media exposure
Political or environmental sensitivity
Business impacts and affected activity
Percent trucks
Potential increase in accidents
Permit issues
Conflicting construction projects
Percent reduction in vehicle capacity
Special factors (if any)
Impact on Transit/Railroad services
Viability of alternative routes

Wilbur Smith Associate's TMP Effectiveness Study and Frank Wilson & Associate's A Traffic Management Plan Study for State Route 91 During Construction of HOV Lanes (both available from Headquarters Division of Traffic Operations, Office of System Management Operations) are excellent sources for guidance on selecting the most cost-effective TMP elements. The district Public Information office is also an experienced source for estimating the effectiveness of public information campaign options, and can help the TMP Manager estimate their cost and effectiveness in reducing traffic demand through the project area.

Public information campaigns serve two main purposes in TMPs. They inform the public about the overall purpose of the project to generate and maintain public support; and they encourage changes in travel behavior during the project to minimize congestion. Because they give travelers the information they need to make their own travel choices, public information campaigns can be the single most effective of all TMP elements.

The FSP is a congestion relief program of roving tow trucks operating in most metropolitan and some rural areas. The FSP program is operated by Regional Transportation Planning Agencies (RTPAs) with funding from the Department. The Department also reimburses the CHP for training and supervisory services provided for the FSP. The RTPAs contract with tow companies

B5-289 (Cont.)

for commute time service and some weekend and mid-day service to assist motorists with simple repairs (i.e. flat tire, one gallon of gas) or tow the automobile from the highway.

FSP is available for incident management during construction. However, construction-related FSP service needs to be funded as part of the TMP. A cooperative agreement with the RTPA is required, outlining the services provided and the fund transfer. An interagency agreement with the CHP is required for any support services (field supervision and dispatch operator services). These agreements should be initiated with the RTPA and the CHP as soon as it is determined that FSP should be in the project TMP.

The Department's HQ Traffic Operations is currently working on Master Agreements with the RTPAs for future FSP services. This process will simplify the process for both the Department and the RTPAs by eliminating the need for a cooperative agreement for each project. Only a task order form will be needed for each project. A similar agreement is being created with the CHP. Please contact HQ Traffic Operations, Freeways Operations Branch for more information.

TABLE 1

TMP STRATEGIES AND THEIR ELEMENTS	
A. Public Information	Off peak/Night/Weekend Work
Brochures and Mailers	Planned Lane/Ramp Closures
Media Releases (including	Project Phasing
Minority Media Sources)	Temporary Traffic Screens
Paid Advertising	Total Facility Closure
Public Information Center	Truck Traffic/Permit Restrictions
Public Meetings/Speaker's Bureau	Variable Lanes
Telephone Hotline	Extended Weekend Closures
Visual Information (videos, slide shows, etc.)	Reduced Speed Zones
Local cable TV and News	Coordination with Adjacent Construction
Traveler Information Systems (Internet)	Traffic Control Improvements
Internet	Total Facility Closure
B. Motorist Information Strategies	**E. Demand Management**
Electronic Message Signs	HOV Lanes/Ramps
Changeable Message Signs	Park-and-Ride Lots
Extinguishable Signs	Parking Management/Pricing
Ground Mounted Signs	Rideshare Incentives
Commercial Traffic Radio	Rideshare Marketing
Highway Advisory Radio (fixed and mobile)	Transit Incentives

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Planned Lane Closure Web Site	Transit Service Improvements
The Department's Highway Information Network (CHIN)	Train or Light-Rail Incentives
Radar Speed Message Sign	Variable Work Hours
	Telecommute
C. Incident Management	Shuttle Service Incentives
Call Boxes	
Construction or Maintenance Zone Enhanced	**F. Alternate Route Strategies**
Enforcement Program – COZEEP or MAZEEP	Ramp Closures
Freeway Service Patrol	Street Improvements
Traffic Surveillance Stations (loop detectors and CCTV) Closures	Reversible Lanes
911 Cellular Calls	Temporary Lanes or Shoulder Use
Transportation Management Centers	
Traffic Control Officers	**G. Other Strategies**
CHP Officer in TMC during construction	Application of new technology
Onsite Traffic Advisor	Innovative products
CHP Helicopter	Improved specifications
Traffic Management Team	Staff Training/Development
D. Construction Strategies	
Incentive/Disincentive Clauses	
Ramp Metering	
Lane Rental	

If the DTM determines that a major TMP is required, the TMP Manager forms a TMP development team. The team's membership will vary according to the TMP elements proposed and the project's impacts. At a minimum, it should include representatives from Construction, Public Affairs, Project Development, Traffic Operations (including Transportation Permits), the CHP and local agencies. Others to be considered as the plan gets refined are Rideshare, Transportation Planning, Public Transportation, Maintenance, Structures, CHP, local law enforcement, local transit agencies, emergency services, and FHWA. Local Maintenance field staff familiar with conditions in the project area should be team members or should be consulted as needed as the TMP develops.

D. TMP IN PROJECT REPORT

As more information becomes available during the project report phase the preliminary scope and cost of the overall TMP and the individual elements should continue to be refined. The TMP team will coordinate the TMP strategies with the project engineer and appropriate units, with

B5-289 (Cont.)

each team member handling their area of expertise. For major projects, subcommittees or task forces may be formed to handle the planning, implementation, monitoring, and evaluation details of some elements. The TMP Manager will keep the Project Manager and district Construction Coordinator updated and must sign-off on the TMP data sheet of the project report.

It is appropriate at this point to develop a timeline schedule for major TMPs keeping in mind that many elements of the TMP have to begin prior to the start of construction. Many TMP elements listed in Table 1 need to be developed separately but concurrently with the project plans. They may be bid and constructed or initiated separately from the project or be included in the project plans and be installed or implemented as the first order of work.

Some tasks may take a long time depending on the complexity of the major project and the type of transportation management necessary. For example, if building new park-and-ride lots are necessary for the Ridesharing element, the planning phase would have to be extended for several months and a design phase added.

An additional activity involves analyzing the existing traffic volume in the corridor, both on the freeway and surface streets. This will provide a basis for establishing the goal of the TMP, i.e., the number of vehicles that should be removed from the freeway, and in determining the capability of the surrounding surface streets to handle the additional traffic demand. It can also provide a database for evaluating the overall effectiveness of the TMP.

E. TMP IN PS&E

Those TMP elements that are not part of the main contract, but are identified as capital outlay costs tied to the main project, should be itemized as State Furnished Materials and Expenses using the appropriate BEES item cost (see TABLE 2). The Project Engineer should consult with the TMP Manager to ensure that the appropriate "Maintaining Traffic" Standard Special Provisions (SSP) are included in the PS&E. The SSPs should always require the contractor to submit a contingency plan.

The TMP and PS&E should address oversize and overweight vehicles traveling under a transportation permit. Additional construction area signs should be provided that restrict travel to overwidth vehicles whenever the lateral clearance drops to 15 feet or less.

The DTM must concur with the PS&E and with Encroachment Permit and Maintenance TMPs.

TABLE 2

TMP BEES ITEM CODES
066003 State Furnished Materials
066004 Miscellaneous State Furnished Materials
066005 Concurrent Work
066006 Miscellaneous Concurrent Work
066008 Incentive Payment
066009 Utility Expense

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066010 Work by Others
066060 Additional Traffic Control
066061 CHP Enhanced Enforcement
066062 COZEEP Contract
066063 Traffic management plan – public Information
066064 Specter Radar Unit
066065 Freeway Service Patrol
066066 Public Transit Support
066069 Rideshare Promotion
066070 Maintain Traffic
066072 Maintain Detour
066074 Traffic Control
066076 Temporary Traffic Control
066077 Install Traffic Control Devices
066578 Portable Changeable Message Signs
066825 Temporary Striping
066872 Service Contract
128602 Traffic Control System (One Way)
128650 Portable Changeable Message Signs
129150 Temporary Traffic Screen
861793 Telephone Service (Location 1)
860811 Detector Loop
860925 Traffic Monitoring Station (Count)
860926 Traffic Monitoring Station (Speed)
860927 Traffic Monitoring Station (Incident)
860930 Traffic Monitoring Station
861088 Modify Ramp Metering System
861985 Travelers Information system
869070 Power and Telephone Service
991046 Public Address System
991047 Telephone Facility
994920 Bicycle Parking Rack

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(Cont.)

995000 Bus Shelter
995002 Bus Passenger Shelter (Type S-1)
995004 Bus Passenger Shelter (Type SM-1)
995005 Bus Passenger Shelter (Type LM-1

F. TMP DURING CONSTRUCTION AND MAINTENANCE OPERATIONS

During construction, those TMP elements that are part of the main contract or Encroachment Permit are implemented under the general direction of district Construction or Encroachment Permits. Those separate contracts/agreements such as for rideshare and transit activities and public awareness campaigns will be under the direction of their respective contract managers.

Special effort should be given to assure that Changeable Message Sign (CMS), Highway Advisory Radio ()HAR) and other media tools provide accurate and timely information to motorists regarding lane closure times and

TMP elements must be carefully monitored for cost effectiveness. The TMP team should determine whether the implemented measures are reaching the predetermined goals for cost effectiveness. If an element's predetermined goal is not immediately reached during implementation, but there is a general trend toward meeting that goal, the element can remain in effect and the FHWA will continue to participate. Elements that show no sign of approaching their predetermined goals as determined by the TMP Manager must be modified as deemed appropriate or dropped.

Contractor compliance with lane closure pickup deadlines can be enforced in two ways. A "maintaining traffic" SSP allows a penalty to be assessed to the contractor for value of traffic delay when the contractor exceeds the lane closure window. The minimum penalty is $1,000 per 10 minutes, but it can greatly exceed the minimum, depending on traffic volumes and the highway facility. The DTM calculates the "delay penalty" during PS&E. The second method is for the state representative to suspend the contract work.

A contractor or the Department forces (such as Maintenance) can be ordered to pick up a lane closure early if traffic impacts become significant either due to a project incident or activities outside the project area. Early pickup should only be ordered when traveler and worker safety will not be compromised. The "maintaining traffic" SSPs for capital projects provide for compensating contractors for early pickup. Encroachment Permit provisions require the permittee to pick up a closure early without compensation.

DTM's are to ensure that lane closures will not be terminated early, or may be extended beyond the lane closure window when the activity needs to be completed for the safety of the public or workers. These activities may include structure inspections and repairs, guardrail repairs, culvert replacement.

In order to avoid significant traffic impacts, it is essential to monitor and respond immediately to delay, pick up closures on time, and have solid traffic and contractor contingency plans.

A Department staff member who can make informed decisions about implementing contingency plans and modifying, terminating or extending approved lane closures should be available to respond to significant delays and other unexpected events whenever lane closures are in place.

B5-289 (Cont.)

The designated employee(s) may be Traffic Operations, Construction, or TMC staff, depending on the district.

At the end of the project a post-TMP evaluation report must be completed by the TMP Manager for all major TMPs and for TMPs where the actual delay exceeded the threshold set by the DTM. Post-TMP meetings with the CHP and other partners can be held to identify what went well and what could have been done differently. Samples of past TMP reports can be obtained from headquarters' Traffic Operations, Office of System Management Operations and from the DTM.

Contingency Plan

Both traffic and contractor contingency plans are required for all planned work. Both blanket and individual TMPs must include contingency plans. The traffic contingency plan, prepared by the Department or a consultant, addresses specific actions that will be taken to restore or minimize affects on traffic when the congestion or delay exceeds original estimates due to unforeseen events such as work-zone accidents, higher than predicted traffic demand, or delayed lane closures. The contractor contingency plan addresses activities under the contractor's control in the work zone. After the contractor's contingency plan is submitted and approved, it becomes part of the TMP contingency plan.

The TMP contingency plan should include, but is not limited to the following:

- Information that clearly defines trigger points which require lane closure termination (i.e., inclement weather, length of traffic queue exceeds threshold;
- Decision tree with clearly defined lines of communication and authority;
- Specific duties of all participants during lane closure operations, such as, coordination with CHP or local police, etc.;
- Names, phone numbers and pager numbers for the DTM or their designee, the Resident Engineer (RE), the Maintenance Superintendent, the Permit Inspector, the on-site traffic advisor, the CHP Division or Area Commander, appropriate local agency representatives, and other applicable personnel;
- Coordination strategy (and special agreements if applicable) between DTM, RE, on-site traffic advisor, Maintenance, CHP and local agencies;
- Contractor's contingency plan;
- Standby equipment, State personnel, and availability of local agency personnel for callout (normally requires a Cooperative Agreement);
- Development of contingencies based on maintaining minimum service level.

G. RETROFITTING PROGRAMMED PROJECTS

Usually the extent of the TMP is to be determined prior to programming (PID approval). However, it may sometimes be necessary to retrofit a TMP to a project that is already programmed due to project changes, policy changes, emergencies or unforeseen conditions. These projects must be handled on a case by case basis since the course of action will depend on how far along the project development process is and how extensive the TMP needs to be. Retrofitted TMPs may require a TMP team and TMP Manager and involvement from all functional units as discussed earlier in these guidelines. The project manager is responsible for

B5-289 (Cont.)

initiating a TMP investigation since they are most knowledgeable of project status. Some suggestions for funding retrofitted TMP are:

Use of Minor Funds

Minor A and B money has been used to pay for TMP measures that total less than $1,000,000. The districts will not usually be reimbursed for this even though the FHWA agrees to participate (it is not economically feasible for the Department to process minor funds for reimbursement). There have been exceptions however, and that decision is at the discretion of the Federal Resources Branch in headquarters Budgets Program.

Charge to Other Project Phase 4 (Construction) Funds

Funds from other construction contracts in the district may be used if those projects are in the vicinity of, or will be affected by, the project requiring TMP funds. At the discretion of the Deputy District Director for Construction a list of chargeable project EAs may be submitted to headquarters Accounting for prorated charging. Very few Accounting staff are aware of the process required and headquarters Traffic Operations, Office of System Management Operations should be contacted for assistance.

Project Cost or Scope Changes

The CTC has delegated to the Director of the Department the authority to increase a project's cost by up to 20 percent without prior commission approval. This authority has been delegated to other Department managers as described in Project Management Directive PMD6. This increase can be used for TMP implementation and will be 100 percent reimbursable by the FHWA. The increased costs must be absorbed by other projects in the district since the total capital outlay allocation remains the same.

H. LOCAL INVOLVEMENT

The TMP Deputy Directive 60 applies to all projects on state facilities, including those not funded by the state. District Directors are responsible for assuring local compliance. Since many measure projects are split funded, the Department and local entities must work cooperatively to develop an effective TMP. The Department is responsible for approving all PSRs and it is at this point that agreements should be reached concerning the costs and scope of TMP measures.

III. CORRIDOR, REGIONAL AND MULTI-FUNCTIONAL AREA TMPS

When multiple or consecutive projects are within the same general corridor, the cumulative impact can result in excessive traffic delays and detour conflicts. These may be multiple capital projects, the involvement of more than one district, or a combination of capital projects and Encroachment Permit and/or Maintenance activities. Corridor or regional coordination will minimize or eliminate these impacts and reduce inconvenience to the motoring public.

When multiple projects are in the same corridor or on corridors within the same traffic area, it may be possible to develop a single corridor or regional TMP. In other cases, individual TMPs are developed and funded from their own sources, and a bare-bones corridor or regional TMP addresses the cumulative impact. Each project covered by corridor and regional TMP contributes resources in proportion to its traffic impact. During TMP implementation, the TMC serves as an information clearinghouse and coordinates operations. The TMC helps identify conflicts and recommends appropriate action. When provided with accurate and up-to-date lane closure information the TMC provides real-time traffic information via electronic media, CMS, and HAR.

B5-289 (Cont.)

The TMP Manager coordinates the development and implementation of corridor and regional TMPs. The TMP Manager forms a TMP team including, as a minimum, representatives from Construction, Maintenance, Public Affairs and Traffic Operations for each of the affected districts. The initial meeting is held several months in advance of the construction season to set milestones, and allow time to gather project information and prepare and distribute information.

The corridor/regional TMP may need elements in addition to those provided by the individual TMP for each project. Those elements may include changeable message signs at key locations outside individual project limits, the establishment of an information hot line and web-sites for all projects involved. The use of the statewide Caltrans Highway Information Network (CHIN) number (1-800-427-ROAD), and particularly the use of TMCs as a central reporting hub. The Northern Valley TMC in District 3 has established reporting procedures specifically for interregional TMPs that are obtainable from headquarters Traffic Operations.

IV. MAJOR LANE CLOSURE APPROVAL PROCESS

This process applies to all major lane closures on the state highway system. Major lane closures are those lane closures that are expected to result in significant traffic impacts despite the implementation of TMPs. A "significant traffic impact" is defined in DD-60 as (a) 30 minutes above normal recurring traffic delay on the facility, or (b) the delay threshold set by the DTM, whichever is less. When a planned lane closure is expected to have a significant traffic impact, Headquarters District Lane Closure Review Committee (DLCRC) review and approval is required. The functional unit directly involved in the work must submit the major lane closure request to the DLCRC for approval as detailed below.

A traveler's trip should not be increased by more than 30 minutes due to planned Department activities. The DTM may set a lower maximum if the economic impact of a delay over 20 minutes would be high. The lesser of these delay limits is the maximum delay threshold allowed for any activity. Only the DLCRC can approve a higher delay threshold for a project.

Additionally, it should be noted that TMP activities are comprehensive, and involve actions in addition to traffic management through the work zone, as detailed in these TMP Guidelines. All lane closure operations and other planned activities should be evaluated at the earliest possible developmental stage for potential impacts and mitigation strategies. Pre-implementation meetings and contingency plans remain important aspects of all lane closure operations to minimize impacts of unforeseen events.

A. THRESHOLD CRITERIA FOR LANE CLOSURES REQUIRING APPROVAL OF THE DLCRC

DLCRC review and approval is required when planned activities are expected to result in a traffic delay that exceeds 30 minutes or the delay threshold set by the DTM, which ever is less.

DLCRC review and approval is not required for emergency closures due to natural events or incidents. However, the DTM must be notified, and every effort must be made to minimize traveler delay and reopen traffic lanes as soon as practical.

Applicability

The DLCRC, comprised of the CHP, District Public Information Officer, and Deputy District Directors of Construction, Design, Maintenance and Operations, approves all requests for major lane closures that meet the above threshold criteria. The criteria are applicable for moving or static lane closure operations. The DLCRC will decide when to submit lane closure requests that

B5-289 (Cont.)

are of an interregional, statewide, environmental, or otherwise sensitive nature to the Headquarters Lane Closure Review Committee (HQLCRC) for their approval.

The DLCRC is responsible for determining when HQLCRC approval is required. The HQLCRC is comprised of the Division Chiefs for Construction, Maintenance, Design and Local Programs, and Traffic Operations along with the Headquarters Public Information Officer, and a representative from the CHP. The HQLCRC may review the closure or leave the decision to the DLCRC. The HQLCRC should be advised of all planned lane closures that exceed the above threshold criteria. All planned lane closures that exceed the above threshold criteria and are of an interregional, statewide, environmental, or otherwise sensitive nature, as determined by the district LCRC, may also require approval of the HQLCRC.

Contents of Major Lane Closure Request Submittal

The functional unit requesting the lane closure and responsible for its performance prepares a proposed lane closure submittal. Sufficient information is provided to ensure complete understanding of the proposal. The submittal is sent through the DTM for review before sending it on to the LCRC. If additional TMP efforts can reduce the expected additional delay to less then 30 minutes, then the closure does not have to go to the LCRC. The DLCRC/HQLCRC may require additional information during its review. At a minimum, the following information is recommended initially:

1. Location and vicinity maps showing the state highway(s), local street network, and other adjacent lane closures or nearby work that may affect traffic during the same period, including special events;
2. Dates, times and locations of the lane closure(s);
3. Brief description of the work being performed during the lane closure(s);
4. Brief description of each lane closure and its anticipated affect on traffic;
5. Amount of expected delay and corresponding queue length for each lane closure;
6. Summary of TMP strategies that will be used to reduce delay and motorist inconvenience during the lane closure(s) (refer to Table 1). A copy of the approved TMP for the project, if available;
7. Contingency plan (see "Contingency Plan" below).

B. EVALUATION

The LCRC is responsible for approving major lane closures and will use the items below for evaluating lane closure operations. In its evaluation of the proposal, the LCRC will give consideration to the accuracy, reliability, and completeness of information provided as well as other reliable sources of information available to the LCRC.

Proposals will be evaluated on the basis of effectiveness in the following areas:

- Promoting motorist and worker safety;
- TMP strategies;
- Plans for coordination with adjacent construction, maintenance, encroachment permits, and special events;

B5-289 (Cont.)

- Plans for coordination with TMC and field personnel;
- Plans for coordination with public media;
- Plans for use of existing field elements such as traffic surveillance loops, changeable message signs, highway advisory radio, and Closed Circuit Television cameras;
- Lines of communication and authority (top to bottom);
- Plans for monitoring delay (or corresponding queue length) during lane closure operations;
- Alternatives to proposed closures;
- Viability of contingency plans;

C. Post-Closure Evaluation Statement

A Post-Closure Evaluation statement will be submitted to headquarters' Traffic Operations Program, Office of System Management Operations, on all projects that exceed expected delay or run outside of the closure window. No more than one page is suggested. The functional unit performing the lane closure will prepare the statement within five working days of the date the lane closure exceeded the threshold criteria. The statement should explain:

- The cause and impact of delays;
- Either actions taken or to be taken to avoid or mitigate an occurrence or recurrence;
- Why the expected delay was exceeded and/or why it was necessary to exceed the closure window;
- How the situation can be avoided in the future.

Post-closure evaluation statements are only for closures formally approved by the District LCRC under this process (i.e. exceed the lesser of 30 minutes or the DTM limit).

B5-289 (Cont.)

STATE OF CALIFORNIA, RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

801 K STREET • MS 20-22 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 322-1110 • FAX 916 / 322-1201 • TDD 916 / 324-2555 • WEBSITE conservation.ca.gov

November 29, 2007

Mr. Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Subject: Notice of Preparation (NOP) for the Sacramento Natural Gas Storage Project draft Environmental Impact Report, Sacramento County
Application No. 07-04-013

Dear Mr. Rosauer:

B5-289 (Cont.)

The Department of Conservation's (Department) Division of Oil, Gas, and Geothermal Resources (Division) has reviewed the above referenced project. The Division is mandated by Section 3106 of the Public Resources Code (PRC) to supervise the drilling, operation, maintenance, and plugging and abandonment of wells for the purpose of preventing: (1) damage to life, health, property, and natural resources; (2) damage to underground and surface waters suitable for irrigation or domestic use; (3) loss of oil, gas, or reservoir energy; and (4) damage to oil and gas deposits by infiltrating water and other causes. Furthermore, the PRC vests in the State Oil and Gas Supervisor (Supervisor) the authority to regulate the manner of drilling, operation, maintenance, and abandonment of oil and gas wells so as to conserve, protect, and prevent waste of these resources, while at the same time encouraging operators to apply viable methods for the purpose of increasing the ultimate recovery of oil and gas. This authority also extends to the permitting and oversight of gas storage projects.

The scope and content of information that is germane to the Division's responsibility are contained in Section 3000 et seq. of the PRC, and administrative regulations under Title 14, Chapter 4 of the California Code of Regulations. Written approval from the Supervisor is required prior to changing the physical condition of any well. The project applicant must consult with the Division of Oil, Gas, and Geothermal Resources district office in Sacramento to conduct any of the work mentioned above.

In addition, written approval from the Supervisor is required prior to changing the physical condition of any well. The operator's notice of intent to perform any well operation is reviewed on engineering and geological basis. For new wells, gas storage projects, and the altering of existing wells, approval of the proposal depends primarily on the following: protecting all subsurface hydrocarbons and fresh waters; protection of the environment; using adequate safety equipment; and utilizing approved drilling and cementing techniques. The Division must be notified to witness or inspect all operations specified in the approval of any notice. This includes tests and inspections of blowout-prevention equipment, reservoir and freshwater protection measures, well-plugging operations, and annual tests/surveys.

Operators must have a bond on file with the Division before certain well operations are allowed to begin. The purpose of the bond is to secure the State against any expenses that the State may incur in obtaining operator compliance with applicable laws, regulations, and orders of the Supervisor. The operator must also designate an agent, residing in the State, to receive and accept service of all orders, notices, and processes of the Supervisor or any court of law.

We would like to suggest that the Division be added to your Initial Study Summary - Environmental Checklist agency contacts for projects of this type. **B5-289 (Cont.)**

If you have any questions, please contact me at (916) 322-1110.

Sincerely,

Robert S. Habel

Robert S. Habel
Deputy Supervisor

Kevin McCarty
Sacramento City Councilmember, District 6
PUC Scoping Meeting December 6, 2007

- Councilmember representing the residents of the Glen Elder neighborhood
- Spent the last year listening with an open mind to the project
- Focused, diligent effort researching the project and talking to industry experts
- Conclusion is that the neighborhood residents face risks that greatly exceed the benefits to the gas company
- While I understand that there are benefits to the city, it is not comprehensible to me to allow residents of this community to bear the burden of these risks
- According to both SMUD and PGE… this project would be helpful, good for business but is in no way necessary for the city, nor either utility
- Through our research we have spoken to experts in the field of gas migration. The following are a few of their safety concerns:
    1. Underground gas storage facilities have demonstrated a history of gas migration problems.
    2. Gas storage facilities pose a risk of explosion and fire, especially when located in an urban setting.
    3. Gas storage within natural geologic formations does not take into consideration fracture zones and imperfections in the earths geologic layers that result in gas migration toward the surface.
    4. There is no way to assure that there will be no vertical gas migration to the surface.
    5. Noxious odors and emissions of carcinogenic chemicals from gas storage operations.
- The burden of proof regarding the safety concerns lies with the applicant, and they have not proven to me or the neighborhood that this project is in fact, safe. In addition, I have asked the applicants to move the project to one of their alternative non-residential sites.
- It seems to me that a questionable industrial use like this should be in a commercial or industrial area, not a residential neighborhood.
- Therefore, I am requesting the following from the PUC:
    1. Full blown Health Risk Assessment through the EIR process
    2. Comprehensive review of alternate non-residential sites – & No Project
    3. Review of the economic issues as they relate to property values
    4. Thorough exploration of the gas migration issues
    5. Review of the safety and security issues posed to residents of the community
    6. Follow CPUC policies and directives to take environmental justice issues into consideration, especially given the demographics of this neighborhood

    - Thank you for your time

B5-289 (Cont.)

CALIFORNIA PUBLIC UTILITIES COMMISSION
Proposed Sacramento Natural Gas Storage Project

Thursday, December 6, 2007

Name*: Diana Portillo
Affiliation (*if any*):* Colonial Manor Neighborhood Association
Address:* P.O. Box 245214
City, State, Zip Code:* Sacramento, CA 95820
Telephone Number:* 916-451-7404
Email:* cmnagetnfo@yahoo.com

The need for reserves seems sound but why locate the facilities close to residents when there is so much open space going east past Florin/Perkins.

B5-289 (Cont.)

** Please print. Your name, address, and comments become public information and may be released to interested parties if requested.*

Please either deposit this sheet at the sign-in table before you leave today, or fold, stamp, and mail. Insert additional sheets if needed. Comments must be received by December 17, 2007. Mailing address: Michael Rosauer, California Public Utilities Commission, c/o Dudek, 605 Third Street, Encinitas, CA 92024.

EXHIBIT 2

B5-289
(Cont.)

The Sacramento Natural Gas Storage Draft EIR states the project "should not have a significant adverse impact on human health."[1]

The California Public Utilities Commission (CPUC) is the state regulatory agency with the primary responsibility for reviewing the proposed project under the California Environmental Quality Act. The CPUC assessed potential impacts for 12 issue areas and 79 specific potential impacts. The CPUC has determined that 76 of the 79 have "no impact" or a "less than significant impact," including:

- ***Air Quality***
- ***Biological Resources***
- ***Cultural Resources***
- ***Geology and Soils***
- ***Land Use***
- ***Agriculture and Recreation***
- ***Noise and Vibration***
- ***Population and Housing***
- ***Public Services and Utilities***
- ***Transportation and Traffic***
- ***Visual Resources***

HEALTH & SAFETY

A question was asked by the Avondale Glen Elder Neighborhood Association (AGENA) if the project would result in cancer risks or odors. The Draft EIR categorically states the project meets regulatory safety standards for cancer risks and noxious odors.

- *Children at the two nearby Elementary Schools identified in the DEIR have a 50 times smaller cancer risk from exposure to the project than the regulatory significance threshold. (page D.2-29)*
- *Residents living over the natural gas field have a "less than significant" cancer risk from exposure to the project. (page D.2-29)*
- *Potential odors are less than one percent (1%) of the significance threshold. (page D.2-30)*

Also, the environmental consultant used inaccurate input data for several issues including pipeline and reservoir pressures and numerous safety features. SNGS will be correcting these and other errors in its written comments for incorporation in the ***Final*** EIR.

B5-289 (Cont.)

Draft Environmental Impact Report Ready for Public Review

The project is currently in its planning stages. The Draft Environmental Impact Report (DEIR) has just been released for public review and comment. The documents will be available for public review and comment from Wednesday, April 8, to Monday, May 25, 2009. Review a copy of the DEIR at the following locations:

CPUC Web Site
www.cpuc.ca.gov/environment/info/dudek/sngs/SNGS_Home.htm

SNGS Office
8031 Fruitridge Road, Suite B | Sacramento, CA 95820 | (916) 388-2088

The CPUC draft is very extensive and quite thick; however, there is a 72-page Executive Summary (including maps and charts) in the front of the document that provides condensed details.

CPUC Public Hearing
April 28, 2009
California Public Utilities Commission
Draft Environmental Impact Report
Sacramento Natural Gas Storage
Project No. A. 07-04-013
(see details on reverse)

SACRAMENTO
Natural Gas Storage

What is an EIR?

An Environmental Impact Report (EIR) is a document that identifies the impacts that construction and operation of a project may have on its surrounding environmental resources and what measures could be taken to avoid or reduce the effects on the environment. This report is prepared before the project is approved, thus identifying and addressing concerns before any impacts occur.

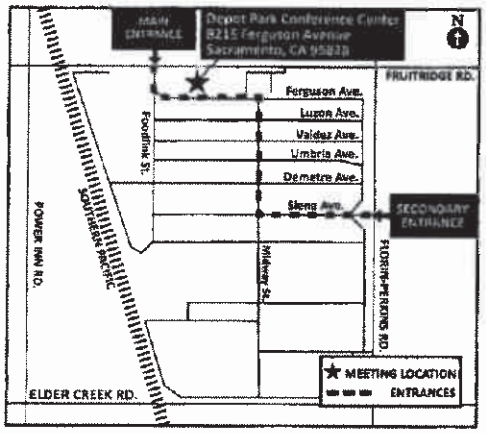
Because an EIR details potential effects to the environment in which we live, the document is made public for review and comment before it is finalized and adopted. A 45-day public review period is scheduled, during which interested individuals and agencies can provide comments to help ensure that the final EIR includes adequate consideration and discussion of significant environmental impacts, mitigation measures, and alternatives to the proposed project.

Please bring this flyer with you to the meeting to get through the security gate. There is a secondary (truck) entrance off Florin-Perkins Road.

Please Plan on Attending the CPUC Public Hearing

Tuesday, April 28, 2009

6:00 p.m. Public Information Meeting on the DEIR
7:00 p.m. Public Participation Hearing
Depot Park, Conference Center – Sacramento Room
8215 Ferguson Avenue | Sacramento, CA 95828



B5-289 (Cont.)

SACRAMENTO Natural Gas Storage
8031 Fruitridge Road, Suite B
Sacramento, CA 95820

Draft EIR Released for Public Review and Comment
April 8–May 25

Presorted
First Class Mail
US Postage
PAID
Sacramento CA
Permit #1890

MS. ELLA PICKETT
7580 52ND AVE
SACRAMENTO CA 95828-2010

EXHIBIT 3

B5-289
(Cont.)

SACRAMENTO
Natural Gas Storage

PAYMENT OPPORTUNITIES FOR HOMEOWNERS

Sacramento Natural Gas Storage (SNGS) is meeting with neighbors to discuss leasing options for storage rights. SNGS representatives will be going door-to-door (early evenings Monday through Friday and throughout the day on Saturdays) over the next couple of months to review project information and leasing materials with neighbors.

Beginning February, 2008, the SNGS leasing representatives will be available to answer any questions or begin the leasing process at the new temporary office. Walk-ins are welcome, but appointments are recommended to eliminate waiting. Notaries will also be on hand allowing you to receive your signing bonus check on the spot. Should you wish to schedule a leasing appointment now, please contact the Leasing Coordinator, Dave Baker, at (916) 517-5646.

According to California State law, those who own a property also own the minerals and rights to store natural gas with the property.

SNGS Leasing Office: 8031 Fruitridge Road, #B, (916) 517-5646
9:00 a.m. - 4:00 p.m. M-F or by appointment

PROJECT BENEFITS

PROJECT UPDATE

Since the last project newsletter dated June 2007:

- SNGS hosted a Community Open House on June 27, 2007 with a panel of safety experts.
- SNGS requested the California Public Utilities Commission (CPUC) to do a complete Environmental Impact Report (EIR) as part of its review process.
- CPUC conducted a public "Scoping Meeting" on December 6, 2007 at the Army Depot Conference Center to hear community input about the project and issues to be addressed in the EIR.
- SNGS secured additional equity financing through the Wells Fargo Energy Capital group.
- SNGS registered the project with the U.S. Green Building Council, and is designing to secure a LEED's Silver Certificate for this "green project".
- SNGS added a new connection to the PG&E pipeline as a means to better support the PG&E system and its customers.
- SNGS agreed with the Sacramento Building Trades Council that this project will be built by union labor.
- SNGS developed a Web site: **www.sacnaturalgas.com**.
- SNGS has started paying neighbors for gas storage rights.

A panel of safety experts were on hand at the June 27, 2007 meeting to answer community questions.

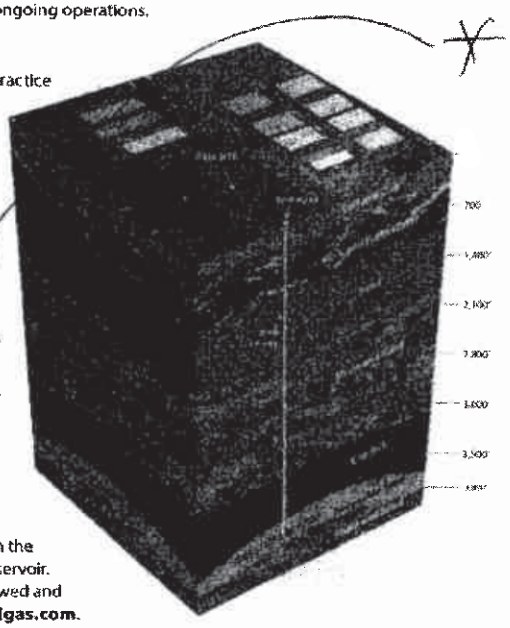
B5-289
(Cont.)

HEALTH & SAFETY

SNGS is committed to a high level of safety. City, County, State and Federal regulatory agencies will ensure the safety of project construction and ongoing operations.

SNGS will be a safe and simple operation...

- Storing natural gas underground is a long-established practice (since World War II in California), with hundreds of facilities safely operating all over the country.
- Modernized operations will make the SNGS even safer than when the Florin Gas Field was safely supplying gas in the 1980s.
- SNGS will use cutting-edge technology and proven safety procedures and it will be strictly regulated and monitored by the CPUC and other regulatory agencies.
- Respected Sacramento Fire and Safety Officials testified at the June 27, 2007 meeting affirming that the project is safe.
- The natural depository is located nearly one mile underground, far below the water table and underneath a thick layer of solid caprock.
- Gas will be stored in a layer of permeable, porous sandstone, somewhat like a sponge—there is no oxygen present in this layer of sandstone and no risk of explosion.



To ensure public safety and project feasibility, the SNGS team conducted a series of comprehensive safety studies to confirm the scientific and geologic integrity and viability of the storage reservoir. Summaries of the safety studies conducted to date can be viewed and downloaded on the project Web site at **www.sacnaturalgas.com**.

SNGS EXPANDS ENVIRONMENTAL REVIEW PROCESS

As part of the project approval process, SNGS opted to expand the environmental review by requesting a complete Environmental Impact Report (EIR). Leading this effort is the California Public Utilities Commission. The purpose of an environmental review is to provide government agencies and the public with information on any potentially significant environmental effects that a proposed project is likely to have and to list ways which the environmental effects may be minimized and indicate alternatives to the project. During the process, there are opportunities for interested parties to submit comments on the proposed project.

To request additional information or to be added to the mailing list, please contact the CPUC by email, fax, or phone as follows:

Project email: **sngs@dudek.com**

Project fax and voicemail: **(800) 371-8797**

CPUC Project Web Site: **http://www.cpuc.ca.gov/environment/info/dudek/sngs/SNGS_Home.htm**

SNGS FUNDS THE NEIGHBORHOOD FOUNDATION

SNGS is excited to create a new Neighborhood Foundation, an organization designed to support projects and activities within the community. It is envisioned that the organization would provide a positive impact on the neighborhood and would be managed by representatives of the community and the City. SNGS is committed to donating $25,000 during the initial start up, and increase the amount to approximately $44,000 per year during full operation. More information will follow pending approval of the SNGS project.

B5-289 (Cont.)

BACKGROUND INFORMATION ON STORAGE RIGHTS ISSUE

Mineral Rights in the 1980s

In the 1980s, when Unocal and Proctor & Gamble managed the Florin Field facility, many neighborhood property owners were paid a "mineral royalty" for the natural gas being harvested beneath their property. During this time, some property owners elected to be paid on a monthly basis, receiving checks for $15 to $20 a month, while others elected to sell their rights for a one-time payment of $1,800. The amount of the payment was based on how much natural gas was produced and the rate of production. When production dropped, the payments dropped and when production stopped, payments stopped.

Gas Storage Rights in 2008

The previous operation depleted Florin Field's natural gas, leaving an empty underground reservoir. SNGS is planning to reuse that reservoir to store natural gas. In order to utilize this geologic formation that lies below the neighborhood, SNGS has proposed a program to lease storage rights from property owners. That program is designed to provide every landowner whose property extends above the reservoir more than fair market value for the underlying storage rights.

COMPENSATION FOR PROPERTY OWNERS & ESTIMATED LEASE AMOUNTS

SNGS is committed to make an offer that is more than fair market value to all landowners whose property extends above the reservoir. The proposed offer exceeds the Appraisal of fair market rental (dated June 1, 2007) made by the firm of Harold W. Bertholf, Inc., a well-respected appraisal, engineering, and geological company previously used by the City of Sacramento. The offer includes the following:

- Every landowner will be paid at the same rate for their storage rights.
- Each landowner who voluntarily signs a lease will receive a "signing bonus".
- The amount of money that SNGS will pay for the storage rights will be a fixed percentage of the company's gross revenues which may increase over time.
- Each landowner will receive a minimum annual payment of $1000 per acre but no less than $500 per parcel, no matter how small their parcel may be.

SNGS is paying more than the appraised market value for a typical sized neighborhood property shown to the left. This example shows the estimated SNGS compensation based on 4% of the projected annual gross revenue of $12.6 million in the first full year of operations. The structure of this compensation package allows property owners to share in future, expected revenues.

ANNUAL PAYMENTS FOR STORAGE RIGHTS ON 0.20 ACRE PARCEL

COMPARISON OF "APPRAISED FAIR MARKET VALUE" AND THE SNGS OFFER

	Appraised Fair Market Value	SNGS Offer
SIGNING BONUS	$-0-	$500
$/ACRE/YEAR		
Year 1	$120	$500 (minimum)
Year 5	$140	$570
Year 10	$700	$700
Year 15	$850	$850
5 Year Total	$740	$3,160
10 Year Total	$3,970	$6,390
15 Year Total	$7,910	$10,320

Note: SNGS Offer is based on 4% of projected estimated annual Gross Revenue of $12.6 million in the first full year of operations (Year 1)

SACRAMENTO
Natural Gas Storage

B5-289
(Cont.)

EXHIBIT 4

B5-289
(Cont.)

SACRAMENTO
Natural Gas Storage
www.sacnaturalgas.com

8031 Fruitridge Road, Suite B
Sacramento, CA 95820
Phone: (916) 388-2088
Fax: (916) 388-2087

January 15, 2009

Dennis and Barbara Smith
5912 Tierra Green Way
Sacramento, CA 95828

Dear Dennis and Barbara,

I would like to have one of our representatives meet with you to explain our proposed project, answer any questions you may have about our firm, and hopefully lease from you the area about ¼ mile below the surface for natural gas storage. We do not want to, in any way, enter upon the surface of your property or interfere with your day-to-day activities. We will pay you for the use of your sandstone in the gas zone.

There has been natural gas in the sandstone beneath your property for many millions of years and, there is still gas in that sandstone today. We want to increase the volume in the sandstone and on a day-to-day basis inject the gas or withdraw the gas according to the needs of the community.

SMUD has signed an agreement with us to store gas on their behalf. They have done this to assure a supply of gas for their electric plants and at a reasonable price. This will prevent electric disruption and help to keep low electric rates for everyone. This is both a necessary health and an economic issue for our community.

This is a safe operation that occurs in both urban and rural areas throughout the United States. There are over 300 such projects throughout the country that have operated for many years and there has not been a single instance of damage to homes or injury to residents as a result of any of these projects.

Our project is designed to be the national leader of environmentally friendly, "Green" gas storage projects and, as such, will be the model for similar safe and green projects in the future. This can and should be a source of pride to our community.

B5-289
(Cont.)

Over 700 of your neighbors have signed gas storage leases with us representing more than 500 properties. We want to add you to our happy and satisfied residents on the surface of this storage field. We also provide a $500 bonus (on the day you sign) for those who meet with us and sign leases.

Please call David Baker or myself to set a convenient time to meet with you and explain all aspects of the project and to answer your questions (388-2088). Or call Dixie Mara (271-7516), our field agent, who will come to your home and meet with you.

Thank you for your consideration. We look forward to hearing from you soon.

Sincerely Yours,

Jim Fossum
Chairman of the Board

B5-289
(Cont.)

EXHIBIT 5

B5-289
(Cont.)

SACRAMENTO
Natural Gas Storage

8031 Fruitridge Road, Suite B
Sacramento, CA 95820
(916) 388-2088

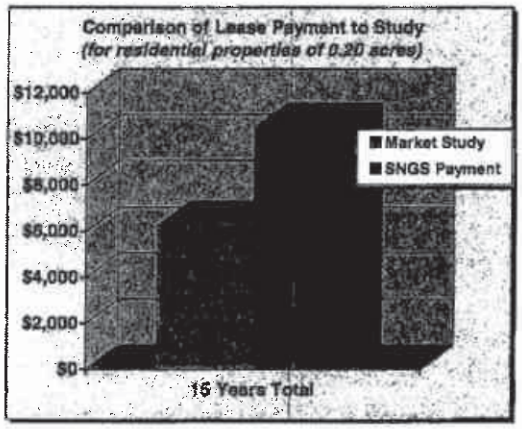
April 14, 2009

Jerry William Samla Jr.
7636 Tierra Glen Way
Sacramento, CA 95828

RE: CITY STUDY CONFIRMS SNGS LEASE RATES ARE GENEROUS

Dear Jerry William:

We are pleased to report that the City of Sacramento's independent study of the storage rental being offered by SNGS has been completed, and the news is ***excellent***. The evaluation study[1] shows that SNGS lease payments are 62% more than market rent as determined by Integra Realty Resources – Chicago Metro.



For those of you who have already signed leases, this independent study affirms that you have made a great financial decision. For those of you who were patiently waiting for the evaluation study before signing, you can now be confident that doing so is financially wise.

To sign your lease now, please call (916) 388-2088 to schedule an appointment with Dave Baker. Para Español llame a Claudine a (916) 388-2092. If you wish to review the full evaluation study, please drop by the SNGS office anytime during normal business hours (8:00 a.m. to 5:00 p.m.) at 8031 Fruitridge Road, Suite B.

Sincerely,

Jim Fossum
Chairman

This study is about city property & says it is not giving an opinion about rental value of residential property.

SNGS is clearly misrepresenting the facts!

---

[1] *Market Rent Survey Regarding: Land Over the Florin Gas Field*
14.42 Acres of Non-Contiguous Property
SWQ Power Inn Road & 53rd Avenue
Sacramento, CA 95828
Effective Date of Analysis: January 31, 2009

B5-289 (Cont.)

EXHIBIT 6

B5-289
(Cont.)

MARKET RENT SURVEY REGARDING:

Land Over the Florin Gas Field
14.42 Acres of Non-Contiguous Property
SWQ Power Inn Road & 53rd Avenue
Sacramento, Sacramento County, California 95828
Client Reference Number: 2008-0726

PREPARED FOR:
Mr. Bill Sinclair
City of Sacramento
5730 24th Street
Sacramento, California 95822

EFFECTIVE DATE OF THE ANALYSIS:
January 31, 2009

REPORT FORMAT:
Summary

INTEGRA REALTY RESOURCES - CHICAGO METRO
File Number: SCRMNT.0808003

INTEGRA Realty Resources

LOCAL EXPERTISE...NATIONALLY

B5-289
(Cont.)

January 31, 2009

Mr. Bill Sinclair
City of Sacramento
5730 24th Street
Sacramento, California 95822

SUBJECT: Market Rent Survey Regarding:
Land Over the Florin Gas Field
14.42 Acres of Non-Contiguous Property
SWQ Power Inn Road & 53rd Avenue
Sacramento, Sacramento County, California 95828
Client Reference Number: 2008-0726
Integra Chicago Metro File No. SCRMNT.0808003

Dear Mr. Sinclair:

Integra Realty Resources – Chicago Metro is pleased to submit the accompanying market rental survey regarding the referenced property. The purpose of the appraisal is to develop an opinion of the appropriate market rental rate for the subject property. The client for the assignment is City of Sacramento, and the intended use is for assessing of fair market rent for municipally-owned property.

B5-289 (Cont.)

The consulting assignment is intended to conform with the Uniform Standards of Professional Appraisal Practice (USPAP), the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute.

The subject is a parcel of land containing an area of approximately 14.22 acres, or 619,336 square feet; as of the date of this report, approximately 13.32 acres of the total is improved with a park (open space) identified as Danny Nunn Park and approximately four single-family residences. The remainder of the total acreage, or approximately 0.90 acres (39,204 square feet) is distributed among another four, non-contiguous parcels scattered throughout the residential subdivision property to the north and, as best as can be determined as of the current date, consists of city-owned drainage culverts, alleyways and similar municipal land uses. The property is zoned RE, Rural Estate, which permits variety of residential and ancillary uses. For the purposes of this rental analysis and survey, however, the existing vertical improvements are exempted, and the appropriate rental applicable to land only is under consideration.

Based on the survey and analyses in the accompanying report, and subject to the definitions, assumptions, and limiting conditions expressed in the report, our opinion of the appropriate market rental rate for the subject property is as follows:

CONCLUSIONS

	As Of	Rental Rate
Appropriate Market Rental Rate (Operational Year 1)*	January 31, 2009	$1,800/surface acre
Appropriate Market Rental Rate for Development Period (2 years maximum)	January 31, 2009	$844/surface acre

* Base Rent and Overage Rent combined

EXTRAORDINARY ASSUMPTIONS & HYPOTHETICAL CONDITIONS

The conclusions are subject to the following extraordinary assumptions and hypothetical conditions that may affect the assignment results.

For purposes of this market rent survey and analysis, we assume:

a. That no specifically atypical, non-market restrictions or requirements will be reflected in the storage lease document between the client and the storage operator. We have not been provided any documentation, draft or otherwise, pertaining to this proposed lease arrangement and have therefore made certain assumptions as regards the client's/lessor's continued access and utilization of the surface parcel, etc. Should subsequently-provided information prove discrepant to the assumptions made herein in this regard, we reserve the right to review and/or alter this report and/or its conclusions according to a time and materials fee basis.

b. That the subject property's size and configuration, as provided us by the client and verified to the extent available via public records (the Sacramento County Assessor) is reasonably accurate. We were not provided with either a plat of survey or a title policy encompassing the entire subject property under consideration herein, and available sources were inconsistent with respect to parcel size and inclusion. Should subsequently provided information prove significantly discrepant to the assumptions necessarily made herein, we reserve the right to reivew and/or alter this analysis and/or its conclusions according to a time and materials fee basis.

c. The unit rental estimate concluded herein is reasonably appropriate and within market parameters as applied to similarly-configured and utilized land parcels in the subject's market of between approximately 10 and 20 acres in aggregate size. Any aggregate land measure which falls outside these parameters has not been addressed in this analysis and would require a separate analysis for concluding to an appropriate unit rental

The opinions expressed in this report are based on estimates and forecasts that are prospective in nature and subject to considerable risk and uncertainty. Events may occur that could cause the performance of the property to materially differ from our estimates, such as changes in the economy, interest rates, capitalization rates, financial strength of tenants, and behavior of investors, lenders, and consumers. Additionally, our opinions and forecasts are based partly on data obtained from interviews and third party sources, which are not always completely reliable. Although we are of the opinion that our findings are reasonable based on current market conditions, we are not responsible for the effects of future occurrences that cannot be reasonably foreseen at this time.

B5-289
(Cont.)

SUMMARY OF SALIENT FACTS AND CONCLUSIONS

Property Name	Land Over the Florin Gas Field	
Address	SWQ Power Inn Road & 53rd Avenue Sacramento, California 95828	
Property Type	Land	
Owner of Record	City of Sacramento	
Land Area	14.22 acres; 619,336 SF	
Zoning Designation	RE, Rural Estate	
Highest and Best Use	Residential	
Exposure Time; Marketing Period	months; months	
Effective Date of the Report	January 31, 2009	
Market Comparable Lease Analysis		
Number of Rental Comparables	6	
Indicated Rental per Surface Acre	$1,500	
Sales Comparison Approach		
Number of Sales	5	
Range of Sale Dates	Jan 08 to Oct 08	
Range of Prices per SF (Unadjusted)	$4.73 - $11.72	
Indicated Fee Simple Value	$3,100,000	($5.01/SF)
Indicated Market Cap Rate	1.00%	
Indicated Rental per Surface Acre (all rent via this methodology	$2,180	
Indicated Reduced Development Period Rent (2 years maximu	$844	per acre
Appropriate Market Rental Rate Conclusion*	$1,800/surface acre	

*Base Rent and Overage Rent combined

B5-289 (Cont.)

EXTRAORDINARY ASSUMPTIONS & HYPOTHETICAL CONDITIONS

The conclusions are subject to the following extraordinary assumptions and hypothetical conditions that may affect the assignment results.

For purposes of this market rent survey and analysis, we assume:

a. That no specifically atypical, non-market restrictions or requirements will be reflected in the storage lease document between the client and the storage operator. We have not been provided any documentation, draft or otherwise, pertaining to this proposed lease arrangement and have therefore made certain assumptions as regards the client's/lessor's continued access and utilization of the surface parcel, etc. Should subsequently-provided information prove discrepant to the assumptions made herein in this regard, we reserve the right to review and/or alter this report and/or its conclusions according to a time and materials fee basis.

b. That the subject property's size and configuration, as provided us by the client and verified to the extent available via public records (the Sacramento County Assessor) is reasonably accurate. We were not provided with either a plat of survey or a title policy encompassing the entire subject property under consideration herein, and available sources were inconsistent with respect to parcel size and inclusion. Should subsequently provided information prove significantly discrepant to the assumptions necessarily made herein, we reserve the right to reivew and/or alter this analysis and/or its conclusions according to a time and materials fee basis.

c. The unit rental estimate concluded herein is reasonably appropriate and within market parameters as applied to similarly-configured and utilized land parcels in the subject's market of between approximately 10 and 20 acres in aggregate size. Any aggregate land measure which falls outside those parameters has not been addressed in this analysis and would require a separate analysis for concluding to an appropriate unit rental

GENERAL INFORMATION

IDENTIFICATION OF SUBJECT

The subject is a series of non-contiguous parcels of vacant land containing an aggregate area of 14.22 acres, or 619,336 square feet. The property is zoned RE, Rural Estate, which permits variety of residential and ancillary uses. A legal description of the property is in the Addenda as was provided in a preliminary title policy report; it should be noted, however, that this title policy only addresses the subject's two "main" parcels, i.e., those containing Danny Nunn Park. The inclusion of another four parcels of non-contiguous, city-owned property has been conducted upon the client's request.

PROPERTY IDENTIFICATION	
Property Name	Land Over the Florin Gas Field
Address	SWQ Power Inn Road & 53rd Avenue Sacramento, California 95828
Tax ID	043-0260-036, 040-0155-001, 040-0145-005, 040-0091-001, 040-0144-013, and 040-0147-002

CURRENT OWNERSHIP AND SALES HISTORY

The owner of record is City of Sacramento. To the best of our knowledge, no sale or transfer of ownership has occurred within the past three years, and as of the effective date of this report, the property is not subject to an agreement of sale or option to buy, nor is it listed for sale.

B5-289 (Cont.)

PURPOSE AND EFFECTIVE DATE

The purpose of the project is to develop an opinion of the appropriate market rental rate for the property as of the effective date, January 31, 2009.

DEFINITION OF MARKET RENT

Market rent is defined as:

> The most probable rent that a property should bring in a competitive and open market reflecting all conditions and restrictions of the specified lease agreement including term, rental adjustment and revaluation, permitted uses, use restrictions, and expense obligations; the lessee and lessor each acting prudently and knowledgeably, and assuming consummation of a lease contract as of a specified date and the passing of the leasehold from lessor to lessee under conditions whereby:
>
> 1. Lessee and lessor are typically motivated.
> 2. Both parties are well informed or well advised, and acting in what they consider their best interests.

3. A reasonable time is allowed for exposure in the open market.

4. The rent payment is made in terms of cash in United States dollars, and is expressed as an amount per time period consistent with the payment schedule of the lease contract.

5. The rental amount represents the normal consideration for the property leased unaffected by special fees or concessions granted by anyone associated with the transaction.

(Source: The Dictionary of Real Estate Appraisal, Fourth Edition, 2002.)

CLIENT, INTENDED USER AND INTENDED USE

The client and intended user is the City of Sacramento. The intended use is for the assessing of fair market rent for municipally-owned property. This market rental study is not intended for any other use or user.

SCOPE OF WORK

To determine the appropriate scope of work for the assignment, we considered the intended use of the study, the needs of the user, the complexity of the property, and other pertinent factors. Our concluded scope of work is described below.

METHODOLOGY

Given the atypical nature of the subject property and our charge in this assignment, the scope of work necessarily includes some gas and oil industry specific research as well as more standard market research. Following are some primary sources for the information included within this market rent survey and analysis:

- The Federal Energy Regulatory Commission (FERC)
- The California Public Utilities Commission (CPUC)
- The Energy Information Administration (EIA)
- The American Gas Association (AGA)
- Claritas (demographic information)

Additionally, we reviewed market area rental information prepared by Mr. Harold W. Bertholf of Harold W. Bertholf, Inc. of Sacramento, California. Mr. Louis Houser (resume attached in Addenda) assisted us further in our research and analysis of market data, and the results of his investigations are incorporated herein.

OTHER RESEARCH AND ANALYSIS

Additional steps taken to gather, confirm, and analyze relevant data, are detailed in individual sections of the report.

B5-289 (Cont.)

For example, given the special nature and utilization of the subject property, we have consulted closely with an expert in the field of petroleum, gas and natural gas storage facilities. Specifically, we have conferred with Mr. Louis A. Houser, Registered Professional Engineer, of Houser and Associates. Mr. Houser has specific experience in the petroleum and gas field and is the former Director of the Gas Supply Division of East Ohio Gas Company (now Dominion) and continues to consult with various gas companies on storage-specific issues. He also served for several years on the American Gas Association's Underground Storage Committee, which produces the AGA's *Survey of Underground Storage of Natural Gas in the United States and Canada*, a favored industry resource for storage-related information. This gentleman has assisted Integra – Chicago Metro in the acquisition of industry-related knowledge and storage-specific particularities as they impact the opinion of the appropriate market lease rate for the subject property.

AVAILABILITY OF INFORMATION

Although a plat of survey of the subject property was requested from the client and is pertinent to the assignment, it was not made available to Integra Realty Resources – Chicago Metro. Our inability to obtain this information and consider it in our analysis may affect our value opinion.

SIGNIFICANT ASSISTANCE

It is acknowledged that Mr. Louis Houser made a significant professional contribution to this study and analysis, consisting of conducting research on the subject and the competitive market. Mr. Houser's resume is attached hereto (Addenda) and considered a part of this report.

B5-289 (Cont.)

Earth Engineering, Inc.
3708 La Canada Road
Fallbrook, CA 92028
760-451-8501

Prepared by John O. Robertson, Jr., Ph. D, PE #P1375 (California)

June 20, 2009

Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Re: **Comments on DEIR, Appendices, and Referenced Supporting Documents**

Project: **Draft Environmental Impact Report for the Sacramento Natural Gas Storage Project, – CPCN Application No. A.07-04-013/SCH No. 2007112089**

Dear Mr. Rosauer:

At the request of the Avondale Glen Elder Neighborhood Association (AGENA), I have reviewed the Draft Environmental Impact Report ("Draft EIR" or "DEIR") for the Sacramento Natural Gas Storage Project (Project) prepared by DUDEK, Inc. for the California Public Utilities Commission (CPUC). The following are my comments on the geological and engineering aspects that directly affect the potential environmental impacts, including the potential for fire, explosion, and hazards to the air quality for the residents that must live above this potential project.

My qualifications as a reservoir, geologic, and engineering expert include a doctorate in Engineering from the University of Southern California, over 9 text books and 40 articles covering various aspects of this project and over 40 years of experience in these fields as a practicing engineer for several major oil companies, banks, and owner of Earth Engineering, Inc. a California Corporation. I am an acknowledged engineering expert witness who has testified many times before various commissions and the court. A more detailed resume is attached to this letter at Exhibit A.

B5-290

Background

This project consists of the revitalization of an old gas field that now lies under a portion of the city of Sacramento. The land above this old gas field features a diverse usage including residential, industrial and small retail shopping villages. There are still areas of

B5-291

vacant land within the area of the project. My particular concern is the additional risk of repressurizing the old oil field and the resultant increase of risks of fire, explosion and air contamination to the portion of the Sacramento community lying directly above the project and also that within a several mile radius. Gas storage problems, as those demonstrated in the Hutchinson Kansas disaster indicate that natural gas can migrate and ignite, explode, and/or contaminate the air and kill people several miles from the project itself. Many other examples of potential problems with gas storage projects in California are described in the book *Gas Migration: Events Preceding Earthquakes*, pp. 290 to 305 (Khilyuk et al., 2000) and article Chilingar, G.V. and Endres, B. *Environmental Hazards Posed by the Los Angeles Basin Urban Oil Field: An Historical Perspective of Lessons Learned*, *Environmental Geology* 47:302-317(2005). The point is that these risks associated with a gas storage project are serious and must be reviewed carefully. It is my opinion that the present Draft EIR has failed to analyze many significant aspects of the engineering and geology that greatly increase the risk of impacts to the environment and human health and safety above and beyond those significant risks already identified in the Draft EIR. **B5-291 (Cont.)**

1. The proposal for the Project contains errors in the geology work up and is not internally consistent.

The general consensus is that the Florin Gas Field lies within the Winters Formation. It is a deltaic (wedge shaped) deposit. It is composed of layers of sands and shales.

No single geologic structural model is presented by the proponents. Rather several different geologic models for the Florin Gas Field are presented in the SNGS data to support this report with no statement as to which is the correct model and why. Although not expressly stated which geologic model is the correct interpretation of the data, the computer model appears to be the one which was used to design the injection project. Absent a clear statement and supporting proof that the Ryder-Scott computer model is, in fact, accurate, the present Draft EIR is flawed in its interpretation of the data and, consequently, underestimates the risk. **B5-292**

Various General Geologic--Structure Models Used by Proponents in the report.

a) Division of oil and Gas model

The Division of Oil and Gas prepared a summary of the Northern California Oil & Gas Fields in 1960. No structure maps for the Florin Gas field were included in a 1981 revision of this book. In a statement under the structure map it simply states that "subsurface data not available." The data indicates that the discovery of the field was in 1977 (November) and not all the wells had been drilled at this time. There was a very limited number of total wells drilled in this project (5 producing gas wells and 2 core holes) and so there was not sufficient data to determine if there was or was not a fault. Several of the proponent's experts have stated in their testimony on behalf of SNGS that there are no faults in this reservoir and have quoted the Oil and Gas Data to support this **B5-293**

contention. *The fact is that there were no "known" faults at the time of writing due to a lack of readily available data, not that the data has been sought, evaluated, and an informed conclusion made that there are no-faults as stated in several of the proponent's reports.* There is, however, enough data now to state as a matter of fact the presence of one or more faults in the Florin Field.

b) Lowell-Garrison Model

Garrison, in a collection of letters (written in the 1990's) found in the Division of Oil -- Gas Florin Reservoir files, proposed a simple dome structure oriented N45°E. This model showed no faults.

c) [redacted] Model

In January [redacted] (SNGS #2115). The SNGS #2112 [redacted] The seismic model data also appears to show evidence of faulting.

d) Computer Model

[redacted] SNGS #1156 [redacted] (SNGS #1192) [redacted] SNGS #1191 and #1193 [redacted] (SNGS 1192), [redacted]

B5-293 (Cont.)

I would agree with the proponents that the significance and support for this feature is that fact the wells on both sides of the depositional pathway feature show significant production differences. [redacted] SNGS #2106.

Several other features of this computer model are open to engineering/geologic question and are discussed later in this report, e.g., vertical permeability, reservoir spill-point, surface foot-print, zones of actual gas production, etc.

e) John Mathews model

John Mathews presented a rectangular model of the reservoir to simplify his volumetric calculations. His model was 25 feet thick by 4000 feet long and 300 feet wide. This model has no relationship to the real reservoir or any of the other models proposed by the proponent and is virtually useless as an analytical or predictive model.

f) Seismic model:

The overall consistency of the seismic model is impressive. Where the paths of seismic measurements cross, the section of structure described by the seismic measurements, match very well (SNGS #2112) from one path to another. One apparent problem in the printouts appears to be that the seismic measurements locate the Florin Field deeper than actual measurements. Looking at the data input, the seismic velocities selected for these runs were high, e.g., for harder sediments. If a softer sediment velocity were used (lower speed), the formations would be adjusted upward to where one would anticipate them. The Winters formation is composed of softer, rather than harder sediments.

B5-293 (Cont.)

At the top of each run is the count of return signals. Through the internal of interest, the count of reflections is high which means that the signal is very good and likely accounts for the good consistent data. [redacted] SNGS #2101-2110 show [redacted] The seismic model, with its (1) various paths of study, (2) consistent representation of *structure for the Florin Gas Field as a simple dome* must be taken as the final authority on the structure as all other models are based upon limited data (7 wells and 2 core holes) and a lot of speculation. In this case, the well data should refine the model and not the other way around.

g) Conclusion

The various models proposed by the proponents vary significantly from orientation, single dome or double dome, thickness, etc. The only model with a wide variety of data (not just seven pin points) is the seismic data. The proposed models may be interesting, but do not represent the real formation as presented by the seismic data which represents a regional view. It is unfortunate that the sesmic model was not used as it had the most data and least speculation of all the models.

For a project of this magnitude, it is very important that we have a completed geologic—structural model that we can work with. Only then can we really understand the risks to the community. The proponents have not presented such a model in this proposal. That fact renders difficult, if not impossible, a full and complete analysis of all risks. B5-293 (Cont.)

2. Is the Florin Gas Reservoir Faulted?

a) Looking at well logs.

An examination of SNGS #2106 shows that there is a physical thickening or addition of section in well P&G Quadin Florin #2 which lies between P&G Quadin #1 and Union Oil Florin #1. I would project this 35 foot normal fault about 4000 depth in P&G #2. It should also be noted that the gas/water contact zones are different on each side of this fault. There are several other potential fault locations, but the well does not appear to cross the actual fault as in this case. 'It should be also noted that the cap rock thickness varies. A full examination needs to be done here, however the log data presented in the proposal is not sufficient to do a detailed analysis.

b) Looking at the computer generated model

In SNGS #1159 [redacted]

In SNGS #2115 there is a discussion [redacted] SNGS #2106 and so it is very likely that there are several other faults present in the Florin Gas Field. B5-294

I feel strongly, particularly since we can physically identify a fault in these wells and that there is evidence of faults in the seismic profiles, that a reasonable identification of this barrier is that of a normal fault. One should always look for a reasonable – simple – answer. We have a normal fault.

c) Looking at production and gas/water contact data

For a good portion of the reservoir the gas/water contacts range between 3789'-3784' while Northgate R/D #1 is much higher. A reasonable explanation for this difference would be due to faulting.

P&G Florin #2 and Union Florin #1 suffered a water break through about 10/86. Union Florin #, Union Florin #2 and P&G Florin #1 suffered sequential break through from 3/84

to 6/87 which indicates that they were in one fault block, while the other two wells were in another.

As noted also in SNGS #1159, [redacted] This data supports the presence of fluid barriers, or faults.

d) **Looking at seismic data**

Looking at the seismic data, one can note the gentle dome of the Florin Field and also where the seismic pattern show disturbance. These reflections can indicate the presence of faults. This must be analyzed fully.

e) Summary

In summary, there can be little question that we are looking at a fault system for the Florin Field. The previous difficulty to identify these faults was due to the very limited data available. When one looks at an actual fault in P&G Florin #2, various levels of gas/water contacts, various water breakthroughs in different parts of the reservoir (fault blocks), different production characteristics for the different fault blocks and the seismic data which suggest faults, there can only be one conclusion, there is a normal fault and likely several other faults in this reservoir. The depositional pathway requires far too complex geologic processes so as to be an unreasonable conclusion – the simple truth supports a fault.

B5-294 (Cont.)

3. Are the sands and shales contiguous between wells and is there vertical permeability for 250 feet?

[redacted]

SNGS #1424

. SNGS #1171 states that

B5-295

The Ryder Scott gas injection computer model indicates that gas would be injected toward the top of the reservoir and would allegedly push the water down about 250 feet from the top of the reservoir. In short, for this to represent the real reservoir, one must have vertical permeability through the whole 250 feet of storage. There is not vertical

permeability throughout the reservoir and certainly not to a depth of 250 feet within the reservoir.

SNGS #2106 shows the logs of several wells in the Florin Field. Magnification of these logs shows a strong shale/sand sequence. Also, as shown in this cross-section, the sands and shales are continuous between wells. Since the vertical permeability of the core samples measured was very low, around 3 millidarcies, one would expect the shales to be even lower. In truth, the vertical permeability of the model does not represent the real world; it is totally imaginary, assumed, hypothetical, and, here, based on much conjecture unsupported by the data.

In SNGS #2106, Union Florin #4 we see two distinct gas/water contacts, one above the other. The importance of this information is that over geologic time, the gas has not migrated from the lower to upper gas sand. These are two gas sands separated by a thin shale about 10 feet thick. There are many thicker shales in this sequence of sands/shales. No evidence or discussion was presented as how the vertical permeability which is likely 0 millidarcies for 250 feet can be improved to allow gas to freely move vertically.

It should be pointed out that the well from which the history matching was generated was only produced from a 25-foot section. Without any support for doing so, the computer model extends this 25-foot producing section to a 250-foot section. There is no justification to state that there is vertical permeability for 250' when looking at a nearby well (Union Florin #4) we have a 10' shale that is obviously impermeable within the 25 foot interval.

SNGS #2106 also illustrates the difference of gas/water contacts on both sides of the fault. It also should be noted that "*bones*" above the top of the Florin and below are continuous between the wells. This indicates a very strong sand/shale sequence and thus very low vertical permeability.

Summary

The shales and sands are continuous between the wells. There is a good correlation between the wells. Most important, the gas/water contacts show that there is no vertical permeability through the sand/shale sequences.

B5-295 (Cont.)

4. At What Pressure will one need to inject gas?

This is a reservoir with an active water drive. The model assumed that this was a depleted gas reservoir and that the pressure is lower than the initial pressure of the reservoir. An active water drive was demonstrated in the gas producing wells during the life the Florin Gas Field. The fact is that as gas was produced and it was replaced by water from the aquifer. The zones that produced gas were only the upper few feet of the zone. The average perforated interval was only 10 feet for the field. In fact, it is unlikely

B5-296

that there is much of a pressure drop at a 600' radius from the wellbore. Since many of the new injectors are at least that distance from the old wells, one would anticipate almost virgin pressure and not a depleted reservoir. Gas will need to be injected at a pressure great enough to displace the water from the sands. The model calls for lower injection pressures assuming depletion; there is no data in the proposal given to support that hypothesis. Since the new wells are drilled to new locations, one would anticipate virgin pressures and not the depleted pressures used in the computer model.

Summary

The injection pressures that will be required to remove water from the aquifer sands to store the gas will be hydrostatic pressure plus the additional pressure to push the water through low millidarcy sand. This is a pressure greater than that used in the computer model. These higher pressures run the risk of vertically fracturing the reservoir and creating pathways to the surface for future gas migration.

B5-296 (Cont.)

5. What is the risk of fracturing the reservoir?

A wellbore filled with gas, as is the case of a gas injection well proposed for the Florin project, will have about the same pressure at the surface as it has at the bottom of the well. The weight of the gas per linear foot is very low and so it contributes very little in additional pressure. The additional pressure to displace water by gas from the top of the Florin reservoir to the bottom of the reservoir is, unlike the light column of gas, the very considerable weight of the vertical water column. In this case it is 250 feet of water. To inject gas 250 feet below the top of the Florin reservoir, as proposed by the computer model, will require a pressure sufficient to displace this water. The force to push this gas down would be 62.4 psi/ft x 250 ft. = 15,600 psi. The problem is that the entire gas column must carry this additional pressure, so the upper portion of the Florin Zone, i.e., the cap rock, would be subjected to this additional pressure which, because of its magnitude, would most certainly create vertical fractures in the reservoir cap and the internal structures.

Summary

This proposal and the DEIR have ignored this problem and do not contain the data required to complete the calculations. Again, this is critical data that must be understood and accounted for prior to any approval of the proposed project.

The only information given in the proposal was a direction program that computed the path of the injectors to the top of the Florin zone. There was no information, even though directly requested on the completion of the injectors and how the gas was to be placed into and removed from the reservoir without fracturing it.

B5-297

6. What is the foot-print of this project?

The computer model had a thickness of 250 feet. As discussed earlier, to inject gas 250 feet below the top of the Florin Zone by injecting from the top of the zone is impossible. The lack of vertical permeability would not permit it.

Several of the proponents experts posited the thickness of the Florin gas sands as 40 feet. My calculations run closer to 25 feet of real sand. Using 40 feet thickness the area extent (or foot-print) of the project proposed by the computer model is 6-to-10 times too small to account for the actual project. In short, the area of the property above the project is far too small and needs to be corrected. B5-298

Summary

The computer model does not give an accurate extent of the surface area exposed to the project. As my testimony indicated in the CPCN evidentiary hearings, the Project footprint could be much shallower and many times more horizontal than the proponent or the DEIR suggest.

7. Are the wells and core holes properly abandoned to handle higher pressure coming from the injection wells?

Preexisting wells and well bores are high permeability pathways through the earth to the surface and as such present a very high degree of risk for future blowouts.

The proponents have stated that the five producing wells and two core holes are properly abandoned according to the California Division of oil and Gas. That does not mean that although they were approved for a depleted reservoir, that they are properly abandoned to handle the repressurizing of the reservoir.

The record clearly shows that the abandonment of the core holes was obtained by filling the well bore with a 78# drilling fluid from the Florin gas zone to the bottom of the fresh water sand and then laying a cement plug of several hundred feet over the fresh water sands at about 1450.' There is nothing but a 78# mud, through which gas can bubble to escape the formation by going up the old well bore. The cement plug was never pressure tested over the fresh water zone and it is unlikely that the plug can hold any pressure from the depressurized field. No study has been done to see if gas escaping to below the fresh water sands can escape to the surface along ancient stream beds and or along faults. ***These well bores must be reabandoned to prevent gas escaping from the reservoir.*** B5-299

The five producing wells were abandoned by shooting a few holes in the casing and then pouring a 200 foot cement plug over the producing zone. The wellbore was then filed with drilling mud and a second plug of several hundred feet was placed at the bottom of the fresh water sands. No attempt was ever made to squeeze cement into the orifice of

the casing to the formation. The cement plugs were never pressure tested to be sure they had properly sealed the wellbore and formation.

The state does not monitor abandoned wells. There is no way to tell if they are currently leaking gases even though the reservoir has not yet been repressured. Over 15% of wells in the U.S. that are abandoned this way will leak. The percentage is even higher where the reservoir has been re-pressurized by water flooding or steam injection.

B5-299 (Cont.)

Summary

Before proceeding with this project, the wells must first be reabandoned in order to eliminate flues and hold pressure.

8. What is the percentage of BTEX in the produced Florin Gas Field?

No information has been given concerning the composition of the Florin Gas coming from the Florin Gas Field. Data in the proponent's records indicate a specific gravity ranging from 0.62 to 0.59 for the specific gravity of the produced gas.

The Natural Gasoline Association lists the specific gravity of pure methane (dry gas) as 0.554. A typical California gas will contain other gases such as carcinogenic BTEX vapors, H_2S and other heavier hydrocarbons. These gases account for the increase from 0.554 to 0.62 in specific gravity.

Because the increase in specific gravity shows that these gases must be present in the dry gas, it is very important that they be identified so that the residents living above this project understand the risk they are exposed to due to leaking gas vapors from the equipment as well as the reservoir.

B5-300

Conclusions

I find that many important questions regarding the structural geology, presence of faults, manor and pressure in which gas will be inject, fracture pressures of the formation have not been properly addressed. The computer model appears to be the center of the proposal, however, the computer model as pointed out has many problems, e.g., footprint, vertical thickness, manor of gas injection, etc. The risks that the community are asked to take, so that this project can continue are too high. Unless the questions raised here are fully answered, this project should be rejected.

B5-301

Sincerely,

John O. Robertson

Exhibit A

B5-302

Resume

John O. Robertson Jr., Ph.D., P.E.

A. Employment History

Forty years experience as an engineer (registered State of California) working in the various fields of petroleum, geothermal, property evaluation, energy, computers and environmental engineering.

President owner	Earth Engineering, Inc. 3708 La Canada Road Fallbrook, CA 92028	1995-2008
Geothermal Project Engineer	Republic Geothermal Inc. Slauson Blvd. Santa Fe Springs, CA	1982-1980
Project Evaluation Evaluation Engineer	United California Bank Wilshire Blvd. Los Angeles, CA	1980-1978
Area Manager & Petroleum Superintendent	American Pacific, Inc. 7th Street Los Angeles, CA	1978-1976
Expert Witness Petroleum Equipment	U. S. Justice Department Los Angeles, CA	1975
Engineer	B & W, Inc. Torrance, CA	1975-1972
Reservoir, Production, Secondary Recovery, Drilling Engineer	Standard of California Los Angeles, La Habra, Taft CA	1970-1965

B. Civic Activities

Dr. Robertson has been active for over twenty years in planning and directing the growth of Cudahy and surrounding Communities. He served as a Cudahy City Councilman and five time mayor from 1976 to 1997. He has also served on a wide variety of Southern California planning and service organizations. He was elected to the Los Angeles and state Republican Central Committee from 1998 to 2003 and was the elected republican nominee for state senate in 1998 and 2002.

- Elected as a Cudahy Councilmember for five successive terms (1976-1997) and served as mayor four times.
- Appointed to the Cudahy Planning Commission (1970-1976).
- Appointed to the Los Angeles County Energy Commission (1987-1993).
- Founding Chairman and Director of the 'Hub Cities' Vocational Training Center in Huntington Park, CA. (1988-1991).

B5-302 (Cont.)

- Served on the Southern California Association of Governments (SCAG) from 1975-2002.
- Served as a member of the Transportation, Energy, and Environmental and Policy committees.
- Elected to serve as a SELAC representative on the SCAG Environment and Energy Commission (1994-1997).
- Served on the Contract Cities Association from 1975-2003. Served on the Board of directors (1995–2003).
- Elected to the Republican Central Committee 1984 to 2003. Served on the board as 1st vice chairman 1999-2003. Elected republican nominee for the California State Senate in 1998 and 2002.
- Appointed and served on various city and regional commissions within Los Angeles County.
- Served on various local board service organizations, i.e., Red Cross, United Way, Boy Scouts etc.

C. Selected Memberships and Technical Societies

SPE of AIME	Society of Petroleum Engineers of the American Institute of Mining, Metallurgical Engineers
A.A.A.S.	An *Elected Fellow* of the American Association for the Advancement of Science
Pi Epsilon Tau	Honorary Petroleum Engineering Society
Sigma Gamma Epsilon	Honorary Geology Society
Simga Xi	Honorary Research Society
U.S.C.S.	Life member of the United States Chess Federation
RAS	Member of the Russian Academy of Science, U.S.A. Chapter
IHF	International Hall of Fame

B5-302 (Cont.)

D. Educational History

Dr. Robertson has completed a Ph.D. in Engineering with a full minor in geology. His dissertation was in the area of clay chemistry. He has served as a state of California registered engineer, petroleum appraiser and realty appraiser. He also has an honorary PhD. (geology) from Dubna University, Russia. He has also completed over 20 units in the graduate business school at the University of Southern California.

Certified Appraisal Trainee	*State of California, #AT039086*	*2005*
Ph. D. (Honorary), Geology	*University of Dubna, Russia*	*2002*
Certified Appraiser, CA Board of Equal.	*State of California, #6179*	*1984*
State of CA Prof. Petrol. Engr.	*State of California, # P1375*	*1978*
Ph.D. Engineering	*University of Southern California*	*1976*
Credit & Financial Analysis	*Dunn & Bradstreet*	*1970*
M. S. Petroleum Engineering	*University of Southern California*	*1964*
B. S. Petroleum Engineering	*University of Southern California*	*1963*
A. A. Engineering	*Los Angeles City College*	*1961*

E. Selected Publications

Dr. Robertson has published over 30 articles in leading scientific journals and co-authored nine text books.

- Degree of Hydration of Clays, 1963. ***Sedimentology***, Volume 2, pp. 341-342. (Co-authors: Chilingar, G.V. and Rieke III, H.H.)
- The Application of Electrokinetic Phenomena in Consolidation and stabilization of Soils, 1963. ***University of Southern California Engineer***, Volume 14, number 2, pp. 6-7.
- Relationship between High Overburden Pressure and Moisture Content of Halloysite and Dickite Clays, 1963. ***Bulletin of Geological Sciences of America***, Volume 74, pp. 1041-1048. (co-authors: Chilingar G. V. and Rieke III, H.H.)
- High Pressure (Up to 500,000 psi) Compaction Studies on Various Clays, 1964. ***International Geological Congress***, XXII Session, New Delhi, India. (Co-authors Chilingar, G. V. and Rieke III, H.H.)
- Viscosity Measurements of Aqueous Clay Suspensions as a Tool for determining Mineralogic Type of Clays, 1965. ***Sedimentology***, Volume 4, pp. 183-187. (co-authors: Chilingar, G.V. and Rieke III, H.H.)
- Plugging Thief Zones in Water Injection Wells, 1967. ***Journal of Petroleum Technology***, August, pp. 999-1004. (co-author: Olefein, F. H.)
- ***Secondary Recovery in Carbonate Reservoirs***, 1972. Elsevier Publishing Company, New York, New York, 305 pp. (Co-authors: Chilingar, G. V. and Langnes, J. L.)
- ***Hydration of Clays: Effect of Various Organic and Inorganic Ions and Electrochemical Treatment on the Swelling of Various Clays***, 1976. Thesis at University of Southern California, 367 pp.
- Direct Reading Swellmeter, 1979. ***Energy Sources***, volume 4, number 3, pp.299-311. (Co-authors: Chilingar, G. V. and Stone, R.O.)
- Engineering Geology of Soft Clay, 1981. ***Soft Clay Engineering***, Elsevier Scientific Publishing Co., Amsterdam, The Netherlands. Chapter 2, pp. 159-238. (Co-authors: Chilingarian, G. V., Brenner, R. P., and Nutalaya, P.)
- Waterflooding, 1985. ***Enhanced Oil Recovery I, Fundamentals and Analysis***. Elsevier Scientific Publishing Company, Amsterdam, The Netherlands. Chapter 8, pp. 251-334. (Co-authors Chilingarian, G..V., Donaldson, E. C., Langnes, G. L., Mehdizadeh, A., Torhzadeh, J. and Yen, T. F.)
- ***Surface Operations in Petroleum Production, I***, 1968. Elsevier Scientific Publishing Company, Amsterdam, The Netherlands, 605 pp. (Co-authors Chilingarian, G..V., Kumar, S.)
- ***Surface Operations in Petroleum Production, II***, 1969. Elsevier Scientific Publishing Company, Amsterdam, The Netherlands, 562 pp. (Co-authors Chilingarian, G..V., Kumar, S.)
- Gas Injection and Miscible Flooding, 1989. ***Enhanced Oil Recovery II, Fundamentals and Analysis***, Elsevier Scientific Publishing Company, Amsterdam, The Netherlands. Chapters 4 & 5, pp. 91- 128. (Co-authors Chilingarian, G. V., Donaldson, E. C., Langnes, G. L., Mehdizadeh, A., Torhzadeh, J. and Yen, T. F.)
- ***Surface Operations in Petroleum Production, II***, 1969. Elsevier Scientific Publishing Company, Amsterdam, The Netherlands, 562 pp. (Co-authors Chilingarian, G..V., Kumar, S.)
- Gas Migration from Oil and Gas Fields and Associated Hazards, 1993. ***Journal of Petroleum Science and Engineering***, volume 9, pp. 223-238. (Co-authors: Chilingar, G. V., Endres, B. L., and Gurevich, A. E.)

B5-302 (Cont.)

- ***Gas Migration, Events Preceding Earthquakes***, 2000. Gulf Publishing Co., Houston Texas, 389 pp. ((Co-authors: Chilingar, G. V., Endres, B. L., and Khilyuk, L. F..)
- ***Origin and Prediction of Abnormal Formation Pressures***, 2002. Elsevier Scientific Publishing Company, Amsterdam, The Netherlands, 373 pp. ((Co-authors: Chilingar, G. V., and Serebrayakov)

B5-302 (Cont.)

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20 June 2009

Mr. Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Re: Draft Environmental Impact Report for the Sacramento Natural Gas Storage Project, CPCN Application No. A.07-04-013 / SCH No. 2007112089

Dear Mr. Rosauer:

At the request of the Avondale Glen Elder Neighborhood Association (AGENA), I have reviewed the Draft Environmental Impact Report (DEIR) prepared by the California Public Utilities Commission (PUC) for the proposed Sacramento Natural Gas Storage, LLC (SNGS) natural-gas storage project (Project) in south Sacramento. Based on ~40-years exper ience as a Quaternary geologist in general, and having mapped the Project area in particular,[1] it is my professional judgment that the DEIR is substantially deficient in several areas and therefore the Project has a potential to cause significant environmental impacts. My comments, observations and supporting references are provided below. I also note that my analysis mainly stems from information provided in the DEIR, in related documents made available by the PUC, and in the readily available geologic literature. I have also reviewed additional documents made available to me by AGENA. B5-303

DEIR FUNDAMENTAL FLAWS

The Project DEIR fundamentally fails to recognize, much less evaluate, the occurrence of multiple channel systems that stratigraphically overlie the proposed subsurface gas reservoir. These channels are immitigable B5-304

[1] A "Summary of Resume" is attached to this letter as Exhibit A.

"contaminant pathways" should gas escape along existing faults or fractures or along those created by engineering design or inadvertent over-pressurization during operation of the proposed SNGS. Accordingly, I focus on Section D.5 (Geology and Soils) of the DEIR, but also incorporate comments stemming from information and interpretations provided in Section D.7 (Hydrology and Water Quality). I also cite pertinent references that are seemingly negligently ignored in the DEIR. **B5-304 (Cont.)**

COMMENTS ON DEIR SECTION D

DEIR Section D.5-1 and Table D.5-1 state and depict, respectively, that the site alluvial deposits (Riverbank Formation) ". . . are underlain by undifferentiated early Tertiary marine deposits, which overlie upper Cretaceous deposits of the Great Valley Sequence." Alas, this statement is incorrect, and exemplifies the many technical flaws in this section of the DEIR. **B5-305**

First, geologists in the Sacramento area have known since at least 1967 that the Riverbank formation contains at least one basal channel gravel system. Ancient channel gravels also occur within the underlying formation, the Turlock Lake (Fair Oaks). Additionally, these Quaternary-age sediments, tens to hundreds of ft thick, are underlain by andesitic channel fills within the Mehrten formation (Shlemon, 1967; 1972). These sediments are fluvial (continental) rather than marine in origin as erroneously given in the DEIR.

Second, the DEIR (D.5-3) notes that, based on geotechnical borings, ". . . a layer of sandy gravel between 60 and 80 feet below the ground surface (bgs) [extends] to an unknown depth." This "sandy gravel" is an older Riverbank-age channel identified more than 40 years ago (Shlemon, 1967). Another discrete channel (confined aquifer) is identified at ~195-230 bgs. The ultimate trend and depth of these potential contaminant pathways are totally unknown, thus posing a significant environmental impact in event of gas release from the underlying reservoir (SNGS). Additionally, the California Department of Water Resources (DWR) has similarly identified the Riverbank and older channels under the site (Ford, 1972). These channels are of unknown extent and characteristics and thus are likewise potential "uncontrolled" migration routes for reservoir gas. Moreover, these channels are major potable aquifers and their potential contamination would constitute a significant and unavoidable impact (Class I). **B5-306**

In brief, the DEIR fails to recognize the presence of multiple channel aquifers that occur between the surface and the SNGS reservoir rocks. From a public health and safety standpoint, the DEIR has not recognized nor characterized these

channel systems, for no investigations have specifically addressed their depth, thickness, permeability characteristics and trend. B5-306 (Cont.)

As shown on DEIR Table D.5-2, site seismic shaking is partially based on distance from the nearest "active" fault" (Holocene); namely, the Dunnigan Hills fault, ~19 miles northwest. However, not evaluated is potential acceleration from a nearer, ground-rupture event at Winters in 1892 (Unruh and Moores, 1992). The DEIR additionally ignores the potential impact of an inferred Holocene-age "Sherman Island fault" (Shlemon and Begg, 1975).

The DEIR assumes that the Florin gas field is a stratigraphic trap rather than partially or wholly enclosed by post-reservoir faults (see specific discussions by AGENA experts, J. Robertson and D. Clarke). But experts vary in their interpretations; and the complexity of basin faulting in the Sacramento Valley is becoming evermore apparent (Boyd and Holland, 2005). Accordingly, unless proven otherwise, and as in many other Sacramento Valley gas fields, it is a reasonable postulate that faults and related fractures occur within, if not bound, the Florin reservoir rocks. These zones of potential "weakness" thus inherently offer a route for gas escape, diffusion and migration into the yet unevaluated channel systems that occur within and immediately adjacent to the proposed SNGS facility. B5-307

CONCLUSIONS

The DEIR provides incorrect stratigraphy and otherwise fails to address the presence of multiple channel systems that occur between the surface and the underlying SNGS reservoir rock. These channels were initially documented in the geologic literature more than 40 years ago. Other channels are likely present based on assessments by the DWR. All channels are important potable-water aquifers. In event of reservoir gas release along known or reasonably inferred faults and fractures, there is significant potential for immitigable contamination of the overlying channel systems. Because the channels have yet to be technically characterized, their thickness, depth, hydrological properties, gas-migration potential and trend remain unknown. Accordingly, this lack of analysis is a major, yet unresolved flaw in the DEIR. B5-308

Roy J. Shlemon

Roy J. Shlemon, Ph.D.

REFERENCES CITED

Boyd, R. W., and Holland, M. B., 2005, 3D seismic data reveals cross-basin faulting in the Sacramento Valley: Geological Society of America (Cordilleran Section), Abstracts with Programs, v. 37, no. 4, p. 60.

Ford, R. S., 1974, Evaluation of ground water resources, Sacramento County: Department of Water Resources Bulletin 118-3, 141 p.

Shlemon, R. J., 1967, Quaternary geology of northern Sacramento County, California: Geological Society of Sacramento, Annual Field Trip Guide, 60 p., maps, cross sections.

Shlemon, R. J., 1972, The lower American River area, California: A model of Pleistocene landscape evolution: Association of Pacific Coast Geographers Yearbook, v. 34, p. 61-86.

Shlemon, R. J. and Begg, E. L., 1975, Late Quaternary Evolution of the Sacramento-San Joaquin Delta, California: *in* Suggate, R. P. and Cresswell, M. M. (eds.), Quaternary Studies, Bulletin 13, The Royal Society of New Zealand, Wellington, New Zealand, p. 259-266

Unruh, J. R. and Moores, E. M., 1992, Quaternary blind thrusting in the southwestern Sacramento Valley, California: Tectonics, v. 11, no. 2, p. 192-203.

B5-308 (Cont.)

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Quaternary Geology
Economic Geomorphology
Soil Stratigraphy
Geoarchaeology

ROY J. SHLEMON

SUMMARY OF RESUME

Education: B.A. Fresno State College, 1957
M.S. University of Wyoming, Laramie, 1959
Ph.D. University of California, Berkeley, 1967

University Positions (Teaching/Research):

Univ. California, Davis (Assistant Professor; and current Research Associate)
Louisiana State Univ., Baton Rouge (Assoc. Professor)
Stanford University (Consulting Professor, [part time])
Univ. California, Los Angeles (Lecturer [part time])
Calif. State Univ., Los Angeles (Lecturer [part time])
Univ. California, Irvine (Lecturer [part time])
San Diego State Univ. (Lecturer [part time])

Consulting Practice: (Principal, R. J. Shlemon & Assoc., Inc., Newport Beach)

Approximately 37-years, full-time consulting geologist specializing in Quaternary geology, geomorphology, geoarchaeology, soil stratigraphy and erosion and sedimentation control. Applications to engineering and engineering-geologic practice: fault-activity investigations (neotectonics/paleoseismicity), landslides, ground-fissure and differential settlement evaluations; independent and contract reviewer to government agencies and private organizations; forensic expert-witness testimony; Superior Court neutral referee (Orange County); advisory services and boards for U.S. Bureau of Reclamation, Corps of Engineers and other federal, state, local and international government agencies. Mining: Pleistocene auriferous and tin-bearing channels; sand and gravel deposits. Contaminant pathways: buried Pleistocene channel systems. Archaeology: reconstruction of Quaternary environments, age of sediments and soils.

Cordilleran Section - 101st Annual Meeting (April 29–May 1, 2005)

Paper No. 12-2

Presentation Time: 1:40 PM-2:00 PM

3D SEISMIC DATA REVEALS CROSS-BASIN FAULTING IN THE SACRAMENTO VALLEY

BOYD, Richard W., Sacramento, CA 95630, boydrichard@comcast.net and HOLLAND, Mark B., Stafford, TX 77477

It has been our observation that most geologists have mapped faults in the Sacramento Valley in a northwest to southeast trend and sub-parallel to several known major fault systems such as the Midland Fault System. Few sizable faults have been described in the literature which have a "cross-basin" or "counter regional" southwest to northeast trend, such as the Stockton Arch, Dry Slough, and Willow Slough Faults. This paper will describe several additional "cross-basin" faults in the natural gas province of the Sacramento Valley of California.

Interpretation of several regional 3D seismic surveys has resulted in the identification of several additional cross-basin faults that were not known to the authors. These faults are usually part of a series or system of faults, primarily in the Yolo and Solano County area, and can be mapped for several ten's of miles. We have taken the liberty of naming these faults the "Crossroads System", the "West Bunker System", and the "Denverton System" of faults, in addition to the "Winters - Dry Slough System" of faults. Many of these cross-basin faults are located on the westerly flank of the Sacramento Valley Syncline and appear to be related to the subsidence of the basin in an extensional environment. Cross-basin faults are important in their effect on deposition and formation of traps for natural gas. The "Crossroads System" for example, acted as a growth fault during deposition of the Cretaceous Winters Formation and acted as a barrier to gas migration in the Crossroads Gas Field.

It is suggested that additional "cross-basin" faults will be identified as geophysical interpretation of 3D seismic continues to drive the exploration for natural gas in the Sacramento Valley.

Cordilleran Section - 101st Annual Meeting (April 29–May 1, 2005)
General Information for this Meeting

Session No. 12
Application of New Technologies to Petroleum Reservoirs: Implications for Exploration and Production
Fairmont Hotel: Crystal
1:15 PM-5:20 PM, Friday, April 29, 2005

Geological Society of America *Abstracts with Programs*, Vol. 37, No. 4, p. 50

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(Cont.)

Representative Applications:

Siting nuclear power plants, liquefied natural gas terminals, large dams, high- and low-level radioactive waste facilities, Class I-III landfills (California); assessment of ancient and modern landslides, origin and age; seismic risk; paleohydrology: flood frequency, and erosion and sedimentation assessments.

Professional Organizations and Service:

Professional Geologist, State of California.

Certified Professional in Erosion and Sedimentation Control.

Professional Geologist, American Institute of Professional Geologists.

Member/Fellow approximately 25 international, national and local professional and honorary organizations.

Trustee and Vice-Chair Emeritus, Geological Society of America Foundation.

Director Emeritus, Engineering Geology Foundation (Association of Engineering Geologists).

North American Representative, Emeritus, International Geological Union, Commission on Geology for Environmental Management.

Member Emeritus, Technical Advisory Committee, California Board of Geology and Geophysics.

Trustee, University of Wyoming Foundation; member Stewardship Committee.

Member, Board of Visitors, University of Wyoming, College of Arts and Sciences.

Member, Independent Review Panel: Delta [California] Research and Management Strategy.

Senior Fellow: University of California, Davis, Division of Mathematics and Physical Sciences.

Trustee, University of California at Davis, Foundation; member Stewardship and Nominating Committees.

B5-309 (Cont.)

Member, Deans' Advisory Council, College of Letters and Sciences, University of California at Davis; member, Development Committee.

Member, Advisory Council, Earth and Soil Science Program, California Polytechnic University, San Luis Obispo.

Editor-in-Chief, Elsevier international journal "Engineering Geology."

Member, Technical Advisory Committee, California State Mining and Geology Board, Geohazards Committee.

Member, Technical Advisory Council, Center for the Study of First Americans, Texas A&M University.

Professional Awards/Recognition

National Science Foundation Educational Awards, 1960 through 1965.

"Best Paper Award" – 1985, "Applications of Soil Stratigraphy to Engineering Geology," Bulletin, Association of Engineering Geologists.

"Distinguished Lecturer" – Richard H. Jahns Distinguished Lecturer, Association of Engineering Geologists.

"Distinguished Practice Award" – Geological Society of America, Engineering Geology Division.

"Honorary Member" – Association of Engineering Geologists.

"Scientific Achievement Award" – Orange County Engineering Council.

"Honorary Member" – American Institute of Professional Geologists.

"Outstanding Alumnus" – College of Arts & Science, University of Wyoming, Laramie.

"Senior Fellow" – University of California, Davis, Division of Mathematics and Physical Sciences.

"Outstanding Alumnus" – College of Mathematics and Sciences, Fresno State University.

B5-309 (Cont.)

Professional Awards/Recognition (continued)

"Recipient and Honoree" - Presidential Medal, Geological Society of America (Boulder, CO).

"Honorary Member", South Coast Geological Society (Santa Ana, CA).

"Recipient and Honoree" – Presidential Citation, Association of Environmental & Engineering Geologists (Denver, CO).

B5-309 (Cont.)

Publications:

Approximately 275 professional journal publications (monographs, articles, abstracts, reviews) since ~1965 dealing with mining (hydraulic and placer); and with Quaternary geology, geomorphology, geoarchaeology and soil-stratigraphic applications to engineering-geologic practice. Topics range from landslide and debris-flow recognition, risk and age, to delta formation, fault-activity assessments, Anthropic-induced sedimentation and erosion, and cause of ground fissures and differential settlement. An additional 300 technical reports of limited distribution focus on site-specific investigations of faults, landslides, ground fissures and differential subsidence and other Quaternary geologic phenomena worldwide (list of publications and technical reports available upon request).

Seismotectonic Investigations for Proposed and Existing Dams

Consultant services directly commissioned by governmental agencies or by engineering-geological firms involved in dam and damsite investigations. Representative seismotectonic (paleoseismic) investigations include the following existing and proposed dams.

California:	Auburn, Folsom, Potrero, Black Butte, Cottonwood Creek, Anderson, Harvey Place, San Andreas, Crystal Springs, O'Neill, San Luis, Contra Loma, Bradbury, Glenn Reservoirs, New Melones, New Hogan, West Reservoir, Hidden, Buchanan, Pine Flat, Eastside Reservoir east and west dams (Domenigoni/Diamond Valley);
Arizona:	Roosevelt, Stewart, Mountain, Horseshoe, Bartlett;
Colorado:	Two Forks, Twin Lakes;
Montana:	Gold mining tailing dams and ponds;
Utah:	Little Dell, SCS southern Utah embankment dams; Piute
Washington:	Mud Mountain;
Colombia:	Bettania;
Guatemala:	Chixoy.

B5-309 (Cont.)

Risk Science Associates
Risk Assessment
Toxicology
Occupational Health
Hazardous Materials Management
Vulnerability Assessments
Infrastructure Security

June 19, 2009

Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Re: Draft Environmental Impact Report for the Sacramento Natural Gas Storage Project, CPCN Application No. A.07-04-013 / SCH No. 2007112089

Dear Mr. Rosauer:

What follows below are my comments on the Draft Environmental Impact Report (DEIR) prepared by the California Public Utilities Commission (PUC) for the Sacramento Natural Gas Storage, LLC (SNGS) underground natural gas storage project (Project) proposed in south Sacramento. I submit these comments at the request of the Avondale Glen Elder Neighborhood Association (AGENA). It is my professional judgment, based upon over 27 years of experience in risk assessment and risk management of hazardous materials[1], that the DEIR is substantially deficient. In commenting on the DEIR, I have based my analysis on the information set forth in the DEIR, the supporting documents made available by the PUC, and additional documents made available to me by AGENA. Please find my comments on the adequacy of the DEIR and the Project's potential to cause significant environmental impacts below. B5-310

B. PROJECT DESCRIPTION

The Project Description reflects only those issues and impacts raised and discussed in the body of the DEIR. However, since the analyses contained in several sections of the DEIR are deficient, the Project Description is necessarily deficient as well. B5-311a

More specifically, regarding potential leakage and gas migration from the reservoir, page D.6-2 of the DEIR states that "because the gas field was depressurized and wells abandoned according to DOGGR Standards, there is currently little potential for gas to migrate to the surface or leak through the abandoned wells". Yet, later on in the DEIR (page D.6-23), it states that "there may be existing fractures within the reservoir cap that B5-311b

[1] My resume is attached to this letter as Exhibit B.

are substantially closed at ambient pressure that could dilate and leak under proposed operation pressure". And, despite these seemingly contradictory statements, which are supported by little-to-no discussion of the propriety of or latent risk inherent in the DOGGR well-closure standards, the DEIR concludes that "Leakage from abandoned and new wells is considered less than significant because abandoned wells were sealed under requirements of DOGGR and new wells will be constructed accordingly (Class III)". **This statement is not only unsupported, but later discussions, independent data, and the comments of other experts submitting comments on behalf of AGENA, including but not limited to Dr. John O. Robertson and Dr. Tom Williams, show it to be false.**

B5-311b (Cont.)

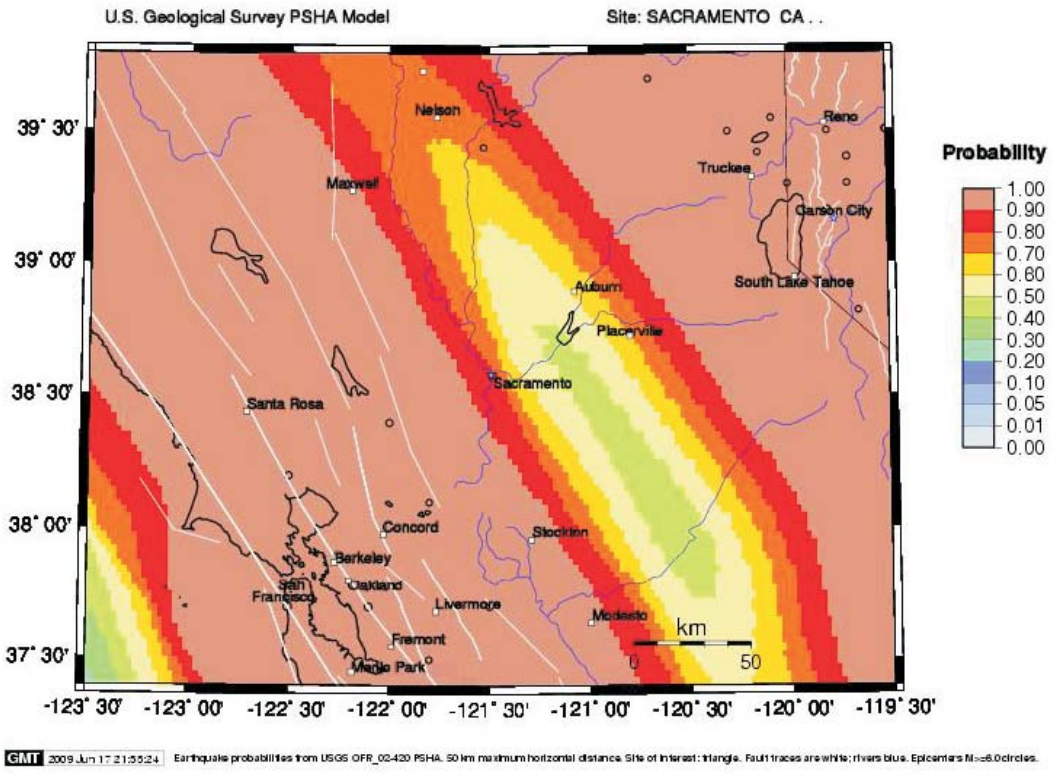
In Section D5, Geology and Soils, the DEIR claims that "there do not appear to be any mapped structural faults through the gas field that would contribute to leakage of natural gas through the capping shale unit. No known active faults in or adjacent to the City of Sacramento". However, in Section D.6 Hazardous Materials, Public Health and Safety, the DEIR modifies this statement by stating that "there is a potential for gas to migrate to the surface and groundwater from inactive faults or other anomalies in the cap rock. This is considered a **SIGNIFICANT** and unavoidable impact". (emphasis added.) Furthermore, Section D.7 Hydrology and Water Quality states that "there is *insufficient information to conclude categorically* that gas migration to the overlying aquifer and/or ground surface would not occur". This is supported by the fact that lateral spreading of gas along the edges of reservoir is possible and perhaps even highly probable because neither the bottom or the sides of gas reservoir have been well defined, so gas could seep into this area under pressures exceeding original reservoir pressure. **Note that the DEIR admits that drilling and core sampling have not been conducted at the well field perimeter.** In fact, the DEIR assumed that while there is a *low potential* that gas could migrate into the aquifer and contaminate the aquifer, it was not of such low probability so as to render it an insignificant risk and that should such contamination occur, it could be substantial requiring a prolonged period of remediation and impacting the water quality of a major potable aquifer. The DEIR considered this a **SIGNIFICANT** and unavoidable impact (Class I) even with the implementation of mitigation measures, due to the consequences if it were to occur and the difficulty of remediating the contamination.

B5-312

The chances of seepage of gas into the aquifer or into the air may be low, but it is not of such low probability so as to render it an insignificant risk. In fact, a review of the USGS website for earthquake probabilities in areas throughout California shows that the probability of a seismic event of magnitude 5.0 in the Sacramento Area – an earthquake of sufficient force to cause subsurface rock to fracture – is high enough as to be termed "significant". Figure 1, below, depicts the probability of a significant earthquake (5.0) occurring in the Sacramento region within the next 100 years as 0.8 (an 80% chance that one of this magnitude will occur). This type of analysis is required by CEQA, yet is lacking in the DEIR.

Figure 1.

Probability of earthquake with M ≥ 5.0 within 100 years & 50 km



B5-312 (Cont.)

D. ENVIRONMENTAL ANALYSIS

D.2 Air Quality

The Project describes in Section D.6 that emergency backup power will be provided by a 75-kilowatt diesel engine generator. However, Section D.2 Air Quality lacks any description of impacts on air quality due to the emissions from this diesel engine generator. Such generators must, according to code, be tested a certain intervals, thus emissions will be routine and consistent regardless of the need for these generators to provide emergency power. In addition to the test periods, there will be the actual periods of time when the diesel generators will be needed. **The DEIR has failed to not only include routine emissions from the required test periods but also failed to provide any historical use patterns of the emergency generator providing power at other similar facilities, including frequency and duration of diesel engine generator use.**

Emissions of criteria air pollutants (NOx, SOx, CO, VOC, PM10 and PM2.5) should be provided on an hourly, daily and annual basis. This information should be provided by the diesel engine manufacturer and calculated based on the expected testing requirements from the manufacturer. Air pollutant impacts from the criteria pollutant emissions associated with the testing operations of these engines should be assessed. Air dispersion models approved by US EPA (CTSCREEN could be used) should quantify the impacts of this engine on the short term (1-hour, 8-hour and 24-hour federal and state ambient air quality standards (NAAQS and CAAQS). The impacts including background should be compared to the ambient air quality standards. B5-313

A Health Risk Screening Analysis was prepared by Environ in March 2008 (see document AFJ9572 attached as Exhibit A) that addresses the toxic air contaminant (TAC) emissions from the proposed glycol dehydration unit associated with the Project. However, this HRA did not include the contribution of TACs, including Diesel Particulate Matter (DPM) from the emergency power generator. The DEIR must address this important public health impact as it is well known that DPM emissions contribute the most to ambient (background) risks in each California Metropolitan Area and measures should be taken to reduce, not increase, this risk.

Page D.2-24 PM10 Mitigation in the Construction Phase

The discussion on the impact of PM10/PM2.5 is incomplete and fails to recognize the deleterious impact on public health posed my fine particulates. Numerous articles in scientific and medical journals have documented that the fine particulates cause an increase in cardiovascular morbidity and mortality, exacerbate asthma, and contribute to other respiratory diseases. It is thus of critical importance that the DEIR identify more extensive fugitive dust mitigation measures to better control the generation of dust and reduce the impact to les than significant. These additional measure should include the following: B5-314

The DEIR should be revised to include as a required mitigation method the retention of an on-site Air Quality Control Mitigation Monitor (AQCMM) responsible for directing and documenting compliance for the entire project site and linear facility construction. The AQCMM should have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions.

The DEIR should be revised to include as a required mitigation the preparation and implementation an Air Quality Construction Mitigation Plan (AQCMP) which would detail the steps that will be taken and the reporting requirements necessary to ensure compliance with all mitigation efforts.

The DEIR should be revised to include as a required mitigation a Construction Fugitive Dust Control Plan that prevents all fugitive dust plumes from leaving the project site. This plan should include the following mitigation:

- All unpaved roads and disturbed areas in the project and linear construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of the AQCMP.
- No vehicle shall exceed 10 miles per hour within the construction site.
- All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.
- Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.
- All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.
- All construction vehicles shall enter the construction site through the treated entrance roadways.
- Construction areas adjacent to any paved roadway shall be provided with sandbags or other measures as specified in a Storm Water Pollution Prevention Plan (SWPPP) to prevent run-off to roadways.
- All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.
- At least the first 500 feet of any public roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff from the construction site is visible on the public roadways.
- All soil storage piles and disturbed areas that remain inactive for longer than 30 minutes shall be covered or treated with appropriate dust suppressant compounds.
- All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover.
- Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

B5-314 (Cont.)

The DEIR should be revised to include as a required mitigation a Dust Plume Response Requirement. This would require the AQCMM to monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (1) off the project site or (2) 200 feet beyond the centerline of the construction of linear facilities or (3) within 100 feet upwind of any regularly occupied structures not owned by the project indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMM should implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:
Step 1: The AQCMM shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.
Step 2: The AQCMM shall direct implementation of additional methods of dust suppression if step 1 specified above fails to result in adequate mitigation within 30 minutes of the original determination.
Step 3: The AQCMM shall direct a temporary shutdown of the activity causing the emissions if step 2, specified above, fails to result in effective mitigation within one hour of the original determination.

B5-314 (Cont.)

D.6 Hazardous Materials, Public Health and Safety

General Comments on Hazardous Materials and Public Safety

The evaluation of the safety and reliability of a major industrial facility that would use, store, and transport a hazardous material, would include Process Safety Management, a Hazard and Operability Study (HAZOP), an Off-Site Consequence Analysis (OCA), a fire needs assessments, a fire prevention and suppression analysis, and emergency response measures. The scenarios assessed would include accidental releases, that is, tank piping, valves, flanges, processes, storage areas, transfer hoses, etc., that fail accidentally. Failures in piping, valves, control systems, secondary containment, warning/detection systems, or at multiple systems on- or off-site should also be considered even though the risk (odds) against simultaneous (cumulative) accidents occurring may be small. This is because of the nature of the Project (a major natural gas storage site and the grave consequences of a catastrophic failure. There is no horizontal "buffer" between the population and the gas storage; only a vertical "buffer" that may fail during any size seismic event. Prevention should be emphasized and response measures would then follow. Both prevention and response must be assessed and would be followed by the OSHA hierarchy of first providing mitigation with engineering controls, followed by administrative controls, and lastly by personal protective equipment. The DEIR attempts to satisfy these criteria but fails in several important ways.

B5-315

There is no mention of a HAZOP study or an OCA for the entire natural gas storage project, including the well head, pipeline, the compressors, or use and storage of methyl mercaptan, all of which should be analyzed from a hazardous-

B5-316

materials-perspective and operational perspective for potential, significant environmental, health, and cumulative impacts. This analysis should be done regardless of whether regulations require these analyses because conducting these types of analyses are standard industry practice for either complex, large, or dangerous industrial facilities. Certainly, given the nature and uniqueness of placing this Project in such close proximity to a large population, this Project, which is complex, large, and presents significant danger of adverse impact, should receive the level of scrutiny commensurate with standard industry practice for such developments.

B5-316 (Cont.)

Since the events of 9/11, a new paradigm of failure assessment has emerged that requires a an additional component. Any assessment of the impacts of a release of hazardous materials or the safety and of the reliability of an energy-related project should and must include the added paradigm of an intentional attack on the facility and subsequent loss of hazardous materials and energy production/provision. This intentional attack could come from vandals, criminals, domestic terrorists, or foreign terrorists. The attack could come as a focused-site attack or as part of a coordinated attack on multiple sites in the immediate area.

As indicated in the pipeline 1 assessment – this pipeline – the isolation/sectionalization valves and the entire wellhead system and specifically the manifold/header are soft targets. During a late injection phase, a much larger volume of gas could be released from an intentional and full breach of the header, which would open all pipe, header, and well gas volumes; that volume would be much more than a single pipe or a well rupture.

An intentional attack will most likely leave secondary containment, chemical detectors, valves, fire detection and suppression systems, and other command and control systems damaged or completely inoperative. Response systems and personnel may be rendered ineffective, inadequate, or useless. Certain critical components used to provide control and/or reliability of hazardous materials or energy production become of paramount importance.

B5-317

Criticality assessment, threat assessments, vulnerability assessment, heretofore applied mostly to military or other national security venues, has now been applied – and should be applied – to chemical and flammable substances facilities in the post-9/11 era. A criticality assessment would provide an evaluation of the critical on-site, off-site and up-stream components that were of the highest necessity to either maintain safety at the proposed natural gas storage facility or provide reliability of mission. These components could be key storage, transfer, shut-off, or detection devices whose presence and location dictate the safety and reliability of the project. For example, power supplied to the facility via overhead power lines could fail due to accidental causes or due to sabotage/terrorist actions. The facility should be equipped with an Uninterruptible Power Supply (UPS) which could also fail or be attacked. The consequences of such a plausible – and even reasonably expected - scenario would be the catastrophic loss of command and control. Emergency shut-off valves could fail

even if they are designed to fail in the closed position due to malfunction or damage and emergency communications could fail as well. The interoperability of emergency response providers has been in question in recent years from the days after 9/11 to the recent hurricanes Katrina and Wilma. It is naïve to pretend that all safety systems will work as designed, that all emergency responders will work in unison as planned, and that all back-up control and containment systems will remain intact during an accidental or intentional leak. This possibility must be fully analyzed by the DEIR if it is to adequately evaluate the risk of impact from the Project. These risks could be significant.

The DEIR analyses and discussions on wellhead and compressor station security appear on their face to be thorough, but are, in fact, incomplete because the security plan proposed lacks a foundation of need. The DEIR does not even mention Criticality, Threat, or Vulnerability Assessments, so the reader is left to wonder about the basis for the security recommendations and how effective and thorough they might be. Some supplemental information appearing in a document provided to AGENA by SNGS titled, "AFJ9628" or "3.11.b Public Health and Safety", (Exhibit A) describes the security measures that would be implemented, but still does not include a Threat Assessment, a Criticality Assessment, or a Vulnerability Assessment.

It is imperative that state and local agencies entrusted by the public to follow their statutory responsibility to protect public health be made aware of such system analyses (under a confidentiality agreement as appropriate) and afforded an opportunity to comment. The U.S. Department of Homeland Security has identified 14 key critical infrastructures and national icons for development of security measures. Energy is one of the key critical infrastructures and as a result, it is imperative that certain assessments be made before it can be determined what parts of the proposed project present the greatest risk and what threat exists to those systems.

It is with this background that, after an analysis, the DEIR is wholly inadequate and incomplete to even attempt to begin to address the safety and reliability of an underground natural gas storage facility (containing high-pressure compressed natural gas) at the Florin Gas Field. Security is a critical component of the safety and reliability of this project and a DEIR must include a discussion of the critical components and the threat presented to the continued operation of these components before the facility can be determined to have an insignificant environmental impact and be as safe and health-protective as possible.

B5-317 (Cont.)

SPECIFIC SECTION COMMENTS

<u>Page D.6-19 Impact HAZ-2</u> Potential to Expose People to a Significant Risk of Fire or Explosion: Radiant Heat Exposure Standard

B5-318

CEQA requires identification and mitigation of any potentially significant impacts associated with a proposed project. The criterion used in evaluating the use, storage,

and transportation of hazardous materials is whether the potential impacts of a worst-case event are significant or insignificant. If they are significant, then mitigation is required to bring the level of risk down to an insignificant level. Any plausible adverse impact on public health must be viewed as a potentially significant impact, until proven otherwise. The standard for evaluating impacts on humans is the use of an appropriate exposure level with safety factors to protect against impacts to "sensitive receptors", the very young, the elderly, and those with pre-existing health conditions.

The DEIR fails to adequately or scientifically quantify risk because of its arbitrary use of a radiant heat exposure level that is deemed acceptable. Even a cursory review of the scientific evidence demonstrates that an exposure level of 1600 Btu/ft^2-hr (5 KW/m^2) to human skin will cause a significant impact. In evaluating the potential for adverse impacts on surrounding populations, the DEIR (page D.6-20) states that the 1600 Btu/ft^2-hr is the appropriate standard but yet provides no reference or documentation to support that level. The DEIR does, however, provide references to document other levels (higher and lower) for increased or decreased effects on humans but does not do the same for the selected no "risk to injury" level.

A review of the scientific and medical literature and International Standards on radiant heat exposure shows that a 1600 Btu/ft^2-hr is inappropriate to use an exposure criterion because it implicitly accepts the potential for adverse impacts on the exposed public. Public exposure criteria should reflect a level of exposure that is without adverse impact, taking into account the potential variability of sensitivity in the potentially exposed population. At an exposure level of 1600 Btu/hr-ft^2(5 KW/m^2), first-degree burns would occur within **20 seconds** (not minutes or hours), second-degree burns would occur within **30 seconds** (not minutes or hours), and third-degree burns would occur within **50 seconds** (not minutes or hours) with a 1% fatality rate.

B5-318 (Cont.)

Typically, acute (short-term) exposure criteria are based on a No Observed Adverse Effect Level (NOAEL) for at least a period of **30 or 60 minutes**[2] divided by a safety factor that is based on the uncertainty associated with extrapolating from the experimental data to the exposed population. An exposure criterion that is consistent with use of a NOAEL, reflecting the susceptibility and limitations of children and the elderly to escape, is 450 Btu/hr-ft^2 (1.5 KW/m^2). At this level of exposure no injury would occur with extended exposure. This is a safer and more appropriate exposure criterion with little potential for significant impact. Not mentioned in the DEIR is that the 1600 Btu/hr-ft^2 criterion is suggested in NFPA 59A but being supported by the National

[2] Toxicological endpoints, physical harm endpoints, etc., are determined from scientific studies and standards used by scientific and government regulatory agencies. It is not the purpose of a DEIR to argue against a previously established and recognized exposure standard. That should be left for an uncertainty analysis. Rather, an exposure that results in either a human No Observed Adverse Affect Level (NOAEL) or an animal Lowest Observed Adverse Effect Level (LOAEL) with a safety factor applied must be used. Any adverse effects that occur within a time frame of "seconds of exposure" rather than minutes or hours of exposure are significant impacts. Indeed, the time of exposure is also critical in determining an appropriate short-term exposure level. All U.S. EPA short-term exposure levels for toxic substance are either for 30 minute exposures or one hour exposures; all Cal-EPA short-term exposure levels are one hour; all National research Council SPEGL's (Short-term Public Exposure Guidance Levels) are for 30 minutes or one hour; and even Federal and California OSHA STELs (Short-term Exposure Levels) are for 30 minutes or one hour.

Fire Protection Association (NFPA) is not a justification for its use in a CEQA analysis as a basis to conclude that a project poses no potential for significant impact. Any safety code must be considered a minimum level of protection and must be evaluated for its applicability in each specific circumstance. While the NFPA standard may be acceptable in an industrial setting for accidental exposure of trained adult healthy workers, it is not an acceptable public exposure criterion.

This view is also supported by Dr. Jerry Havens, an expert retained in the past by the California PUC and by Dr. Harry West in testimony before the FERC (June 2005; docket Nos. CP04-36 et al.). Dr. West pointed out that the 450 Btu/hr-ft^2 (1.5 KW/m^2) standard was consistent with the thermal radiation flux standards of the European LNG Regulations for critical areas, the U.S. HUD rule (49 Fed. reg. 5100 Feb. 10, 1984), the World Bank, and the recommendation of the American Petroleum Institute. Dr. West further provides testimony discrediting the basis of the NFPA 59 standard of 5 KW/m^2 (1600 Btu/hr-ft^2). Indeed, when one considers that the thermal radiation dose to the skin from the sun is 1.0 Kw/m^2, **a thermal radiation standard that takes into account the cumulative impact of a natural gas fire plus existing sunshine would be closer to 1.0 Kw/m^2 or less.** B5-318 (Cont.)

Page D.6-16 TRANSPORTATION RISKS

Impact HAZ-1a addresses the potential hazards associated with the routine use, transport, and disposal of hazardous materials during construction and operation of the proposed project. Materials used would include: fuels (gasoline, diesel, propane), lubricants, solvents, hydraulic fluids, other toxic or flammable materials. The DEIR considers the impact SIGNIFICANT but can be reduced to Class II (less-than-significant) through implementation of APMs 7, 8, 9 and Mitigation Measure HAZ-1a, which are summarized below:

- APM 7: diesel fuel and petroleum-based lubricants shall be stored only at designated staging areas; all hazardous material spills that threaten California waters will be reported.
- APM 8: preparation of Hazardous Materials Contingency Plan for spills and a Health and Safety Plan.
- APM 9: preparation of an Emergency Response Plan to use in pipeline related emergency.
- Mitigation Measure HAZ-1a: hazardous wastes generated during construction and operation of the proposed project shall be transported to an approved facility for the specific type of material.

However, regarding the fuels (gasoline, diesel, propane), lubricants, solvents, hydraulic fluids, other toxic or flammable materials that are proposed for use at the site (during construction and operation), **the following information is lacking and should be provided**: B5-319

- Identity and toxicity/flammability/hazard classification
- Quantities delivered, used, and for disposal
- Method of transportation
- Frequency of deliveries
- Method of on-site storage
- An Offsite Consequence Analysis (OCA) using an appropriate air dispersion model.

Impact HAZ-1c describes the use, transportation and storage of methyl mercaptan; it would be transported, stored and used at the compressor station and wellhead site to add odorant to natural gas, as needed. It would be transported to the site via trucks carrying individual cylinders with an estimated delivery of 2-3 cylinders/week. It is classified as class 2.3 toxic gases. The DEIR states that despite the low probability of an incident, impacts associated with hazardous materials delivery are considered SIGNIFICANT due to the close proximity along travel routes to schools, parks, etc. Implementation of Mitigation Measures HAZ 1-ci and HAZ 1-cii would reduce impacts to less than significant (Class II).

The methyl mercaptan will be stored at the compressor station in a structure designed for such a purpose. There is no design provided for this structure and no storage structure indicated in any of the layouts for this Project, despite its being mentioned in the context of the wellhead site. The DEIR references a report describing a Quantitative Transportation Risk Assessment. This risk assessment assumed hazardous materials transport accident/incident risk-per-mile to be ≈ 0.507E-06 for ALL types of hazardous materials (Battelle 2001), 0.338E-06 for hazard class 2.3 (toxic gases). The report calculated transportation risks for different routes of delivery to the compressor and wellhead sites using the accident/incident risk-per-mile rates above; all are above 1 in a million.

- Route to Compressor Station: SR-99 to Fruitridge Road (4.3 miles): Passes residential, commercial and industrial developments, Earl Warren Elementary School is within 0.15 mile from route; more schools within 0.25 mile of route. Risk per delivery: 2.2E-06 for all hazardous materials and 1.5E-06 for class 2.3.

- Route to Compressor Station: US-50 along Howe Avenue/Power Inn Road (3.1 miles): Passes residential, industrial and recreational (Granite Regional Park); no schools within 0.25 mile. Risk per delivery is 1.6E-06 for all hazardous materials and 1.1E-06 for class 2.3.

- Route to wellhead site: SR-99 and Florin Road via Power Inn Road (2.5 miles): Passes residential, commercial and industrial developments plus 2 schools (Earl Warren Elementary School and Elder Creek Elementary School) within 0.15 mile from route. Risk per delivery is 1.3E-06 for all hazardous materials and 0.85E-06 for class 2.3.

B5-319 (Cont.)

- Route to wellhead site: US-50 and Howe Avenue via Power Inn Road (3.4 miles): Passes a school. Risk per delivery is 1.7E-06 for all hazardous materials and 1.2E-06 for class 2.3.

- Route from compressor station to wellhead site (1.9 mile): This route passes mostly industrial and some residential properties. The risk for each delivery is estimated at 1.0E-06 for all hazardous materials and 0.64E-06 for class 2.3.

The DEIR states in Mitigation Measure HAZ-1cii that the preferred route to deliver methyl mercaptan would be US-50 and Howe Avenue to either Power Inn Road or to Folsom Boulevard, Jackson Road and Florin Perkins Road. The DEIR states that this route would minimize exposure to sensitive receptors yet this statement contradicts an earlier statement that "[t]he route from US-50 to the wellhead passes by a school and is longer than the route from SR-99; therefore the route from SR-99 is preferable". **This serious discrepancy must be corrected and the ultimate finding adjusted to reflect additional risk for either the longer travel time/distance (SR-99) or proximity to a school (US-50). This discrepancy demonstrates that the Project Description is both inadequate and incomplete (see also page 1 of this comment letter above).**

The entire analysis of the storage and transportation of methyl mercaptan is flawed because the following important information is lacking:

B5-319 (Cont.)

- The size/volume of the methyl mercaptan cylinder?
- The number of each cylinder delivered each time, each week, and each year.
- Regarding on-site storage of methyl mercaptan, an OCA is needed.
- The risk assessment conducted in the report gives risks for accidents occurring, **but does not evaluate potential impacts of methyl mercaptan** released during an accident on **nearby populations**. **The DEIR should quantify the risk of health effects due to methyl mercaptan released in a transportation and storage accident to residents and sensitive receptors.**

The DEIR erred in under-identifying schools, parks, and other locations of sensitive receptors along hazardous materials transportation routes. Using maps on Google Earth and MapQuest, the following schools, parks, daycare centers were identified by this commenter as being within ~0.25 miles of each proposed delivery route (a site visit would be necessary to confirm the location and existence of all of these schools):

ROUTES TO COMPRESSOR SITE

SR-99 to Fruitridge Road

1	St. Hope Public School	5201 Strawberry Lane
2	Happy Time Learning Center	5540 Martin Luther King Jr. Blvd.
3	Seta Head Start	5746 40th Street
4	St. Stephen Academy	5461 44th Street
5	Ethel I. Baker Elementary School	5717 Laurine Way

6	West Campus School	5022 58th Street
7	Peter Burnett Elementary School	6032 36th Avenue
8	Earl Warren Elementary School	5420 Lowell Street
9	Eliezer Christian Academy	5800 Power Inn Road
10	Elder Creek Elementary School	7934 Lemon Hill Avenue

US-50 along Howe Avenue/Power Inn Road

1	Eliezer Christian Academy	5800 Power Inn Road
2	Elder Creek Elementary School	7934 Lemon Hill Avenue
3	Granite Regional Park	

ROUTES TO WELLHEAD SITE

SR-99 and Florin Road via Power Inn Road to Wellhead

1	Another Choice, Another Chance (teen boarding school)	5415 Florin Road
2	Florin Elementary School	7300 Kara Drive
3	Noah's Ark Christian Academy	8201 Florin Road
4	Florin Reservoir Park	

US-50 along Howe Avenue/Power Inn Road

1	Eliezer Christian Academy	5800 Power Inn Road
2	Elder Creek Elementary School	7934 Lemon Hill Avenue
3	Still Water's Academy	8008 43rd Avenue
4	Granite Regional Park	
5	Sim Park	
6	Florin Reservoir Park	

B5-319 (Cont.)

Appendix B: **System Safety and Risk of Upset (prepared by EDM Services, Inc. September 2008)**

Based on the analysis provided, no meaningful or adequately supported conclusions are drawn from the pipeline incident data provided in sections 4, 5, and 6 of Appendix B and utilized in the EDM analysis. What is considered an acceptable risk level for the general public is significantly lower than that which is acceptable in the workplace. Risks to innocent by-standers in the general public exclusive of workers in pipeline rights-of-way must be provided for public thoroughfares in the vicinity of the Project sites and corridors. Even if the injured parties are not employees of the pipeline owner, if they are working in or near the right-of-way and the Project sites (i.e., Army Depot industries), they will be impacted while in a workplace setting.

An analysis that excludes worker injuries and fatalities would also be more relevant to the communities affected by the project. Making this correction to the analysis would

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render the analysis more germane to the public and nearby non-Project workers that would assume the risk.

It is also difficult to draw meaningful conclusions regarding risk of fatalities without segregating fatality risks with failure modes. For example if the risk of fatality associated with incidents caused by excavation activities in the right-of-way are high and such fatalities are almost exclusively members of the excavating crew and the public falsely presumes that such fatalities are innocent bystanders, the analysis inappropriately biases the public's perception of its risk.

Section 7.3.4 of Appendix B concludes that the proposed project will result in significant impacts that would remain unmitigated. The DEIR postulates that these risks should be considered acceptable because other existing projects involving natural gas storage and transmission involve similar risks that "have been generally accepted as a cost of modern living in other locations." However, **this argument is not consistent with the intent and purpose of CEQA. CEQA requires that significant impacts be mitigated to the fullest extent feasible.**

B5-320 (Cont.)

CEQA obligates the lead agency to adopt all feasible mitigation measures to address significant and unavoidable impacts. The lead agency cannot ignore feasible mitigation measures simply because the impacts would remain significant and unavoidable even with those mitigation measures. For example, while the impacts from gas pipelines would still remain significant, the following mitigation measures are feasible and should be analyzed for their potential to reduce the risk from what will remain a significant impact:

1. In section 8.2 of Appendix B, another alternative pipeline route that may be feasible and provide greater risk reduction should be investigated.
2. Measures, such as substitution and upgrading of pipeline materials at critical sections, to reduce the dominant risks of excavation activities, impact rupture, and external corrosion must be identified and thoroughly analyzed.
3. Other protective measures, i.e., placing a reinforced concrete cap over the pipeline in critical sections, must be evaluated as ways to reduce the risk of damage through excavation activities.

ALTERNATIVES ANALYSIS

B5-321

The DEIR's alternatives analysis is fatally flawed because it appears from even a cursory reading of D.2, which addresses the Air Quality impacts of alternative locations, that the impacts of locating the Project at the Snodgrass Slough Gas Field are clearly less than the impacts of locating the Project at the proposed Florin site. The Snodgrass site is located in a primarily agricultural area and, as the DEIR states the "nearest population center is Walnut Grove, 4 miles to the south" and does "not have nearby sensitive receptors".

The same benefits to the Snodgrass Slough Grass Field are reiterated in other sections of the DEIR including, but not limited to, the following:

page ES-27:
"In summary, from a strictly environmental perspective, the Snodgrass Slough Gas Field alternative ranks as the environmentally superior alternative.

Page D.6-40:
"Regarding potential migration of gas to surface, impacts associated with the release of gas from the Snodgrass reservoir would be considered **Class II** with implementation of mitigation measures due to limited population of the area (compared to Class I significant and unavoidable impacts for this at Florin)."

Page D.7-28:
"During project operation for both Snodgrass and Florin, the potential for leakage of natural gas into the aquifer is considered a significant and unavoidable impact (Class I) although fewer people would rely on the drinking water at Snodgrass than Florin."

It is thus clear from the rather brief assessment of the Snodgrass Slough Alternative Site, that this site will afford far more protection to public health and safety and would have far fewer impacts on public health and safety and to a lesser degree than the Florin Site. Due to its location away from dense population centers, public health and safety impacts (Class I) would be reduced to less than significant with mitigation (Class II). The risk of and the impacts from a rupture of the gas pipeline would be reduced to Class II with implementation of mitigation measures at Snodgrass (compared to remaining at Class I at Florin). These lesser impacts would be due to the greatly reduced risk of pipeline integrity breach from the most common threat, the construction backhoe. Trenching operations in urban and suburban environments occur far more often than in rural agricultural areas. And, even more importantly, in the event of gas leak, the location of the Project in a less populated area reduces the consequences and impacts on the public. **Therefore, the Snodgrass alternative must be given far greater consideration and analysis as a preferred site.** It appears that the only impediment to proceeding with the Project at Snodgrass Slough is the extra cost for a longer gas pipeline, a small price to pay for public safety.

B5-321 (Cont.)

Cordially,

Alvin Greenberg

Alvin J. Greenberg, Ph.D., REA, QEP

Exhibit A

B5-322

ENVIRON

March 25, 2008

Ms. Emily Keller
Senior Scientist, Wetlands and Wildlife Biologist
PBS&J
1200 Second Street
Sacramento, CA 95814

RE: Health Risk Screening Analysis - Proposed Sacramento Natural Gas Storage Project, Florin Gas Field Facility

Dear Ms. Keller:

At the request of PBS&J, ENVIRON International Corporation (ENVIRON) performed an ambient air quality health risk screening analysis (HRSA) of the toxic air contaminant (TAC) emissions from a glycol dehydration unit associated with the Sacramento Natural Gas Storage Project at the Florin Gas Field (the "Project") in Sacramento, California (the "Site"). Our analysis indicates that the proposed operations of the Project are not expected to have a significant human health risk impact as defined under Sacramento Metropolitan Air Quality Management District (SMAQMD) California Environmental Quality Act (CEQA) Guidelines.

B5-322 (Cont.)

Process

ENVIRON performed this HRSA using information obtained from PBS&J. This HRSA reflects the fact that we utilized conservative methodologies for:

1) the estimation of TAC emissions,
2) the calculation of screening-level airborne TAC concentrations at offsite receptors, and
3) the estimation of cancer risks and non-cancer hazards at these receptors.

Potential incremental health effects resulting from exposure to projected emissions of TAC associated with the Project were evaluated for hypothetical offsite workers and offsite residential receptors nearby the Site boundary. Two sensitive offsite receptors representing Still Water's Academy and Elder Creek Elementary were also considered. ENVIRON evaluated potential exposures to TAC emission at these locations using conservative (i.e., health protective) exposure parameters consistent with the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) risk screening guidance.[1]

Using an established emission estimation model developed by the Gas Research Institute (GRI) for use in regulatory permitting projects (GRI-GLYCalc 4.0), ENVIRON estimated

[1] California Environmental Protection Agency (Cal/EPA). 2003. *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments.* Office of Environmental Health Hazard Assessment. August.

TAC emissions for the glycol dehydration unit. Parameters used for GRI-GLYCalc and emission estimates are shown in Table 1. GRI-GLYCalc estimates emissions of the BTEX compounds (i.e., benzene, toluene, ethyl benzene and xylenes) and n-hexane, all of which are considered TACs under OEHHA guidance.[2]

Consistent with SMAQMD-approved practices, TAC concentrations for estimated emissions at receptor locations were conservatively estimated using the United States Environmental Protection Agency (USEPA) air dispersion model SCREEN3, which represents worst-case scenario meteorological conditions. Parameters used in SCREEN3 modeling are shown in Table 2 and estimated one-hour maximum and annual average concentrations for BTEX and n-hexane are presented in Table 3. One-hour maximum concentrations estimated using SCREEN3 were converted to annual average concentrations using a conservative conversion factor of 0.1, per OEHHA guidance.[3]

Quantitative estimates of cancer risks and non-cancer health effects associated with potential offsite residential, offsite worker and offsite child exposure at nearby schools to TACs from the Project were then calculated based on the screening air dispersion modeling results. Exposure assumptions used in this analysis are presented in Table 4 and toxicity values are presented in Table 5. GRI-GLYCalc only estimates BTEX emissions as a composite, therefore all BTEX was assumed to be benzene as it has the highest toxicity of all BTEX compounds. This is a conservative assumption as BTEX emissions represent a mixture of compounds that have a composite toxicity lower than benzene.

B5-322 (Cont.)

As part of this HRSA, the estimated human health risks were compared to the thresholds for significance for TACs in the SMAQMD CEQA Guidelines for a maximally exposed individual (MEI). These results are shown in Table 6. The SMAQMD CEQA Guidelines thresholds correspond to the TAC concentration that would not pose an unacceptable health risk to offsite populations. According to the SMAQMD CEQA Guidelines, the threshold for significance for TACs is a cancer risk greater than ten in one million (1×10^{-5}) and a non-cancer hazard index (HI) of greater than one for the MEI.[4]

Findings

The results of our analysis indicate that the estimated incremental cancer risks and non-cancer HIs for the offsite workers and offsite residents in the vicinity of Project and the offsite children at nearby schools are below the SMAQMD CEQA thresholds (i.e. an estimated cancer risk of less than ten in one million and an HI less than one), as summarized in Table 6. Thus, based on the results of this HRSA, the Project should not have a significant adverse impact on human health according to SMAQMD CEQA Guidelines.

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[2] Ibid.

[3] Ibid.

[4] Sacramento Metropolitan Air Quality Management District (SMAQMD). 2004. Guide to Air Quality Assessment in Sacramento County. July.

To provide perspective for the results of a HRSA, OEHHA indicates that the estimated cancer risks can be "compared to the overall risk of cancer in the general U.S. population" or "to the risk posed by all harmful chemicals in a particular medium, such as air. The cancer risk from breathing current levels of pollutants in California's ambient air over a 70-year lifetime is estimated to be 760 in one million."[5] Furthermore, the California Department of Health Services (DHS) reports that two in five Californians will be diagnosed with cancer during their lifetime, corresponding to a background cancer risk of 400,000 in one million.[6]

The many conservative assumptions that have been used in this screening assessment regarding the identification of truck traffic routes and associated emissions, estimation of ambient air concentrations, and exposure assumptions likely lead to an overestimate of potential risks, the magnitude of which could likely be substantial. The USEPA explains the effect of using conservative parameters in regulatory risk assessments as follows:[7]

> *"These values are upper-bound estimates of excess cancer risk potentially arising from lifetime exposure to the chemical in question. A number of assumptions have been made in the derivation of these values, many of which are likely to overestimate exposure and toxicity. The actual incidence of cancer is likely to be lower than these estimates and may be zero."*

B5-322 (Cont.)

Closing

Thank you for the opportunity to complete this assignment. If you have any questions about our analysis or need further information, please feel free to contact Liz Miesner at 415.796.1938 or emiesner@environcorp.com or Michael Keinath at 510.420.2539 or mkeinath@environcorp.com.

Sincerely,

Michael Keinath, P.E.
Manager

Elizabeth A. Miesner, M.S.
Principal

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[5] Office of Environmental Health Hazard Assessment (OEHHA) 2001. A Guide to Health Risk Assessment. California Environmental Protection Agency.

[6] California Department of Health Services (DHS), California Cancer Registry. 2006. Available at http://www.dhs.ca.gov/cdic.

[7] USEPA. 1989. Risk Assessment Guidance for Superfund: Volume 1- Human Health Evaluation Manual (Part A). Interim Final. Washington, D.C. December.

Attachments:

Table 1: GRI-Glycalc 4.0 Inputs and Outputs

Table 2: SCREEN3 Modeling Parameters

Table 3: Summary of Receptor Concentrations

Table 4: OEHHA-Recommended Exposure Parameters for Evaluating Cancer Risk for Resident, Worker, and Child Receptors

Table 5: Inhalation Carcinogenic and Non-Carcinogenic Toxicity Values for Benzene and n-Hexane

Table 6: Summary of Carcinogenic Risks and Non-Cancer Hazard Indices

B5-322 (Cont.)

Table 1
GRI-Glycalc 4.0 Inputs and Outputs
SNGS Florin Facility
Sacramento, CA

Inputs	Units	Value
Annual Hours of Operation	hours	3075.0
Wet gas temperature	degrees F	97.00
Wet gas pressure	psig	250.00
Wet Gas Water Content		Saturated
Composition of the wet gas[1]		
Methane	volume %	99.97%
n-Hexane	volume %	0.03%
BTEX	volume %	<0.01%
Dry Gas Flow Rate[2]	MMSCF / day	225-314
Dry Gas Water Content	lbs H_2O / MMSCF	7.0
Lean Glycol Type:		TEG
Lean Glycol Water Content:	weight % H_2O	1.0%
Lean Glycol Recirculation Ratio:	gallons/lb H2O	3.0
Glycol Pump Type		Electric/Pneumatic
Flash Tank Control[3]		Vented to atmosphere
Flash Tank Temperature:	degrees F	200.0
Flash Tank Pressure:	psig	75.0
Output		
Annual BTEX Emissions (at Average Dry Gas Flow Rate)	lbs/yr	976
Maximum Hourly BTEX Emissions (at Maximum Dry Gas Flow Rate)	lbs/hr	0.44
Annual n-Hexane Emissions (at Average Dry Gas Flow Rate)	lbs/yr	9,614

Notes:
1. Client data specified BTEX concentrations <1 ppm. To be conservative, ENVIRON assumed a concentration of 1 ppm of BTEX.
2. The average flow rate is 225 MMSCF/day; the maximum flow rate is 314 MMSCF/day.
3. Assumed to be conservative.

Abbreviations:
BTEX - benzene, toluene, ethyl benzene, xylenes
F - Fahrenheit
hr - hour
lb(s) - pound(s)
MMSCF - million standard cubic feet
ppm - parts per million
TEG - triethylene glycol
yr - year
% - percent

Source:
Inputs provided by client.

Table 2
SCREEN3 Modeling Parameters
SNGS Florin Facility
Sacramento, CA

Parameter	Units	Value
BTEX Emission Rate (1-hr maximum) [1]	g/s	0.056
BTEX Emission Rate (annual) [2]	g/s	0.014
n-Hexane Emission Rate (annual) [2]	g/s	0.14
Stack Height	m	6.1
Stack Diameter	m	0.356
Exit Velocity	m/s	4.91
Exit Temperature	K	644
Air Temperature	K	293

Notes:
1. 1-hour maximum emission rate = hourly emissions (lbs/hr)*453.59 g/lb / (3600 s/hr)
2. Annual emission rate = annual emissions (lbs/yr)*453.59 g/lb / (8760 hr/yr * 3600 s/hr)

Abbreviations:
BTEX - benzene, toluene, ethyl benzene, xylenes
g - gram
hr - hour
K - Kelvin
lb - pound
m - meter
s - second
yr - year

B5-322 (Cont.)

Table 3
Summary of Receptor Concentrations
SNGS Florin Facility
Sacramento, CA

Receptor	Location	BTEX 1-Hour Maximum Concentration[1]	BTEX Annual Average Concentration[2]	n-Hexane Annual Average Concentration[2]
		ug/m^3	ug/m^3	ug/m^3
PMI	92 meters from source	18	0.44	4.4
MEIW	Nearest offsite worker identified at 150 meters north or east of source	17	0.42	4.1
MEIR	Nearest residence identified 800 meters west of source	7.7	0.19	1.9
Still Water's Academy	8008 43rd Ave. (900 meters west of source)	6.8	0.17	1.7
Elder Creek Elementary	7934 Lemon Hill Ave. (900 meters west of source)	6.8	0.17	1.7

Notes:
1. Estimated directly using SCREEN3 with the maximum hourly emission rate of BTEX under the maximum dry gas flow rate of 314 MMSCF/day.
2. Estimated using SCREEN3 to estimate a 1-hour maximum concentration for the emissions of BTEX and n-hexane under the average dry gas flow rate of 225 MMSCF/day and then scaling the 1-hour maximum concentration to an annual concentration using the factor 0.1, as recommended by OEHHA guidance.

Abbreviations:
BTEX - benzene, toluene, ethyl benzene, xylenes
MEIR - Maximally Exposed Individual Resident
MEIW - Maximally Exposed Individual Worker
MMSCF - million standard cubic feet
OEHHA - Office of Environmental Health Hazard Assessment
PMI - Point of Maximum Impact
ug/m^3 - microgram per cubic meter

Source:
California Environmental Protection Agency (Cal/EPA). 2003. "Air Toxics Hot Spots Program Risk Assessment Guidelines, the Air Toxics Hot Spots Program Guidance Manual for Preparations of Health Risk Assessments," Office of Environmental Health Hazard Assessment, August.

B5-322
(Cont.)

Table 4

OEHHA-Recommended Exposure Parameters for Evaluating Cancer Risk for Resident, Worker, and Child Receptors

SNGS Florin Facility

Sacramento, CA

Exposure Parameter	Units	Resident	Worker	Child
Daily Breathing Rate [1]	[L/kg-day]	302	149	581
Exposure Time	[hours/day]	24	8	8
Exposure Frequency	[days/year]	350	245	180
Exposure Duration	[years]	70	40	9
Conversion Factor (CF)	[m^3/L]	0.001	0.001	0.001
Averaging Time	[days]	25550	25550	25550
Intake Factor, Inhalation (IF_{inh})[2]	[m^3/kg-day]	0.29	0.057	0.012

Notes:

1. Resident uses 80th percentile breathing rate used per ARB Guidance. Worker and child use high end values per OEHHA.
2. Resident and worker: IFinh = (Breathing Rate*Exposure Frequency*Exposure Duration*CF)/(Averaging time)
   Child: IFinh = (Breathing Rate*[Exposure Time/24 hours]*Exposure Frequency*Exposure Duration*CF)/(Averaging time)

Abbreviations:

CF - conversion factor
IFinh - inhalation intake factor
kg - kilogram
l - liter
m - meter
OEHHA = Office of Environmental Health Hazard Assessment

Source:

California Air Resources Board (ARB). 2003. "Air Resources Board Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk." October 9.

California Environmental Protection Agency (Cal/EPA). 2003. "Air Toxics Hot Spots Program Risk Assessment Guidelines, the Air Toxics Hot Spots Program Guidance Manual for Preparations of Health Risk Assessments," Office of Environmental Health Hazard Assessment, August .

B5-322 (Cont.)

Table 5
Inhalation Carcinogenic and Non-Carcinogenic Toxicity Values for Benzene and n-Hexane
SNGS Florin Facility
Sacramento, CA

Chemical	CPF $(mg/kg\text{-}day)^{-1}$	Source	Chronic REL (ug/m^3)	Reference	Acute REL (ug/m^3)	Source
Benzene [1]	0.10	Cal/EPA 2007	60	Cal/EPA 2005	1300	Cal/EPA 2003
n-Hexane	NA		7000	Cal/EPA 2005	NA	

Notes:
1. BTEX assumed to be 100% benzene as it has the highest toxicity of BTEX compounds.

Abbreviation:
BTEX - benzene, toluene, ethyl benzene, xylenes
CPF - Cancer Potency Factor
NA - not applicable
REL - Reference exposure level
(mg/kg-day)-1 - milligram per kilogram-day
ug/m^3 - microgram per cubic meter

Source:
California Environmental Protection Agency (Cal/EPA). 2003. Air Toxics Hot Spots Program Risk Assessment Guidelines, the Air Toxics Hot Spots Program Guidance Manual for Preparations of Health Risk Assessments," OEHHA, August.

California Environmental Protection Agency (Cal/EPA). 2005. All Chronic Reference Exposure Levels Adopted by Office of Environmental Health Hazard Assessment (OEHHA). January.

California Environmental Protection Agency (Cal/EPA). 2007. California Cancer Potency Values. Office of Environmental Health Hazard Assessment. April 9.

B5-322 (Cont.)

Table 6
Summary of Carcinogenic Risks and Non-Cancer Hazard Indices
SNGS Florin Facility
Sacramento, CA

Receptor	Location	Cancer Risk (in a million)	Chronic HI [1]	AcuteHI
PMI [2]	92 meters from source	13	0.008	0.014
MEIW [3]	Nearest offsite worker identified at 150 meters north or east of source	2	0.0017	0.013
MEIR	Nearest residence identified 800 meters west of source	6	0.0035	0.0059
Still Water's Academy [4]	8008 43rd Ave. (900 meters west of source)	0.2	0.0031	0.0052
Elder Creek Elementary[4]	7934 Lemon Hill Ave. (900 meters west of source)	0.2	0.0031	0.0052
	SMAQMD Significance Threshold	10	1	1

Notes:
1. Chronic HI = $HQ_{benzene} + HQ_{n\text{-}hexane}$
2. The PMI reflects resident exposure assumptions, though there are no residences at this location. Therefore, the SMAQMD Significance Threshold is not exceeded.
3. Per OEHHA guidance, the air concentration used in evaluation of the chronic HI for the MEIW was adjusted to account for non-continuous exposure (e.g., 245 days/365 days and 8 hours/24 hours).
4. As a conservative estimate, no adjustemnt was made for exposure duration at the school receptors.

Abbreviations:
HI - Hazard Index
HQ - Hazard Quotient
MEIR - Maximally Exposed Individual Resident
MEIW - Maximally Exposed Individual Worker
PMI - Point of Maximum Impact
SMAQMD - Sacramento Metropolitan Air Quality Management District

Source:
California Environmental Protection Agency (Cal/EPA). 2003. Air Toxics Hot Spots Program Risk Assessment Guidelines, the Air Toxics Hot Spots Program Guidance Manual for Preparations of Health Risk Assessments," OEHHA, August.

Sacramento Metropolitan Air Quality Management District (SMAQMD). 2004. Guide to Air Quality Assessment in Sacramento County. July.

B5-322 (Cont.)

Exhibit B

B5-323

Name & Title: **Alvin J. Greenberg, Ph.D., FAIC, REA, QEP**
Principal Toxicologist

Dr. Greenberg has had over two decades of complete technical and administrative responsibility as a team leader in the preparation of human and ecological risk assessments, air quality assessments, hazardous materials handling and risk management/prevention, infrastructure vulnerability assessments, occupational safety and health, hazardous waste site characterization, interaction with regulatory agencies in obtaining permits, and conducting lead surveys and studies. He has particular expertise in the assessment of dioxins, lead, diesel exhaust, petroleum hydrocarbons, mercury, the intrusion of subsurface contaminants into indoor air, and the preparation and review of public health/public safety sections of EIRs/EISs. Dr. Greenberg's expertise in risk assessment has led to his appointment as a member of several state and federal advisory committees, including the California EPA Advisory Committee on Stochastic Risk Assessment Methods, the US EPA Workgroup on Cumulative Risk Assessment, the Cal/EPA Peer Review Committee of the Health Risks of Using Ethanol in Reformulated Gasoline, the California Air Resources Board Advisory Committee on Diesel Emissions, the Cal/EPA Department of Toxic Substances Control Program Review Committee, and the DTSC Integrated Site Mitigation Committee.

Dr. Greenberg is the former Chair of the Bay Area Air Quality Management District Hearing Board, a former member of the State of California Occupational Health and Safety Standards Board (appointed by the Governor), and former Assistant Deputy Chief for Health, California OSHA.

Years Experience: 27

Education:

B.S. 1969 Chemistry, University of Illinois Urbana
Ph.D. 1976 Pharmaceutical/Medicinal Chemistry, University of California, San Francisco
Postdoctoral Fellowship 1976-1979 Pharmacology/Toxicology, University of California, San Francisco
Postgraduate Training 1980 Inhalation Toxicology, Lovelace Inhalation Toxicology Research Institute, Albuquerque, NM

Professional Registrations:

Board Certified as a Qualified Environmental Professional (QEP)
California Registered Environmental Assessor - I (REA)
Fellow of the American Institute of Chemists (FAIC)

Professional Affiliations:

Society for Risk Analysis
American Chemical Society
American Association for the Advancement of Science
National Fire Protection Association

B5-323 (Cont.)

Technical Boards and Committee Memberships

July 1996 – March 2002
Member, Bay Area Air Quality Management District Hearing Board (Chairman 1999-2002)

September 2000 – February 2001
Member, State Water Resources Control Board Noncompliant Underground Tanks Advisory Group

January 1999 – June 2001
Member, California Air Resources Board Advisory Committee on Diesel Emissions

January 1994 - September 1999
Vice-Chairman, State Water Resources Control Board Bay Protection and Toxic Cleanup Program Advisory Committee

September 1998
Member, US EPA Workgroup on Cumulative Risk Assessment

April 1997 - September 1997
Member, Cal/EPA Private Site Manager Advisory Committee

January 1986 - July 1996
Member, Bay Area Air Quality Management District Advisory Council (Chairman 1995-96)

January 1988 - June 1995
Member: California Department of Toxic Substance Control Site Mitigation Program Advisory Group

January 1989 - February 1995
Member: Department of Toxics Substances Control Review Committee, Cal-EPA

October 1991 - February 1992
Chair: Pollution Prevention and Waste Management Planning Task Force of the Department of Toxics Substances Control Review Committee, Cal-EPA

September 1990 - February 1991
Member: California Integrated Waste Management Board Sludge Advisory Committee

September 1987 - September 1988
ABAG Advisory Committee on Regional Hazardous Waste Management Plan

March 1987 - September 1987
California Department of Health Services Advisory Committee on County and Regional Hazardous Waste Management Plans

January 1984 - October 1987
Member, San Francisco Hazardous Materials Advisory Committee

March 1984 - March 1987
Member, Lawrence Hall of Science Toxic Substances and Hazardous Materials Education Project Advisory Board

Jan. 1, 1986 - June 1, 1986
Member, Solid Waste Advisory Committee, Governor's Task Force on Hazardous Waste

Jan. 1, 1983 - June 30, 1985
Member, Contra Costa County Hazardous Waste Task Force

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Present Position

January 1983- present

Owner and principal with Risk Sciences Associates, a Marin County, California, environmental consulting company specializing in multi-media human health and ecological risk assessment, hazardous waste site characterization, air pathway analyses, hazardous materials management-infrastructure security, environmental site assessments, review and evaluation of EIRs/EISs, preparation of public health and safety sections of EIRs/EISs, and litigation support for toxic substance exposure cases.

Previous Positions

Jan. 2, 1983 - June 12, 1984

Member, State of California Occupational Safety and Health Standards Board (Cal/OSHA), appointed by the Governor

Aug. 1, 1979 - Jan. 2, 1983

Assistant Deputy Chief for Health, California Occupational Safety and Health Administration

Feb. 1, 1979 - Aug. 1, 1979

Administrative Assistant to Chairperson of Finance Committee, Board of Supervisors, San Francisco

Jan. 1, 1976 - Feb. 1, 1979

Research Pharmacologist and Postdoctoral Fellow, Department of Pharmacology and Toxicology, School of Medicine, University of California, San Francisco

Jan. 1, 1975 - Dec. 31, 1975

Acting Assistant Professor, Department of Pharmaceutical Chemistry, University of California, San Francisco

Experience

Dr. Greenberg has been a consultant in Human and Ecological Risk Assessment, Occupational Health, Toxicology, Hazardous Waste Site Characterization, and Toxic Substances Control Policy for over 26 years. He has broad experience in the identification, evaluation and control of health and environmental hazards due to exposure to toxic substances. His experience includes Community Relations Support and Risk Communication through experience at high-profile sites and presentations at professional society meetings.

He served for over five years as the Vice-chair of the California State Water Resources Control Board Advisory Committee convened to address toxic substances in sediments in bays, rivers, and estuaries. He has been a member of the Squaw Valley Technical Review Committee since 1986 establishing chemical application management plans at golf courses to protect surface and groundwater quality. He has also conducted numerous ecological risk assessments and characterizations, including those for marine and terrestrial habitats.

B5-323 (Cont.)

Dr. Greenberg has extensive experience in data collection and preparation of human and ecological risk assessments on numerous military bases and industrial sites with Cal/EPA DTSC and RWQCB oversight. He has also been retained to provide technical services to the Cal/EPA Department of Toxic Substances Control (preparation of human health risk assessments), the Office of Environmental Health Hazard Assessment (review and evaluation of air toxics health risk assessments and preparation of profiles describing the acute and chronic toxicity of toxic air contaminants), and the California Energy Commission (hazardous waste site characterization, waste management, public health impacts, human health risk assessment, hazardous materials management, and worker safety/fire protection). He has also conducted several surveys of sites containing significant lead contamination from various sources including lead-based paint, evaluated potential occupational exposure to lead dust and fumes in industrial settings, prepared numerous human health risk assessments of lead exposure, and prepared safety and health plans for remedial investigation of lead contaminated soils. Dr. Greenberg is also a recognized expert on the requirements of California's Proposition 65 and has served as an expert on Prop. 65 litigation.

Sites with RWQCB and/or DTSC Oversight

Dr. Greenberg has specific experience in assessing human health and ecological risks at contaminated sites at the land/water interface, including petroleum contaminants, metals, mercury, and VOCs at several locations in California including San Francisco, Oxnard, Richmond, Avila Beach, Mare Island Naval Shipyard, San Diego, Hollister, Hayward, Richmond, the Port of San Francisco, and numerous other locations. He has used Cal/EPA methods, US EPA methods, ASTM Risk Based Corrective Action (RBCA) and Cal/Tox methodologies. He is extremely knowledgeable about SWRCB and SF Bay RWQCB regulations on underground storage tank sites and with ecological issues presented by contaminated sediments including sediment analysis, toxicity testing, tissue analysis, and sediment quality objectives. Dr. Greenberg served on the State Water Resources Control Board Bay Protection and Toxic Cleanup Program Advisory Committee from 1994 until the end of the program in 1999.

B5-323 (Cont.)

Dr. Greenberg experience on many of these contaminated sites has been as a consultant to local governments, state agencies, and citizen groups. He assisted the City and County of San Francisco in developing local ordinance requiring soil testing (Article 20, Maher ordinance) and hazardous materials use reporting (Article 21, Walker ordinance). He served as the City of San Rafael's consultant to provide independent review and evaluation of the site characterization and remedial action plan prepared for a former coal gasification site. He was a consultant to a citizen group in northern California regarding exposure and risks due to accidental releases from a petroleum refinery and assisted in the assessment of risks due to crude petroleum contamination of a southern California beach. He has prepared a number of risk assessments addressing crude petroleum, diesel and gasoline contamination, including coordinating site investigations, environmental monitoring, and health risk assessment for the County of San Luis Obispo regarding Avila Beach subsurface petroleum contamination. That high-profile project lasted for over one year and Dr. Greenberg managed a team of experts with a budget of $750,000. Another high-profile project included the preparation of an extensive comprehensive human and ecological risk assessment for the Hawaii Office of Space Industry on rocket launch impacts and transportation/storage of rocket fuels at the southern end of the Big Island of Hawaii. Dr. Greenberg's risk assessments were part of the EIS for the project. Dr. Greenberg also worked on

another high-profile project conducting Air Pathway Analysis of off-site and on-site impacts from landfill gas constituents, including indoor and outdoor air measurements, air dispersion modeling, flux chamber investigations, and health risk assessment for the County of Santa Barbara. Dr. Greenberg has conducted RI/FS work, prepared health risk assessments, evaluated hazardous waste sites and hazardous materials use at numerous locations in California, Hawaii, Oregon, Minnesota, Michigan, and New York. He has considerable experience in the development of clean-up standards and the development of quantitative risk assessments for site RI/FS work at CERCLA sites, as well as site closures, involving toxic substances and petroleum hydrocarbon wastes. He is experienced in working with both Region IX EPA and the State of California DTSC in negotiating clean-up standards based on the application of both site-specific and non site-specific health and ecological based clean-up criteria. He has significant experience in the development of site chemicals of concern list, quantitative data quality levels, site remedial design, the site closure process, the design and execution of data quality programs and verification of data quality prior to its use in the decision making process on large NPL sites.

He has considerable experience in the review and evaluation of exposure via the air pathway - particularly to emissions from power plants, refineries, and diesel exhaust - and a thorough knowledge of the regulatory requirements through his experience at Cal/OSHA, the BAAQMD Hearing Board, as a consultant to the California Energy Commission, and in preparing such assessments for local government and industry. He has assessed exposures to diesel exhaust during construction and operations of stationary and mobile sources and has testified at evidentiary hearings numerous times on this subject.

Dr. Greenberg has prepared numerous Air Pathway Analyses and human health risk assessments, evaluating exposure at numerous locations in California, Hawai'i, Oregon, Minnesota, Michigan, and New York. He is experienced in working with Region IX EPA, the State of California DTSC, and the Hawai'i Department of Health Clean Air Branch in the application of both site-specific and non site-specific health risk assessment criteria.

B5-323 (Cont.)

Representative Projects (those in San Francisco on bay-front listed first)

1. San Francisco Energy Reliability Project, San Francisco, Ca. 2004-2007 (and other previous proposed projects on Port of SF property). As a contractor with the California Energy Commission, Dr. Greenberg was responsibly for preparing and defending the environmental documentation (equivalent to an EIR) for the proposed San Francisco Electrical reliability Project on Port property (near Caesar Chavez and the Bay) in the areas of hazardous waste site characterization and management, worker safety/fire protection, hazardous materials management, and public health. These assessments consistent of:
    - Off-site consequence analyses of the handling, use, storage, and transportation of hazardous materials,
    - Risk Management Plans (required by the Cal-ARP) and Business Plans (required by H&S Code section 25503.5),
    - Safety Management Plans (required by 8 CCR section 5189),
    - Natural gas pipeline safety,
    - Solid and hazardous waste management plans,
    - Phase I and II Environmental Site Assessments,
    - Construction and Operations Worker Safety and Health Programs,

- Fire Prevention Programs,
- Human health risk assessment from stack emissions and from diesel engines, and
- Mitigation measures to address PM exposure, including diesel particulates

2. Review and Evaluation of the Remedial Investigation Report and Human Health Risk Assessment for the U. S. Naval Station at Treasure Island, Ca. (June 1999)
3. Screening Health Risk Assessment for the Proposed San Francisco Police Department's Helicopter Landing Pad at Hunters Point Shipyard, San Francisco, Ca. (September 1997)
4. Health Risk Assessment for the Rincon Point Park Project, San Francisco, Ca. Prepared for Baseline Environmental Consulting and the San Francisco Redevelopment Agency. (August 10, 1992)
5. Health Risk Assessment for the South Beach Park Project, San Francisco, Ca. Prepared for Baseline Environmental Consulting and the San Francisco Redevelopment Agency. (August 10, 1992)
6. Human Health Risk Assessment for Soils Containing PCB-paint on Concrete Particles for the Ross Valley Sanitation District, Larkspur, Ca. (January 2008 to present).
7. Review and Evaluation of the Proposed Remedial Action Plan for the Sacramento Rail yard Property, Sacramento, Ca. (Jan. 2008 to March 2008)
8. Investigation of Subsurface Soils and Indoor Vapor Migration at a former newspaper printing company, Dublin, Ca. (March – July 2008)
9. Human Health Risk Assessment and Indoor Vapor Intrusion Assessment for the former Pt. St. George Fisheries Site, Santa Rosa, Ca. (October 2002)
10. Human Health Risk Assessment for the former Sargent Industries Site, Huntington Park, Ca. (July 2001)
11. Ballard Canyon Air Pathway Analysis and Human Health Risk Assessment, Santa Barbara County, Ca. (September 2000)
12. Screening Human Health Risk Assessment, Calculation of Soil Clean-up Levels, and Aquatic Ecological Screening Evaluation, Galilee Harbor, Sausalito, Ca. (May 1998)
13. The Avila Beach Health Study Phase 1: Reconnaissance Sampling Findings, Conclusions, and Recommendations. (July 1997) Volume 1: Baseline Human Health Risk Assessment. (May 1998)
14. Human Health Risk Assessment, Ecological Screening Evaluation, and Development of Proposed Remediation Goals for the Flair Custom Cleaners Site, Chico, California (January 1996)
15. Focused Ecological Risk Characterization, Hawaiian Electric Company, Keahole Generating Station Expansion, Hawai'i (June 1993)
16. Human Health Risk Assessment for the Proposed Palima Point Space Launch Complex, prepared for the Hawai'i Office of Space Industry (April 1993)
17. Ecological Risk Assessment for the Proposed Palima Point Space Launch Complex, prepared for the Hawai'i Office of Space Industry (March 1993)
18. Development of Proposed Soil Remediation Levels for the Marine Corps Air-Ground Combat Center, 29 Palms, California (May 30, 1991)
19. Preliminary Health Risk Assessment for the City of Pittsburg Redevelopment Agency, Pittsburg, California (May 29, 1991)
20. RCRA Facility Investigation (RFI) Work Plan of Lead Oxide Contaminated Areas, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (August 14, 1989)

B5-323 (Cont.)

21. Hazardous Waste and Solid Waste Audit and Management Plan, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (July 3, 1989)
22. Water Quality Solid Waste Assessment Test (SWAT) Proposal RCRA Landfill, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (October 31, 1988)
23. Waste Disposal Facilities, Waste Haulers, Waste Recycling Facilities Report, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (September 22, 1988)
24. Sampling and Analysis Plan, Health and Safety Plan, Site Characterization of Lead Oxide Contaminated Areas, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (September 2, 1988)
25. Air Quality Solid Waste Assessment Test (SWAT) Proposal, Mare Island Naval Shipyard, Vallejo, California. Prepared in conjunction with Kaman Sciences Corp. (August 25, 1988)
26. Other sites in California where Dr. Greenberg has provided site characterization evaluation and prepared environmental documentation for the California Energy commission include Romoland, the City of Vernon, Blythe, Escondido, the Cosumnes Power Project at Rancho Seco, Tesla, San Joaquin, Morro Bay, El Segundo, Burbank, Hayward, Modesto, Colusa County, San Jose, Roseville, Taft, Tracy, Victorville, Niland, and Eureka.

B5-323 (Cont.)

DIRECT TESTIMONY OF DR. HARRY H. WEST

1 Q. Please state your name and business address.

2 A. Harry H. West, Shawnee Engineers, 1829 Augusta #10, Houston, Texas 77057.

3 Q. What is your profession?

4 A. I am an independent consulting chemical engineer.

5 Q. Do you also maintain an academic affiliation?

6 A. Yes. I am an Adjunct Professor of Chemical Engineering at the Process Safety

7 Center of the Texas A&M University

8 Q. Please summarize your educational background.

9 A. I received a BS from the Bucknell University in 1965; and a PhD from the

10 University of Oklahoma in 1969, all in Chemical Engineering.

11 Q. Dr. West, do you have a particular area of specialization within chemical

12 engineering?

13 A. Yes, my primary specialization is in process safety, with a particular emphasis on

14 the analysis of safeguard systems that can avoid or mitigate the consequences of a

15 chemical release.

16 Q. Do you regularly do research, publish, and speak at professional symposia on

17 those subjects?

18 A. Yes. A listing of my publications and symposia presentations is included in the

19 Resume attached to this testimony as Exhibit A.

Q. Are you a registered professional engineer?

A. Yes. I am a registered professional engineer in the States of Pennsylvania and Texas.

Q. Describe your experience in LNG technology.

A. In the late 1960s, my first involvement in LNG technology was to develop a computer simulation of the LNG liquefaction process for the ChemShare Corporation, which allowed design engineers to optimize process conditions. As a member of the professional staff of University Engineers of Norman Oklahoma, I was involved in many aspects of LNG technology. In the early 1970s, I participated in the LNG safety research projects sponsored by the AGA and others, which involved LNG spills on both land and water. Experiments to evaluate the effectiveness of LNG fire control technologies were also a major project. Troubleshooting many early LNG peak shaving facilities led to numerous process developments, most notably the running film LNG vaporizer (currently used by many LNG peak-shaving facilities) and the patent on fire control of LNG tank vents.

I participated in numerous LNG safety analysis studies for proposed LNG importation terminals throughout the USA during the 1970s, including the successful projects at Cove Point, Elba Island and the Trunkline terminal in Lake Charles. For LNG liquefaction projects in the Middle East and Far East, I participated in safety analysis studies and detail design of the fire control safeguard systems.

B5-324 (Cont.)

One significant aspect of LNG safety analysis studies was the production of a document, which detailed the compliance of the proposed detail facility design to each paragraph of the NFPA 59A standard. The last such document I produced was in 2000 for the Dhabol India LNG importation terminal.

Q. What is your current focus in LNG technology?

A. I am currently updating my LNG safety text, originally prepared in the late 1970s with my partner, the late Dr. Lester Edward Brown. It is anticipated that this text will be used for a one semester academic course at the Texas A&M, Doha, Qatar campus. Notes from this text have been used in continuing education courses on LNG/LPG safety presented in the Far East for many years.

I am also involved in directing Texas A&M graduate students and visiting professors in several LNG research projects, specifically various Computational Fluid Dynamic models, design of fire control experiments, and development of updated LNG rollover mathematical models.

Q. Have you ever served as a consultant either to government standard setting agencies or to government officials working in areas bearing on LNG safety?

A. Yes. In the mid 1970's, University Engineers had a project to advise the US Coast Guard on the development of LNG regulations. As a senior consultant on this project, I visited LNG terminals in Algeria at the behest of the US Coast Guard,

B5-324 (Cont.)

1 Also in the mid 1970s , I was a member of the University Engineers technical
2 team that provided LNG consulting services to the Federal Power Commission.
3 Q. For whom are you appearing in this proceeding?
4 A. I am appearing on behalf of a coalition of Cities in both Massachusetts and Rhode
5 Island, each of which would be impacted directly by either the KeySpan or the
6 Weaver's Cove proposals.
7 Q. When did your work for the Cities first commence?
8 A. I was first contacted by Garry Bliss on behalf of the Mayor of Providence, RI, in
9 late 2004.
10 Q. Dr. West, when you were first contacted by representatives of the Mayor of
11 Providence, were you told that your help was wanted in fighting the certification
12 of the LNG proposals?
13 A. No, I was asked to assist the various city staff, most notably the Providence Fire
14 Department, in evaluating the safety aspects of the Keyspan proposal.
15 Q. Dr. West, please summarize the conclusions that you reached following your
16 evaluation.
17 A. While working with the Providence Fire Department, I became acutely aware of
18 the deficiencies in the FERC safety analysis. During my review of the Keyspan
19 draft environmental impact statements (DEIS), I had numerous technical
20 discussions with Dr. Jerry Havens. My analysis of the LNG safety aspects of the
21 Keyspan DEIS concurred with Dr Havens review. My testimony herein will focus

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(Cont.)

on several issues that complement and perhaps expand some of the concepts detailed by Dr. Havens.

Q. Was your work subsequently expanded to include the Weaver's Cove proposal?

A. It was. The analysis that follows, and the judgments I offer, apply equally to the Weaver's Cove and KeySpan proposals.

Q. You mentioned your concurrence with the views being offered by Dr. Havens in this proceeding. Please explain what you mean by that concurrence.

A. As Dr. Havens was in the process of preparing his testimony, he wanted to test his analysis and judgments in a "peer" review fashion. He asked that I undertake a critical review of his work. I did, and following that review I told Dr. Havens that I was in total agreement with the views and judgments expressed in the testimony that he is sponsoring.

Q. Dr. West, will you explain the concerns that you have regarding the failure of the FERC LNG safety analysis?

A. The issues which I will present herein are:

- Inadequacy of the thermal hazard exclusion zone analysis
- Lack of consideration of modern concepts of Process Safety
- Inadequate consequence modeling
- Potential use of high expansion foams systems to reduce the thermal hazard exclusion zone estimates for LNG terminal impoundment areas.

Q. How are the criteria for thermal radiation hazard exclusion zones inadequate?

B5-324 (Cont.)

A. Quantification of the LNG pool fire hazard exclusion zone involves calculating the distance from the fire at which thermal radiation levels are hazardous to people and equipment. NFPA59A and the DOT 49CFR193 use the same basic concept to define the thermal hazard exclusion zone (minimum separation distance) from LNG impoundment areas to the nearest edge of the LNG facility's property line or the nearest point of assembly where the thermal flux is 1,600 BTUs/Hr-Ft^2 (5 kW/m^2).

This level of thermal hazard is far too high to provide for the congressional intent in the Pipeline Safety Act of 1979 (codified as 49 CFR part 193), which was "protection of persons and property near an LNG facility from thermal radiation caused by ignition of a major spill of LNG"

B5-324 (Cont.)

Q. What is the impact on people from a thermal radiation level of 1,600 BTUs/ hr-ft^2. (5 kW/m^2)

A. A 2004 report prepared by ABSG Consulting Inc. for the FERC provides a literature review documenting the effects of thermal radiation on both people and structures. An excerpt from ABSG report table 2.6 is reproduced below to emphasize the impact of exposure time on injury level to people at the thermal flux of 1600 Btu/hr-ft^2 (5 kW/m^2).

Effects on People for 1,600 BTU/hr/ft^2 (5 kW/m^2) Thermal Radiation

Effect	Exposure Time (seconds)	Data Source
Severe pain	13	Burn injury criteria from the Federal Emergency Management Agency (FEMA, 1990)
First-degree burns	20	5 kW/m^2 for 20 seconds corresponds to a thermal dose of 100 kJ/m^2
Second-degree burns	30	5 kW/m^2 for 30 seconds corresponds to a thermal dose of 150 kJ/m^2
	40	FEMA, 1990
Third-degree burns (1% fatality)	50	50 seconds corresponds to a thermal dose of 250 kJ/m^2
72% probability of first-degree burns	40	TNO (1992) probit equation

From the above table, it is obvious that the level of 1,600 BTU/hr/ft^2 (5 kW/m^2) is only protective provided that the potentially exposed population will have both opportunity and capability to quickly take cover. It may also be protective to workers or emergency personnel who are wearing protective clothing This high thermal radiation level does not take into account sensitive populations, such as the elderly, handicapped or children. It also does not account for problems that startled people may encounter in the rush to escape to a protected

B5-324 (Cont.)

area. Further, it does not appear to take into account the extended duration that the thermal flux from an LNG fire is likely to last.

Q. Could you describe the protective clothing that could serve to protect workers or emergency personnel?

A. The protective equipment typically used by Fire Service personnel during rescue operations from burning buildings includes heat reflective and insulative clothing.

Q. Could residents in the immediate vicinity of an LNG terminal be issued similar clothing?

A. This is not a practicable solution to the problem of inadequate protection for a number of reasons. Workers and emergency personnel can be trained to don the protective clothing quickly, and correctly. Given the large number of residents living in proximity to the proposed Weaver's Cove site, the difficulties of providing adequate training would be enormous. Further, children, the elderly, and the disabled simply cannot respond as quickly and as completely as can workers and emergency personnel. Further, children grow; ensuring properly fitting protective clothing would be an administrative task of enormous complexity and certain of failure.

Q. Are there any regulations, standards or recommended practices that provide for exclusion zones or minimum separation distances with lower thermal radiation limits that better provide protection for the public.

A. Yes. There are several well known standards that recommend lower thermal radiation levels for the protection of people.

B5-324 (Cont.)

US Department of Housing and Urban Development

The Department of Housing and Urban Development (HUD) has established thermal radiation flux levels of 31.5 kW/m^2 (10,000 $Btu/hr\text{-}ft^2$) for buildings and 1.4 kW/m^2 (450 $Btu/hr\text{-}ft^2$) for people as guides in determining an "Acceptable Separation Distance" (ASD) between a fire consuming combustible liquids or gases and nearby structures and people. These HUD rules are codified in 24 CFR Part 51, Subpart C (paragraph 51.203) Safety standards. The following discussion from the preamble to the final HUD rule, 49 Fed.Reg. 5100 (February 10, 1984), helps to put the seriousness of this issue into context:

People in outdoor areas exposed to a thermal radiation level of approximately 1,500 BTU/ft^2- hr will suffer intolerable pain after 15 seconds. Longer exposure causes blistering, permanent skin damage, and even death. Since it is assumed that children and the elderly could not take refuge behind walls or run away from the thermal effect of the fire within the 15 seconds before skin blistering occurs, unprotected (outdoor) areas, such a playgrounds, parks, yards, school grounds, etc., must be placed at such a distance from potential fire locations so that the radiation flux level is well below 1500 BTU/ft^2- hr. An acceptable flux level, particularly for elderly people and children, is 450 BTU/ft^2- hr. The skin can be exposed to this degree of thermal radiation for a prolonged period of time with no serious detrimental effect. The effects at this exposure would be the same as a bad sunburn. Therefore, the standard for areas in which there will be people in exposed settings (e.g., outdoor recreation areas such as playgrounds and parks)

B5-324 (Cont.)

will not exceed 450 BTU/hr. sq. ft. Areas covered also include open space ancillary to residential structures, such as yard areas and vehicle parking areas. An excerpt from this HUD standard is contained in Exhibit B herein. Note that the HUD rules specifically mention LNG as one of the hazardous materials that is subject to the acceptable separation distance rule.

SFPE Handbook of Fire Protection Engineering

The Society of Fire Protection Engineers Handbook of Fire Protection Engineering 2nd Edition recommends a level of 800 Btu/hr-ft^2 (2.5 kW/m^2) as a public tolerance limit for exposure to radiant heat (see page 2-114).

European LNG Regulations

The European LNG rule, EN 1473:1997, defines the maximum allowable incident thermal radiation flux at the LNG property boundary as 5 kW/m^2 for urban areas. However, the European code defines a lower allowable thermal radiation level as 1.5 kW/m^2 for "critical areas". Examples of critical areas noted in EN 1473 are areas which are difficult to evacuate on short notice. Therefore, the European LNG rules require review of the areas that may be impacted by a major LNG fire To emphasize the difference between US and European LNG codes, consider the example of a stadium adjacent to the LNG facility. The NFPA thermal hazard exclusion zone, defined as "1600 Btu/hr/ft^2 (5000 W/m^2) at the nearest point located outside the owner's property line that, at the time of plant siting, is used for outdoor assembly by groups of 50 or more persons for a fire over an impounding area." The EN 1473 regulation specifically defines a stadium as a

B5-324 (Cont.)

critical area, and therefore the European standard would be 480 Btu/hr/ft^2 (1.5 kW/m^2) while the U.S. standard for this same area would be 1600 Btu/hr/ft^2 (5 kW/m^2). Thus, the US thermal exclusion zone rules are considerably less than their European counterpart.

The World Bank

In the 1988 World Bank manual, "Techniques for Assessing Industrial Hazards", the level of incident thermal radiation flux which causes no discomfort is listed as 1.6 kW/m^2. While this value is not a specific limit for site planning, it means that the site evaluation should review the adjacent areas out to this limit to see if special populations or critical facilities are impacted.

Thermal Radiation Recommendations in API 521

B5-324 (Cont.)

The American Petroleum Institute recommended practice 521 suggests permissible exposure to the thermal radiation from flares listed in the table below.

Permissible Thermal Radiation Exposure for Flares from API 521 (1997)

Thermal Hazard		Adjacent area considerations for determination of the acceptable separation distance
BTU/hr-ft^2	kW/m^2	
500	1.6	at any location where personnel are continuously exposed
1,500	4.7	areas where emergency actions lasting several minutes may be required by personnel without shielding but with appropriate clothing

It is inconceivable that the permissible exposure to the public outside the facility property line should be any less than the permissible exposure to personnel inside the plant.

Q Would you extend the consideration of a lower thermal radiation hazard limit to the LNG tanker route.

A. Yes. Two recent government sponsored reports provided estimates of the distance to the 5 kW/m^2 (1600 $BTU/hr\text{-}ft^2$) thermal flux level following an LNG release from an LNG tanker. The FERC revision of the ABSG report (table 4) estimates the distance to the 5 kW/m^2 thermal flux level as 5008 ft. Using the common point source approximation that incident thermal flux is proportional to the inverse square root of the target distance translates into about 1100 ft or almost 2 miles to the 1.5 kW/m^2 flux level.

The December 2004 Sandia report , titled "Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water," estimates the distance to the 5 kW/m^2 thermal flux level as about 2000 meters (6560 ft) following an LNG release from an LNG tanker. Since Sandia used a zero wind speed in their analysis, the estimated thermal hazard impact distance using the DOT requirement of the largest local wind speed over 5% of the time would be expected to be an even greater distance. Nevertheless, again using the common point source approximation that incident thermal flux is proportional to the inverse square root of the target distance to the 1.5 kW/m^2 thermal flux level translates into over 21000 ft or almost 4 miles.

B5-324 (Cont.)

Q. What are your specific recommendations regarding thermal exclusion zones?

A. The clear intent of Congress to protect people from a major LNG release requires the consideration of a lower thermal hazard criteria (such as the 1.5 kW/m^2 value used by the Europeans or the 1.4 kW/m^2 value used by HUD) for areas adjacent to the facility and along the LNG tanker route which are inhabited by sensitive populations or critical facilities.

Therefore, FERC should consider the areas that may be subjected to the 1.5 kW/m^2 thermal radiation flux level following a major LNG spill, either from an LNG terminal or an LNG tanker.

Q. Can you illustrate the errors that FERC and some of the LNG industry use to justify refusing to consider the lower public thermal hazard zone.

A. Yes. Recently the NFPA 59A committee rejected a proposal by the member representing the views of the fire service to reduce the target thermal radiation flux values to be in agreement with modern fire service ideas[ ].

B5-324 (Cont.)

The reasons that the NFPA 59A committee advances in defense of this decision are preposterous. The following quotes are taken from the NFPA 59A white paper (59A-05-ROC) defending the decision to reject the thermal flux reduction proposal.

"such a level and duration are acceptable since a second degree burn is reversible if attended to promptly"

"... in a 30 second exposure a person can safely run away to a distance of 100 m at which distance the radiant intensity will be far less and thus avoid suffering a second degree burn"

Modern safety analysis would not define burn injuries as acceptable. The argument that the public can run away fast enough to avoid injury is equally ridiculous as it does not consider the elderly, children, or the handicapped.

To illustrate how preposterous the above NFPA 59A white paper statements are, consider that the same white paper noted *that "NFPA 59A Standard stipulates 5 kW/m^2 (1,600 Btu/hr ft^2) as a safe level of exposure at a property line that can be built upon next to a LNG storage facility"*

Clearly the 5 kW/m^2 (1600 BTU/hr-ft^2) thermal flux level can not be considered a "safe level of exposure".

The NFPA 59A white paper further states, *"... most regulations, worldwide, stipulate a level of 5 kW/m^2 as the acceptable level (for the purposes of facility design and location) for public exposure to thermal radiation hazards from a liquid hydrocarbon pool fire"*. The information on the HUD regulations, European LNG rules and the World Bank recommendations presented previously herein show that this statement is erroneous.

Although NFPA 59A continues to reject modern safety concepts, the FERC must employ the most current safety ideas in order to fulfill their duty to protect the public.

Q. Does FERC apply the widely accepted principles of Process Safety in it's deliberations and requirements?

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1 A. No. The world wide process industry has embraced the process safety
2 management concepts, such as the principles documented by the American
3 Institute of Chemical Engineers. OSHA's Process Safety Management regulations
4 in 29CFR 1910.119 are a prime example of this concept. However, OSHA does
5 not have authority over LNG facilities, only because of the federal government
6 mandate that OSHA regulation is precluded if another federal agency has safety
7 regulations in place. Unfortunately this deference leaves outdated safety
8 regulations, such as the DOT LNG safety regulations in 49CFR193, in full force.
9 Other federal agencies with authority over segments of the process industry, such
10 as the US Mineral Management Services rules over the offshore petroleum
11 industry, have embraced process safety management concepts.
12 EPA, in 40 CFR68, expanded the process safety regulations to include impacts of
13 hazardous chemicals outside the facility fence line.
14 Q. How would consideration of process safety management to proposed LNG
15 facilities help accomplish the goal of public safety?
16 A. A safety management system that included formal hazard analysis would permit
17 continuing technical review of the level of safety within the LNG facility.
18 A recent technical paper by ABSG (a FERC contractor) detailed the need for
19 LNG facilities to be subjected to the safety management system concepts inherent
20 in process safety. A copy of this paper is contained in the Exhibit C .
21 FERC contracted with IoMosaic Corporation in September 2004 to evaluate the
22 cryogenic design review process and inspection program by which the FERC staff

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(Cont.)

1 reviews proposed projects and ensures the continued operational reliability and
2 safety of each jurisdictional LNG import terminal and peak shaving facility. See
3 FERC solicitation number FERC04C40490. The scope of this project included:
4 *An evaluation of the engineering and design information required of an applicant*
5 *to file in its application under Title18, Code of Federal Regulations Part 380.12*
6 *in Resource Report 13; and the subsequent review criteria used by the staff to*
7 *determine reliable and safe operations, and the adequacy of company operating*
8 *and maintenance practices;*
9 *A review of the staff's application of the design spill criteria used to establish*
10 *thermal radiation and flammable vapor exclusion zones at LNG facilities*
11 *An assessment of whether there are additional safety features or plant*
12 *components that should be examined during inspections and/or application*
13 *reviews;*
14 *An assessment of international construction, operation, and maintenance*
15 *standards and/or regulations, e.g., in Japan or Europe, that offer better*
16 *protection and/or operating and maintenance measures/standards.*
17 *An evaluation of the Cryogenic Design and Inspection Manual prepared during*
18 *the design review of proposed facilities and subsequently used to evaluate facility*
19 *operation; including whether there are additional facets of plant operations,*
20 *maintenance procedures, or procedures that should be examined.*
21 Even though the contract deliverable report was submitted in late January 2005,
22 FERC has never released the report. As a frequent contributor to the process

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(Cont.)

1 safety literature, it has been expected that IoMosaic would include process safety
2 management recommendations in their report to FERC. The importance of this
3 report is that it covers some of the concerns that have been raised herein.
4 Q. Why do you believe that FERC safety analysis uses inappropriate consequence
5 models?
6 A. Dr. Havens has detailed the FERC's incorrect use of the plug flow vapor hold-up
7 model for the evaluation of vapor dispersion exclusion zone evaluations. For the
8 case of vapor dispersion exclusion zone evaluations for the process areas
9 impoundment areas, FERC has opted to use the old NFPA definition rather than
10 the previous DOT 193 *"§Sec. 193.2059* requirements. The result is that the
11 "design LNG spill" in the FERC analysis is significantly less than the equivalent
12 "design LNG spill" which would result from the previous DOT 193 *"§Sec.*
13 *193.2059* requirements, with the ultimate effect that the FERC vapor dispersion
14 exclusion zone estimates are too small. The appendix to Dr Zinn's paper
15 *presented at the recent LNG safety sessions of the American Institute of Chemical*
16 Engineers conference details this FERC error. A copy of the Zinn detail
17 discussion is Exhibit D.
18 Q. Dr. West, if the Commission were to accept your concerns and challenges, would
19 it not have to reach the conclusion that it is not possible to certificate any LNG
20 project?
21 A. Absolutely not. However, in the post 9/11 world it is prudent to insure the public
22 against severe consequence events. This translates into locating LNG facilities at

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1 a sufficient distance from the adjacent public to insure that catastrophic events

2 will not compromise their safety.

B5-324 (Cont.)

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Weaver's Cove Energy, L.L.C. and	)	Docket Nos. CP04-36-000, CP04-41-000,
	)	
Mill River Pipeline, L.L. C.	)	CP04-42-000, and CP04-43-000
	)	

DECLARATION OF WITNESS

I, Harry West, declare under penalty of perjury that the statements contained in the Prepared Direct Testimony of Harry West on behalf of the City of Fall River and the Attorney General of the Commonwealth of Massachusetts in this proceeding are true and correct to the best of my knowledge, information, and belief.

Executed on this 3rd day of June, 2005.

Harry West

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(Cont.)

DIRECT TESTIMONY OF DR. JERRY HAVENS

Q. Please state your name and business address.

A. Jerry Havens, President, Havens Associates, Inc., 809 Lighton Trail, Fayetteville, Arkansas, 72701.

Q. Do you also maintain an academic affiliation?

A. Yes. I hold the title of Distinguished Professor of Chemical Engineering at the University of Arkansas, where I have been on the faculty since 1970. In addition to my teaching responsibilities, I am the Director of the University's Chemical Hazards Research Center. At the Center my responsibilities include, in perhaps most direct relation to the matters at hand, the development and verification of mathematical models for prediction of atmospheric dispersion of toxic or flammable gases. Under my direction, the Center has been involved in a number of assignments of relevance to the subject matter of my testimony in this proceeding. For example, the Center has been responsible for the development and validation of the DEGADIS gas dispersion model as well as for the continuing development and validation of the FEM3A computational fluid dynamics (CFD) gas dispersion model, both of which are the only gas dispersion models currently approved for the determination of vapor cloud exclusion zones as required by the Code of Federal Regulations (49 CFR 193) and the National Fire Protection Association (NFPA) 59A which govern siting of LNG import terminals in the United States.

Q. Please summarize your educational background.

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1 A. I received a BS from the University of Arkansas in 1961; a MS from the
2 University of Colorado in 1962; and a PhD from the University of Oklahoma in
3 1969, all in Chemical Engineering. I spent an additional one-year period as a
4 post-doctoral fellow studying fire and explosion phenomena in the Flame
5 Dynamics Laboratory of the University of Oklahoma prior to moving to the
6 University of Arkansas in 1970.
7 Q. Dr. Havens, do you have a particular area of specialization?
8 A. Yes, my primary specialization is in the analysis and quantification of the
9 consequences of releases of hazardous materials into the environment, with
10 primary emphasis on the consequences that can occur as a result of toxic and/or
11 flammable gas releases into the atmosphere.
12 Q. Do you regularly do research, publish, and speak at professional symposia on
13 those subjects?
14 A. Yes. A listing of my publications, research assignments and symposia
15 presentations is included in the Resume attached to this testimony as Exhibit A.
16 Q. Are you a registered professional engineer?
17 A. Yes. I am a registered professional engineer in the State of Arkansas.
18 Q. For whom are you appearing in this proceeding?
19 A. I am appearing on behalf of a coalition of Cities in both Massachusetts and Rhode
20 Island, each of which would be impacted directly by either the KeySpan or the
21 Weaver's Cove proposals.
22 Q. When did your work for the Cities first commence?

B5-325
(Cont.)

1 was inserted into the building involved a complex analysis of the gas dispersion
2 throughout the building, and I believe my analysis of that complex dispersion
3 process contributed importantly to the resolution of many of the questions that
4 had been raised about the tragic event. Secondly, the analysis of the "fireball"
5 required application of my knowledge of fire and explosion phenomena which are
6 also pertinent to the matters at hand, and I believe, here too, that my identification
7 of that event as being the result of a boiling liquid, expanding vapor, explosion, or
8 BLEVE, caused by the rupture of an LPG tank that had been used for cooking
9 contributed importantly to the resolution of questions that had been raised in this
10 regard.
11 Q. Dr. Havens, to provide a context for your conclusions, would you please describe
12 why LNG, *if* released into the environment, gives rise to credible safety concerns?
13 A. The primary hazards (to the public) that could result from the errant release of
14 LNG are:
15 o Fire hazard from Liquid Pool Fires
16 o Fire hazard from Vapor Cloud Fires
17 o Vapor Cloud Explosion hazard
18 There are three other hazards that require identification and consideration,
19 although it is noted here that they are of less concern than the fire and explosion
20 hazards, primarily because they would not be expected to pose off-site hazards,
21 that is, they would not be expected normally to affect the public.
22 o Toxicity hazard
23 o Cryogenic ("cold" burn) hazard

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(Cont.)

1 o Rapid phase transition (flameless explosion) hazard

2 I will first briefly describe these last three hazards, in order to identify and
3 prioritize any associated concerns for public safety, before considering the
4 primary hazards associated with liquid pool fires and vapor cloud fires and
5 explosions.

6 **Toxicity Hazard** - LNG is natural gas that has been cooled to its condensation
7 temperature (its boiling point temperature, normally at approximately atmospheric
8 pressure). The composition of natural gas varies widely depending upon the
9 source of the gas, but it normally contains as its principal component methane.
10 Other heavier hydrocarbons such as ethane, propane, butane, etc., normally
11 compose the remainder. Before LNG can be vaporized and fed into the natural
12 gas pipeline system, it must meet requirements specified for its heating value
13 (energy content), which depends importantly on the content of the heavier
14 hydrocarbons noted above. Depending upon the composition of the LNG and
15 requirements that the vaporized LNG be compatible with pipeline gas, LNG rich
16 in heavier hydrocarbons, referred to in the industry as "hot gas", may require
17 removal of some of the heavier components. For purposes of assessing the
18 hazards of LNG, it is reasonable to consider its toxicity to be that of methane, the
19 principal component, with some modification to allow for consideration of the
20 toxicity of the heavier components which may be present. Since methane is not a
21 toxic material, and normally poses a hazard only if breathed in sufficient quantity
22 to displace necessary quantities of oxygen, methane does not pose a toxicity
23 hazard to the public since the public would not be expected to be exposed to high

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(Cont.)

enough concentrations to result in severe displacement of oxygen. Similar considerations apply for the heavier components in "hot LNG", with the result that the toxicity of LNG (that is, the toxicity of LNG vapors) is not considered to be an important concern for public safety, particularly in relation to the more important potential for public danger from the combustion (burning) of the LNG vapor.

Cryogenic ("Cold Burn") Hazard - LNG, as pure methane, has a temperature of approximately -260 F. It is a cryogenic liquid, and exposure of living tissue to such temperatures can cause immediate severe injury. The author is aware of at least one death which resulted from being deluged with LNG because of an equipment failure (ruptured valve). However, injury to the public is not expected to occur by exposure to such extreme temperatures because the region near a release of LNG where contact with the gas could cause such "cold" burns would not be expected to extend to distances where the public could be exposed.

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Rapid Phase Transition (Flameless Explosion) Hazard - If a small volume of LNG is rapidly poured into water, the LNG can be heated by the water to temperatures greater than its normal boiling point while remaining in the liquid state. The (liquid) LNG is then said to be *superheated*. If several degrees of superheat are achieved, the evaporation (boiling) process which follows can be essentially instantaneous, with the result that significant pressure increases (overpressures) can result. Such overpressures can cause damage similar to the overpressures caused by more *conventional explosions* which are normally associated with rapid

1 combustion of a chemical or fuel. The rapid phase transition (RPT) which can
2 occur if LNG is added to water was first observed, unexpectedly, in a laboratory
3 experiment performed in the 1960's at the U. S. Bureau of Mines. Subsequent
4 research into the phenomenon has been performed by several organizations, most
5 prominently by inhouse industry research programs. All of the work of which I
6 am aware is relatively small scale, but there have been calls for additional
7 research to better determine the scaling characteristics of rapid phase transitions.
8 That said, the damaging overpressures that could occur from rapid phase
9 transitions would be expected to be local, much as would be the potential for
10 exposure to cryogenic temperatures discussed above, and such overpressures
11 would not be expected to extend to distances which could endanger the public.
12 However, it should be noted here that there is continuing interest in, and a need
13 for, further research to study the scaling characteristics of RPT's. Although
14 dangers to the public are not expected to result directly from RPT overpressures,
15 their importance in the public safety context lies in the potential for RPT's to
16 cause secondary damage which could lead to cascading failures and further
17 releases of LNG.
18 I will turn now to the primary hazards to the public – fire and explosion hazards.
19 **Fire Hazard** - There are two ways that very large fires (that could endanger the public)
20 can result from a major LNG spill – pool fires and vapor cloud fires.
21 Pool Fires - Spilled LNG will evaporate rapidly due to high rates of heat transfer from the
22 warm surroundings to the cold LNG. The vapor evolving from the liquid pool
23 will mix with air to form a gas-air mixture which can be ignited in the

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1 concentration range of approximately 5% to 15% LNG vapor (the concentration
2 range that is flammable for methane-air mixtures). Such mixtures of LNG vapor
3 and air will inevitably form when LNG is spilled, and if an ignition source such as
4 an open flame or spark are present at a location where the gas mixture is within
5 the flammability range, as would be highly likely to accompany the violent
6 circumstances (as in a collision or terrorist attack) that would cause a major
7 release, a large pool fire will result. In this instance the fire will immediately burn
8 through the gas mixture from the point of ignition to the liquid pool. The
9 resulting "pool fire" is similar to any other pool fire where hydrocarbons, such as
10 gasoline, or propane, are burning. The fire results from the combustion of the fuel
11 vapors which have evaporated from the liquid pool and have been mixed with air
12 to result in flammable concentrations. A pool fire can endanger the public, either
13 through direct contact with the fire, or through heat radiated by the fire. It should
14 be noted that it is in this context that the statement that "LNG does not burn", or
15 variations thereon, is frequently found in the literature purporting to educate the
16 public regarding LNG safety. While the statement is literally true, it is not
17 helpful, and it can be seriously misleading, as the statement is also (literally) true
18 if applied to any other liquid hydrocarbon fuel, including gasoline. It is
19 misleading because the statement that LNG does not burn could imply that there
20 is something different here from other hydrocarbon fuels such as gasoline – in this
21 sense, there is not.
22 Vapor Cloud Fires - If the LNG is spilled and evaporates to form a gas mixture in which
23 there are located no sources of ignition (an ignition source is a high temperature

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(Cont.)

source of energy such as a spark or flame), the gas-air mixture ("gas cloud") which forms, although possibly containing a large amount of gas that is in the flammable concentration range, will not ignite, and the cloud will drift until it either contacts an ignition source or all of the cloud becomes diluted below its *lower flammable limit* (approximately 5% methane in air) - it will then disperse harmlessly. If ignition occurs during the drifting of the cloud the result is a vapor cloud fire. If the gas cloud so formed is not ignited immediately it will be carried downwind, or will spread more or less radially (due to gravity forces on the heavier-than-air gas mixture) in the absence of wind. Both spreading by the wind and gravity spreading are accompanied by gas-air mixing and thus dilution of the cloud. If an ignition source is encountered at a location where the gas concentration is within the flammable concentration range, ignition will occur (at that location) and the fire will spread throughout the part of the cloud which is in the flammable concentration range. This is the so-called "flash fire" or vapor cloud fire. The vapor cloud fire can endanger the public, either through direct contact with the fire, or through heat radiated from the burning cloud. Finally, it is important to note that in the event that a flammable cloud were ignited, the fire would first burn through the portion of the cloud that had concentrations between the lower and upper flammable limit concentrates (for methane, approximately 5% and 15%) – this is a so-called premixed (fuel/air) fire. However it is of paramount importance to understand that the fire would then continue to burn throughout the cloud where concentrations above the higher flammable limit are present – this is a so-called diffusion flame, where the necessary oxygen for the

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(Cont.)

combustion would be added to the rich fuel mixture by air entrainment from the surroundings.

I want to state here my opinion that pool fires pose the greatest risk, based on the potential for high consequences *accompanied by the high probability that ignition will occur* as a result of the violent circumstances that would be expected to effect such a release – such as heat generated by collision forces, or sparks of impact or electrical system origin. However, as I have said above, the consequences of credible events that might occur that could impact public safety require determination *independently* of consideration of the likelihood of the occurrence. Finally, I note that the current federal regulations for siting LNG facilities require the determination of vapor cloud dispersion exclusion zones to protect the public safety, and no consideration is given to ignition probability in the determination of those vapor cloud exclusion zones. Therefore, it remains important to determine the potential consequences of delayed ignition of large flammable vapor clouds.

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Vapor Cloud Explosion Hazard - The term explosion is used here to describe combustion reactions (that we normally call "burning", i.e., reaction of the gas in question with the oxygen in the air) which achieve such rapid rates that significant overpressures (local pressures higher than the atmospheric pressure) develop. Such overpressures can cause severe damage – they constitute the "blast" effect in conventional explosions. The forces released in conventional explosive materials (such as dynamite) typically result from very rapid *reactions of materials that are totally contained in the explosive material*. In such materials both the "fuel" and

the "oxidizer" are already present. In contrast, gas explosions such as are experienced with fuel gases such as methane or propane, cannot occur unless the gas (fuel) is mixed with air (containing oxygen) such that the mixture has a concentration within the flammable range (for methane this is approximately 5% to 15% methane in air). Such *physical* processes (as mixing with air), which are necessary for the gas to burn (or explode), place gas/air fires and explosions in a lower hazard class than materials like dynamite, which are "ready to go" if ignited, i.e., without the necessity that the material first be mixed with anything else. If a methane/air mixture within the flammable concentration range is ignited, the rate of reaction (the burning rate, i.e., how fast the flame moves through the gas mixture) varies depending on a number of factors, one of the most important of which is *confinement*. We all know that natural gas (normally principally composed of methane) explodes all of the time – *when it is confined*. We all have read about, and many have experienced, the blast effect that occurs when leaking (flammable) gas is released into a confined volume (say the kitchen) and its ignition (say by a light switch) blows the building apart. Conventional wisdom, as well as scientific opinion, held until fairly recently (the seventies) that unconfined gas/air clouds such as are formed by gases such as methane, propane, and the higher molecular weight hydrocarbon, will not explode if unconfined. This is important to the present discussion because it goes straight to the question of whether the cloud formed by LNG vapors mixing with air following a major LNG spill could explode (develop damaging overpressures) when the cloud is not confined. Today, damaging explosions (overpressures) of hydrocarbon gas/air

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1 mixtures are a high-level concern because of accidents which have demonstrated
2 the propensity of some hydrocarbon gases, when mixed to the correct proportions
3 with air, to explode with devastating damage, *even when unconfined*. There is not
4 time or space here to provide the details, but it can be stated that two such
5 unconfined vapor cloud explosions (UCVEs) that occurred at Flixborough,
6 England, in 1974, and in Pasadena, Texas, in 1989, were sufficiently devastating
7 that they resulted in extensive changes in the regulatory requirements for dealing
8 with chemical hazards in both countries.
9 What does this have to do with LNG? There is a scientific consensus (supported
10 by experimental data) that methane/air mixtures which are unconfined are very
11 unlikely to explode. The LNG industry and the Government are sufficiently
12 confident of this fact that the explosion of an unconfined LNG vapor/air cloud is
13 not considered credible. As a result, the most severe hazard is considered to be
14 fire. I have studied this question, and I agree with the contention that methane/air
15 mixtures are very unlikely to explode. But the story doesn't, or shouldn't, end
16 there. It has already been stated that the composition of LNG imported into the
17 United States varies significantly depending on several factors, most prominently
18 the gas source location. LNG is imported from some locations that provide nearly
19 pure methane. LNG is also imported from some other locations with
20 concentrations of heavier hydrocarbons as high as 15-20%. Such gas is termed
21 "hot gas" in the industry because its calorific value (energy content) is higher than
22 an equivalent volume of methane. Typical heavy hydrocarbon gases present in
23 LNG are ethane and propane, but others are present as well. Industrial accidents

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(Cont.)

1 have proven, with truly disastrous results, that some gas/air mixtures do explode
2 when unconfined, and unconfined propane/air explosions, as well as other
3 unconfined hydrocarbon/air explosions, have been observed.
4 Q. Dr. Havens, how might a fire occur following a breach of containment?
5 A. As I have said, there are two ways that very large fires can follow a major LNG
6 spill. When LNG is spilled it will rapidly evaporate and the vapors will mix with
7 air to form a vapor/air mixture that will burn in the concentration range of
8 approximately 5% to 15% LNG vapor (assuming the LNG is essentially methane;
9 the flammability limits as well as other indexes of the hazard must be reassessed
10 if the LNG vapor contains important amounts of other hydrocarbon gases).
11 Flammable mixtures of LNG vapor and air will inevitably form when LNG is
12 spilled, and if an ignition source such as an open flame or spark are present, as
13 would be highly likely to accompany the violent circumstances that would cause a
14 major release, a large pool fire will result. However, if no ignition sources are
15 present at any location where the gas/air mixture is in the flammable
16 concentration range a vapor cloud will result, and the cloud will spread downwind
17 from the spill until it either contacts an ignition source or becomes diluted below
18 its flammable concentration limits. If a vapor cloud is ignited, the fire will burn
19 through those parts of the cloud that are above the lower flammable limit
20 concentration; if the vapor cloud is not ignited, it will disperse harmlessly (here
21 too, the assumption is that the vapor cloud is essentially a mixture of methane and
22 air; the potential for unconfined vapor cloud explosions must be considered if the
23 LNG vapor contains important amounts of other hydrocarbon gases). In either

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1 case, pool fire or vapor cloud fire, the damaging thermal radiation distances to
2 which the people or property could be exposed provide the criteria for
3 determination of exclusion zones to protect the public. It is the estimation of
4 these distances, which are identified in 49 CFR 193 as thermal radiation distances
5 and vapor cloud dispersion distances that I would like to discuss now. These
6 distances are also referred to as a thermal exclusion zone and as a dispersion
7 exclusion zone, respectively.
8 Q. How are the criteria for thermal exclusion zones and dispersion exclusion zones
9 determined or defined?
10 A. Regarding thermal exclusion zones, although there are several criteria designed to
11 protect property as well as people, the exclusion zone which precludes public
12 occupancy is generally delineated in the LNG safety regulations by the distance
13 from the fire, at ground level, at which thermal radiation fluxes of 5 KW/m^2 could
14 be experienced. This is the heat flux level at which persons would be expected to
15 experience second degree burns to unprotected skin in about 30 seconds. This
16 thermal radiation flux is often expressed as 1600 Btu/ft^2-hr.
17 Regarding vapor cloud dispersion exclusion zones, the exclusion distances are
18 delineated by the downwind distance at which the model-predicted gas
19 concentration level falls below one-half of the lower flammability level (lfl/2), the
20 one-half factor accounting for gas concentration fluctuations expected within the
21 cloud.
22 Q. What do you mean by gas concentration fluctuations expected within the cloud?

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(Cont.)

A. The models used to calculate the expected concentration calculate an expected average, but the actual concentration at any point in the vapor cloud will be somewhat higher or somewhat lower than the expected average level at that point. As noted in the preamble to the final rule adopting the 2.5% concentration criterion, "The DEGADIS model predicts only average concentration of LNG. Because vapor does not disperse uniformly, pockets of 5% LFL concentration could be adjacent to the average distance line predicted by the model." 65 *Fed. Reg.* 10950, 10953 (March 1, 2000).

Q. Do you regard these criteria as sufficient?

A. I regard the lfl/2 criteria for vapor cloud exclusion distance as being generally sufficient, based upon my experience and study of the fluctuations in gas concentration that can be expected in such a vapor cloud. However, I believe that the criterion of a 5 KW/m^2 flux level merits further consideration, because exposure at this intensity to persons could result in serious burns within time periods which would not be sufficient for evacuation or escape. Further, although fire fighting personnel equipped with protective gear could work in such an environment for considerable time, they would not be able to provide evacuation or removal of unprotected persons in time to prevent injury. This is especially true where the numbers of people that would need evacuation would number in the hundreds if not the thousands, and they would be scattered in scores or even hundreds of separate structures. Further, a large LNG fire could not be extinguished; it would simply continue to burn until the LNG is exhausted. It is known that the flux level would have to be reduced to about 1.5 KW/m^2

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before unprotected persons could be exposed continuously without thermal radiation damage [this corresponds to a level of 480 Btus/ft^2-hr]. Consequently, I believe that serious consideration should be given to defining exclusion zones to protect the public from thermal radiation hazards using such a lower (~1.5 KW/m^2) thermal radiation flux criterion. However, whether or not DOT defines the exclusion zone using such a lower thermal radiation flux criterion, I believe that FERC should use the lower thermal flux criteria in order to protect the public from such very large fires. It is very important to recognize that a policy which prevents public presence where there would be exposure to 5 KW/m^2 is not consistent with the public interest, because the public could receive serious injuries at lower flux levels if exposed for longer time periods (including time periods that would still be insufficient to provide for sheltering or evacuation). That is why I suggest the consideration of the lower value of 1.5 KW/m^2 as the "safety" criterion – this value is widely recognized as being the <u>highest</u> value of thermal radiation exposure from which the public would not receive serious injury even if exposed for longer time periods.

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Q. What is a "pool fire" and why is the potential for pool fires associated with the release of LNG a matter of concern?

A. The description "pool fire" is intended to describe a fire that is burning over, or attached to, a pool of liquid that is vaporizing and forming a flammable gas air mixture in the area adjacent to the vaporizing liquid pool. A common example would be a fire such as results if gasoline is spilled onto the ground (or onto water) and ignited. An LNG pool fire would result if LNG is spilled and the

combustible gas/air mixture emanating from the spill is ignited while there is some portion of the liquid remaining in the pool. The resulting fire is said to be attached or anchored to the pool. Such pool fires are a matter of concern because of the damage that can result from direct exposure to the fire (as being engulfed therein) but also from the high, and damaging, levels of thermal radiation (heat) that can extend to considerable distances beyond the fire's "edge".

Q. What is "vapor dispersion" and why is it a matter of concern when considering the implications to public health and safety of either an accidental or intentional breach of facilities or of tankers that would be associated with the operations of either the KeySpan or the Weaver's Cove proposals?

A. In the event that the vapors emanating from an LNG spill are not ignited more or less immediately, the LNG pool will continue to vaporize, as long as liquid remains, and it will form a vapor "cloud" over the liquid pool surface. Such vapors, if not ignited at that location, will continue to mix with air and spread, or disperse, from the spill location under the action of the wind or gravity effects on the cloud (which at the outset will be heavier than air). As the cloud disperses (downwind, normally) it will continue to be diluted with air. At some point, there will be determined a maximum extent to which flammable gas/air mixtures will occur. Beyond those distances, the cloud does not constitute a fire hazard. But within those distances, the cloud can be ignited and the result would be a fire that would burn through the portion of the cloud that had concentrations above the lower flammable limit concentration. Such fires are called vapor cloud fires, to distinguish them from the aforementioned pool fires. As in the case of pool fires,

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1 vapor cloud fires are a matter of concern because of the damage that can result
2 from direct exposure to the fire as well as from the damaging levels of thermal
3 radiation that can extend to considerable distances beyond the fire's edge.
4 Q. Are there other concerns about which the public should be aware in relation to the
5 activities proposed at the terminal facilities in Fall River and Providence?
6 A. As I have stated, the pool fire thermal radiation and vapor cloud thermal radiation
7 danger zones are the principal hazards that would be expected following a
8 catastrophic LNG release. However, as was mentioned above, the assumption is
9 usually made that the LNG is composed essentially of methane, say
10 approximately 95 percent or above, with only minor amounts of heavier
11 hydrocarbon gases such as ethane, propane, etc. This assumption is extremely
12 important, because it is well known that "hot" LNG, i.e. LNG that contains higher
13 concentrations of heavy components such as propane, can form gas/air clouds that
14 are subject to explosion rather than the slower burning vapor cloud fire discussed
15 above. Unconfined vapor cloud explosions (UVCE's) are considered a very
16 serious threat in the fuels/chemicals industry, and there have been repeated
17 incidents where catastrophic unconfined vapor cloud explosions have occurred,
18 with widespread damage, injury and death. Indeed, although final reports have
19 not been issued regarding the accident which recently occurred at the Skikda,
20 Algeria, export facility last year, there are strong indications that unconfined
21 vapor cloud explosions may have occurred and contributed importantly to the
22 resulting damage.

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1 I repeat -- LNG imported into the United States might be sufficiently lean in hot
2 gas components as to not constitute a UVCE hazard; however, it is clear that the
3 explosion hazard must not be hastily disregarded, for two reasons:
4 First, the natural gas produced in some fields around the world can, and
5 frequently does, contain sufficient "hot" gas components to pose an explosion
6 hazard; to the extent that LNG imported into the United States from various
7 locations reflects the gas concentrations that are characteristic of those various gas
8 fields there could be an explosive danger.
9 Second, in the event of spillage of LNG that contains some "hot" gas components,
10 the vaporization process that occurs will result in enrichment in the heavier
11 components during the latter phases of boil-off. This is because the heavier
12 (higher molecular weight) components have a higher boiling point, so those
13 heavier components will remain in the liquid state longer than will the methane.
14 As a consequence, there is the potential for a spill of LNG that might be initially
15 below the "hot gas" level of concern to form gas/air mixtures as a result of
16 differential boiling that could constitute an explosive hazard.
17 Q. Dr. Havens, can you be more specific about these concerns as they would bear on
18 the operation of either the KeySpan or the Weaver's Cove installation?
19 A. Yes. Considering first the tanker operations that would be associated with either
20 installation, a single tank on a typical LNG carrier may contain six or more
21 million gallons of liquefied natural gas. The fire from such a spill, if the spill
22 occurred onto water and was therefore uncontained, would be very large, perhaps
23 up to a half-mile in diameter, or larger if the other LNG tanks on the ship were to

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(Cont.)

1 fail. We have no experience with fires this large, but we do know that they could
2 not be extinguished, they would just have to burn themselves out, and the radiant
3 heat extending outward from the fires edge could cause serious burns to people at
4 considerably larger distances. Again, an LNG tanker typically has five cargo
5 tanks, with a combined capacity in excess of 30 million gallons, and ships are
6 being designed to carry twice that amount.
7 The KeySpan and Weaver's Cove onshore storage facilities are intended to
8 accommodate approximately 25 million and 53 million gallons respectively.
9 While it would be unusual to anticipate an accidental breach of more than one
10 tank on a tanker, or of an onshore facility breach that would threaten the release of
11 all or even of a substantial percentage of the stored LNG, the same conclusions
12 cannot comfortably be drawn about an intentional breach, particularly one that
13 might be associated with a terrorist attack.
14 This raises one of the most significant issues presented by the KeySpan, Weaver's
15 Cove, and associated applications: they force us to confront issues that extend
16 well beyond our base of experience. We have some, but limited, history to fall
17 back upon when considering the potential for and likely consequences of
18 accidental breaches of containment; fortunately, we have no equivalent
19 knowledge base when it comes to the assessment of intentional breaches.
20 Accordingly, our study methodologies all assume the former but that in no way
21 renders irrelevant the latter. To the contrary, it demands of us, and of the
22 Commission in particular, increased vigilance.

B5-325
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Westlaw.
49 FR 5100-01
49 FR 5100-01, 1984 WL 127550 (F.R.)
(Cite as: 49 FR 5100)

RULES and REGULATIONS

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Office of the Secretary

24 CFR Part 51

[Docket No. R-84-709; FR-935]

Environmental Criteria and Standards; Siting of HUD-Assisted Projects Near Hazardous Operations Handling Petroleum Products or Chemicals of an Explosive or Flammable Nature

Friday, February 10, 1984

***5100** AGENCY: Department of Housing and Urban Development.

ACTION: Final rule.

B5-326

SUMMARY: This final rule provides standards for the safe siting of HUD-assisted projects near hazardous operations handling petroleum products or chemicals of an explosive or flammable nature. The rule establishes standards and methods for calculating the acceptable separation distance of a proposed HUD-assisted project from such hazardous operations, and describes mitigating measures which can be taken to modify the application of the acceptable separation distance requirements.

EFFECTIVE DATE: March 22, 1984.

FOR FURTHER INFORMATION CONTACT:James L. Christopulos, Office of Environment and Energy, Department of Housing and Urban Development, 451 7th Street, SW., Washington, DC 20410, telephone number 202-755-7225 (this is not a toll free number).

SUPPLEMENTARY INFORMATION:

I. Proposed Rule

A Notice of Proposed Rulemaking was published August 19, 1980 (45 FR 55223) that proposed a new regulation establishing Departmental standards, requirements and guidelines for siting HUD-assisted projects near hazardous operations which store or process petroleum products or chemicals of an explosive or fire prone nature. The proposed rule would have established blast (overpressure) and thermal radiation (fire) safety standards. The effect of these standards would have been to withhold HUD assistance for projects located within a prescribed acceptable separation distance from specific hazardous operations.

The standards set forth in § 51.203 of the proposed rule and carried over into the final rule are:

	Thermal radiation	Blast overpressure
Amount of acceptable exposure allowed for building structures	10,000 BTU/ft [FN2] hr	0.5 psi.
Amount of acceptable exposure allowed for people in open areas	450 BTU/ft [FN2] hr	0.5 psi.

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The standards are based on the findings of two studies conducted for the Department: "Safety Consideration in Siting Housing Projects," prepared by Arthur D. Little, Inc. published in December, 1975 by the Office of Policy Development and Research, HUD, and "Urban Development Siting with Respect to Hazardous Commercial/Industrial Facilities," by Rolf Jensen and Associates, Inc., submitted April 2, 1982. A summary of these studies follows:

(a) Thermal Radiation

Flammable products stored in above-ground containers represent a definite, potential threat to human life and structures in the event of fire. The resulting flame from a fire emits thermal radiation which is absorbed by the surroundings. Combustible structures, such as wooden houses, may be ignited by the thermal radiation being emitted. The radiation can cause severe burn injuries and even death to exposed persons some distance away from the site of the fire.

Wooden buildings, window drapes and trees generally ignite spontaneously when exposed for a relatively long period of time to thermal radiation flux levels of

approximately 10,000 BTU/hr. sq. ft. It will take 15 to 20 minutes for a building to ignite at the degree of thermal intensity. Since the reasonble response time for fire fighting units in urbanized areas is approximately five to ten minutes, a standard of 10,000 BTU/hr. sq. ft. is considered an acceptable level of thermal radiation for buildings.

People in outdoor areas exposed to a thermal radiation level of approximately 1,500 BTU/ft 2 HR will suffer intolerable pain after 15 seconds. longer exposure causes blistering, permanent skin damage, and even death. Since it is assumed that children and the elderly could not take refuge behind walls or run away from the thermal effect of the fire within the 15 seconds before skin blistering occurs, unprotected (outdoor) areas, such a playgrounds, parks, yards, school grounds, etc., must be placed at such a distance from potential fire locations so that the radiation flux level is well below 1500 BTU/ft 2 HR. An acceptable flux level, particularly for elderly people and children, is 450 BTU/ft 2 HR. the skin can be exposeD to this degree of thermal radiation for a prolonged period of time with no serious detrimental effect. The effects at this exposure would be the same as a bad sunburn. Therefore, the standard for areas in which there will be people in exposed settings (e.g., outdoor recreation areas such as playgrounds and parks) will not exceed 450 BTU/hr. ***5101** sq. ft. Areas covered also include open space ancillary to residential structures, such as yard areas and vehicle parking areas.

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(b) Blast Overpressure

The range of sensitivity of the explosion tolerance of a material and the magnitude of the violent sudden release of energy can vary widely from one material to another. Therefore, for the sake of simplicity, the blast effect of an explosive material is compared to TNT, whose blast energies are well know. This method of comparison is known as "TNT Equivalent." The term "TNT Equivalent" (TNT eq) refers to the amount of material (other than TNT) it would take to have the same blast effect as one pound of TNT.

The Acceptable Separation Distance (ASD) for people and structures from materials prone to explosion in dependent upon the resultant blast measured in pounds per square inch (psi) overpressure. The military services have determined that 0.5 psi in the acceptable level of blast overpressure for both buildings and occupants, because a frame structure can normally withstand the level of external exertion with no serious structural damage and it is unlikely that human beings inside the building would normally suffer any serious injury. Using this standard and after determining the TNT equialent for the material concerned, the ASD can be computed by determining the distance at which the blast overpressure will be 0.5 psi. The Arthur D. Little and the Rolf Jensen reports both corroborate 0.5 psi as the acceptable level of blast overpressure for both buildings and occupants. Therefore, HUD has adopted this standard.

The Acceptable Separation Distances for buildings, which are computed for fire and blast overpressure, delineate separate identifiable danger zones for each potential accident source. For some materials the fire danger zone will have the greatest radius, and cover the largest area, while for others the explosion danger zone will be the greatest. For example, conventional petroleum fuel products stored in unpressurized tanks do not emit blast overpressure of dangerous levels when ignited. In most cases, hazardous substances will be stored in pressurized containers. The resulting blast overpressure will be experienced at a greater distance than the resulting thermal flux at the standards set in this rule. The hazard requiring the greatest separation distance will govern in determining the location of HUD-assisted projects.

Appendix II to this rule provides an illustration of how this rule is applied. Procedures for calculating the ASD are described. A fuller treatment of the subject is included in a HUD guidebook entitled "Urban Development Siting With Respect to Hazardous Commercial/Industrial Facilities," which will be issued for use with this rule.

II. Public Comments

The following discussion summarizes changes that were to the final rule based upon significant comments received. Thirteen comment letters were received, and all comments were evaluated and given due consideration. The discussion is organized by section of the proposed rule.

B5-326 (Cont.)

1. Proposed § 51.200, Purpose, has been revised to indicate that the general purpose of the rule is to establish standards for the location of proposed HUD-assisted projects near hazardous operations handling chemicals of an explosive or fire prone nature, in order to minimize the possibility of loss of life and substantial property loss from such hazards.

The reasoned basis for this new regulation was not fully set forth in the proposed rule. HUD policy has been to consider the location of HUD-assisted projects near hazardous operations as part of its environmental assessment. No regulatory standards, however, were published. The policy took cognizance of the fact that projects and their occupants may be placed at unacceptable risk located too near a hazardous operation containing substances of an explosive or fire prone nature. For example, in 1975, during the environmental review process, the Department learned about the proposed construction of 1,250 units of public housing which were to be located within 120 feet of a public utility facility containing forty 60,000 gallon liquid propane storage tanks. An engineering analysis determined that an explosion of just one of the tanks would emit a force capable of destroying 60 percent of the project.

HUD policy was to approve projects to be located near hazardous operations if appropriate measures to mitigate the effects of unacceptable thermal radiation and blast overpressure conditions were used. For example, a high-rise housing facility for Senior Citizens was to be constructed within 282 feet of two 30,000 gallon liquid propane tanks. However, the safe separation distance, based on explosion and thermal radiation computations was determined to be 660 feet. Since there was no other economically acceptable site in the area, compliance with the safe separation distance computations would have meant cancellation of the project. After an engineer field analysis, it was determined that erection of an 18 foot high reinforced concrete wall, between the project and the tanks, designed to withstand 1.5 psi overpressure would contain the anticipated blast in event of an incident. Design changes to the upper portion of the structure that could withstand an anticipated thermal radiation flux level of 12,000 Btu per sq. ft. per hr. in the event of a fireball, were also recommended. These recommendations were incorporated into the project and the facility is now complete and occupied. The wall is effectively camouflaged with shrubbery and vines so that it is not descernible as a concrete wall.

More systematic data are available as to the need for limited regulation. The National Fire Protection Association (NFPA), an organization dedicated to promote the science and improve the methods of fire protection, reports that there are an average of approximately 3,000 incidents (nationwide) of fire/explosion per year, involving stationary chemical and petrochemical facilities. This report was corroborated by the United States Fire Administration, an adjunct of the Federal Emergency Management Administration (FEMA). FEMA reported 3,197 and 3,358 fire/explosion incidents for the years 1980 and 1981 respectively, as outlined below. FEMA data demonstrate that fires and explosions of the type relevant to this rule occur with resulting property damages to buildings and death and injuries to persons off the premises. These data show that the event, when it occurs, carries significant dangers; however, the incidence of such damage is infrequent. Therefore any regulation in this area needs to focus on those circumstances of potential adverse effects and not impose burdens on interested parties where there is little likelihood of adverse effects.

B5-326 (Cont.)

Fire/Explosion at Stationary Chemical-Petrochemical Facilities

Total	Damage off-premises
1980:	
3,197 incidents	----------
20 deaths	7 deaths.
444 injuries	198 injuries.
$39,637,000 property loss	$15,800,000 property loss.
1981:	
3,358 incidents	----------

10 deaths ..... 4 deaths.
445 injuries ..... 225 injuries.
$51,126,799 property loss ..... $23,200,000 property loss.
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2. Proposed § 51.201, Definitions, has been condensed to remove unnecessary language. The definition of "HUD-***5102** assisted project" has been amended to indicate that the terms "rehabilitation" and "modernization" refer only to such repairs and renovation of a building or buildings as will result in an increased number of people being exposed to hazards by: (1) increasing residential densities; (2) converting the type of use of a building to habitation; or (3) making a vacant building habitable. This qualification was, in substantial part, contained in § 51.202(c)(2) of the proposed rule.

The broad definition of "Hazard" in § 51.201 has been revised to exempt from the definition containers with a storage capacity of 100 gallons or less when they contain common liquid industrial fuels, such as gasoline, fuel oil, kerosene, jet fuel or crude oil. The ASD from 100 gallons of common industrial liquid fuels is only 15 feet. Therefore, this threshold level was included in the definition on the basis of the Department's conclusion that common liquid industrial fuels in quantities of 100 gallons or less would generally pose no danger in terms of thermal radiation or blast overpressure consequences to a project, and that it is therefore unnecessary to calculate acceptable separation distances for such facilities. Also excepted are facilities which are shielded from a proposed HUD project by the topography, because these topographic features effectively provide a mitigating measure already in place. The regulation clarifies that the term "hazard" does not apply to pipelines for the transmission of hazardous substances if such pipelines are located underground or if they comply with applicable Federal, State and local safety standards.

B5-326 (Cont.)

3. Proposed § 51.202, Policy. Section 51.202(a) has been added to make clear that HUD will not approve applications for assistance if a project fails to satisfy the § 51.203 standards. In addition, the requirement in paragraph (d) of the proposed rule--grantees or sponsors of projects which have received HUD approval must notify the Department if they hear of any planned hazard to be located near the project, so that HUD could advise the appropriate local government on hazard implications and remedial measures--has been deleted as vague and without effect. Section 51.202 of the final rule authorizes HUD, in cases when HUD knows that operations involving hazardous substances are proposed to be built within the acceptable separation distance of the project, to require mitigating measures as a condition of approval of the project.

4. Proposed § 51.203, Safety Standards, has been revised by deleting explanatory information now contained in the appendix and in other sections of the final rule. The fire and explosion safety standards themselves have been retained.

Clarification was necessary as to the applicability of the standards to Gas Transmission Pipelines and liquid natural gas (LNG) facilities. Of the 13 comments received, nine expressed concern that the proposed standards would be applicable to high pressure gas transmission lines. This is not the intent, and language appearing in the regulation has been changed to make it clear that the standards are only applicable to stationary storage facilities. Existing Department of Transportation Regulations and HUD Minimum Property Standards (MPS) govern proximity of structures to high pressure gas transmission lines.

Several of the reviewers questioned the necessity for the HUD regulation in view of the existing Federal Fire Safety Standards for Liquified Natural Gas (LNG) Facilities, 49 CFR Part 193, developed by the Materials Transportation Bureau (Department of Transportation). The DOT regulation establishes thermal radiation standards which are applicable only to LNG facilities, not to other petroleum products or chemicals of an explosive or fire prone nature. The HUD regulation establishes explosion and thermal radiation (fire) standards, both of which are applicable to 53 commonly encountered chemicals or petrochemicals of an explosive and/or fire prone nature, in addition to LNG. While the DOT standards may affect the location of proposed LNG facilities relative to existing projects, they do not govern the placement of HUD-assisted projects near existing LNG facilities.

5. Proposed § 51.204, Responsibilities, has been deleted. General implementation responsibilities are now found in § 51.206 of the final rule. The specific responsibilities applicable to HUD staff for carrying out the regulation will be continued in the HUD guidebook, "Urban Development Siting With Respect to Hazardous Commercial/Industrial Facilities."

B5-326 (Cont.)

6. Proposed § 51.205, Exceptions, has been deleted as redundant. The inclusion of the 100 gallon container and other exceptions in the final § 51.201 makes unnecessary the proposed section.

7. Proposed § 51.206, Mitigating Measures, has been renumbered § 51.205. One of the reviewers suggested that additional mitigation factors be listed. The final section on mitigating measures (§ 51.205) has accordingly been revised. The HUD field representative will determine whether an existing intervening structure can serve as an effective barrier against blast and thermal radiation.

8. A new § 51.206, Implementation, has been added. It provides that the regulation shall be implemented for each proposed HUD-assisted project by the Departmental official responsible for environmental review of the project. In the case of HUD-assisted projects for which the Department's project selection criteria at 24 CFR § 200.700 et seq. are applicable, § 51.206 indicates that the regulation shall be implemented by the Departmental official responsible for determining compliance with such criteria.

9. A New Appendix I has been added which lists the most common hazardous substances. The preamble to the proposed rule provided illustrations-- kerosene, gasoline, naptha, liquid propane, liquid butane, and liquified natural gas--of hazardous substances which triggered the regulatory requirement. The proposed rule, however, did not define hazardous substance creating ambiguity as to the coverage of the rule. The definition of hazardous substance in § 51.201 and Appendix I clarify this point. The list is based on a study prepared for the Department by Rolf Jensen and Associates, Inc., entitled "Urban Development Siting with respect to Hazardous Commercial/Industrial Facilities," dated April 2, 1982.

10. A new § 51.207 is added to prescribe the procedures for modifying the list of substances defined as hazardous under this Part. Paragraphs "a" and "b" allow the Secretary to act quickly either on a case-by-case basis or more generally when the facts warrant the enforcement of the policy with regard to the substance. The hazardous nature of the substance justifies expeditious application of the rule without the time consuming requirements of notice and comment. In cases where a substance is added to Appendix 1, notice in the Federal Register is required. The notice is to provide the basis for the action. Interested parties may petition changes to Appendix 1 pursuant to 24 CFR 15.20, the HUD procedure for issuing, amending or repealing a rule.

11. The material contained in parts one and two of the Appendix of the proposed rule has been retained without substantial revision to Appendix II of the rule.

B5-326 (Cont.)

Other Supplementary Information

The Department finds that based on the criteria set out in Executive Order ***5103** 12291, this regulation is not a major rule in that it will not:

(a) Have an annual effect on the economy of $100 million or more;

(b) Cause a major increase in cost or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions;

(c) Have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The basic benefit of the regulation will be to assure that people and property are not unreasonably and unnecessarily exposed to potential explosion and thermal radiation hazards caused by hazardous substances.

The proposed regulation does not require action by, or generate direct costs to, local government, private enterprises, or individuals. It may, however, generate some indirect costs, or reduce expected profits in that it could limit the types of development that would occur with HUD assistance in areas near hazardous operations. The regulation may, for instance, preclude a local government from using cheaper land for some types of projects using HUD assistance, or it may prevent a private landowner from developing his/her land with HUD assistance for the use with the highest possible return.

However, based upon the Department's experience over the past several years, application of safety standards together with mitigating measures (where appropriate) have not imposed an undue burden on interested parties. The definitional exceptions to the term hazard and the use of mitigating measures minimizes the imposition of unjustified costs.

Pursuant to Section 605(b) of the Regulatory Flexibility Act, the under-signed hereby certifies that this Rule does not have a significant economic impact on a substantial number of small entities. The rule will affect only a small number of projects.

In evaluating the need for this regulation, the Department considered alternative approaches reliance on other standards and insurance coverage.

B5-326 (Cont.)

The Department surveyed professional societies, regulatory agencies, the National Fire Protection Association, Safety Councils and Boards, other Federal agencies, State and local entities, and The Insurance Information Institute, and found that the only extensive explosion and thermal radiation safety standards are as follows:

1. Explosion safety standards developed by the U.S. Air Force for liquid propelled Atlas "D," "E" and "F," and Titan I and II Inter Continental Ballistic Missiles (ICBM's). These standards were developed specifically for establishing safety easements around liquid propelled ICBM sites; they are predicated upon the TNT equivalent of the propellants used in the respective ICBM systems, and cannot be applied to HUD's purpose.

2. LNG thermal radiation standards developed by the Department of Transportation (DOT), discussed above.

3. National Fire Protection Association (NFPA) fire standards. These standards are limited to fire hazards, and are for the specific use of industry in determining the internal configuration of petrochemical facilities, rather than

determining acceptable separation distances from such facilities.

Reliance on State and local controls would be an unsatisfactory alternative; few localities have extensive standards governing the siting of residences near hazardous operations. Moreover, the data on the incidence of off-premises damage caused by fires and explosions at stationary chemical and petrochemical facilities indicate that safety standards for storage tanks do not themselves provide sufficient protection against damage to nearby dwellings. Insurance was also rejected. While high insurance costs might deter many project sponsors from locating a project near a hazardous operations site, this result is not always the case. The potential outcome of personal injury and death are sufficient reasons for prohibiting the location of projects within dangerous proximity of hazardous operations.

As an alternative to issuing a regulation, the Department also considered issuing a handbook with guidelines. However, the Department determined that compulsory standards are necessary in order to ensure that residents of proposed HUD-assisted projects are sufficiently protected against hazardous operations.

The regulation will not create any new reporting or recordkeeping requirements for either HUD personnel or for local governments, private industries, or individuals. All procedures necessary to implement the regulation are already part of existing site and/or environmental review procedures currently followed by HUD personnel.

B5-326 (Cont.)

The Department determined that the regulation may affect the quality of the human environment. Therefore, a Draft Environmental Impact Statement (EIS) was prepared and circulated for agency and public comment in accordance with the National Environmental Policy Act of 1969 (U.S.C. 4321), Council on Environmental Quality Regulations (40 CFR Part 1500-1508) and HUD's Regulations (24 CFR Part 50). All comments received were reviewed, evaluated, and those which were substantially pertinent were incorporated into the Final EIS. A copy of this Final EIS will be available for inspection in the Office of the Rules Docket Clerk, Room 10278, Department of Housing and Urban Development, 451 7th Street, SW., Washington, DC 20410.

List of Subjects in 24 CFR Part 51

Hazardous substances, Housing standards.

PART 51--[AMENDED]

Accordingly, 24 CFR Part 51 is amended as follows:

MICHAEL L. JOHNSON LLC
ECOSYSTEMS • CONSULTING

June 19, 2009

Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Re: Draft Environmental Impact Report for the Sacramento Natural Gas Storage Project, CPCN Application No. A.07-04-013 / SCH No. 2007112089

Dear Mr. Rosauer:

I have reviewed and submit the following comments on the Draft Environmental Impact Report (DEIR) for the proposed Sacramento Natural Gas Storage, LLC (SNGS) underground natural gas storage project (Project) at the request of the Avondale Glen Elder Neighborhood Association (AGENA). It is my professional judgment, based upon over 25 years of experience in water quality, watershed hydrology, and toxicology,[1] that the DEIR is substantially deficient. I have based my analysis on the information set forth in the DEIR and the woefully inadequate supporting documents made available by the PUC. Please find below my comments on the adequacy of the DEIR and the Project's potential to cause significant environmental impacts. B5-327

I. PROJECT DESCRIPTION

The information provided in Section D.7 is deficient in that, 1) it is incorrect in some instances, 2) impacts on the full range of surface waters described in earlier sections of the document are not addressed, 3) conclusions are made for which no rationale is provided, and 4) the conclusion of significant impact to surface waters stated in an earlier section was not discussed in a later, relevant section. For example, Table D.3-1 in Section D3 Biological Resources identifies a number of unverified seasonal wetlands, drainage ditches, and Old Morrison Creek as being within the study area. Table D.3-2 identifies a number of verified seasonal wetlands, vernal pools, a drainage ditch, Old Morrison Creek, and an upland swale as being within the study area. Also, in Section D.7 Elder Creek is identified as potentially impacted by project activities (e.g. page D.7-16), but Elder Creek is not identified in Tables D.3-1 or D.3-2. Nowhere in Section D.7 is there any discussion of where these wetlands occur or to which water bodies the ditches drain. There is no discussion of the potential effects of project construction, or post-construction effects on these water bodies. Additionally, there is no discussion of B5-328

[1] Resume attached as Exhibit A.

a predevelopment hydrograph or how that hydrograph will be modified as a result of project activities. Consequently, the discussion of potential effects on surface waters is incomplete. See below for details. B5-328 (Cont.)

II. ENVIRONMENTAL ANALYSIS

a. Hydrology and Water Quality

Specific comments

Page D.7-5. Solana County should be Solano County. B5-329

Pages D.7-5 and D.7-6. The discussion of beneficial uses is both superficial and incorrect.

The 303d listing for Morrison Creek is from the 2002 303(d) list. The most recent listing is the 2006 303(d) list available online at the Central Valley Regional Water Quality Control Board website (http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/index.shtml). The 2006 listing includes Morrison Creek, which is impaired due to both diazinon and chlorpyrifos rather than just diazinon as stated in Table D.7-2. Both are organophosphate chemicals originating from agricultural activities and would not be released by the proposed activities. However, additional stressors imposed by project activities could result in cumulative downstream impacts to aquatic communities. Cumulative impacts of project activities are not addressed in the current DEIR, but should be addressed.

There is no assigned beneficial use for "aquatic life support" or "overall use support" in the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan). Table II-1 in Chapter II of the Basin Plan provides the assigned beneficial uses for the Sacramento River downstream of Morrison Creek. These beneficial uses should be included in the EIR. As stated in the EIR, the beneficial uses of the Sacramento River are assigned to Morrison Creek through the application of the "tributary rule." However, there is no exclusion of any assigned existing or potential beneficial uses of any water body due to impairment. B5-330

The first paragraph at the top of page D.7-6 indicates that certain beneficial uses are excluded due to pesticides from agriculture and municipal/urban runoff. There is no such designation as "excluded beneficial uses" and the statement that beneficial uses for aquatic life support, warm freshwater habitat, and overall use support are excluded is incorrect. The discussion implies that it is not necessary to protect the beneficial uses assigned to Morrison Creek. Once assigned, either directly by the Regional Board, or indirectly by the tributary rule, beneficial uses cannot be changed except through the development of a formal Use Attainability Analysis (UAA) which evaluates the ability of the waterbody to achieve water quality sufficient to support the assigned beneficial uses.

As outlined in the second paragraph of page D.7-6, in cases where the beneficial uses are not supported, it is incumbent on the Regional Board to determine the cause and source of the impairment, and implement a Total Maximum Daily Load (TMDL) to bring the water body back to the condition where the

assigned beneficial uses are supported. Additionally, the Basin Plan contains an anti-degradation clause which states that any activities or discharges to a waterbody cannot further degrade water quality, regardless of the current condition. Consequently, any activities that degrade water quality due to project activities will clearly impact aquatic life both in the reaches of Morrison Creek that support aquatic communities and downstream in the Sacramento River. In addition, if project activities impact beneficial uses of any of the 11 streams that are tributaries to Morrison Creek, those impaired beneficial uses should be discussed. B5-330 (Cont.)

Page D.7-13. Section D.7.3.1 provides 9 bullet points that outline impacts to water resources. Of these, the second and ninth bullet points are not relevant to this project. The text following the list does not adequately address all of the remaining relevant points. For example, dewatering is mentioned several times during the discussion of the project construction (e.g. page D.7-18). Nowhere in the section is there a discussion of the effects of dewatering on surface waters in the project area. For example, will the water be routed either directly or indirectly to the drainage canals or Morrison Creek? Issuance and compliance with a National Pollutant Discharge Elimination System (NPDES) permit would impose the requirement that no change be made in the quality of surface waters receiving the discharge, but will dewatering impact shallow groundwater recharge and the quality of the water in Morrison Creek or in any of the wetlands in the vicinity of the project? Will the disposal of the water alter the hydrograph (presumably base flow in this case) in whatever water body receives the water to the point of altering the current aquatic communities in the reaches in which they exist? Whether data exist to definitively answer these questions, these questions should be addressed and if no data are available, the method to obtain the data should be identified. B5-331

The Applicant Proposed Measures (APM) provided in Table D.7-3 are insufficient to guarantee with reasonable certainty the quality of surface waters during and after construction. For example, APM 12 indicates that all wash-down activities will take place 100 ft from sensitive areas. It does not consider the materials (potentially toxic chemicals) removed from equipment, their fate and transport, or the potential effects on biota. If materials are persistent in the soil, they could be moved to surface waters during major rain events leading to potential downstream adverse impacts on aquatic communities and human health. This potential impact must be analyzed. B5-332

Page D.7-16. Under the section labeled **Impact H-2: Degradation of Water Quality through Spill of Potentially Harmful Materials Used in Construction**, there is mention of runoff moving from the project site to Morrison Creek, Elder Creek, the remnant Morrison Creek corridor, wetlands, other drainageways, and the two groundwater basins. Elder Creek is not mentioned in the tables in Section D.3 and, consequently, until fully analyzed it is not clear whether it could be degraded due to project activities. B5-333

Page D.7-17. Drilling fluid (= drilling mud) is described as consisting of bentonite and non-toxic detergents. The implication is that any release will be non-toxic and cause no adverse impacts to aquatic communities or human health. Characterizing any compound as non-toxic is incorrect. Any compound can be toxic. Toxicity is defined as the degree to which a compound is poisonous or causes adverse impacts to individual organisms. Effects are determined by exposure and concentration of the B5-334

compound. The relative toxicity of detergents may be low compared to other compounds, but detergents can be toxic. The release of drilling mud to surface waters would cause sedimentation and turbidity and adverse impacts on aquatic communities and human health as outlined in the text. Additionally, the detergents could cause toxicity depending on the concentration, the sensitivity of the species to the active ingredients in the drilling mud, and the level of exposure. This understanding of toxicity must be adopted in the DEIR and applied throughout the DEIR's analysis.

It is not clear how the conclusion was drawn that the implementation of APMs 8 and 16 would reduce impacts to surface waters to less-than-significant. The methodology by which the conclusion was made is unexplained in the DEIR and needs to be outlined in detail. It appears that there is an assumption that implementation of APMs 8 and 16 will either prevent movement of drilling mud to surface waters, or reduce the amount to a level such that no adverse impacts are expected. There is no rationale provided to support such a conclusion. The potential for adverse impacts would depend on a number of potential factors including stream discharge and volume of the release. These factors should be considered when the release scenarios are developed and risk assessed. Once the complete risk assessment is undertaken, the method used to reach the conclusion should be explained and all supporting documentation provided so that each can be evaluated. Here, neither the methodology nor the information on which the DEIR's conclusions are based are provided in or appended to the DEIR, thereby, making a full evaluation impossible. **B5-334 (Cont.)**

Page D.7-19. The DEIR indicates that the impacts from the increased impervious surface and the increased runoff are to be reduced to less-than-significant. However, once again, it is not clear how this conclusion was made as the plan to reduce the impact has yet to be developed. The plans to be developed will focus on runoff and the potential for the delivery of sediment to surface waters. However, the increased runoff itself could have adverse impacts by altering the storm hydrograph. The shapes of altered hydrographs in watersheds dominated by impervious surface are well documented and involve increasing peak flows and truncating the descending limb of the hydrograph. The altered hydrograph can cause increased flow and scour downstream altering habitat for aquatic communities in reaches in which they exist. This wait-and-see analysis and plan to mitigate any impacts at a later date runs plainly contrary to sound principles of risk analysis by placing the conclusions regarding impact before the study or plan to deal with any impact. Furthermore, proceeding in this way is wholly inadequate and contrary to CEQA since significant sources of runoff have not been analyzed. **B5-335**

Page D.7-22. Impact H8 focuses on the potential for natural gas contamination of ground water, but does not address the potential for contamination of surface waters such as seasonal wetlands and the streams in the project area. A statement at the bottom of page D.7-22 indicates that a detailed discussion of the potential for movement of natural gas to surface waters was provided in Section D.6 and a summary is provided in the following text. No summary was found for the potential movement of gas to surface waters. The discussion on Page D.6-25 is that the potential for contamination of surface waters by stored gas is low but present and therefore the effects could be significant. This statement should be reiterated in section D.7. Section D.6 also concludes that the potential for seepage of stored gas into groundwater is low but significant. This conclusion is provided on page D.7-23. **B5-336**

III. ALTERNATIVES ANALYSIS

With respect to the substantive areas analyzed above, other than the "No Project" Alternative, conclusions for Alternative Project Sites generally track the conclusions for the Florin site. However, to an even greater degree than with respect to the impact analysis done for the Florin site, the lack of a thorough review of potential impacts, lack of a transparent rationale for conclusions, and the failure to provide with the DEIR the information on which conclusions were based, renders the conclusions made with respect to Alternative Sites inadequate and incomplete. B5-337

IV. OTHER CEQA CONSIDERATIONS

a. Cumulative Impacts

As outlined above, current impaired beneficial uses are attributed to organophosphate pesticides. The cumulative impacts of these pesticides and impacts from project activities need to be addressed. They are not addressed in any way. B5-338

CONCLUSION

In conclusion, errors and inaccuracies, the lack of a thorough review of potential impacts, the lack of a transparent rationale for conclusions of less-than-significant impacts, and the failure to make available to the public the information on which conclusions were based, render those conclusions suspect. B5-339

Sincerely,

Michael L. Johnson, Ph.D.
President and Managing Partner of MLJ-LLC

Exhibit A

B5-340

Michael L. Johnson

EDUCATION

Ph.D. 1984, University of Kansas
M.A. 1977, University of Colorado
B.A. 1974, University of Colorado

PRESENT POSITIONS

Principal and President, Michael L. Johnson, LLC
Associate Director, Center for Watershed Sciences
Research Scientist, Center for Watershed Sciences, John Muir Institute of the Environment, 2008 – present
Adjunct Associate Professor, Department of Medicine and Epidemiology, School of Veterinary Medicine, 2004 - present

PAST POSITIONS

Associate Research Scientist, John Muir Institute of the Environment, 1998 – 2008
Director, Lead Campus Program in Ecotoxicology, UC Toxic Substances Research & Teaching Program 2000-2005
Associate Researcher, Department of Civil and Environmental Engineering, 1992 - 1998
Lecturer, Department of Environmental Toxicology, 1998-99
Lecturer, Department of Wildlife, Fish, and Conservation Biology, UC Davis, 1993 - 1995
Assistant Scientist, Kansas Biological Survey, 1991-1992
Adjunct Assistant Professor, Department of Systematics and Ecology, University of Kansas, 1989-1992
Research Associate, Kansas Biological Survey, 1988-1991
Postdoctoral Research Associate, Department of Systematics and Ecology, University of Kansas, 1987-1988
Lecturer, Department of Mathematics, University of Kansas, 1984-1987

PROFESSIONAL ACTIVITIES

Member — Ecological Society of America; American Association for the Advancement of Science; American Fisheries Society

Reviewer — American Naturalist; Ecology; Southwestern Naturalist, Canadian Journal of Zoology; Journal of Insect Behavior; Trends in Ecology and Evolution; American Midland Naturalist; Journal of Mammalogy; Journal of Wildlife Management; Environmental Toxicology and Chemistry - Special Publication, Bulletin of Environmental Contamination, Biological Conservation, Office of Environmental Health Hazard Assessment Public Health Goals Draft Documents, several book chapters and symposia contributions

B5-340 (Cont.)

Consultant Coastal Salt Marsh Recovery Team (formerly the California Clapper Rail and Salt Marsh Harvest Mouse Endangered Species Recovery Team); U.S. Navy for Ecological Risk Assessment at Mare Island Naval Shipyard; U.S. Fish and Wildlife Service for Natural Resource Damage Assessment; Alameda Point Restoration Advisory Board for Ecological Risk Assessment at Alameda Point (formerly Alameda Naval Air Station), US Air Force for Ecological Risk Assessment at Edwards Air Force Base, East San Joaquin Water Quality Coalition and the San Joaquin County and Delta Water Quality Coalition for Phase I Agricultural Waiver requirements

COURSES TAUGHT

Ecotoxicology (ETX 240) - 2008
Mammalogy (WFCB 110, 110L) – 1993-1995
Introduction to Toxicology (ETX 10) – 1998-1999
Ecological Risk Assessment (UNEX) – 1995, 1997
Health and Ecological Risk Assessment (with T. Carpenter) – 1997, 1999, 2000, 2002-2007, 2009
Problems in Ecotoxicolgoy, (Summer Short Course) 2002

GRANTS AND CONTRACTS

University of California (All grants as Principle Investigator unless noted otherwise)

B5-340 (Cont.)

Guidance Document and Recommendations on the Types of Scientific Information to be Submitted by Applicants for California Fuels Environmental Multimedia Evaluations. California Air Resources Board. June 2007 – May 2009 ($55,110)

Phase II Continuation of Monitoring of Agricultural Drainage Water Quality in the Central Valley of California. CAL EPA Water Control Board. December 2003 – June 2008 ($2,337,837)

City of Ukiah Healthy Waterways Study. City of Ukiah. July 2006 – December 2008 ($35,000)

Review & Assessment of Apalachee I BMPs and Monitoring Needs, Task 2. El Dorado County. November 2004 - January 2009 ($17,472)

Review & Assessment of Apalachee I BMPs and Monitoring Needs, Task 3. El Dorado County. November 2004 – January 2005 ($17, 472)

Identification of Bacterial Sources for the East San Joaquin Water Quality Coalition. East San Joaquin Water Quality Coalition. July 2006 – December 2006 ($7,123)

Bacterial Source Identification Analysis. East San Joaquin Water Quality Coalition. April 2007 – June 2008 ($16,673)

Identification of Bacterial Sources for the Sacramento Valley Water Quality Coalition. July 2006 – December 2007 ($6,600)

Lake County Healthy Waterways Study. Lake County. August 2005 – February 2008 ($34,500)

Detection of Fecal Contaminants in Groundwater. Lake County. March 2007 – December 2008 ($6,840)

Scientific Peer Review of Public Health Goal Documents. CAL EPA – Office of Environmental Health Hazard Assessment. July 2005 – August 2005 ($3,000)

Feather River PRISM. Coalition for Urban/Rural Environmental Stewardship. January 2005 – January 2008 ($70,000)

Feather River Prop 50 Monitoring and Modeling. California State Water Resources Board November 2005 – December 2007 ($143,331)

Identification of Bacterial Sources for the San Joaquin County & Delta Water Quality Coalition. San Joaquin County and Delta Water Quality Coalition. July 2006 - December 2006 ($7,300)

Tahoe Basin Toxicity Testing. California Department of Transportation October 2005 – May 2008 ($6,281)

Total Maximum Daily Load Monitoring. State Water Resources Control Board March 2007 – February 2008 ($139,500)

Central Valley Bioassessment 2005-06. Central Valley Regional Water Quality Control Board, December 2005 – December 2006 ($276,048)

El Dorado County Department of Transportation Sampling and Analysis of Water Runoff. Eldorado County Department of Transportation February 2004 – February 2008. ($475,000)

Using a sensitive Japanese Medaka (*Oryzias latipes*) fish model for the detection of endocrine disruptors in ground water. State Water Resources Control Board, June 2004 – May 2006 ($238,000) (Co-PI, S. Teh PI)

Central Valley Bioassessment 2004-05. Central Valley Regional Water Quality Control Board, April 2004 – June 2005 ($228,000)

Using a sensitive Japanese Medaka (*Oryzias latipes*) fish model for endocrine disruptors screening. U.S. Environmental Protection Agency, October 2003 – September 2006 ($399,167) (Co-PI, S. Teh PI)

Fire and fuels management, landscape dynamics, and fish and wildlife resources: study design for integrated research on the Plumas and Lassen National Forests -- Small mammal distribution, abundance, and habitat relations. USDA-Forest Service, 2002-2007. ($1,604,000); (Co-PI, D. Kelt PI)

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TMDL monitoring of Central Valley Watersheds 2002-03. Central Valley Regional Quality Control Board, December 2002 – August 2003 ($340,147)

Review of Angora Meadows Monitoring Data. El Dorado County, March – May 2003 ($2,061)

Ecotoxicology Lead Campus Program. UC Toxic Substances Research and Teaching Program, June 2000 – June 2004 ($1,266,594)

Central Valley Bioassessment 2003-04. Central Valley Regional Water Quality Control Board, June 2003 – June 2004 ($186,620)

Review of Public Health Goals Draft Documents for 1,1,2,2-Tetrachloroethane, Chlorobenzene, Simizine, and 1,1-Dichloroethane. Office of Environmental Health Hazard Assessment, Cal EPA, December 1998 – January 2003. ($6,000)

Review of SFBRWQCB Risk Based Screening Levels for Ecological Receptors. UC Berkeley, April 2003 – June 2003 ($2,000)

Water quality modeling for the Shasta River dissolved oxygen and temperature TMDLs. North Coast Regional Water Quality Control Board, December 2003 – December 2004, ($115,000) Co-PI, (J. Quinn, PI)

TMDL monitoring of Central Valley Watersheds 2003-04. Central Valley Regional Water Quality Control Board, November 2003 – March 2004, ($259,973)

Statewide toxicity testing research project. California Department of Transportation. June 2000 – June 2003 ($1,710,000)

Simplex modeling of an urban watershed. Vallejo Sanitation and Flood Control District. August 2000 – August 2001 ($29,000)

Perchlorate exposure in drinking water. California Department of Health Services. (Co-PI, G. Fogg, P.I.) June 1999 – September 2001 ($222,603)

FREP project. California Department of Food and Agriculture, February 2000 – March 2000 ($4,000)

Estrogenicity of selected herbicides and adjuvants. California Department of Transportation. October 1998 – June 2002 ($241,627)

Simplex modeling of an urban watershed. Fairfield-Suisun Sewer District. December 2000 – December 2001 ($10,000)

MTBE analysis in California. University of California Toxic Substances Research and Teaching Program (Co-PI). January 1998 - October 1998 ($220,000)

B5-340 (Cont.)

TMDL analysis of North Coast watersheds (North Coast River Loading Study). California Department of Transportation, July 1997-June 2002 ($1,541,173)

The impact of stormwater runoff on North Coast rivers (Small Stream Crossing Study). California Department of Transportation, November 1997-June 2002 ($1,820,144)

San Pablo Bay National Wildlife Refuge vegetation monitoring plan. California Department of Transportation, July 1997-June 2002 ($419,250)

Small mammal survey of the Alhambra Creek Wetlands. California Department of Transportation, September 1997-October 1997 ($12,000)

Baseline vegetation survey of the East San Pablo Bay Unit of the San Pablo Bay National Wildlife Refuge. California Department of Transportation, July 1996-March 1997 ($50,000)

An integrated assessment of a linked wetland-nearshore estuarine ecosystem at Mare Island Naval Shipyard. University of California Toxic Substances Research and Teaching Program, July 1996-June 1997 ($363,000)

An integrated assessment of a linked wetland-nearshore estuarine ecosystem at Mare Island Naval Shipyard. University of California Toxic Substances Research and Teaching Program, July 1995-June 1996 ($160,000)

An integrated approach to assessing water management options in a major watershed: Extending a hydrodynamic-water quality model to include biological and politico-economic components (Co-PI). U.S. Environmental Protection Agency (EPA-NSF), October 1996-September 1999 ($1,292,627)

Development of an ecological risk assessment model. Year 2. California Environmental Protection Agency, July 1995 - June 1996 ($40,000)

Salt marsh hydrology and mitigation of flooding. California Department of Transportation, October 1995 - June 1996 ($50,000)

Salt marsh modeling. National Biological Survey, November 1994 - October 1995 ($59,325)

UC Davis Environmental Education Partnership (UCDEEP). (Co-PI) Department of Defense, October 1994 - September 1995 ($1,660,207)

An integrated ecological assessment of three wetlands sites at Mare Island Naval Shipyard. University of California Toxic Substances Research and Teaching Program, July 1994 - June 1996 ($79,453)

Development of an ecological risk assessment model and symposia. California Environmental Protection Agency, July 1994 - June 1995 ($250,000)

B5-340 (Cont.)

A regionalized assessment of the influences of rural nonpoint source pollution on the ecological integrity of stream ecosystems and evaluation of associated pollution control management: Data management and data analysis (Year 2). Subcontract to University of Kansas, June 1993 - June 1994 ($23,000)

Hydrodynamic modeling of Pt. Mugu Lagoon. U.S. Fish and Wildlife Service, August 1993 - December 1993 ($5,000)

Feasibility study of alternate wetland restoration plans for the Napa Marsh Unit of the San Pablo Bay National Wildlife Refuge. U.S. Fish and Wildlife Service, January 1993 - December 1994 ($85,286)

A regionalized assessment of the influences of rural nonpoint source pollution on the ecological integrity of stream ecosystems and evaluation of associated pollution control management. Phase I. Selection of watersheds. U.S. EPA, Region IX, August 1992 - June 1993 ($29,000)

An assessment of the effects of nonpoint source pollution on the biotic integrity of Walnut Creek, and the role of riparian vegetation in mitigating nonpoint source pollution: Data management and data analysis. Subcontract to University of Kansas, October 1992 - September 1995 ($35,443)

A regionalized assessment of the influences of rural nonpoint source pollution on the ecological integrity of stream ecosystems and evaluation of associated pollution control management: Data management and data analysis (Year 1). Subcontract from the University of Kansas, June 1992 - June 1993 ($23,000)

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University of Kansas

Data for validation of EPA modeling. U.S. EPA - ERL Duluth, August 1990 - March 1991 ($7500)

A regionalized assessment of the influences of rural nonpoint source pollution on the ecological integrity of stream ecosystems and evaluation of associated pollution control management (Year 1). U.S. EPA, June 1991 - June 1992 ($1,250,000)

A regionalized assessment of the influences of rural nonpoint source pollution on the ecological integrity of stream ecosystems and evaluation of associated pollution control management (Year 2). U.S. EPA, June 1992 - June 1993 ($1,450,000)

An assessment of the effects of nonpoint source pollution on the biotic integrity of Walnut Creek, and the role of riparian vegetation in mitigating nonpoint source pollution. U.S. EPA, August 1992 - July 1995 ($325,000)

PRESENTATIONS (Poster and Oral)

Turner, M. A., J. D. Kiernan, L. Chu, N. Y. Krigbaum, and **M. L. Johnson**. 2007. Effects of two developmental temperatures on lipid composition in steelhead (*Oncorhynchus mykiss*)

juveniles. Annual Meeting of the American Society of Fisheries, San Francisco, CA Sept 2-6, 2007.

Kiernan, J. D., L. Chu, N. Y. Krigbaum, B. N. Harvey, and **M. L. Johnson**. 2007. Mechanisms and pathways linking salmon carcasses to the productivity of a coastal California stream. Annual Meeting of the American Society of Fisheries, San Francisco, CA Sept 2-6, 2007.

Johnson, M. L. 2006. Water quality in agricultural landscapes in the Central Valley: Is the glass half empty or half full? UC-ANR Surface Water Quality Workshop. Woodland, CA April 27, 2006.

León-Cardona, A. Teh, S. J., **Johnson, M.**, Hall, L. C. and Wu, P-S. 2006. Gene expression profiling of androgenic and antiandrogenic endocrine disrupting chemicals on Qurt medaka (*Oryzias latipes*) fish. University of California Toxic Substances Research & Teaching Program (UCTSR&TP) 19th Annual Research Symposium. San Diego, California. April 28-29, 2006.

Teh, S., León-Cardona, A., Wu, P-S., Hall, L. C., and **Johnson, M**. 2006. Using a sensitive Japanese medaka (*Oryzias latipes*) fish model for endocrine disruptor screening. 4th Biennial CALFED Bay-Delta Program Science Conference. Sacramento, CA. October 23-25, 2006.

Johnson, M. L., M. Turner, S. Teh, and M. Viant. 2004. NMR analysis of elevated temperature on developing steelhead (*Oncorhynchus mykiss*) eggs. Society of Environmental Toxicology and Chemistry, Portland OR November 2004.

B5-340 (Cont.)

Steinmetz, J, **M. Johnson**, R. Bush, H. Calanchini, M. Turner, and J. Viers. 2004. Avian predation in the Navarro River watershed, California: Potential impacts on salmonids. Annual Meeting of the Ecological Society of America, Portland, OR. August 2004.

S. A. Coppeto, D. A. Kelt, J. A. Wilson, D. H. VanVuren and **M.L Johnson**. 2004. Habitat selection by small mammals in the Northern Sierra Nevada, California. 84th American Society of Mammalogists Annual Meeting. Arcata CA, June 12-16, 2004.

Teh, S., Hall, L., **Johnson, M.**, and Bartosiewicz, M. 2004. Development and application of an endocrine-disruptor (ED) gene chip. Northern California Chapter of the Society of Environmental Toxicology and Chemistry (NorCal SETAC) 14th Annual Meeting. May 12th, 2004.

Kiernan, J.D. and **M. L. Johnson**. Using Marine-Derived Nitrogen in Riparian Tree Rings to Assess Nutrient Flux and Salmon Escapement. 22nd Annual Salmon Restoration Federation Conference, Davis CA. March 20, 2004.

Bowen, L., B. Aldridge, B. DeLong, L. Lowenstein, J. Stott, and **M. Johnson**. 2003. Immunogenetic characterization of the California sea lion (*Zalophus californianus*): a framework for future studies. Poster presented at the 9th International Congress of the

International Society for Developmental and Comparative Immunology, St. Andrews Scotland, 29 June – 4 July 2003.

Bush, R. A., **M. L. Johnson**, and P. B. Moyle. 2003. Estuaries: Migration corridors or essential rearing habitat for steelhead? Western Division of the American Fisheries Society, San Diego, CA, April 2003.

Viers, J.H., Florsheim, J.L., Ramirez, C., Quinn, J.F., **Johnson, M.L.,** and Kozlowicz, B. 2002. Detecting Patterns of Land Use Disturbance at a Watershed Scale: A Study of the Navarro River Watershed using Hyperspectral Data Analysis Techniques. EOS Trans. AGU, 83(47):F273, Fall. Meet. Suppl., Abstract B21A-0710.

M. Turner, D. Huggins, and **M. L. Johnson.** 2002. Assessment of asymmetry in steelhead trout, *Oncorhynchus mykiss*, from a northern California watershed and its potential relationship to environmental stress. Presented at the Bay Area Conservation Biology Symposium. January 2002.

Blanchard, M., B. Aldridge, C. Funke, D. King, T. Goldstein, L. Dalton, L. Bowen, **M. Johnson,** B. Smith, G. Antonelis, J. Stott, F. Gulland, A. Aguirre, R. Braun, J. Reif, and S. Dickerson. 2001. Can Blind Monk Seals Help Us See? Presented at the 14th Biennial Conference on the Biology of Marine Mammals. November, 2001.

Bowen, L., B.Aldridge, J. Stott, W. Van Bonn, F. Gulland, and **M. Johnson.** 2001. California Sea Lions (*Zalophus californianus*) MHC Class II: how classy are there genes? () Presented at the 14th Biennial Conference on the Biology of Marine Mammals. November, 2001.

Viers, J. H., C. T. Sailer, C. M. Ramirez, J. F. Quinn, and **M. L. Johnson.** 2002. An Integrated Approach to the Discrimination of Riparian Vegetation in the Navarro River Watershed, Mendocino County, California, USA JPL Conference, February 2002

Johnson, M. L. 2001. Simplex Modeling of Urban Watersheds. Inaugural CWEA-WRPPN Pollution Prevention Conference, October 23-26, 2001, Santa Rosa, CA

Viers, J. H., J. F. Quinn, P. B. Moyle, and **M. L. Johnson.** 2001. Aquatic Conservation in California Coastal Watersheds: Geospatial Information as a Starting Point, Society for Conservation Biology Annual Meeting, Honolulu HI June 2001

Johnson, M. L. 2001. The Simplex Model for Urban Watershed Analysis, Bay Area Stormwater Management Agencies Association, April 4, 2001

Johnson, M. L. 2001. The Navarro Watershed Project: Predicting Effects of Disturbances in North Coast Salmonid Populations Across Spatio-Temporal Scales, Symposium and Annual Meeting of the California-Nevada and Humboldt Chapters of the American Fisheries Society, March 29-31, 2001

Timothy B. Smith and **M. L. Johnson.** 2001. Stable Isotopes Describe Community Structure and Local Differences in Marine Nutrient Subsidies Across a Coastal Watershed, Symposium

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and Annual Meeting of the California-Nevada and Humboldt Chapters of the American Fisheries Society, March 29-31, 2001

Bowen, L, B. Aldridge, J. Woo, J. Stott, and **M. L. Johnson.** 2000. MHC class II variation in California sea lions (Zalophus californianus) Presented at the Meeting of the International Association of Aquatic Animal Medicine. September, 2000.

Bowen, L, B. Aldridge, J. Woo, J. Stott, and **M.L. Johnson.** 2000. MHC class II variation in California sea lions (*Zalophus californianus*) Conference for Comparative Evolution of the Mammalian MHC. Manchester, UK, September 2000.

Using GIS and Bioassessment Criteria for Urban Watershed Assessment. Seventh Annual Meeting of the CA Aquatic Bioassessment Workgroup - November 2000

Navarro River Watershed Project. Steelhead research and monitoring program workshop - Nov 2000 Ft. Bragg

Steelhead, Sediment, and Land Use. California Biodiversity Council Science Showcase - Rhonert Park, September 19, 2000

Deterministic Ecological Risk Assessment. Symposium on Probabilistic Ecological Risk Assessment and Best Management Practices for Water Quality Management, Sacramento CA, August 1999

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An ecologists view of ecotoxicology. UCTSR&TP Ecotoxicology Program Annual Retreat, October 1996.

Contaminant problems at closing DoD facilities. Association of Women Geoscientists, Berkeley, CA. May 1996

An integrated assessment of three wetlands at Mare Island Naval Shipyard. UC Toxic Substances Research and Teaching Program Annual Meeting, Santa Cruz, CA. March 1996

Ecological risk assessment at closing DoD bases. Society for Risk Analysis Symposium on Risk Based Regulation. Honolulu, HI December 1995.

An integrated assessment of three wetlands at Mare Island Naval Shipyard. UC Toxic Substances Research and Teaching Program Annual Meeting, La Jolla, CA. October 1994

Hydrodynamic and sediment transport modeling of the Cullinan Ranch restoration. San Francisco Bay Long Term Management Strategy Program, Oakland, CA. September 1994

Hydrodynamic and sediment transport modeling of the Cullinan Ranch restoration. Shell Environmental Litigation Trust Committee, Napa, CA. September 1994

The restoration potential for the Cullinan Ranch. Save the San Pablo Baylands, Vallejo, CA August 1994

Structural equation modeling and ecosystem analysis. 11th Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 1990

The effect of atrazine on aquatic ecosystems: an assessment of direct and indirect effects using structural equation modeling. 11th Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 1990

Habitat selection and fitness rewards in a patchy environment. Fifth International Theriologic Congress, Rome, Italy, August 1989

The selective basis for dispersal of the prairie vole, *Microtus ochrogaster*. Joint meeting of the Society of Evolution, American Society of Naturalists, and Genetics Society of America, June 1983

The selective basis for dispersal of *Microtus ochrogaster*. American Society of Mammalogists, June 1982

An experimental analysis of dispersal in vole populations. American Society of Mammalogists, June 1981

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INVITED SEMINARS

Johnson, M. L. 2006. Agricultural effects on water quality in California. Public Service Research Program Speaker Series, Searching for Environmental Solutions: Challenging Issues, Scientific Investigations, and Policy Implications. November 7, 2006

Salmonid declines along the North Coast of California: The big picture in a small watershed. Department of Environmental Science and Policy, University of South Florida (Tampa), April 10, 2003

Wetland restoration issues in the San Pablo Bay National Wildlife Refuge. Department of Wildlife, Fish and Conservation Biology Proseminar Series, February 1997

Hydrodynamic and sediment transport modeling of the Cullinan Ranch restoration. Center for Environmental and Water Resources Engineering Seminar Series, UC Davis, October 1994

Population viability analysis of the California clapper rail. U.S. Fish and Wildlife Service Clapper Rail Recovery Team, San Francisco Bay National Wildlife Refuge, Newark, CA October 1993

Future trends in ecological risk assessment. Hazardous Materials and Environmental Management Conference, West/Spring, Long Beach, CA May 1993

The role of modeling in ecosystem analysis. U.S. Environmental Protection Agency, ERL - Corvallis, September 1993

Population viability analysis of the California clapper rail: problems and management implications. University of Miami, February 1993

Ecosystem assessment and restoration: The role of modeling and predictability. U.S. EPA Workshop on the Water Quality-Based Approach for Point Source and Nonpoint Source Controls. U.S. EPA Office of Wetlands, Oceans and Watersheds, and Office for Science and Technology, Chicago, IL, June 1991

The history, current utilization, and future of biological indicators in ecological risk assessment. U.S. EPA, Region VII, Comparative Risk Seminar Series, Kansas City, KS, May 1991

Ecosystem modeling of mesocosms and watersheds. Department of Systematics and Ecology, University of Kansas, April 1991

The evolution of dispersal and the role of dispersal in the population dynamics of the prairie vole, *Microtus ochrogaster*. Department of Biology, Old Dominion University, Fall 1985

Evolution of dispersal. Department of Biology, University of Missouri, Columbia, Fall 1982

TECHNICAL REPORTS

B5-340 (Cont.)

Huggins, D. G., **M. L. Johnson**, P. M. Liechti, T. M. Anderson, S. Meador, and J. L. Whistler. 1990. Establishment of empirical relationships between land use/land cover and nonpoint source pollution stream effects within an ecoregion. Technical report for U.S. EPA, Region VII, Office of Integrated Environmental Analysis.

Johnson, M. L., G. Hu, and R. B. Krone. 1994. Feasibility study of alternate wetland restoration plans for the Napa Marsh Unit of the San Pablo Bay National Wildlife Refuge. Report to the National Biological Survey and U.S. Fish and Wildlife Service.

Johnson, M. L. 1998. Ecological risks of MTBE in surface waters. Report to the Governor and Legislature of the State of California as Sponsored by SB521.

Johnson, M. L. 1998. Exposure of humans to MTBE from drinking water. Report to the Governor and Legislature of the State of California as Sponsored by SB521.

Johnson, M. L., G. Pasternack, J. Florsheim, I. Werner, T. B. Smith, L. Bowen, M. Turner, J. Viers, J. Steinmetz, J. Constantine, E. Huber, and O. Jorda. 2002. The impact of abiotic and biotic stressors on salmonids in the Navarro River watershed, Vols I-III. Report CTSW-RT-02-040 to the Division of Environmental Analysis, California Department of Transportation, Interagency Agreement Nos 43A0014 and 43A0073.

Hayford, B. L., D. B. Baker, D. Huggins, **M. Johnson**. Submitted. Congruence between nutrient water quality parameters and Chironomidae (Diptera) in delineating ecological

classifications of Missouri streams at different environmental scales. Technical Report of the Kansas Biological Survey

SYMPOSIUM PROCEEDINGS

Kaplan, J. D., R. E. Howitt, **M. L. Johnson**, and J. H. Viers. 2004. Managing water temperature TMDLs under economic and environmental uncertainty. Selected paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Denver, Colorado August 1-4, 2004.

Viers, J. H., James F. Quinn, **Michael L. Johnson**, and Susan L. Ustin. 2004. Geomorphic Confinement as a Predictor of Riparian Extent and Vegetation Composition Proceedings of the AWRA 2004 Summer Specialty Conference

Ramirez, C. M., J. H. Viers, J. F. Quinn, **M. L. Johnson**, J. H. Johnson, and N. Kalman. 2003. Geospatial risk assessment of North Coast watersheds in California. 2003 ESRI User Conference Proceedings.

Viers, J. H., C. M. Ramirez, J. F. Quinn, and **M. L. Johnson.** 2003. Detection of Land Use Disturbance Patterns in Riparian Habitats Using Hyperspectral Data: An Example in the Navarro River Watershed, California. Accepted in the Proceedings of the 2003 American Society for Photogrammetry and Remote Sensing Annual Conference

Viers, J. H., C. T. Sailer, C. M. Ramirez, J. F. Quinn, and **M. L. Johnson**. 2002. An integrated approach to the discrimination of riparian vegetation in the Navarro River watershed, Mendocino County, California, USA. Proceedings of the 11th JPL Airborne Earth Science Workshop, R. O. Green (ed.) National Aeronautics and Space Administration, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA.

B5-340 (Cont.)

Viers, J. H., Joan L. Florsheim, Carlos Ramirez, James F. Quinn, **Michael L. Johnson**, and Ben Kozlowicz. 2002. Detecting Patterns of Land Use Disturbance at a Watershed Scale: A Study of the Navarro River Watershed using Hyperspectral Data Analysis Techniques. *EOS Trans. AGU, 83(47):F273, Fall. Meet. Suppl., Abstract B21A-0710.*

Viers, J. H., Charlene T. Sailer, Carlos M. Ramirez, James F. Quinn, and **Michael L. Johnson**. 2002. An Integrated Approach to the Discrimination of Riparian Vegetation in the Navarro River Watershed, Mendocino County, California, USA. In Proceedings of the 2002 AVIRIS Airborne Geoscience Workshop. Edited by Robert O. Green, Jet Propulsion Laboratory, Pasadena, CA.

T. Rajkumar and **M. L. Johnson**. 2001. Population viability analysis using fuzzy arithmetic. Conference Proc. 4th International Symposium on Environmental Software Systems, Banff, Alberta, Canada May 22-25, (IFIP TC 5 WG 5.11) pp 95-108.

T. Rajkumar and **M. L. Johnson**. 2001. Salinity Prediction of the San Francisco Bay-Delta area using neural networks. Proceedings of IEEE Systems, Man and Cybernetics. Arizona, USA

Viers, J. H., Michael McCoy, James F. Quinn, and **Michael L. Johnson**. 1999. Nonpoint Source Pollution Modeling in the North Coast of California Within a GIS: A Predictive Screening Tool for Watershed Management. 1999 ESRI User Conference Proceedings.

PUBLISHED ABSTRACTS

Johnson, M. L. 1976. Rocks in streams as islands for aquatic invertebrates. Journal of the Colorado-Wyoming Academy of Science. Volume 8.

Halfpenny, J. C., J. S. Beckman, C. E. Fuenzalida, and **M. L. Johnson**. 1977. Reconnaissance of the rodents of Devils Tower National Monument, Wyoming. Journal of the Colorado-Wyoming Academy of Science. Volume 9.

Johnson, M. L. 1991. Ecosystem assessment and restoration: The role of modeling and predictability. Proceedings of a U.S. EPA workshop on the Water Quality-Based Approach for Point Source and Nonpoint Source Controls. U.S. EPA Office of Wetlands, Oceans and Watersheds, and Office of Science and Technology.

Johnson, M. L. 1993. Future trends in ecological risk assessment. Proceedings of the Hazardous Materials and Environmental Management Conference, West/Spring, Long Beach, CA.

PUBLICATIONS

B5-340 (Cont.)

Gaines, M. S. and **M. L. Johnson**. 1982. Home range size and population dynamics in the prairie vole, *Microtus ochrogaster*. *Oikos* 39:63-70.

Abdellatif, E., K. B. Armitage, M. S. Gaines, and **M. L. Johnson**. 1982. The effect of watering on a prairie vole population. *Acta Theriologica* 27:243-255.

Gaines, M. S. and **M. L. Johnson.** 1984. A multivariate study of the relationship between dispersal and demography in populations of *Microtus ochrogaster* in eastern Kansas. *American Midland Naturalist* 111:223-233.

Johnson, M. L. and M. S. Gaines. 1985. The selective basis for emigration of the prairie vole *Microtus ochrogaster*: Open field experiment. *Journal of Animal Ecology* 54:399-410.

Gaines, M. S., C. L. Fugate, **M. L. Johnson**, D. C. Johnson, J. R. Hisey, and D. Quadagno. 1985. Manipulation of aggressive behavior in male prairie voles (*Microtus ochrogaster*) implanted with testosterone in silastic tubing. *Canadian Journal of Zoology* 63:2525-2528.

Danielson, B. J., **M. L. Johnson**, and M. S. Gaines. 1986. An analysis of a method for comparing residents and colonists in a natural population of *Microtus ochrogaster*. *Journal of Mammalogy* 67:733-736.

Johnson, M. L. and M. S. Gaines. 1987. The selective basis for dispersal of the prairie vole, *Microtus ochrogaster*. *Ecology* 68:684-694.

Gaines, M. S. and **M. L. Johnson**. 1987. Phenotypic and genotypic mechanisms for dispersal in *Microtus* populations and the role of dispersal in population regulation. In, B. D. Chepko-Sade and Z. Halpin (eds.). Mammalian Dispersal Patterns: The Effect of Social Structure on Population Genetics. The University of Chicago Press, Chicago, IL.

Boonstra, R., C. J. Krebs, M. S. Gaines, **M. L. Johnson**, and I. M. T. Craine. 1987. Natal philopatry and breeding systems in *Microtus*. *Journal of Animal Ecology* 56:655-673.

Johnson, M. L. and M. S. Gaines. 1988. Demography of the western harvest mouse, *Reithrodontomys megalotis*, in eastern Kansas. *Oecologia* 75:405-411.

Johnson, M. L. 1989. Exploratory behavior and dispersal: a graphical model. Canadian *Journal of Zoology* 67:2325-2328.

Hedrick, P. W., M. S. Gaines, and **M. L. Johnson**. 1989. Owl feeding habits on small mammals. *Occasional Papers of the Museum of Natural History* 133:1-7.

Gaines, M. S., E. M. Abdellatif, **M. L. Johnson**, and K. B. Armitage. 1990. The effect of aggression on dispersal and related demographic parameters in *Microtus ochrogaster* populations in Eastern Kansas. In, R. H. Tamarin, R. S. Ostfeld, S. R. Pugh, and G. Bujalska, (eds.). Social Systems and Population Cycles in Voles. Birkhauser Verlag, Basel

Johnson, M. L. and M. S. Gaines. 1990. Evolution of dispersal: theoretical models and tests using birds and mammals. *Annual Review of Ecology and Systematics* 21:449-480.

Gaines, M. S., N. C. Stenseth, **M. L. Johnson**, R. A. Ims, and S. Bondrup-Nielson. 1991. A response to solving the enigma of population cycles with a multifactorial prespective. *Journal of Mammalogy* 72:627-631.

Johnson, M. L., D. G. Huggins, and F. deNoyelles. 1991. Ecosystem modeling with LISREL: A new approach for measuring direct and indirect effects. *Ecological Applications* 1:383-398.

Gaines, M. S., G. R. Robinson, R. D. Holt, **M. L. Johnson**, and J. E. Diffendorfer. 1992. The effects of habitat fragmentation on small mammal populations. In, D. R. McCullough and R. H. Barrett (eds.). Wildlife 2001: Populations. Elsevier Science Publishers, Ltd., London.

Robinson, G. R., R. D. Holt, M. S. Gaines, S. P. Hamburg, **M. L. Johnson**, H. S. Fitch, and E. A. Martinko. 1992. Diverse and contrasting effects of habitat fragmentation. *Science* 257:524-526.

Huggins, D. G. and **M. L. Johnson**. 1992. Ecological consequences of the control and elimination of macrophytes in small ponds by atrazine and grass carp. In, Proceedings from the Regional Lake Management Conference, North American Lake Management Society. June 1991.

B5-340 (Cont.)

Johnson, M. L., D. G. Huggins, and F. deNoyelles, Jr. 1993. Structural equation modeling and ecosystem analysis. In, R. L. Graney, J. H. Kennedy, and J. H. Rodgers, Jr. (eds.). Aquatic Mesocosm Studies in Ecological Risk Assessment. Lewis Publishers, Boca Raton, FL.

Huggins, D. G., **M. L. Johnson**, and F. deNoyelles, Jr. 1993. The effect of atrazine on aquatic ecosystems: An assessment of direct and indirect effects using structural equation modeling. In, R. L. Graney, J. H. Kennedy, and J. H. Rodgers, Jr. (eds.). Aquatic Mesocosm Studies In Ecological Risk Assessment. Lewis Publishers, Boca Raton, FL.

Johnson, M. L., L. Holmes, A. Salveson, M. S. Denison, and D. M. Fry. 1998. Environmental estrogens in agricultural drain water from the Central Valley of California. Bulletin of Environmental Contamination and Toxicology 60:609-614.

Venkatram, A., L. Burns, C. Chen, J. Irwin, and **M. Johnson**. 1998. Model testing and validation. In, K. H. Reinert, S. M. Bartell, G. R. Biddinger (eds.). Ecological Risk Assessment Decision-Support System: A Conceptual Design. Proceedings from SETAC Ecological Risk Assessment Modeling Workshop; 1994 Aug 23-28; Pellston MI. Pensacola FL: Society of Environmental Toxicology and Chemistry. 120 p.

Pagel, J. E., D. A. Bell, and **M. L. Johnson**. 1998. When is an endangered species recovery complete: Is de-listing the American Peregrine Falcon appropriate? Proceedings of the 63rd Transactions of the North American Wildlife Conference.

Hansen, L. J. and **M. L. Johnson**. 1999. Conservation and Toxicology: Integrating the disciplines. *Conservation Biology* 13:1225-1227.

Hansen, L. J. and **M. L. Johnson**. 1999. Conservation and Toxicology: The need to integrate the disciplines. *Environmental Toxicology and Chemistry* 18:2121-2122.

Scow, K. M., G. E. Fogg, D. E. Hinton, and **M. L. Johnson**, eds. 2000. Integrated Assessment of Ecosystem Health. Lewis Publishers, Boca Raton, FL. (Book Editor)

Mayfield, R. L., D. Van Vuren, and **M. L. Johnson**. 2000. Demography of an insular endemic rodent, Peromyscus maniculatus santacruzae, on Santa Cruz Island. *Southwestern Naturalist* 45:508-513.

Van Vuren, D., **M. L. Johnson**, and L. Bowen. 2001. Impacts of feral livestock on island watersheds. *Pacific Science* 55:285-289.

Torres, K. C. and **M. L. Johnson**. 2001. Bioaccumulation of metals in plants, arthropods, and house mice in a seasonal wetland. *Environmental Toxicology and Chemistry* 20:2617-2626.

Torres, K. C. and **M. L. Johnson**. 2001. Testing of metal bioaccumulation models with measured body burdens in mice. *Environmental Toxicology and Chemistry* 20:2627-2638.

B5-340 (Cont.)

Grigione, M. M. and **M. L. Johnson**. 2002. The effects of roads on carnivores. A case study of mountain lions (*Felis concolor*) in California. Managing for Healthy Ecosystems. CRC Press LLC, Boca Raton FL.

Sarakinos, H. C., **M. L. Johnson**, and M. J. Vander Zanden. 2002. A synthesis of tissue-preservation effects on carbon and nitrogen stable isotope signatures. *Canadian Journal of Zoology* 80:381-387.

Bowen, L., B. M. Aldridge, F. Gulland, J. Woo, W. Van Bonn, R. DeLong, J. L. Stott, and **M. L. Johnson.** 2002. Molecular characterization of expressed *DQA* and *DQB* genes in the California sea lion (*Zalophus californianus*). *Immunogenetics* 54:332-347.

Grigione, M. M., **M. L. Johnson**, P. Beier, W. D. Padley, and R. A. Hopkins. 2002. Ecological and allometric determinants of home range size for mountain lions (*Puma concolor*). *Animal Conservation* 5:317-324.

Johnson, M. L. 2002. Review of Ecotoxicology of Wild Mammals. *Journal of Mammalogy* 83:1153-1154.

Constantine, J. A., G. B. Pasternack, and **M. L. Johnson**. 2003. Floodplain evolution in a small, tectonically active basin of Northern California. *Earth Surface Processes and Landforms* 28:869-888.

Viant, M. R., I. Werner, E. S. Rosenbloom, A. S. Gantner, G. Lee, R. T. Donham, R. S. Tjeerdema, and **M. L. Johnson**. 2003. Correlation between stress protein induction and reduced metabolic condition in juvenile steelhead trout (*Oncorhynchus mykiss*) chronically exposed to elevated temperature. *Fish Physiology and Biochemistry* 29:159-171.

Bowen, L., B. M. Aldridge, F. Gulland, W. Van Bonn, R. DeLong, S. Melin, L. J. Lowenstine, J. L. Stott, and **M. L. Johnson**. 2004. Class II multiformity generated by variable MHC-*DRB* region configurations in the California sea lion (*Zalophus californianus*). *Immunogenetics* 56:12-27.

Bowen, L., B. M. Aldridge, R. DeLong, S. Melin, E. L. Buckles, F. Gulland, L. J. Lowenstine, J. L. Stott, and **M. L. Johnson**. 2004. An immunogenetic basis for the high prevalence of urogenital cancer in a free-ranging population of California sea lions (*Zalophus californianus*). *Immunogenetics* 56:846-848.

Werner, I., T. B. Smith, J. Feliciano, and **M. L. Johnson**. 2005. Heat-shock proteins in juvenile steelhead trout (*Oncorhynchus mykiss*) reflect thermal conditions in the Navarro River watershed, California, USA. *Transactions of the American Fisheries Society* 134:399-410.

Hall, L. C., J. M. Rogers, M. S. Denison, and **M. L. Johnson**. 2005. Identification of the herbicide Surflan and its active ingredient oryzalin, a dinitrosulfonamide, as xenoestrogens. *Archives of Environmental Contamination and Toxicology* 48:201-208.

B5-340 (Cont.)

Constantine, J. A., G. B. Pasternack, and **M. L. Johnson**. 2005. Logging effects on sediment flux observed in a pollen-based record of overbank deposition. *Earth Surface Processes and Landforms* 30:813-821.

Bowen, L., B. Aldridge, R. DeLong, S. Melin, C. Godinez, A. Zavala, F. Gulland, L. Lowenstine, J. L. Stott, **M. L.. Johnson**. 2006. MHC gene configuration variation in geographically disparate populations of California sea lions (*Zalophus californianus*): pathogen pressure or breeding biology. *Molecular Ecology* 15:529-533.

Bowen, L. I. Werner, and **M. L. Johnson**. 2006. Physiological and behavioral effects of zinc and temperature on coho salmon (*Oncorhynchus kisutch*). *Hydrobiologia* 559:161-168.

Ghneim, G. S., J. H. Viers, B. B. Chomel, P. H. Kass, D. A. Descollonges, and **M. L. Johnson**. 2006. Use of a case-control study and geographic information systems to determine environmental and demographic risk factors for canine leptospirosis. *Veterinary Research* 38:37-50.

Hall, L. C., M. Okihiro, **M. L. Johnson** and S. J. Teh. 2006. Surflan and oryzalin impair reproduction in the teleost medaka (*Oryzias latipes*). *Marine Environmental Research* 63:115-131.

Werner, I., Viant, M. R., E. S. Rosenbloom, A. S. Gantner, R. S. Tjeerdema, and **M. L. Johnson**. 2006. Cellular responses to temperature stress in steelhead trout (*Oncorhynchus mykiss*) parr with different rearing histories. *Fish Physiology and Biochemistry* 32:261-273.

Ibrahim, J. S., M. S. Grismer, and **M. L. Johnson**. 2006. Sediment deposition and mercury transformations in an intertidal salt marsh: San Pablo, CA. International Symposium of Lowland Technology. September 14-16, Saga, Japan.

Takekawa, J. Y., B. N. Sacks, I. Woo, **M. L. Johnson**, and G. D. Wylie. 2006. Tidal saltmarsh fragmentation and persistence of San Pablo song sparrows (*Melospiza melodia samuelis*): assessing benefits of wetland restoration in San Francisco Bay. *Studies in Avian Biology* 32: 238-246.

Turner, M. A., M. R. Viant, S. J. Teh, and **M. L. Johnson**. 2007. Developmental rates, structural asymmetry, and metabolic fingerprints of steelhead trout (*Oncorhynchus mykiss*) eggs incubated at two temperatures. *Fish Physiology and Biochemistry* 33:59-72.

Innes, R., D. Van Vuren, **M. L. Johnson**, and D. A. Kelt. 2007. Habitat selection by dusky-footed woodrats (*Neotoma fuscipes*) in mixed-conifer forest of the northern Sierra Nevada. *Journal of Mammalogy* 88:1523-1531.

Leon, A., P-S Wu, L. C. Hall, **M. L. Johnson,** and S. J. Teh. 2007. Global gene expression profiling of androgen disruption in Qurt strain Medaka. *Environmental Science and Technology* 42:962-968.

B5-340 (Cont.)

Innes, R., D. H. Van Vuren, D. A. Kelt, **M. L. Johnson,** J. A. Wilson, and Peter C. Stine. 2007. Habitat associations of the dusky- footed woodrats (*Neotoma fuscipes*) in mixed-conifer forest of the northern Sierra Nevada. *Journal of Mammalogy* 88:1523-1531.

Wilson, J. W., D. A. Kelt, D. H. Van Vuren, and **M. L. Johnson**. 2008. Population dynamics of small mammals in relation to cone production in 4 forest types in the Northern Sierra Nevada, California. *Southwestern Naturalist* 53:346-356.

Hornberger, M. I., S. N. Luoma, **M. L. Johnson**, and M. Holyoak. The influence of remediation in a mine-impacted river: can metal trends in biomonitors and sediment be detected over large spatial and temporal scales? In press, *Ecological Applications*

MANUSCRIPTS IN REVIEW

Hornberger, M. I., M-N. Croteau, S. N. Luoma, and **M. L. Johnson**. Modeling uptake and loss of Cu and Cd in a biomonitor: do laboratory-derived constants predict metal concentrations in nature? Submitted to *Environmental Toxicology and Chemistry*

Wengler, W. R., D. A. Kelt, and **M. L. Johnson**. Ecological consequences of invasive lake trout in river otters in Yellowstone National Park. Submitted to *Biological Conservation*

Bowen, L., K. Eder, I. Werner, C. M. Leutenegger, M. A. Adkisson, R. P. Hedrick, and **M. L. Johnson**. Euthanization methods influence cytokine mRNA expression levels in steelhead trout (*Oncorhynchus mykiss*). Submitted to *Journal of Wildlife Diseases*

Kiernan, J. D., B. N. Harvey, and **M. L. Johnson**. The contribution of salmon carcasses to the productivity of a coastal California stream: direct versus indirect pathways of incorporation. Submitted to *Canadian Journal of Fisheries and Aquatic Sciences*

MANUSCRIPTS IN PREPARATION

Turner, M. A., L. Bowen, D. G. Huggins, E. R. Huber, J. H. Viers, and **M. L. Johnson**. Structural asymmetry: an indicator of environmental perturbations in a Northern California watershed. To be submitted to *Transactions of the American Fisheries Society*

Huber, E. R. and **M. L. Johnson**. Food limitations in nature intensify sublethal thermal stress experienced by juvenile steelhead trout. To be submitted to *Transactions of the American Fisheries Society*

Kiernan, J. D. and **M. L. Johnson**. Evaluating the use of marine-derived nitrogen in riparian tree rings as an indicator of historical nutrient flux and salmon abundance. To be submitted to *Ecological Applications*

B5-340 (Cont.)

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16 June 2009

Michael Rosauer, California Public Utilities Commission
c/o Dudek, 605 Third Street, Encinitas, California 92024

RE: COMMENTS ON DEIR, APPENDICES, AND REFERENCED SUPPORTING DOCUMENTS
PROJECT: DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE SACRAMENTO NATURAL GAS STORAGE PROJECT, CPCN APPLICATION NO. A.07-04-013 / SCH NO. 2007112089

Dear Mr. Rosauer:

At the request of the Avondale-Glen Elder Neighborhood Association (AGENA), I have reviewed the Draft Environmental Impact Report (DEIR) prepared by the California Public Utilities Commission (PUC or CPUC) for the proposed natural gas storage project (Project) of the Sacramento Natural Gas Storage, LLC (SNGS) in southern Sacramento City. I have based my analysis on the information set forth in the DEIR and the supporting documents and references made available by the PUC. I have also reviewed additional documents made available to me by AGENA, some of which are also cited in the DEIR, and others of which are conspicuously absent. B5-341

Please find my comments on the adequacy and completeness of the DEIR and the Project's potential to cause significant environmental impacts below. It is my professional judgment, based upon over 30 years of EIR preparation (300+EIRs, EISs, and EAs), 45 years of experience in Tertiary and Quaternary geology in central and southern California, India, the Middle East and Africa, and in the oil and gas industries (see summary attached as Exhibit A) that the DEIR is substantially deficient, incomplete, inadequate, and insufficiently supported by direct evidence. The Project Description and other related engineering and risk analyses are not based on adequate and complete engineering designs, layouts, and Process Flow Diagram (PFD) and Piping and Instrumentation Diagrams (P&ID) otherwise required for any such a major project. B5-342

A. COMMENTS SUMMARY/OVERVIEW

The entire DEIR is a desktop study with virtually no direct field survey and investigation data. The proposed SNGS Project is an inadequately planned project; no design documents are provided for the Project. B5-343

Most of the assessment of environmental and health and safety impacts and their significance, mitigation measures, and the projected horizontal extent of the field after injection of gas is based on interpretation of historic records using hypothetical models rather than on the current field information. Moreover, no foundation designs or grading plans are given for any facility making it impossible for the public to evaluate their potential impact. B5-344 B5-345

Since the DEIR provides inadequate information to support its conclusions of insignificant impact, mitigation measures are posited as measures to be taken, IF and WHEN something happens or IF surveys or circumstances "find it necessary and feasible". Proposing unspecified mitigation B5-346

measures for unknown risks is not only contrary to the purpose of CEQA review by failing to identify what risks need mitigation, what mitigation is needed, and what significant impacts the mitigation itself might have, it is also dangerous to proceed this way. B5-346 (Cont.)

The Project has been presented without clear and factually supported relationships of the proposed Project with the dense residential communities which will be most affected. Arbitrary separation of the "Gas Storage Reservoir" is supported only by a hypothetical model based on data more than 10 years old but which is used to establish subsurface rights to compensation and exclusions therefrom, the value of resources in the reservoir, and future financial conditions both for the residents and ratepayers. B5-347

The Project setting, interpreted current conditions, inadequate and incomplete Project Description, and conjectures related to impacts, significance, and mitigation, do not meet the needs of the Public or CEQA nor do they reflect the detailed consideration that must necessarily precede discretionary permit actions. In each instance, the analytical deficiency and ambiguity has been interpreted in a manner that supports a finding of lesser impact. Since incomplete review and ambiguity in the data could mask otherwise significant impacts, the inferences drawn therefrom should be construed the other way around. B5-348

B. PROJECT DESCRIPTION (See attached)
The one layout drawing each for the Wellhead and Compressor Station sites is not supported by text descriptions and does not relate to any design drawings, process-flow-diagrams (PFDs), piping-and-instrumentation-diagrams (P&IDs), grading plans, etc., otherwise typically presented in and required of the project description for any completely and adequately developed project. This Project Description is inconsistent with or does not include the Mitigation Measures presented in Sec. D and G. B5-349

C./E. ALTERNATIVES ANALYSIS (See attached)
Alternative analyses are incomplete and inadequate for presented of feasible alternative siting and layouts of facilities and sites which would reduce risks and potential impacts to the surrounding land uses and residents. B5-350

D. ENVIRONMENTAL ASSESSMENT (See attached)
The DEIR does not provide complete and adequate description of the environmental setting for all Project elements, the DEIR provides what might be considered sufficient information for an Initial Study and Scoping, but not for an EIR. The current direct data and information are only provided for geotechnical aspects of the sites, but not corridors by Terracon, while other geological and geotechnical interpretations are developed by others (Ryder-Scott, Golder, etc.). B5-351

Various consultants depreciate various elements of DOGGR files and delineations based largely on their own interpretations which appear directed by or favorable to the Applicant; while in other elements (e.g., plugging and abandonment), claims of adequacy and completeness are made when in fact the documents support improperly abandoned wells exist in the proposed reservoir. B5-352

Assessment
The assessment is based on a selectively inadequate and incomplete Project Description and an out-of-date, incomplete, and inadequate environmental setting in biological and cultural resources, hazards and public health and safety, hydrology, utilities, etc. Without adequate setting and Project Description, the assessment is flawed, inadequate, and incomplete, but, furthermore, the analyses of impacts and risks of impacts appears limited to conditions which are interpreted to favor the least impacts of any project or any environmental setting. B5-353

The assessment based on these elements has not provided a complete and adequate determination of significance for the inferred impacts. Many "impacts" are interpreted as insignificant or insignificant with mitigation and compensation, but the mitigation involves many studies and surveys to establish the setting and potential for impacts after discretionary approval of the Application. According to the DEIR, only after such studies on the type, extent, and appropriateness of mitigation measures would mitigation or compensation be implemented for any impact. It is as if the DEIR reads, "if the need for any mitigation arises, we will mitigate or compensate, after the CPUC approves the Project, trust us." B5-354

Mitigation/Compensation
The mitigation and compensation discussions are scattered throughout the document and some appear to contradict the Project Description, mitigation measures in the Section D, and Section G. The tentative, conditional character of many measures does not comply with the requirements of CEQA and reflects the inadequate nature of the environmental setting and assessment. B5-355

F. OTHER CEQA CONSIDERATIONS (See attached)

F.1 Growth Inducements

Growth inducement has not been developed based on the meager information provided in the Project Description; almost 50% of the storage volume will NOT be provided to the Sacramento Municipal Utility District (SMUD), but will be delivered through SMUD pipelines for purchase by others or by other SMUD customers. B5-356

Such gas provision can support additional industrial and large commercial user developments and expansions of existing commercial and industrial land uses and activities. As such, impacts of such development using the stored Project gas could be equivalent to support for equal or greater development than the existing power generation of SMUD; this is not insignificant growth. B5-357

Similarly, assuming successful implementation and safe future operations of the Project, the Winters Sandstone extends under the City of Sacramento and the developing southeast Sacramento County and could be developed for additional gas storage operations to support and facilitate development of more residential, commercial, and industrial land uses. Of course, all of these projects would likely have significant and unavoidable impacts as well. B5-358

Again similarly, development of storage for methane gas will also provide valuable supporting information and facilitation for the storage of sequestered CO2 (carbon dioxide) perhaps from SMUD for its generating facilities. With sequestration as a possibility, CO2-generating land use development may be stimulated. B5-359

F.4 Cumulative Impacts

As indicated above, the Project is planned to directly support customers other than SMUD and reduce the risks of interruption to all SMUD customers and especially interruptible commercial and industrial users. If successful, such protection from interruption could support additional commercial and industrial users and thereby additional projects may be stimulated by CPUC approval of this Project. B5-360

Plans for CO2 sequestration have concentrated on the southern Sacramento Valley gas and gas/oil fields. The DEIR indicates the potential risks of gas storage from other projects, but not from the Project; therefore, the consideration of alternatives clearly demonstrates that other gas (or CO2) projects are under consideration and approval of this Project could add to the cumulative effects of B5-361

the CPUC actions in the Delta and southern Sacramento Valley fields and under urban developments. B5-361 (Cont.)

G. Mitigation Monitoring and Reporting (See attached)
This section supposedly compiles all mitigation and compensation measures; however, the scattered measures and various conditions render those outside of this list as irrelevant and their value for reducing or eliminating significant impacts and risks cannot be included in the assessment. The confused, misleading, incomplete, and sometimes contradictory nature of the measures clearly demonstrates the inadequacy of Section G and the various other subsections which present non-Applicant Proposed Mitigation (APM) measures. B5-362

The many conditionals, conditioned statements, and dependencies on future surveys (where none exist at present), which are put forward in support of the Mitigation Measures do not comply with CEQA or even basic industry requirements and thereby are inadequate; the mitigation measures must be commitments and dedications of the Applicant upon approval of the application. This demonstrates the inadequacy of the entirety of Section G. B5-363

Appendix B System Safety and Risk of Upset, EDM Services, Inc., Sep. 2008 (See attached)
This Appendix is inadequate and incomplete as it reflects neither the Project Description nor various facilities mentioned in Section D, but not included in the Project Description. In the body of Section D, references to this Appendix misstate the contents, while the Appendix wrongly assumes the hypothetical model of Ryder-Scott as representing fact and dismisses demonstrable risks from the field and improperly abandoned wells. The Appendix contains several errors and omissions in the risk assessment, regarding facilities and equipment provisions. B5-364 B5-365

Other Cited/Foundation Documents (See attached)
Many documents are referenced, cited, or mentioned which are not available or accessible to the public and to many reviewers. The assumptions of validity contained within the DEIR and the lack of any demonstrable quality controls and assurances clearly is not supported or is neutralized. All documents and sections depend directly or secondarily on two major interpretations and their assumptions: B5-366

- Ryder-Scott's model of the gas storage reservoir is based largely on interpretations of no direct or current reliable information (e.g., DOGGR information lacks QC/QA and is depreciated in various documents);
- Matthew's claim that the eight existing historic wells in the Florin Field were abandoned and plugged in accordance with DOGGR requirements when, in fact, all DOGGR documents state contradictions and non-compliance with stated well-abandonment requirements. B5-367

Respectfully,

CT Williams

Dr. Clyde T. Williams, PhD
for AGENA

ORGANIZATION OF COMMENTS

1. Relevant page and section references for DEIR are cited.
2. ***Bolded, Italicized*** and general text passages from DEIR are reproduced (with emphasis added), which are the subject of comments immediately below.
3. **Bolded and <u>underlined</u>**, texts are this reviewers comments on the relevant DEIR passages reproduced immediately above.

B. PROJECT DESCRIPTION

p. B-2 **B.2 Project Description, B.2.1 Project Location and Regional Context - Florin Gas Field**

The DOGGR limits are ***based on more qualitative information*** from well drilling information and the location of historic wells in the field. (emphasis added.)

p. B-5 / Fig. B-2, SNGS and DOGGR Filed boundaries

<u>B. P-1 Comment: Delineation of the Florin Field by the authorized and accepted State agency responsible and present before, during, and after the development of the Florin Field would suggest that the delineation would be based on more than "qualitative information" as DOGGR has access to all information. The Applicant's delineation of the reservoir may also reflect qualitative information as there is no direct and current information or data from the existing "reservoir" or "field". Proposed Applicant's delineation and limiting of the field may also reflect other "quantitative" information as to the subsurface rights and conditions and need to limit reservoir or field size .</u> B5-368

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p. B-2, footnote - [1] It should be noted that DOGGR does not estimate storage capacity. DOGGR has historic production records of the previous Florin Gas Field, which Ryder Scott Company ***used to determine*** a portion of the gas field capacity. Ryder Scott Company did ***further modeling to determine the gas field capacity***. (emphasis added.)

Also, based on testimony before the CPUC, there is ***disagreement among experts*** as to the size of the field. Dr. John Robertson questioned the size and storage capacity of the reservoir asserting that the ***field was larger than depicted by SNGS, LLC.*** (emphasis added.)

Mr. Bruce Palmer of the Scott Ryder Company provided testimony replying to Dr. Robertson's testimony. Mr. ***Palmer responded*** to each of Dr. Robertson's issues ***defending the model and the modeled size of the reservoir***. (emphasis added.)

<u>B. P-2 Comment: Ryder Scott has not determined anything, the complicated model is based on old DOGGR records(without any significant quality controls/assurances), unvetted (without QC/QA) interpretations of seismic geophysical surveys, and various well drilling records (again without any significant QC/QA). As a model with poorly defined margins and limits and as yet to be defined Winters Sands floor and Winter Shale "Cap Rock", disagreements in interpretations would be expected, especially for the isolation of the entire SE third of the modeled reservoir. Defense of a model cannot be verified as no new evidence is provided by either party and the Applicant has chosen not to provide direct field evidence, data, and information; without new evidences, the setting of the Florin Field cannot be adequately provided and limits and margins cannot be verified in part or completely. Therefore, the boundaries of the Florin field as</u> B5-369

projected to be used by the Project remain ill-defined and undocumented by direct field investigations.

The boundaries and limits of the storage reservoir have direct financial implications regarding the acquisition of storage rights and environmental compliance. The DEIR does not provide clear definition and delineation of the surface projection of the modeled storage reservoir to the surface. No information has been provided to ensure that the various interpreted margins in fact exist and therefore support the present boundaries of the residential areas in which SNGS has pursued the acquisition of rights from surface owners. A minimally prudent choice, based on the current levels of subsurface information, would be to use existing records of subsurface rights used by the earlier gas field development rather than a hypothetical and poorly supported construct with no new information from the Applicant.

B5-369 (Cont.)

Additionally, as indicated by Dr. John O. Robertson's testimony, it is also quite possible that the injection of natural gas into a strong water drive reservoir such as the Florin Gas Field could distribute the gas as a shallow, wide band across the top contours of the reservoir that would far exceed the horizontal, bird's eye footprint of the original naturally occurring gas.

B5-370

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p. B-2 Approximately 8.2 bcf of natural gas was produced at the Florin Gas Field with the reservoir ***estimated*** to contain 13 bcf (***approximately 5 bcf is buffer or cushion gas that cannot be extracted)***. The [SNGS] reservoir is expected to store approximately ***7.5 bcf of natural gas***, which ***meets the 4.0 bcf requirement for SMUD's local supply, and allows storage of 3.5 bcf of additional gas***. (emphasis added.)

B. P-3 Comment: The cushion gas volume is an estimate based on 20-year-old, unvetted data, a hypothetical model of a complex geological structure, absence of gas and water conditions, and an unsupported partitioning of the Southeast third of the entire field. This determination has direct implications for significant financial issues, i.e., who gets compensated, and the extent of owners' subsurface rights and acquisitions as well as who bears the risk.

B5-371

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p. B-2 Initial pressure of the field was ***estimated*** to be ***1,677 pounds per square inch (psi)*** prior to operation (Ryder Scott Company, ***2008***). The field ***initially*** operated at a pressure of ***1,518 psi*** and ended at 1,115 psi. ***It is estimated*** that the current pressure is between ***1,200 to 1,300 psi*** (SNGS, LLC 2008c). The Proposed Project is projected ***to operate at a pressure of 1,804 psi*** (Ryder Scott Company 2008) **[+127 psi, above maximum initial operating pressure]**. (emphasis added.)

Injection pipeline pressure ***1695 psi***… (emphasis added.)

B. P-4 Comment: Reservoir pressures depend on unvetted data, undocumented water levels, gas pressures, modeled reservoir volumes, a hypothetical model of a complex geological structure, and an unsupported partitioning of the SE third of the entire field, and determines a significant financial issue and the extent of owners' subsurface rights and acquisitions. "Initial" and "ending" field pressures cannot be verified and are provided by documents without verified QC/QA systems.

The Project Description does not provide a gas pressures, temperature, flow scheme, and head-losses through a process flow diagram of the various facilities for the Proposed Project, and the above pressures cannot be verified: Project pressure =

B5-372

1804psi, somewhere (pre- or post-compressure, Seg. 1 pipeline, wellhead, etc.) under sometime schedule, compared to full injection or full withdrawal. B5-372 (Cont.)

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p. B-5 Fig. B-2 Approximate Limits of Florin Gas Field and Gas Field Location (DOGGR)

B. P-5 Comment: As indicated elsewhere, the delineation of two different "Fields" is based on a hypothetic model of Ryder-Scott, but in the Project Description figures B-2 and B-4 show different images compared to the R-S model with regard to the margins, the bottom level of the gas storage and cushion gases and related spill(out)-point, and the loss of one-third of the "field" due to some as-yet-to-be supported barrier (but not a fault) across (SW-NE) the entire field.

As currently informed, the full subsurface rights for the depicted extent of the Fig. B-2 field have not been acquired and especially those southeast of the R-S modeled SW-NE barrier. If the Project Description's Florin Field (Fig. B-2) is not in fact the proposed Project's gas storage reservoir, then the figure and descriptions are erroneous, incomplete, or inadequate for presentation of the real Project facilities. B5-373

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p. B-7 Fig. B-3 show the old railroad spurs and Union Pacific mainline

p. B-9 Union Pacific Railroad (UPRR)

B. P-6 Comment: In Sec. D.7, no consideration has been given to the trenching along and within a pre-1950 railroad right-of-ways (ROWs) especially when several spurs and military uses were made of the main and spur lines and ROWs. The Project Description should identify any specific requirements (required rather than mitigation) or assumed liabilities (e.g., encountering hazardous contamination) of the railroad authorities and the past presence and filling. B5-374

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p. B-9 ***B.2.1.1 Florin Gas Field***

The Proposed Project would store natural gas in the depleted Florin Gas Field reservoir, which is situated approximately 3,800 feet below the ground surface. Natural gas was previously extracted…until approximately 1987 when the **[commercial]** ***natural gas supply was depleted***. (emphasis added.)

Three other wells were drilled by Venada National and TXO, but all three missed the ***structure*** and were dry holes ***[no commercial quantities of gas encountered]***. At the time of depletion, the eight wells and appurtenance facilities were ***plugged, capped, and abandoned in accordance with regulations set forth by DOGGR*** (Weatherwax and Weatherwax 2007). (emphasis added.)

B. P-7 Comment: The reservoir gas was not totally removed (depleted entirely) and a significant amount of remaining (undepleted) "cushion gas" has been estimated (not determined) by SNGS consultants. No evidence of existing gas volumes or pressures exists at present and therby all estimates, modeling, etc. regarding such are conjectures.

Review of the referenced document shows no such conclusions regarding the abandonment in accordance with regulations set forth by DOGGR. No documents by any DOG or DOGGR sources have provided the direct evidence and inspection reports regarding the compliant abandonment of these wells. B5-375

Some documents and summaries by Matthew (2006-07) demonstrated that the wells were not abandoned and plugged in accordance with DOGGR's requirements at the time and left long portions of the casings filled with thin drilling mud. As the referenced document was also prepared in association with the Applicant, the consultants' conjectures are potentially biased, inadequate, and insufficient to make the above statement and be referenced as part of an objective EIR, which achieves full disclosure. B5-375 (Cont.)

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p. B-10 ***B.2.1.1 Florin Gas Field***

A porous sandstone unit within the Winters Formation measuring approximately 150 feet thick formed the Florin Gas Field. An impermeable shale cap measuring approximately 150 to 300 feet thick above the sandstone unit prevented the natural gas from escaping (see Figure B-4).

B. P-8 Comment: The hypothetical Ryder-Scott model contained more than 150ft of porous sandstone in the field (sand zone, reservoir, gas-storage volume), and no floor (only the roof or ceiling) of the sandstone has been provided and thereby the thickness cannot be assigned as 150ft (approximately or otherwise. The storage volume depends on the water level within the sandstone, contained gas volume, sandstone volume, and peripheral spill-points (NE side) or barriers (SE barrier). Figure B-4 is grossly generalized and does not reflect the R-S model, and the Block diagram is in error regarding "scaled" depths and derived thickness, character of materials, etc. B5-376

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p. B-10 ***B.2.1.2 Wellhead Site, Compressor Station, and Associated Pipelines*** - **Wellhead Site**

Up to six new injection/withdrawal wells, one water disposal well, and one observation well are proposed to be drilled and constructed on a currently vacant 4-acre parcel at the intersection of Power Inn Road and Junipero Street (refer to Figure B-3). There is an approximately ***100-footwide power easement along the western edge of the property*** **[Wellhead site]**. (emphasis added.)

B. P-9 Comment: The Section D.11 does not discuss the presence of the 100-ft wide overhead power line immediate adjacent to the wellhead site and the possible at-risk of involvement of the towers of the powerline in the event of a torch/cloud-fire at the wellhead site.

As no environmental setting, assessment, or mitigation of risks are provided in Section D, the element is included in the Project Description, Section B, the DEIR, Section D.11 and other subsections, and thereby absence of consideration of Project's effect on the powerline and towers is considered to render the Section B and D as incomplete and requires revisions for this issue. B5-377

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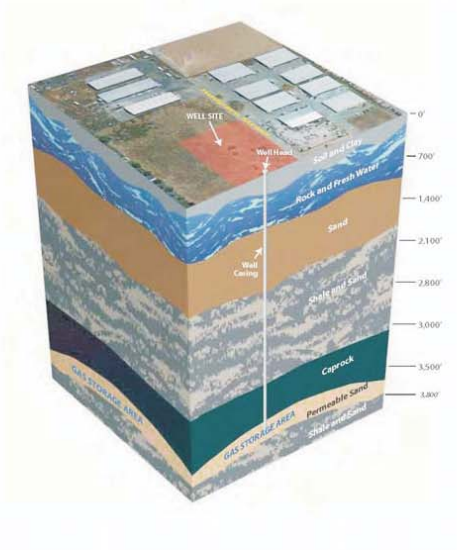
p. B-11 Fig. B-4, Schematic Block Diagram of Wellhead Site and underlying Storage Reservoir. B5-378



B. P-10 Comment: The block diagram does not depict the Project as envisioned, as all injection/withdrawal wells will be directionally drilled under residential areas, the produced water well will be drilled to the lower margins of the gas storage area, permeable sand, the well site is mis-located in relation to the surface land uses, and well site is misrepresented as to size, etc.

B5-378 (Cont.)

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p. B-13 A water injection well would be drilled to permit water produced with the gas to be re-injected into the zone of production. Five water tanks (noted as "H20 tanks" on Figure B-5) measuring 12 feet in diameter and 10 feet high would be situated on the west side of the site and would be used to ***temporarily store water inadvertently extracted*** with the natural gas. The water would be injected into the same reservoir. (emphasis added.)

B. P-11 Comment: The entire produced water and non-methane petroleum gases/liquids system from the wells and within the Wellhead site is mentioned but is not developed to adequately and completely assess its potential impacts. Produced water from the wells could easily be expected to contain heavy hydrocarbon associated formation gases, different gases (compared to those at the time of discovery) inflowing during the repressurization during the last 20 years, CO2, and H2S as the Applicant suggested by the presence of "cushion gas". No facilities are specifically assigned for non-methane gas separation and the eventual disposition of any non-methane gases. There are no discussions regarding the Wellhead site treatment facilities and the character of the "Water Tanks" which will receive produced waters. Produced liquids in the Water Tanks may contain contaminants, both solids and gases which may need to be removed before re-injection. Furthermore, SNGS states in its Response to AGENA's Third Set of Data Requests that "SNGS is informed and believes that no tests were performed relating to the chemical composition of the residual gas presently in the Florin reservoir." (See attached SNGS's Response to AGENA's Third Set of Data Requests, Response to Request No. 30, pg. 7.) Given this uncertainty, which is a known unknown, further gas sampling, field

B5-379

investigations, and tests must be done to define the chemical constituents of the residual gases and liquids in the Florin Gas Field before the impact on other areas can be confirmed. B5-379 (Cont.)

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p. B-13 The Wellhead site would also include a pig launcher/receiver(catchers) to allow the insertion and removal of pigs (a device inserted into a pipeline to perform cleaning, inspection, and other internal functions) from the associated underground pipelines. A [pig and its] slug catcher would be installed along the north side of the site to ***separate liquid and other impurities*** from the natural gas that is extracted. (emphasis added.)

B. P-12 Comment: The entire pigging system between the Wellhead and the Compressor Station sites is mentioned, but is not developed to adequately and completely assess its potential impacts during pigging operations (opening of the Segment No.1 pipeline). No facilities are specifically assigned for collecting and treated any gaseous releases or non-methane gas separation and their eventual disposition of any non-methane gases. There are no discussions regarding the Wellhead site liquids treatment facilities for pigging and the character of the "Water Tanks" that will receive produced waters. B5-380

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p. B-13

The wellhead site would have ***gas odorization capability*** to add the odorization agent methyl mercaptan, ***if needed*** to compensate for reduction in the concentration of this odorizing agent in the storage field. (emphasis added.)

p. B-13 …mercaptan would be added to the natural gas at the wellhead site prior to the injection of the gas back into SMUD Line 700 to meet federal and state odorization standards.

B. P-13 Comment: No facilities are indicated in relevant drawings and layout for these facilities and their potential for odorous releases to the surrounding residential and light industrial areas. Odorizer facilities are indicated in the Compressor Station site layouts but no PFD or P&ID drawings are provided. B5-381

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p. B-14 The waterline would be an ***8-inch line*** from Power Inn Road into the wellhead site and would ***supply water to a fire hydrant*** to be located ***outside but adjacent to the front gate***. Extensions would be run off the mainline to feed hose bibs within the site as needed. (emphasis added.)

B. P-14 Comment: The Project Description does not provide utilities layout for power, water/firewater, sewerage, and drainage although some are mentioned and indicated as retention ponds, electrical cables, etc. B5-382

P. B-14 The compressor station would have a maximum injection capability of ***100 million cubic feet (Mcf)*** and maximum withdrawal capacity of 200 Mcf of natural gas per day. [with two online and one spare compressor, spare for additional 50Mscf /d injection] (emphasis added.)

[Wells 5-initial, and one spare 100Mscf/d by 5 wells, 6th well = total 120Mscf/d…]

[8Bscf capacity = 80 day pump up, 200Mscf/d x 80 d = 1.6Bscf added to storage]

B. P-15 Comment: The terms and units are erroneously presented. Gas and petroleum industry and elsewhere in the DEIR and PEA generally use MMscf (million standard cubic B5-383

feet) rather than Mcf or Mscf. The overall system does not appear balanced between the initial and ultimate proposed Project system as adding a third compressor to the Compressor Station would increase compressing capacity by 50%, 100MMscf/d up to 150MMscfd, while adding one additional well would only increase injection capacity by only 20%, 100MMscf/d up to 120MMscf/d.

If the systems are properly sized, the 5 initial injection wells (with one spare/standby) should have maximum capacity ratings of 30MMscf/d-well, 150MMscf/d / 5 wells, and if so the Project Description does not adequately or completely describe the proposed Project and thereby assessment of the impacts of the ultimate Project development.

B5-383 (Cont.)

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p. B-14 The compressors would be ***housed in a building*** approximately 50 feet by 110 feet and would stand approximately 24 feet high. (emphasis added.)

As shown in Figure B-6 [p. B-17] , the compressor station would include two electric drive compressors [C-101A & 101B, motor driven],.... A back-up compressor [not shown in layout] with an electric motor of up to 3,500 hp [C101C shown as "Engine Driven, Future", not electric or motor] may also be installed (shown on Figure B-6 located inside the [portion of the] "Compressor Building" labeled as "Future").

B. P-16 Comment: As confinement of gas provides conditions suitable for explosions the description of the building and analyses as to the risks and mitigations of explosions rather than torch flames become important to risk assessments (including Appendix B). Without adequate and complete description of the building and any other enclosures or containments (e.g., water tanks at the Wellhead site), the Project Description should be considered as inadequate and incomplete to form the basis to assess impacts on the environmental and urban settings of southern Sacramento.

The description of the compressors and building does not conform with that given in the Figure B-6, and therefore either the text or drawing or both are incomplete and inadequate or in error.

B5-384

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p. B-14 The compressor station site ***would*** also have gas odorization capability in order to add the odorization agent methyl mercaptan, if necessary to meet odorization standards in the event of a gas leak. (emphasis added.)

Two odorizer systems – one at well site and one at compressor site, but under withdrawal, released gas is odorized at well site and pressure regulated to metered pipeline.

B. P-17 Comment: As indicated elsewhere Section B Project Description Wellhead Site layout drawing does not show any odorizer facilities, although the text indicates its presence, while the Compressor Site includes a "Possible Future...Skid" (Fig. B-6) and text mention only present "if necessary". The Description are inconsistent and perhaps in error and does not provide any typical design PFD, P&ID, or piping drawings of the Compressor and Wellhead sites and therefore cannot be considered as complete and adequate.

B5-385

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p. B-15, Fig. B-5 Wellsite Layout with Well Site Silencers, Water Tanks (5), Water Injection, Observation, and Spare Injection Wells, and Retention Pond

B5-386

B. P-18 Comment: The Project Description includes equipment or facilities not described in text and not provided in context of standard Process Flow Diagrams (PFD) and Piping and Instrumentation Diagrams (P&ID). Presence of "silencers" are usually related to the noisy releases of gases under pressures which have not been discussed in the Project Description or the Air Quality and Noise Vibration subsections. B5-386 (Cont.)

The produced water separation system for the withdrawal phase is not described adequately or completely for assessment as to compliance with gas releases, water quality of produced water, and full return of produced waters to the formation zone. B5-387

The three well pad locations are of interest as they are provided as identical footprints to the Injection/Withdrawal wells and thereby can be easily converted to additional I/W wellpads without modifications. As no information is provided regarding the complete and adequate design, PFDs, P&IDs, and specifications no assurance can be provided that these wells will not be converted to I/W wellpads once construction has been approved and thereby change the injection rates from proposed 100MMscfd up to 160MMscfd . This is important as the spare compressor set in the Compressor Station can increase injection by 50% but a single spare well could only increase injection by 20%, thereby requiring addition well drilling compared to the current available design information for the Wellhead site. B5-388

The Water Tanks are not described and pig-receiver and slug piping networks related to them. B5-389

The Project Description and the Figure do not provide the drainage networks for the Wellhead site and its relationships to impervious areas, the retention pond and to some assumed discharge point to the existing stormwater drainage system, which are not provided elsewhere, including subsection D.11, Utilities and Services. B5-390

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p. B-17, Fig. B-6 Compressor Station - Retention Pond and Spare Future Compressor Place

"As shown in Figure B-6, the compressor station ***would*** include two electric drive compressors, each paired with a 3,500 horsepower (hp) electric motor (located inside the "Compressor Building" on Figure B-6). A ***back-up compressor with an electric motor*** of up to 3,500 hp may also be installed (shown on Figure B-6 located inside the "Compressor Building" labeled as "Future"). (emphasis added.)

B. P-19 Comment: The spare engine-powered compressor pad location is of interest as it is provided as identical footprints to those of other motor-powered compressors and thereby can be easily added without significant modifications. As no information regarding the compressors is provided regarding the complete and adequate design, PFDs, P&IDs, and specifications no assurance can be provided that the spare compressor will not be added immediately once construction has been approved and thereby change the injection rates from proposed 100MMscfd up to 150MMscfd. B5-391

This opportunity is important as the spare compressor set in the Compressor Station would increase injection by 50% but a single spare well could only increase injection by 20%, thereby requiring addition well drilling compared to the current available design information for the Wellhead site. B5-391 (Cont.)

No air-/noise-quality consideration has been given to the operations of the hydrocarbon fuelled (natural gas or diesel) engine for this installation which could be completed prior to the operational phase of the Project, once approved. B5-392

The Liquid Storage Tanks (3) are not described nor related to pig-launching/receiving and dehydrators and piping networks related to them. No discussion regarding air quality impact has been provided regarding uses of these tanks on the Compressor Station. B5-393

The Project Description and the Figure do not provide the drainage networks for the Compressor Station site and its relationships to impervious areas, the retention pond and to some assumed discharge point to the existing stormwater drainage system, which are not provided elsewhere, including subsection D.11, Utilities and Services. B5-394

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p. B-21 **B.4.2 Construction Activities and Methods, *B.4.2.1 Florin Gas Field***

There ***will*** be ***no construction activities associated with or required to use the Florin Gas Field***. (emphasis added.)

Installation of wells moving natural gas into and out of the reservoir is described below.

…monitoring wells for freshwater gas contamination prior to injection/withdrawal wells.

B. P-20 Comment: This approach indicates a very limited "concept" of construction or it may reflect a lack of appreciation as to the proposed direct activities and mitigation measures required by various references in the DEIR and related consultants, engineers' and experts' reports incorporated by references for the well field. B5-395

Redrilling, plugging, and proper abandonment of the 5-8 wells may be undertaken to remediate potential blowouts from improperly abandoned wells and thus will require considerable "construction" activities at the original well sites or off-set sites. B5-396

Drilling of gas probes, groundwater monitoring wells, and other exploratory/data collection wells requires more than the construction of the eight wells on the Wellhead site. B5-397

Additional geophysical surveys may be undertaken to provide adequate delineation of the field, reservoir, Winters sand body, and the SE barrier (SW-NE) across the sand body and to clearly assign properties for subsurface storage rights and acquisitions.

Therefore the referenced phrase incompletely and inadequately describes pre-operating activities required for the field, reservoir, or Winters Sand Body development. B5-398

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p.B-21 – 22 ***B.4.2.2 Wellhead Construction*** B5-399

Drill string ***would*** be stored on site in a "pipe rack" until additional sections are needed. The process of drilling, adding drill stem, and drilling again ***would*** continue until the driller has reached the desired depth of approximately 3,800 feet. Drilling mud…fluids used in the drilling operation would be contained and stored on site in mobile tanks or 55-gallon drums in a designated containment area. (emphasis added.)

B5-399 (Cont.)

B. P-21 Comment: Use of conditionals here, rather than definite verbs as above regarding construction for the Field are not appropriate. Since at least seven wells may be drilled by the same equipment and generally operates 24hr/day, 7-days/week, a more adequate and complete description should be provided for this key activity if the application in approved.

In addition to drill strings, a very large amount of casing of various diameters would be required to be delivered, stored, assembled, and installed at the Wellhead site; because of the pressure and other factors, large amounts of cement for each well would be required for delivery and pumping into the casings and bores.

B5-400

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p. B-22 ***B.4.2.3 Compressor Station Construction***

Excavating required for the foundations would be performed ***as needed*** and all ***backfill would be compacted in place. Any excess soils*** would be ***used on site***. (emphasis added.)

p. B-23 ***B.4.2.4 Pipeline Construction*** **- Grading and Pipeline Trenching Methods**

A deeper trench may be required to ***avoid existing utilities***. ***Trench spoil would be temporarily stored*** next to the trench on the spoil storage portion of the ROW. (emphasis added.)**- Lowering-In, Tie-In, and Backfilling**

A small amount of excess soils may need to be removed from the pipeline route and disposed of off site. Any excess would be disposed of at an appropriate disposal facility.

B5-401

B. P-22 Comment: This is the closest description of a grading plan provided by the DEIR for all sites and corridors. The magnitude of grading, excavating, and filling for all Project elements has not been provided and not balanced between cuts and fills; no estimates of existing and proposed ground levels are provided, and no estimates of cuts and fills are provided. Herein the excess cut materials will be used on site, while in other elements, the excess cut materials would be disposed of offsite.

The entire grading presentation is totally undocumented, incomplete, and inadequate, and assessments of impacts (e.g., biology, cultural resources, hydrology, etc.) of grading, excavating, trenching, or filling based on the "description" would be adequate or complete.

B5-402

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p. B-22 ***B.4.2.3 Compressor Station Construction***

B5-403

Equipment consisting of the glycol dehydration units, reboilers, and coolers would be installed on concrete pads.

B. P-23 Comment: Concrete pads are mentioned but no designs, layouts, or delineations of concrete pads for ALL of the facilities has been provided; therefore the amounts and depths cannot be established for excavation, volumes of materials excavated and either imported/exported, amounts of concrete and gravels imported concrete, types of equipment to be used, and durations of construction. The above text is inadequate and incomplete but more than many other facilities (e.g., compressor shed, 50x100ft). B5-403 (Cont.)

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p. B-28 **B.5 Operation and Maintenance**

"As part of the proposed ***operation and maintenance program***, above ground piping components ***would*** be ***maintained to minimize leakage of odorized gas***. The pipeline ***would*** be ***monitored following procedures outlined in and with an emergency plan***…which ***requires operators to establish written procedures to minimize the hazard*** resulting from a gas pipeline emergency." (emphasis added.)

The facility valves, flanges, and other piping components would be ***monitored for leaks by operations personnel as part of the day-to-day operation*** of the facility. In the event SNGS, LLC receives notification from a third party concerning the smell of odorant in the vicinity of the proposed facility, SNGS, LLC operations personnel would investigate the ***source of the odor and repair any leaks*** contributing to the odor. A log of all third-party notifications regarding gas odors ***would*** be kept. The date ***[and time]*** of the notification, ***[notifying party and contact??]***, the cause ***[and source]*** of the odor, and the date of the repair of any corresponding odorant leaks ***would*** be recorded in the log. A copy of the described log ***would*** be submitted to the CPUC quarterly. (emphasis added.)

B. P-27 Comment: Leak monitoring systems for the TEG and Odorizer systems is generalized and focused on "minimizing" leaks rather than eliminating leaks. In order for a proposed Project to avoid confusion and contradictions prior to certification of the DEIR (FEIR) and to the CPUC approval, the Applicant shall provide all procedures, plans, etc. as draft documents which can be specifically approved as part of the submission for full, sufficient, adequate, and complete information for the decision makers prior to approval of the proposed Project. B5-404

The Project Description does not reference to or integrate all documents, plans, procedures, BMPs, APMs, and other specific mitigation relevant to the activities and facilities described in this Project Description. B5-405

Monitoring and identification of TEG and mercaptan leakage can be done quite simply by placing relevant facilities, tanks, and pipelines in appropriate enclosure with appropriate gas sensors as would be done in sites where odors may be a concern. B5-406

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p. B-28 **B.6 Abandonment of Project** B5-407

At the point that the Proposed Project is no longer in use and the site is abandoned, the following procedures ***will*** be used:

- The gas reservoir pressure ***will*** be depleted to its ***current conditions***. (emphasis added.)
- The gas ***will*** be abandoned in place according to the requirements of the DOGGR in place at the time of abandonment. (emphasis added.)

[GAS, p. B-2, "…reservoir estimated to contain 13 bcf (approximately 5 bcf is buffer or cushion gas that cannot be extracted)." "***The reservoir is expected to store approximately 7.5 bcf of natural gas, which meets the 4.0 bcf requirement for SMUD's local supply, and allows storage of 3.5 bcf of additional gas. Initial pressure of the field was estimated to be 1,677 pounds per square inch (psi) prior to operation (Ryder Scott Company 2008).]*** (emphasis added.)

B. P-28 Comment: No explanation is provided as to why the pressure is used rather than the natural gas volume as pressure can be maintained at current conditions by addition water injection and gas displacement.

B5-407 (Cont.)

The abandonment is incomplete and inadequate as it does not discuss the extraction of operating gas, of existing cushion gas, or any other inflow gases and the status of such gases to existing subsurface rights owners and the SMUD rate payers.

DOGGR has not effective jurisdiction over the "gas", unless the State owns the lands and subsurface rights. The second item may be a typo and may referred to the "gas wells" and if the latter, the abandonment section is incomplete and inadequate as the abandonment appears not to include the produced water injection well, the field observation well, and referenced aquifer monitoring well, as part of the mitigation for groundwater impacts.

B5-408

The abandonment also does not deal with the prospective sale of a well-monitored "gas" storage site for alternative uses of CO2 injection/sequestration. Thereby, abandonment as a "natural gas storage site" should include transfer of site to "Exhaust CO2 Storage Site".

B5-409

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p. B-28 **B.7 SNGS Project Protocols**

Section 2.5.7 of the April 2007 Applicant's Environmental Assessment (PEA) prepared by SNGS, LLC, ***details the best management practices (BMPs)*** that ***would*** be followed during all project-related activities (SNGS, LLC 2007a). The BMPs provide ***general*** protection measures, as well as ***measures specific to environmental issue areas, such as air quality, paleontology, geology, traffic, or water quality***. SNGS, LLC's proposed BMPs are herein termed applicant proposed measures (APMs) **[SNGS 2007 BMPs = SNGS 2009 APMs]**. (emphasis added.)

B. P-29 Comment: References to BMPs of SNGS 2007 are irrelevant to the document herein, DEIR and the MMRP. This section includes only the APMs of the DEIR (Tables B-4 and B-5) and does not include the many more and detailed mitigation measures scattered throughout the document (e.g., pipeline construction will be conducted only the dry season).

The DEIR shall include a draft MMRP with a full compliance section providing all required, recommended, and proposed measures for mitigation, monitoring of satisfactory mitigation to less than significance status, and reporting in addition to the responsibilities, authorities, funding, and full timely compliance.

B5-410

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p. B-29 **B.7 SNGS Project Protocols**

B5-411

However, where ***other impacts are identified that are not addressed by these BMPs***, or where the ***BMPs are not considered to be adequate to reduce impacts to less than significant levels***, ***additional mitigation measures are recommended***. (emphasis added.)

APMs ***will*** be incorporated into the Mitigation Monitoring, Compliance, and Reporting Program (MMCRP) developed for this Proposed Project and monitored in the same fashion as the mitigation measures developed in this EIR (see Section G, Mitigation Monitoring and Reporting, of this EIR for details on the MMCRP). (emphasis added.)

B. P-30 Comment: These Section B statements are open-ended, incomplete, or inadequate as the Project Description of the DEIR indicates those activities and measures which will be implemented but do not include many measures mentioned in the subsequent Section D.

In an attempt to cover all bases, the statements destroy the concept of mitigation as a commitment of the Applicant and relevant agencies based on sound Project development, adequate definition of environmental setting, and complete assessment of impacts and their significance.

B5-411 (Cont.)

In addition, detailed review of the APMs herein Section B may not be identical to those provided in Section D.

B5-412

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p. B-33 - -34 **B.8 References**

Raymundo Engineering Company. 2008. Pipeline Alignment Engineering Sheets Prepared for all Project Components. Sheets revised March 2008.

Ryder Scott Company. 2008. Letter providing results on injection and production cycles. June 30, 2008.

SNGS (Sacramento Natural Gas Storage), LLC. 2007a. *Applicant's Environmental Assessment (PEA) for the Sacramento Natural Gas (SNGS) Storage Project*. Sacramento, California: Sacramento Natural Gas Storage, LLC and EIP Associates, a division of PBS&J. April 5, 2007.

SNGS, LLC. 2007b. Initial response to "Deficiency Letter" dated July 12, 2007. August 10, 2007.

SNGS, LLC. 2008a. Response of SNGS, LLC to CPUC Data Request No. 1. May 27, 2008.

SNGS, LLC. 2008b. Response of SNGS, LLC to CPUC Data Request No. 1 Preliminary Jurisdictional. March 13, 2008.

SNGS, LLC. 2008c. Sacramento Area Gas Field Selection Criteria. April 3, 2008. USA Prime Imagery. 2008. Arc GIS Online USA Imagery Base.

Weatherwax, R.K. and M.R. Weatherwax. 2007. California Natural Gas Storage Facilities: A Contemporary History of Incidents. Roseville, California: Sierra Energy and Risk Assessment, Inc.

B. P-31 Comment: Many references are not generally available to the public and perhaps relevant decision makers and thereby do not conform with requirements of CEQA.

B5-413

C. PROJECT ALTERNATIVES

p. C-1, **C.1** However, the State CEQA Guidelines also declare that an EIR need not consider an alternative that fails to meet ***most of the basic project objectives***, or whose ***effects cannot be reasonably ascertained***, or whose implementation is remote or speculative. (emphasis added.)

p. C-2 **C.2** State CEQA Guidelines (Section 15126.6(a)) state that:

An EIR shall describe a range of ***reasonable*** alternatives…which would feasibly attain ***most of the basic objectives of the project*** but would avoid or substantially lessen any of the significant effects of the project…

1. Provide strategically located natural gas in California.
2. Provide a secure and reliable gas supply…[for] disruption of…main supply pipeline...
3. Satisfy…SMUD's…storage needs…[for] electrical generating plants…4.0… bcf)…30-day supply. (emphasis added.)

C. AI-1 Comment: A very large array of Florin alternatives can meet all basic project objectives, their effects can be reasonably ascertained at the same level as the proposed Project has been reviewed, and all significant impacts could be mitigated or compensate as well as in the proposed Project. The Applicant has chosen not to provide an adequate array of Florin alternatives, such as all wellhead and compressor operations on the same, NE site, as the possibilities of failures is as low as presented in the DEIR.

B5-414

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p. C-6 **2.2 Feasibility** ***Feasibility*** can include several components:

- Technical Feasibility: Is the alternative feasible…technological perspective,…construction, operation, and maintenance?
- Legal and Regulatory Feasibility: …legal protections or regulatory restrictions… (emphasis added.)

C. AI-2 Comment: Typical definitions of Feasibility contain technical, financial, managerial, and legal/regulatory, and rather than stating what feasibility "can include", the preparers should state what the DEIR considers to be feasibility, Furthermore, every project can be made technically feasible at increased costs.

B5-415

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c.5 Alternatives C.5.2 Project Design Alternatives as Identified by SNGS, LLC for the Proposed - Florin Gas Field Storage Project

p.C-31 Fig. C-6

C. AI-3 Comment: Three (3) alternative Wellhead Sites (Site 1, Site 2, and Adjacent to Compressor site) are shown in Figure C-6 (p. C-31). Compressor/Wellhead Site Alternative is discussed but no discussion is presented for Site 1 and Site 2. Site 1 (West Junipero) is a valid alternative and would have some definite advantages (for risks to overhead utilities and proximity to residential areas) over the proposed Site (West Junipero).

B5-416

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p.C-31 Fig. C-6

C. AI-4 Comment: Aerial photo shows several prospective vacant wellhead sites south of Junipero Ave. Sites (South Junipero) would be valid alternatives with only slightly longer

B5-417

south pipelines but with greater screening and fire containment opportunities and some definite advantages (for risks to overhead utilities and proximity to residential areas) over the proposed Site (West or East Junipero) B5-417 (Cont.)

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p.C-33 ***C.5.2.3 Alternative Well Site at Compressor Station Site*** **- Description**

Project facilities under the alternative wellhead site location are the same…

- Rationale for Elimination

For the wellhead site…needs to be ***located near the center of the natural gas field***. However, this alternative would move the wellhead site approximately 1 mile away from the natural gas field…this alternative does not meet the ***feasibility criteria***…and was not carried forward for full EIR analysis. (emphasis added.)

C. AI-5 Comment: Three (3) alternative Wellhead Sites are shown in Figure C-6 (p. C-31). Compressor/Wellhead Site Alternative is discussed, but no discussion is presented for Site 1 which differs by less than 100ft from the proposed site.

Site 1 (West Junipero) would have some definite advantages (for risks to overhead utilities and proximity to residential areas) over the proposed Site (West Junipero) and its close proximity to the proposed site would warrant considerations. B5-418

The proposed site is not in or near the center of the field for vertical drilling and the proposed wells would all be directionally drilled, except perhaps for the produced water injection well. B5-419

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p. C-36 **C.7 References**

DOGGR (Division of Oil, Gas, and Geothermal Resources). 2007. Map W6-1. Sacramento, California: State of California Department of Conservation. June 26, 2007.

C. AI-6 Comment: This DOGGR publication is not generally accessible by the public and therefore should be provided as an appendix or on accessible CPUC webpages. B5-420

GENERAL COMMENTS FOR OVERALL SECTION D OF THE DEIR

Basic Comment (as for all sections) The Applicant has done a "desktop" study of biological, cultural resources, hazards, hydrology, geology and soils, and resources, impacts, and mitigations and relies on inferences from previous "studies" of conceptual models, general extrapolations, inferences, and interpretations based on "experiences" elsewhere without the actual direct and current field investigations, specifically focused on the proposed Project and therefore the assessment and mitigation for Environmental Resources cannot be considered as Complete, Adequate, or Sufficient to meet the requirements as an Environmental Impact Report under CEQA . B5-421

Without basic data and information for the existing conditions and the developments since the time of the original field development and closure many aspects of the environmental setting cannot be established as complete and adequate, the setting, any impact assessments, mitigations, or even compliance cannot to confirmed or properly reviewed. Desktop studies may be appropriate for initial CEQA studies and checklists but not for Negative Declarations, Mitigated Negative Declarations, and especially for full EIRs. Appeal to the future review by government agencies of further investigations, designs, and other consideration defeat the CEQA purposes of clear, objective, and adequate information for decision maker at this time to make informed discretionary judgments as the impacts, mitigations, and their significance. These absences render this section totally incomplete, inadequate, and incomplete with regard to groundwater resources, setting, impacts, and mitigation. B5-422

Appeals to previous consultancy reports which have many of the same sufficiency issues cannot be used to verify the current assessment statements without independent confirmation and documentation, one lie cannot be used to support a second lie. B5-423

D.3 Biological Resources

D.3 B-1 Comment: Basic Comment (as for section) The Applicant has done a "desktop" study of biological resources, impacts, and mitigations and relies on inferences from previous studies without the actual field investigations specifically focused on the proposed Project and therefore the assessment and mitigation for Biological Resources cannot be considered as Complete, Adequate, or Sufficient to meet the requirements as an Environmental Impact Report under CEQA . B5-424

The Applicant has failed to recognize that all activities of the Applicant as part of the proposed Project MUST comply with all appropriate regulations, ordinances, and laws of the City and County of Sacramento, the State of California, and the Federal Government and therefore "Compliance" cannot be part of "mitigation" and any "non-compliance" would be void the Project, rather than it being considered as a "significant impact" to be mitigated by "compliance". B5-425

Rather than doing the field investigations prior to or for the preparation of the DEIR, the Applicant proposes to do additional studies after certification of the FEIR as part of the Mitigation, Monitoring, Compliance, and Reporting Plan (MMRP, not MMCRP) which has not been presented in sufficient, adequate, and complete details to assure mitigation of any and all possible impacts. The Applicant has placed the cart before the horse (mitigation before assessment), and reviewers must ASSUME that the MMRP may be carried out completely, adequately, and sufficiently to identify, mitigate/compensate for any assessed significant impacts, monitor successful reduction of impacts, and report such implementation, failures, revisions, and successes to the CPUC and relevant but as yet unidentified organizations. B5-426

Table D.3-4 Applicant Proposed Measures for Biological Resources

APM

No. Description

1 SNGS, LLC ***would identify work areas*** and would ensure that:

- Construction activities, equipment, and associated activities (e.g., staging areas) are confined to the designated work zones
- Areas supporting sensitive resources (e.g., nearby seasonal wetlands and special-status species' habitat) are avoided. (emphasis added.)

Construction equipment ***would be confined*** to a designated work zone in the project area. Before ground-disturbing activities are initiated, the work zone would be clearly staked and flagged. Where ***feasible***, all adjacent waters and wetlands would be avoided and would be designated as exclusion zones during the pre-construction phase. (emphasis added.)

D.3 B-2 Comment: The Applicant has not identified construction work zones and provide defined measures to control, avoid, and confine activities as part of the DEIR. B5-427

D.3 B-3 Comment: The Applicant has not defined "would" or "feasible" in relationship to avoidance, delineated wetlands and "waters", who, when, and what determine "feasible", and who and how to identify "exclusion zones". B5-428

Table D.3-4 Applicant Proposed Measures for Biological Resources

APM

No. Description

2 SNGS, LLC would conduct Worker Environmental Awareness Program (WEAP) training for construction crews before construction activities begin. The WEAP training would include a ***brief*** review of the special-status species and other sensitive resources that ***could occur*** in the Proposed Project area (including their life history and habitat requirements and ***what portions*** of the Proposed Project area they may be found in) and their legal status and protection. (emphasis added.)

D.3 B-4 Comment: The Applicant has not provided a "draft "Environment Awareness Program", how "brief" is, who determines "could occur" and "what portions". B5-429

The program would also cover all mitigation measures; environmental permits; and Proposed Project plans, such as the ***best management practices*** (BMPs), ***erosion control and sediment plan***, and ***any other required plans***. During WEAP training, construction personnel would be ***informed of the importance of avoiding*** ground-disturbing activities outside of the designated work area. (emphasis added.)

D.3 B-5 Comment: The Applicant has not provided a draft "Environment Management Plan" for the Project; use of "preventing" rather than "avoiding" would give greater confidence in actual implementation of measures. Furthermore, all plans have not been defined nor provided as draft issues for review and assurance of mitigation.

B5-430

The designated environmental inspector would be responsible for ensuring that construction personnel adhere to the guidelines and restrictions. WEAP training sessions would be conducted ***as needed*** for new personnel brought on to the job during the construction period (relative to the area in which the employee would be working and the tasks the employee would be completing). (emphasis added.)

D.3 B-6 Comment: Who is, who selects, who pays for the "Environmental Inspector" and what are the EI functions, activities, duties, and authority of the inspector? Who does the Inspector report to and derives the authority to ensure compliance? Who establishes the "needs" for WEAP training for each employee, owners', consultants', contractors', sub-contractors', and vendors' employee? The Applicant has not provide the necessary information to assess the adequacy and sufficiency of the Inspector and the program for implementation by the Inspector.

B5-431

Table D.3-4 Applicant Proposed Measures for Biological Resources

APM No.	Description
12	The equipment used for the Proposed Project would require periodic maintenance and refueling. To reduce the potential of contamination by spills, no refueling, storage, servicing, or maintenance of equipment would be performed within 100 feet of sensitive environmental resources (e.g., seasonal wetlands and Morrison Creek). Additionally, all refueling or servicing would be done with absorbent material or drip pans underneath equipment to contain spilled fuel or fluids. Any fluids drained from the machinery during servicing would be collected in leak-proof containers and taken to an appropriate disposal or recycling facility. If such activities result in spillage or accumulation of a product on the soil, the contaminated soil would be assessed and disposed of properly. Under no circumstances would contaminated soils be added to a spoils pile.
	Mobile refuelling trucks likely would be used for on-site refueling of stationary construction equipment. The refueling trucks would be independently licensed and regulated to haul and dispense fuels and to ensure that the appropriate spill prevention techniques are implemented. All maintenance materials (i.e., oils, grease, lubricants, antifreeze, and similar materials) would be stored in a designated storage area, away from site activities and more than 100 feet from sensitive resources. During construction, all vehicles and equipment required on site would be parked or stored at least 100 feet from waterbodies, wetlands, and other sensitive resource areas. These areas would be identified on the construction drawings, as appropriate.
	All wash-down activities would be conducted at least 100 feet from sensitive environmental resources.

B5-432

D.3 B-7 Comment: The Applicant has not provided a draft "Environmental Management Plan" nor a "Spill Contingency, Control, Clean-up, and Restoration Plan for the project. The DEIR does not identify and delineate the sensitive environmental resources areas and therefore the 100ft exclusion zone cannot be identified nor assessed for adequacy. B5-432 (Cont.)

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13 Following installation of the pipeline, the right-of-way ***would*** be graded to pre-construction grades and contours and ***would*** be seeded with an appropriate seed mix. The seed mix ***would*** be composed of the appropriate mix of species and be acceptable to the landowner. All disturbed areas of paved roadways ***would*** be repaved. (emphasis added.)

D.3 B-8 Comment: The Applicant has not provide the routes, locations, and existing profiles/elevation for jacking/boring, jacking pits, trenching, and backfill piles; therefore the grading and re-seeding cannot be assessed. Similarly, the Applicant has not provided the seed mix for the various parts of the pipelines, and therefore th mitigation or compensatory value of the re-seeding cannot be assessed nor confirm its mitigation potential. B5-433

Mitigation Measures for Impact B-1: Substantial Adverse Effect on Listed, Candidate, or Special-Status Species - B-1a Impacts to Sanford's Arrowhead.

Prior to initiation of construction, qualified botanist to survey Sanford's arrowhead…

…survey during a period of time (March through May) when plant will allow for ready identification.

D.3 B-9 Comment: The Applicant has not conducted a survey for this plant "during a period of time…when the plant will allow for ready identification" even though several seasons have passed during the Applicant's consideration of the project in this project area and vicintiy. The Applicant does not define the "qualified botanist" nor the "Ready" level of identification. B5-434

Even though ***most of the habitat*** potentially supporting populations of this species ***will*** be ***avoided***, activities ***may impact*** this species. (emphasis added.)

D.3 B-10 Comment: The Applicant has not defined: "habitat potentially supporting populations" and "most [51% or 99%] of the habitat…will be avoided", therefore the adequacy and completeness of the mitigation measure cannot be assessed. No responsible agent is described (environmental inspector or qualifies botanist) and therefore the adequacy of the measure cannot be confirmed. B5-435

Any populations found ***shall*** be fenced under the supervision of the botanist and no work shall be conducted within the fenced area. (emphasis added.)

…monitored throughout the period of construction to ensure that the fencing is maintained.

D.3 B-11 Comment: The Applicant states that "Any population" found during the single pre-construction survey shall be fenced, while previously, the Applicant clearly indicated that not "All" may be found. B5-436

B-1b Impacts to Vernal Pool Fairy Shrimp.

…conducted by a ***qualified biologist protocol-level VPFS survey*** at each potential wetland habitat. B5-437

D.3 B-12 Comment: The Applicant has not conducted a survey for this plant "during a period of time...when the plant will allow for ready identification" even though several seasons have passed during the Applicant's consideration of the project in this project area and vicinity. The Applicant does not define the "qualified botanist" nor the "ready" level of identification, and who determines and who identifies such. B5-437 (Cont.)

B-1b Impacts to Vernal Pool Fairy Shrimp.

...***assumed*** that each potential vernal pool contains these species.

...***assumed***-occupied areas **shall be avoided** ***where possible*** by fencing off these areas and monitoring during construction

...Consult with the USFWS to obtain ***any necessary*** permits or approvals

...if populations or assumed populations ***would*** be disturbed. (emphasis added.)

D.3 B-13 Comment: The Applicant does not define "assumed", "avoided", "where possible", and "any necessary" , and who determines and who identifies such. B5-438

For areas that ***cannot be avoided***, at least two vernal pool credits shall be purchased prior to any construction at a USFWS-approved preservation bank for every acre directly or indirectly impacted. (emphasis added.)

D.3 B-14 Comment: The Applicant has not defined what can or cannot be avoided means or applies to and therefore no assessment of insignificance, significance, or mitigation required to reduce to insignificance. The statement states that if there are any, no manner what their importance we will compensate for any significant impact, of which we as yet known not what. B5-439

B-1c Impacts to Giant Garter Snake.

Surveys for the species ***shall be conducted 24 hours*** before commencement of Construction

...in areas ***determined to be potential habitat*** for the giant garter snake ***shall be conducted between May 1 and October 1.*** (emphasis added.)

D.3 B-15 Comment: The Applicant has not conducted a survey for this snake during a period of time previously, when the snake will allow for ready identification, even though several seasons have passed during the Applicant's consideration of the project in this project area and vicinity. Statement does not indicate who conducts the survey, who determines "commencement", and who determined "potential habitat". B5-440

Surveys for the species shall be conducted ***24 hours*** before commencement of Construction...consultation with USFWS ***to obtain the necessary permits and approvals***. (emphasis added.)

D.3 B-16 Comment: The Applicant does not allow for adequate or complete survey within a 24-hour period before construction as construction activities in preparation of actual physical operations on the site must commence well before 24-hours and such a short period does not allow for adequate consultation and protection measures to be B5-441

implemented. Statement does not indicate who conducts the survey, who determines "commencement", and who determined "potential habitat". B5-441 (Cont.)

D.3 B-17 Comment: The Applicant does not define a "qualified herpetologist" nor the rationale for the period of "pre-construction" survey. B5-442

Any occupied area shall be ***avoided*** by construction. (emphasis added.)

D.3 B-18 Comment: The Applicant has not conducted a survey for this snake and either confirmed or potential "occupied areas", although several seasons have passed during the Applicant's consideration of the project in this project area and vicinity. Avoidance does not provide sufficient mitigation as required by similar exclusion buffer indicated for other similarly or even lesser protected species. B5-443

Any impact to upland or marsh vegetation shall be mitigated by ***restoration*** of habitat ***after completion of impacts***. (emphasis added.)

D.3 B-19 Comment: The Applicant has not defined "Any impact" which would include less than significant. Restoration of destroyed upland and marsh [=wetlands] habitat for the garter snake is NOT complete, adequate or sufficient to protect this protected species from significant adverse impact, if present, especially given a 24-hour in advance of construction schedule for the survey of this reclusive species. Statement does not indicate who conducts and certifies the restoration, and who determines "after completion". The Applicant has not defined what can or cannot be avoided means or applies to and therefore no assessment of insignificance, significance, or mitigation required to reduce to insignificance. The statement states that if there are any effects, no manner what their importance, the Applicant "would" compensate for any significant impact, of which we as yet known not what. B5-444

B-1d Impacts to Active Burrowing Owl Burrows.

…surveys by a ***qualified*** biologist within ***30 days*** prior to initiation of construction.

No nesting owls were noted during the prior biological surveys…

…could begin nesting prior to construction…(emphasis added.)

D.3 B-20 Comment: The Applicant has not conducted a survey for this Owl "30 days prior to initiation of construction" (not "during a period of time…when the owl may be nesting" even though several seasons have passed during the Applicant's consideration of the project in this project area and vicinity. The Applicant does not define the "qualified biologist" (rather than ornithologist). Statement does not indicate who conducts the survey, who determines "commencement", and who determined "potential habitat". B5-445

The Applicant alludes to "prior biological surveys" which have not been referenced, included as appendices, or made available for review and confirmation. Therefore the section is incomplete and inadequately presented. B5-446

…250-foot buffer shall be established around the burrow

…no work shall commence in the buffer zone until young have fledged.

D.3 B-21 Comment: The Applicant has not identified, defined, and delineated nesting areas of burrowing owls. Therefore the 250 foot limit nor the period of time that no work would occur cannot be verified as complete, adequate, or sufficient for mitigation. Period limits based on fledging cannot be used rather than occupancy; if the nested owls continue to occupy the burrows construction activities should be excluded, until the burrows are no longer occupied. Statement does not indicate who establishes burrow occupancy and its buffer, who determines "commencement", and who determine "fledging" and occupancy. B5-447

D.3 B-22 Comment: The Applicant has not considered that burrowing owls typically return to the burrows previously used and that the fledged owls will also return to these burrows. The Applicant does not assess the loss or disturbance of the burrows, their impacts, nor the mitigation/compensation for such impacts on a protected species. B5-448

During ***non-breeding season***, then ***passive*** relocations conducted under ***supervision by CDFG.*** (emphasis added.)

D.3 B-23 Comment: The Applicant has not defined: "non-breeding" vs pre-fledging/nesting seasons nor "passive relocation" vs active disturbance and has not defined who will authorize and determine such terms, presumably a field specialist (qualified burrowing owl ornithologist) required and paid by the Applicant to comply with the supervision by CDFG. B5-449

B-1e Impacts to Foraging Habitat for Swainson's Hawk and Other Raptors.

…***permanent loss*** of habitat at the proposed compressor station site and proposed wellhead site. (emphasis added.)

D.3 B-24 Comment: The Applicant has not defined the difference between "permanent" and "temporary" and defined and delineated the foraging habitat nor losses of such. The Applicant has not considered or assessed the removal of this habitat within the context of raptor movements in southern Sacramento urban area. B5-450

The Applicant has not defined what can or cannot be avoided means or applies to and therefore no assessment of insignificance, significance, or mitigation required to reduce to insignificance. The statement states that if there are any, no manner what their importance we will compensate for any significant impact, of which we as yet known not what. B5-451

The Applicant does not include the growth and cumulative effects on the raptors and species of special concern especially for the rapidly expanding Sacramento County projects and those in the Depot area. B5-452

The US Fish and Wildlife Service and the California Department of Fish and Game are authorized and required to review projects which have the potential to affect riverine fisheries especially those leading directly to the Central Valley Delta and Sacramento River. No consultations with these agencies is indicated to clarify their requirements under federal and state requirements. Without such formal clearances or exemptions, the setting, impacts assessments and mitigation cannot be considered as complete or adequate. The Applicant and CPUC do not appear to have coordinated with either CDFG or USFWS regarding DEIR setting, species of concern, impact assessment, significance B5-453

or mitigation/compensation and perhaps not during the initial study and scoping or for the preparation of the PEA. B5-453 (Cont.)

Permanent loss of habitat on a 0.75:1 ratio compensated by purchase of mitigation bank credits in a CDFG mitigation bank or payment of a mitigation fee to an approved habitat mitigation bank. (emphasis added.)

D.3 B-25 Comment: The Applicant has not justified the less than 1:1 compensation nor has the general allocation to a bank been confirmed. In addition compensation should be within the same foraging context of those raptors generally using the southern Sacramento urban area patchwork. A larger mitigation bank area where there is already large foraging areas is not as valued for the raptor as even smaller areas within their overall foraging range. B5-454

The Applicant has not defined what can or cannot be avoided means or applies to and therefore no assessment of insignificance, significance, or mitigation required to reduce to insignificance. The statement states that if there are any, no manner what their importance we will compensate for any significant impact, of which we as yet known not what. B5-455

B-1f Impacts to Active Nests of Raptors or Other Migratory Birds.

No nesting birds were recorded during previous surveys

…birds could nest prior to construction in the spring and summer

…surveys during breeding season (February 1 through August 30) within 0.5 mile of construction

D.3 B-26 Comment: The Applicant has not conducted a survey for any bird nests or those for raptors or other migratory birds specifically for this project even though several nesting seasons have passed during the Applicant's consideration of the project in this project area and vicinity. Statement does not indicate who conducts the survey, who determines "prior to construction", and who determines "nests". B5-456

D.3 B-27 Comment: The Applicant does not indicate the timing of nest surveys and construction which is indicated in other measures as being only 24-hours in advance. The absence of timing for nest surveys and construction does not allowed adequate consideration as a mitigation. Most raptors and other protected migratory birds return to either the same nest or nearby nests during the nesting season and a survey of occupied or unoccupied nest would have provided adequate indication of the potential impacts for the project and the period of concerns from general construction disturbance. B5-457

…***qualified biologist*** to determine if any nesting raptors or migratory birds are present. (emphasis added.)

D.3 B-28 Comment: The Applicant has not defined: "migratory" or "nesting" birds and the field specialist required by the Applicant to make the "determination". Statement does not indicate who selects, pays for, or controls the biologist and determinations and who implements mitigation if nesting birds are found. B5-458

…construction shall be delayed until the birds have fledged ***OR***.

…>250-foot buffer zone in consultation with CDFG

…nests shall be monitored during construction. (emphasis added.)

D.3 B-29 Comment: The Applicant has not identified, defined, and delineated nesting areas and therefore the 250 foot limit nor the period of time that no work would occur. Period limits based on fledging cannot be used rather than occupancy; if the nested birds continue to occupy the nests construction activities should be excluded, until the burrows are no longer occupied. No indication is given as to who, how, and when nests are monitored during what construction. B5-459

D.3 B-30 Comment: Same for the all raptor, game, and migratory species as those in D.3 21, 22, 23 Comments, above. B5-460

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p.D.3-36 - -37

Impact B-2: Substantial Adverse Effect on Riparian Habitat or Other Sensitive Habitat

Wellhead, Compressor Station, Pipeline Segments 1 and 2

No riparian habitats would be impacted by these project components as the project will use HDD near the riparian areas.

D.3 B-31 Comment: The Applicant has long discussions regarding wetlands, impacts, and mitigation (Comments 36-40) without consideration that many wetlands are in fact part of riparian habitats. The Applicant has not provided definition and surveys of Project sites and routes to assure none of the various features of riparian habitats are not found, especially in light of the aerial photos of the Compressor Site and topographic maps of the Wellhead site showing what appears to be the earlier trace of the Morrison Creek channel and topographic maps of the Wellhead site showing an unnamed channel of a stream-way passing across the site. B5-461

The Applicant has indicated as in Comment 32 Text a term: riparian. The Applicant has not provided definition and relationships to "wetlands" and adequate and complete delineation of the trenching and pipe jacking/boring areas of activities and especially those pits for jacking/boring in the vicinity of riparian or wetland habitats and crossing. B5-462

In the event of a frac-out, there would be a ***potential significant impact (Class II)***, due to **disturbance** of the ***riparian*** area with drilling mud. (emphasis added.)

D.3 B-32 Comment: The Applicant has not provided draft Environmental Management Plan nor Spill Contingency Plan. A blow out of drilling mud would require mitigation in order to achieve Class II level of impact (that remaining after mitigation). The Applicant has not defined "disturbance" as the blowout of 50 barrel of mud vs 5 gallons would hae very different levels of impacts, and mitigation measures would be vastly different. Drilling mud releases into the projects related waterways could not be effectively controlled without barrier and clean-up would probably destroy more than would be destroyed by the mud itself. B5-463

Sacramento Army Depot Reuse Plan (Sacramento, City of 1994) set aside approximately 63 acres in the present Depot Park for a ***natural resource protection area***. (emphasis added.) B5-464

Portion of Pipeline Segment 1 and most of Pipeline Segment 2 are contained within this ***[natural] resource protection area***. (emphasis added.)

D.3 B-33 Comment: The Applicant has not provided the requirements nor coordination for the use of the "Natural Resource Protection Area". The Applicant has not delineated those portions of the pipelines within the Area nor any speciall measures related to the Area.

B5-464 (Cont.)

Implementation of the Proposed Project would result in trenching through this area as well as use of HDD under Morrison Creek.

…temporary loss of grassland habitat and potential impacts to vernal pools and fairy shrimp.

Mitigation measures including revegetation of pipeline alignments and compensation for loss of any vernal pools (Mitigation Measure B-1b) would reduce these impacts to less-than-significant levels (Class II).

D.3 B-34 Comment: The Applicant has not provided the requirements for the use of the "Natural Resource Protection Area", re-vegetation of destroyed areas, types of current vegetation, nor the total areas to be revegetated.

B5-465

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p.38 **Impact B-3: Substantial Adverse Effect on Federally and State-Protected Wetlands**

Wellhead, Compressor Station, Pipeline Segments 1 and 2

…impact wetlands and other waters of the U.S. as well as wetlands under the jurisdiction of the CDFG and the RWQCB by compressor station, and installation of pipeline segments one and two.

…0.50 to 0.75 acre of wetlands would be disturbed.

…significant impact and will require permits from the ACOE under Section 404 of the CWA and certification from the RWQCB under Section 401 of the CWA.

For those wetlands not under ACOE jurisdiction, the areas may still be under jurisdiction of the RWQCB under the Porter-Cologne Act. CDFG will also be required to approve HDD under waters within their jurisdiction.

With implementation of Mitigation Measures B-3a and B-3b, impacts will be reduced to less-than significant levels (Class II).

D.3 B-35 Comment: Proposed measures do not adequately and completely define the mitigation and compensation required to achieve levels of Class II, insignificant after mitigation. The Applicant has not provided:

- **Adequately delineated areas of construction (50% variation is inadequate);**
- **Adequately delineated areas of runoff impacts from permanent physical facilities and compacted revegetated or open areas (no stormwater management plan);**
- **Adequately delineated construction areas of pipeline jacking/boring and potential areas of blowouts;**
- **Adequately delineated areas of federal, state, and local jurisdictions for the delineated wetlands and "waters";**
- **Adequately delineated distribution of surveyed wetland-related, wetland related species;**

B5-466

- Required mitigation or compensation for impacts (all impacts to wetlands should be considered Significant);

- Draft MOU with relevant agencies regarding acceptable mitigation and compensation;

B5-466 (Cont.)

Mitigation Measures for Impact B-3: Substantial Adverse Effect on Federally Protected and State-Protected Wetlands. - B-3a Avoidance of Wetlands and Compensation.

Wetlands delineation prepared by Sycamore Environmental Consultants (2008) for those areas not verified in the earlier delineation by CH2M HILL shall be verified and concurrence on the areas of ACOE jurisdiction shall be obtained by ACOE.

D.3 B-36 Comment: The Applicant has not verified the CH2M Hill delineation nor the current ACOE jurisdiction. The Applicant has not indicated as to when and by whom the verification and concurrence for ACOE shall be obtained.

The US Fish and Wildlife Service and the California Department of Fish and Game are authorized and required to review projects which have the potential to affect riverine fisheries especially those leading directly to the Central Valley Delta and Sacramento River. No consultations with these agencies is indicated to clarify their requirements under federal and state requirements. Without such formal clearances or exemptions, the setting, impacts assessments and mitigation cannot be considered as complete or adequate. The Applicant and CPUC do not appear to have coordinated with either CDFG or USFWS regarding DEIR setting, species of concern, impact assessment, significance or mitigation/compensation and perhaps not during the initial study and scoping or for the preparation of the PEA.

B5-467

B-3a Avoidance of Wetlands and Compensation.

Wetlands shall be ***avoided*** where ***feasible*** either through rerouting of the pipeline or the use of HDD. (emphasis added.)

D.3 B-37 Comment: The Applicant has not defined "Feasible" and rerouting may have unexpected and unassessed changes for the FEIR. The Applicant again is getting the cart before the horse and should define such terms and provide such environmentally more acceptable pipeline routes.

B5-468

B-3a Avoidance of Wetlands and Compensation.

Where wetlands cannot be avoided, the loss of wetlands shall be compensated for

…through restoration of the wetlands or

…through creation of wetlands elsewhere, either directly or through an established wetlands bank approved by the ACOE.

D.3 B-38 Comment: The Applicant has not stated as to when the wetlands would either be "restored" or created he current ACOE jurisdiction. The Applicant has not indicated as to by whom the restoration or creation for ACOE shall be developed.

B5-469

The Applicant has not defined what can or cannot be avoided means or applies to and therefore no assessment of insignificance, significance, or mitigation required to reduce to insignificance. The statement states that if there are any, no manner what their importance we will compensate for any significant impact, of which we as yet known not what.

B5-470

B-3a Avoidance of Wetlands and Compensation.

CDFG or RWQCB permits obtained prior to initiation of construction.

…mitigation ratios will be between 2 to 1 and 3 to 1.

D.3 B-39 Comment: The Applicant has not verified the federal and state jurisdictions and as to whether the replacement ratios apply to both federal and state jurisdictions and to whether they apply to both restoration and/or creation/acquisition. A 50% variation is far too wide to be considered as completely assessed.

The US Fish and Wildlife Service and the California Department of Fish and Game are authorized and required to review projects which have the potential to affect riverine fisheries especially those leading directly to the Central Valley Delta and Sacramento River. No consultations with these agencies is indicated to clarify their requirements under federal and state requirements. Without such formal clearances or exemptions, the setting, impacts assessments and mitigation cannot be considered as complete or adequate.

B5-471

B-3b Avoidance of Impacts to Creeks and Drainages.

Creek and drainage crossings ***shall*** be conducted in a manner that does not result in a sediment-laden discharge or hazardous materials release to the waterbody. (emphasis added.)

D.3 B-40 Comment: The Applicant has indicated above that the risk of blowouts/frac-outs has not been eliminated and therefore the statement is in error. Similarly without a draft Spill Contingency Plan there is no way to confirm the assessment with regard to construction release or relases via the stormwater discharges from the Wellheads or Compressor sites.

B5-472

B-3b Avoidance of Impacts to Creeks and Drainages.

The following measures ***shall be implemented*** during horizontal boring…operations: [p.39]

(1) Site preparation ***shall begin*** no more than 10 days prior to initiating horizontal bores to reduce the time soils are exposed adjacent to creeks and drainages.

(2) Trench and/or bore pit spoil ***shall be*** stored a minimum of 25 feet from the top of bank or wetland/riparian boundary for Morrison Creek. Spoils shall be stored behind a sediment barrier and covered with plastic or otherwise stabilized (i.e., tackifiers, mulch, or detention).

(3) Portable pumps and stationary equipment located within 100 feet of a water resource (i.e., wetland/riparian boundary, creeks, drainages) ***shall be*** placed within secondary containment with adequate capacity to contain a spill (i.e., a pump with 10 gallon fuel or oil capacity should be placed in secondary containment capable of holding 15 gallons). A spill kit shall be maintained on site at all times.

(4) Immediately following backfill of the bore pits, disturbed soils ***shall be*** seeded and stabilized to prevent erosion and temporary sediment barriers…until restoration is deemed successful.

(5) SNGS, LLC ***shall*** obtain the required permits prior to conducting work associated with HDD activities and provide proof to CPUC.

Required permits ***may include*** ACOE CWA Section 404, RWQCB CWA 401, CDFG Streambed Alteration Agreement 1602.

B5-473

SNGS, LLC ***shall*** implement all pre- and post-construction conditions identified in the permits issued for HDD activities.

This ***will*** involve methods to avoid or remediate frac-outs. (emphasis added.)

D.3 B-41 Comment: The Applicant has not provided a draft Sediment, Runoff, and Spill Plans. All construction areas should be provided with sediment and spill containment barriers (fences, berms, ditches, etc.). The Applicant has not committed to the season for conducting the related riparian, stream crossing, etc. works. Ten days during January may contribute considerable sediment to the enlarge waterways, while 30 days in July may have quite different results. B5-473 (Cont.)

The Applicant as not identified the "most probable" crossings, construction activities zones, excavation areas nor the spoil pile areas; therefore assessment cannot be confirmed and the mitigation cannot be evaluated as to its effectiveness. As these items are required for State and Federal permit application, the reviewer can only assumed that the Applicant has not applied for or has not incorporated relevant factual information within the DEIR regarding the details of the applications, impacts, and mitigation. B5-474

Who deems the restoration successful and orders the barriers to be removed [Item (4)]? B5-475

"This…avoid or remediate" cannot be reviewed as the methods are not defined nor scheduled and cannot be judged even by the Applicant as to whether the impact will be avoid or will the impact be remediated (=mitigated or compensated??). B5-476

In this sequence of statements the Applicant appears definite as "shall" is used rather than "would" as in other sections and as "shall" is most appropriate for actual required and contracted terms and conditions these measures appear to be more assured and thereby others with "could, should, would, and may" are only suggestions and without force of law or regulations. All specific terms and conditions of the application and eventual permit, including the MMRP must use "shall". B5-477

The US Fish and Wildlife Service and the California Department of Fish and Game are authorized and required to review projects which have the potential to affect riverine fisheries especially those leading directly to the Central Valley Delta and Sacramento River. No consultations with these agencies is indicated to clarify their requirements under federal and state requirements. Without such formal clearances or exemptions, the setting, impacts assessments and mitigation cannot be considered as complete or adequate. B5-478

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p.D.3-38 B-4 Construction of the wellhead site, compressor station, and most of the pipelines would not impact wildlife corridors. ["Morrison Creek is a potential wildlife movement corridor."]

D.3 B-42 Comment: The Applicant states that Morrison Creek is a "potential" wildlife corridor, while the Applicant states has not verified the CH2M Hill delineation nor the current ACOE jurisdiction. B5-479

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p.D.3-38 B-4 Construction of the proposed pipeline ***would*** tunnel under Morrison Creek using HDD.

Morrison Creek is a ***potential wildlife movement corridor***.

No impacts to fish habitat ***are expected***. (emphasis added.)

D.3 B-43 Comment: The Applicant has not verified by direct field investigation during the rainy season (Nov.1-April 1) that fish habitat (even concreted channel) does not exist in Morrison Creek. This is the first and only time the Applicant agrees that the Morrison Creek (presumably the original and current) is a "Wildlife Corridor". CEQA does not B5-480

deal with "expected" but mitigated and if the mitigation does not work effectively then monitoring would demonstrate the effectiveness and make adjustments to actual mitigation agreed upon during the CEQA and application considerations not some vague thoughts of the Applicant as to what is expected or not expected.

The US Fish and Wildlife Service and the California Department of Fish and Game are authorized and required to review projects which have the potential to affect riverine fisheries especially those leading directly to the Central Valley Delta and Sacramento River. No consultations with these agencies is indicated to clarify their requirements under federal and state requirements. Without such formal clearances or exemptions, the setting, impacts assessments and mitigation cannot be considered as complete or adequate. B5-480 (Cont.)

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p.D.3-38 - -39 **Impact B-5: Conflicts with Regional Habitat Conservation Planning Efforts**

Wellhead, Compressor Station, Pipeline Segments 1 and 2

A portion of the Proposed Project within the unincorporated portion of Sacramento County is located within the ***South Sacramento HCP***. (emphasis added.)

The activities of the Proposed Project would mainly be in the vicinity of the Urban Services Boundaries of the plan.

No resources of concern occur in here because the area is urbanized.

Because this portion of the project is in an urban area, the impact is considered less than significant (Class III).

D.3 B-44 Comment: The Applicant has not provided a coordinate map of the HCP, the Urban Services Boundaries, the Depot Reuse Plan, and the wetlands and "water" resources and related prospective habitats and ranges of protected species previously indicated to be worthy of additional surveys. B5-481

The Applicant has stated that "No resources of concern occur in here because the area is urbanized." but is refuted by the numerous assessments and discussions regarding additional surveys required by these mitigations. B5-482

The Applicant has indicated that the natural resource protection area set aside in The Sacramento Army Depot Reuse Plan (Sacramento, City of 1994) includes portions of the proposed Project. B5-483

D.3 B-45 Comment: The Applicant has clearly shown in Measure B-5 that they have a fundamental bias and disregard for the increased value of the remaining biological resources in urban environments and greater need for protection and mitigations. B5-484

Impact B-6: Conflict with any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance.

Wellhead, Compressor Station, Pipeline Segments 1 and 2

Implementation of the Proposed Project is ***not expected to impact any of the trees*** in the area so there would be no conflict with the City of Sacramento Tree Preservation Ordinance. (emphasis added.)

No impact ***would*** occur. (emphasis added.) B5-485

A portion of pipeline segment one and most of pipeline segment two are contained within the natural resource protection area set aside in The Sacramento Army Depot Reuse Plan (Sacramento, City of 1994).

With implementation of Mitigation Measure B-6, potential impacts of pipeline construction in this protected area ***will be reduced to less*** than significant (Class II). (emphasis added.)

D.3 B-46 Comment: The Applicant has provided information that various tree species occur within the project corridors and areas, and Google Earth images confirm occurrences along the north boundaries of the Wellhead Site and at other locations. Tree ordinances usually have a size requirement (e.g., 4in dia. at 5ft above ground) and protection of root zone beneath canopies, but such information has not been provided by the Applicant. Inadequate provision of current field investigation renders assessment and review of completeness and adequacy difficult or near impossible. B5-485 (Cont.)

Mitigation Measure for Impact B-6: Conflict with any Local Policies or Ordinances Protecting Biological Resources

B-6 SNGS, LLC shall coordinate with the City of Sacramento and the Department of the Army to avoid any loss of wetlands or to

compensate for loss within the natural resource protection area set aside in the Sacramento Army Depot Reuse Plan.

This could include increased use of HDD or compensation for any wetland loss on a 2 or 3-to-1 basis.

Same as D.3 B-35 – B39 Comment: Proposed measures do not adequately and completely define the mitigation and compensation required to achieve levels of Class II, insignificant after mitigation. B5-486

D.3 B-47 Comment: Proposed measures do not adequately and completely define the mitigation and compensation required to achieve levels of Class II, insignificant after mitigation. The Applicant has not provided adequate or complete details regarding proposed or draft plans or requirements for the mitigation mentioned, no binding commitments have been made as insufficient information is available for the relevant agencies to take action or to comment. B5-487

D.3.5 Mitigation Monitoring, Compliance, and Reporting

Table G-1 shows the mitigation monitoring, compliance, and reporting program for biological resources.

D.3 B-48 Comment: The Applicant has not verified that the measures in Sections D and G are identical and brief review indicates considerable latitude as to which measures may or may not be implemented and whether Sections D or G are dominant (or take the more or less stringent as dominant). The Applicant should have a single list of mitigation and compensation with reference by number as appropriate in order to completely and adequately eliminate confusion, errors, and misleading statements B5-488

D.4 CULTURAL RESOURCES

p. D.4-5 "…[records] of 12 cultural resources sites were identified within a one-quarter mile [1320ft] search radius of the site [Compressor and Wellhead sites and two pipeline routes]…None are within the project area itself…In all, 15 cultural resources have been recorded adjacent to the proposed SNGS Facility…All of the recorded sites are historical-period [structures].

D.4 C-1 Comment: The Applicant's summary has incorporated apparent contradictions or confusions in discussions regarding the numerous of known cultural resources ("historic" structures) and their proximity to the Project and as to what portions of the Project (Compressor Site, Wellhead Site, and two Pipeline routes). B5-489

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p. D.4-8 **Results of Cultural Resource Surveys**

A field survey covering 100% of the project area including the pipeline alignments, compressor station site, and wellhead site was conducted by Tremaine and Associates (2008).

D.4 C-2 Comment: The Applicant's referenced document and PEA referenced earlier studies are not generally available to the Public; therefore they cannot be reviewed to confirm the description of the setting and thereby the potential for significant impacts on prehistoric cultural resources. Recognizing the need for limitations on some elements of te report should not preclude all information. B5-490

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p. D.4-8 The area has been impacted through urban development and no cultural resources were found during the survey.

The study area is around the likely prehistoric meanderings of Morrison Creek; therefore, there is a potential for buried prehistoric resources.

D.4 C-3 Comment: Due to the developed nature of some portions of the Project vicinity, the probability of finding any prehistoric cultural resources is NOT nil. The fact that the earlier and prehistoric course of Morrison Creek is still apparent on aerial/satellite images clearly indicates that disturbance at the Compressor Site has not destroyed the surface setting and cultural resources may still be found therein. The proposed excavations for Project facilities, especially the HDD pits and drilling, would penetrate well below the levels of recent filling and disturbances. B5-491

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p.D.4-11 **D.4.3 Environmental Impacts and Mitigation Measures for the Proposed Project**

D.4.3.1 Definition and Use of Significance Criteria

CEQA states that a project that…***may*** have a significant effect on a unique archaeological resource may have a significant effect on the environment. (emphasis added.)

D.4 C-4 Comment: The Applicant has not adequately considered the high potential to encounter unique archaeological resources, especially at the Compressor Site and in the deeper excavations for pipeline from the Site to the north and to the HDD sites. B5-492

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p.D.4-12 ***D.4.3.2 Applicant Proposed Measures***

There are no specific applicant proposed measures (APMs) proposed by SNGS, LLC related to impacts to cultural resources.

D.4 C-5 Comment: The Applicant's use of several different types and terms for mitigation and compensation measures and descriptions in both Section D and Section G leads to B5-493

confusion, deletions, and inconsistencies in these sections. One consistent listing in a draft MMRP would resolve many issues in every section of Sec.D with Section D consideration just referencing the appropriate measure(s). B5-493 (Cont.)

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p. D.4-12 The compressor station site is located within the former Sacramento Army Depot. Development of the proposed compressor station would not impact any structures and therefore, would not impact any historical features of the former Army Depot.

[There are no considerations of the Wellhead site]

D.4 C-7 Comment: Many USGS topographical maps (current and historic verisions, 1:25,000 scale) exist which show earlier structures at various locations over the last 100 years of development, in addition to historic aerial photos in the City and the County of Sacramento files. B5-494

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p. D.4-12 **Impact C-2: Construction Could Affect Undiscovered Cultural Resources**

Wellhead Site, Compressor Station, and Pipeline Segments 1 and 2

"The cultural resources report indicated that there is a ***low potential for undiscovered prehistoric resources*** at the ***wellhead site and compressor station [along the pipeline alignment]***. Although the likelihood to affect undiscovered cultural resources is low, the potential to impact undiscovered cultural resources during construction remains; therefore, this impact is considered significant. Implementation of Mitigation Measures…reduce this impact to less than significant (Class II)….there is a ***potential for undiscovered prehistoric resources***. The ***highest potential for these resources is in the historic flow pattern of Morrison Creek.*** This impact is considered significant. Implementation of Mitigation Measures C-2a and C-2b would reduce this impact to less than significant (Class II). (emphasis added.)

D.4 C-9 Comment: The Applicant's consideration of "potential" and "significance" appears inadequate and confused and cannot be attributed to the Cultural Resources Report, especially as aerial photos and topographic maps are available. B5-495

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p. D.4-19 References - ACOE (U.S. Army Corps of Engineers). 1993; Maniery, M.L., and K. Kelly. 1995; SNGS, LLC. 2007b; Tremaine and Associates. 2008 CPUC file.

D.4 C-10 Comment: The Applicant has not made vetted versions of the various cultural resources reports which seriously restricts the Public and reviewers ability to fairly and adequately comment on the section. B5-496

D.5 GEOLOGY AND SOILS COMMENTS

Section B, Project Description (and references)

Golder Associates. 2008. "Evaluation of Cap Rock Integrity and Risk of Gas Release." Redmond, Washington: Golder Associates. Prepared for SNGS, LLC. June 2008.

Terracon. 2008. *Geotechnical Engineering Report, Sacramento Natural Gas Compressor Facility and Wellhead Site*. Sacramento, California: Terracon. March 26, 2008. B5-497

D.5 Ge-1 Comment: By reference and citation of these two reports, without inclusion as appendices renders any meaningful comments by the public and this reviewer as impossible or at least difficult and thereby does not comply with requirements of CEQA.

By their inclusion, however, the documents become part of the DEIR and thereby are subject to the same requirements of transparency, completeness, adequacy, and objectivity as if they were fully provided within the DEIR. They have been reviewed separately and comments are included as appendices to these comments.

B5-497 (Cont.)

Section B, Project Description

p. B-9 At the time of depletion, the eight wells and ***appurtenance facilities were plugged, capped, and abandoned in accordance with regulations set forth by DOGGR*** (Weatherwax and Weatherwax 2007) [Weatherwax, R.K. and M.R. Weatherwax. 2007. California Natural Gas Storage Facilities: A Contemporary History of Incidents. Roseville, California: Sierra Energy and Risk Assessment, Inc.]. (emphasis added.)

D.5 Ge-2 Comment: By reference and citation of the report, the above referenced document without inclusion as appendices becomes included for any meaningful comments by the public and this reviewer as impossible or at least difficult and thereby does not comply with requirements of CEQA.

By their inclusion, however, the document becomes part of the EIR and thereby are subject to the same requirements of completeness, adequacy, and objectivity as if they were fully provided within the subject EIR. They have been reviewed and review comments are included as appendices to these comments.

B5-498

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p. D.5-1 ***D.5.1.1 Regional Topographic and Geologic Setting***

Regional Geology

D.5 Ge-3 Comment: No regional (15-mile radius), district (5-mile radius), or area (1-mile distance from the Project facilities) topography is given as part of the Project description or setting.

B5-499

The regional (15 mile radius) geological setting is trivial and totally incomplete, although the Cretaceous-Miocene stratigraphy and structural (especially the many faults within the Cretaceous formations, but not Tertiary formations) are well know and depicted in many reports.

B5-500

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p. D.5-2 **Soils** *Surface Conditions.*

D.5 Ge-4 Comment: No regional, district, or area soils and distrubtions is given as part of the Project description or setting. The district and area soils are well-known and studied for numerous agricultural descriptions from the Sacramento River eastward to the 2000ft elevation, and the setting is trivial and totally incomplete especially as it applies to wetlands, vernal pools, and the Compressor site.

B5-501

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p. D.5-4 *Underground Field Conditions.*

B5-502

The Winters Sand is characterized as a 150-foot-thick porous sandstone unit forming the reservoir for the natural gas, which in turn is ***overlain (capped) by a 150- to 500-foot-thick shale unit***. (emphasis added.)

D.5 Ge-5 Comment: The underground geology and geological setting are trivial and totally incomplete, although the Cretaceous-Miocene stratigraphy and structural (especially the many faults within the Cretaceous formations, but not Tertiary formations) are well know and depicted in many reports. Also the Ryder-Scott reports supposedly included reviews of all well physical and E-logs and several geophysical surveys all of which are not provided or included in the EIR. By reference and citation of the RSC reports, without inclusion as appendices renders any meaningful comments by the public and this reviewer as impossible or at least difficult and thereby does not comply with requirements of CEQA.

By their inclusion, however, the documents become part of the EIR and thereby are subject to the same requirements of completeness, adequacy, and objectivity as if they were fully provided within the subject EIR. They have been reviewed and review comments are included as appendices to these comments.

B5-502 (Cont.)

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p. D.5-4 ***This shale unit above the Winters Sand forms a seal that prevents the natural gas from escaping (SNGS, LLC 2007).*** (emphasis added.)

D.5 Ge-6 Comment: The statement is fundamental to the geology and other sections of the EIR and the reference herein to an Applicant's report which provides no factual data and evidence is totally misleading and by reference and citation of the Applicant's report, without inclusion as appendices renders any meaningful comments by the public and this reviewer as impossible or at least difficult and thereby does not comply with requirements of CEQA.

By the inclusion of the Applicant's report and thereby all references therein, however, the referenced and cited documents become part of the EIR and thereby are subject to the same requirements of completeness, adequacy, and objectivity as if they were fully provided within the subject EIR. They have been reviewed and review comments are included as appendices to these comments.

B5-503

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p. D.5-4 The gas field appears to be a convex lens-shaped sand mound controlled by thinning sand deposition to the east and northeast, with ***closure on all sides of the reservoir*** provided by the shale layer above the sandstone. (emphasis added.)

D.5 Ge-7 Comment: A convex upward sand body does not represent a channel filling but a shoal/sand bar. No characterization of the sand body floor has been provided for the reservoir and thereby the character of the water-drive cannot be fully or adequately assess.

No description or discussion regarding the SE barrier (oriented NE-SW) has been provided regarding its origins nor it character and how it excludes water and gas from southeasterly migration from the central and NW portions of the "sand body" and reservoir.

B5-504

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p. D.5-4 There ***do not appear*** to be any mapped structural faults through the field that would contribute to leakage of natural gas through the capping shale unit. (emphasis added.)

B5-505

D.5 Ge-8 Comment: As indicated, elsewhere most of the Sub-section is inadequately and incompletely prepared and "appearances" based on little or any direct current information on the underlying geology. Even the exception for the surface geotechnical investigations, the report only deals with materials above groundwaters (<40ft bgl) without comment that the groundwater table lies below sea-level. Geological and soils descriptions must be based on direct, up-to-date data from borings and seismic surveys rather than "appearances" and should be written as "evidenced by" rather than "do not appear". B5-505 (Cont.)

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p. D.5-5 The project area ***may also support other older faults that are not considered active.*** (emphasis added.)

D.5 Ge-9 Comment: The statement presumably is based on all available geological information, interpretations, and related Applicant's consultancy reports. "Support" for the presence of inactive ancient faults must be based on the available information and therefore appears to contradict many other interpretations put forward in other subsections. B5-506

The presence of ancient, Cretaceous to Eocene, faults is consistent with many other geological reports for southern Sacramento Valley; although the faults are inactive and buried they continue to provide planes of weakness through the Cretaceous deposits, including the Winters cap-rock shale member above the Winters Sand Body member and the proposed Project reservoir. B5-507

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p. D.5-16 Table D.5-4 presents APM 4 and 6 only, not APM 5; Table B-4 = 4, 5, 6, APM

D.5 Ge-10 Comment: The entire APM approach appears to be internally inconsistent between MMRP, various D subsections, and even the Description, and the other related, but not APM designated, measures. As indicated elsewhere, a single coordinated presentation of all measures for mitigation, compensation, monitoring, compliance-assurance, and reporting must be provided in order to assure that the mitigations are complete and adequate. Such compilation will assure Applicant's specific and complete dedication to the implementation of the measures, their adequacy to achieve mitigation to less than significant levels, and reporting as required by CEQA. B5-508

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p. D.5-17 - -19 ***D.5.3.3 Geology and Soils Impact Analysis***

Impact G-1: Risk to People or Structures within a Known Alquist–Priolo Earthquake

Fault Zone - Impact G-2: Exposure of People or Structures to Strong Seismic Ground Shaking -- *Wellhead Site, Compressor Station, and Pipeline Segments 1 and 2* (emphasis added.)

p. D.5-18 - -19 *Natural Gas Field*

The existing gas-bearing rock unit ***is capped by between 150 to 300 feet of impermeable shale*** and is overlain by layers of shale, sandstone, and alluvium totaling about 3,600 feet of material between the reservoir and the surface that ***would prevent*** seepage from the reservoir. Although strong seismic ground shaking could result in gas migration along an active fault line, ***no fault related structures have been identified within the area of the project***. (emphasis added.) B5-509

D.5 Ge-10A Comment: The presence of as yet undefined bedrock and alluvium above the Project sands reservoir do not guarantee "prevention of seepage" from the reservoir sands, through the shale cap rock, through the Tertiary formations and the Quaternary alluvium and soils. Seepage has been recorded through equal or greater thicknesses either through parts

or the total sections of other gas storage facilities or through parts of abandoned wells and the alluvial and bedrock materials.

B5-509 (Cont.)

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p. D.5-19 In addition, ***experienced*** California Reservoir Engineers (Mannon 2008; Matthews, pers. comm., 2007; Ryder Scott 2008; Terracon 2008) ***indicate*** that the reservoir ***has demonstrated its ability to successfully… contain*** natural gas for millions of years. (emphasis added.)

D.5 Ge-11 Comment: As indicated elsewhere, the "experienced" engineers (elsewhere also as "experts") have based their interpretations, conjectures, and concepts on limited analysis of Ryder Scott which is not supported by the limited available information. Further no information and data have been provided regarding the gas source deposits, generation rates and duration of the source materials, repressuring of the proposed reservoir levels, and spillage (out-flow through the spill-point) from the reservoir to the more general sandstone formation extending to the northeast of the proposed concept reservoir.

Without appropriate calculations and analyses the "Engineers" and "Experts" cannot demonstrate that the reservoir has functioned and contained gases for the many millions of years. As indicated in the statement, Engineers may "indicate" such conditions as concepts and interpretations but such does not conclude or document that the situation does or does not in fact exists.

B5-510

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p. D.5-19 Moreover, the ***observed abrupt lateral changes in subsurface lithology*** (sand/shale contact) have been attributed **[by SNGS consultants]** to ***stratigraphic variation*** as opposed to structural-fault-related causes. **[Section D.6, Hazardous Materials, Public Health and Safety, Impact HAZ-2a describes the potential for gas to migrate to the surface and groundwater from inactive faults or other anomalies in the cap rock. This is considered a significant and unavoidable impact.]**

D.5 Ge-12 Comment: No "observed" evidence of the lateral changes has been provided by the EIR, appendices, or even referenced/cited consultants' reports. The "reservoir model" by Ryder Scott has been "developed" from interpretations of well physical and E-logs and from results of geophysical surveys recorded and conducted by others without indications as to quality controls or assurances. Changes along the perimeter of the "sand body" and reservoir and interpretations have not been documented nor provided, especially for the NE side "saddle" and "spill-point" nor for the SE "barrier" between the entire SE third of the "sand body" and the central and NW portions (=the reservoir").

B5-511

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p. D.5-22 ***D.5.3.3 Geology and Soils Impact Analysis***

Mitigation Measure for Impact G-9: Impact on Unique Geologic or Paleontological Resources

G-9 Procedures to Avoid Impacts to Paleontological Resources. Prior to the start of construction, a ***qualified paleontologist*** will conduct a field survey to identify sensitive stratigraphic units within the construction area that might be disturbed…These [mitigation] procedures ensure that the Proposed Project will have a less-than-significant impact on paleontological resources.

D.5 Ge-13 Comment: The Applicant has not provided a coordinated map of the sites and depths of anticipated excavations or borings and presence of any sensitive formations in these terrace and alluvial deposits of the Project area and potential "paleontological"

B5-512

resources. The Applicant has stated that "No resources of concern occur in here because the area is urbanized." The Applicant has indicated that the natural resource protection area set aside in The Sacramento Army Depot Reuse Plan (Sacramento, City of 1994) includes portions of the proposed Project and whether any cultural or paleontologic resources have been encountered by any other project including that for the Depot.

The Applicant has not defined what can or cannot be avoided means or applies to and therefore no assessment of insignificance, significance, or mitigation required to reduce to insignificance. The statement states that if there are any, no manner what their importance we will compensate for any significant impact, of which we as yet known not what.

B5-512 (Cont.)

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p. D.5-26 - -28 **D.5.6 References**

Hackel, O. ***1966***. "Summary of the Geology of the Great Valley." In *Geology of Northern California*, Bulletin 190, E.H. Bailey, ed. San Francisco, California: United States Geological Survey, California Division of Mines and Geology.

Helley, E.J., and D.S. Harwood. ***1985***. Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierran Foothills, California. United States Geological Survey Miscellaneous Field Studies Map MF–1790.

Mannon, R. 2008. Letter to Mr. James Fossum, SNGS, LLC. Mannon Associates Petroleum Consultants. March 26, 2008.

Matthews, J. 2007. Pers. comm. ***Former California State Supervisor*** of Oil & Gas. Reservoir Engineer; independent consultant on oil and gas for the past 25 years.

Regional Geologic Map, Sacramento Quadrangle, ***1987***.

Sacramento, City of. ***1988***. *City of Sacramento General Plan*. Approved January 1988; revised in 2000 and 2003. 2030 General Plan is in preparation.

Scott, R. ***[for Ryder Scott]*** 2008. Letter to Mr. James Fossum, SNGS, LLC. Ryder Scott Company Petroleum Consultants. March 4, 2008.

SNGS (Sacramento Natural Gas Storage), LLC. 2007. *Proponent's Environmental Assessment (PEA) for the Sacramento Natural Gas Storage (SNGS) Project*. Sacramento, California: Sacramento Natural Gas Storage, LLC and EIP Associates, a division of PBS&J. April 5, 2007.

Terracon. 2008. *Geotechnical Engineering Report, Sacramento Natural Gas Compressor Facility and Wellhead Site*. Sacramento, California: Terracon. March 26, 2008.

USGS (United States Geological Survey). 2005. General Information Product 15. United States Geological Survey. http://www.consrv.ca.gov/cgs/rghm/psha/index.htm

Wagner, D.L., C.W. Jennings, T.L. Dedrossian, and E.J. Bortugeno. ***1981***. Sacramento Quadrangle Map. No. 1A. Regional Geologic Map Series, California.

Wesnouski, S.G. ***1986***. "Earthquakes, Quaternary Faults, and Seismic Hazard in California." *Journal of Geophysical Research* 91(B12). Table A1.

Yolo County Subsidence Network. 2000. Recommendations for Future Monitoring. May 2000. Davis, California: Davis Community Network. Accessed online: http://www.yarn.org/subsidence/about.html

B5-513

D.5 Ge-14 Comment: Many of the above references provided and used in the text are not readily available and especially for the general public, and therefore such documents need to be in the appendices, made easily available through web-browsers and by direct addresses (such as Sacramento and Yolo County libraries) rather than just being referenced. Other Project reports from the Applicant's numerous consultants which bear on the geology are not cited in Geology references, such as-

Section B, Project Description

Golder Associates. 2008. "Evaluation of Cap Rock Integrity and Risk of Gas Release." Redmond, Washington: Golder Associates. Prepared for SNGS, LLC. June 2008.

Ryder Scott Corporation.

Weatherwax and Weatherwax

B5-513 (Cont.)

D.6 HAZARDOUS MATERIALS, PUBLIC HEALTH AND SAFETY

p. D.6-1 "…potential hazards to public and worker health and safety associated with the Proposed Project…"

D.6 Hz-2 Comment: This section of the EIR does not identify or locate many hazards and source/generators of hazardous materials and wastes and their relationships to existing and future risks and effects on public health and safety. Hazards can include: any existing and historic sources and transport routes of hazardous substances and wastes, earthquake-seismicity, fires and fuels, flooding and inundation, and congestion/road accidents involving trucks.

B5-514

The public health and safety related to the Project does not identify and locate the providers of occupational and public health and safety services (e.g., fire stations, clinic, hospitals, etc.) and does not related the health and safety setting with the activities and facilities of the proposed Project, therefore no adequate and complete assessment of the impacts for this section can be established with sufficient details to meet the requirements of CEQA.

B5-515

One mitigation measure (use of a flame ionization rather than a photo-based gas detection unit) actually is recommended which presumes no significant gas leak and may endanger the safety of worker employing such instruments and the public associated with release of detected gases after they have been ignited by the instrument.

B5-516

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p. D.6-1 **D.6.1 Environmental Setting for the Proposed Project**

This section ***identifies known hazardous waste contamination sites*** in the study area for the Proposed Project. The primary reason to define ***potentially hazardous sites*** is to protect ***worker*** health and safety and to ***eliminate or minimize public exposure to hazardous materials*** during **construction** of the SNGS Facility and waste handling. (emphasis added.)

D.6 Hz-2 Comment: The entire scope of this section is confused and may reflect the preparers lack of experience with these issues. Deficiencies can be summarized from the two above statements:

B5-517

- **Potential hazards – materials, wastes, events/conditions (rail, pipeline, powerlines, culverts/bridges, abandoned wells, abandoned storage tanks and pipelines, abandoned/buried railroad ballast, etc.;**
- **Public and worker health – adjacent industrial and utilities areas and corridors, public access routes, residents, institutional sites ;**
- **Public and worker safety – adjacent industrial and utilities areas and corridors, public access routes, ;**
- **Identification of known hazardous waste contamination sites, sources, and characterizations;**
- **Potentially hazardous sites – operations, risks of events and releases, ;**
- **Protect worker health and safety during construction…and waste handling and must apply to operations and maintenance of Project;**
- **Eliminate or minimize public exposure to hazardous materials during construction…and waste handling and must apply to operations and maintenance of Project.**

B5-517 (Cont.)

Potential hazards, potentially hazardous sites, and identification of known hazardous waste contamination sites: No specific hazards or risks regarding the surrounding land uses, their activities, and materials or waste residing on the sites or area properties. No specific sites are identified and location in relationship to the Project areas, sites, and corridors; no directions are given for runoff water flows (no flow nets nor even topography), groundwater movements, or typical winds and calms in relationship to the sites and corridors.

B5-518

Public and worker health and safety issues arise from the lack of consideration and implementation of activities and facilities to:

- **Protect worker health and safety during construction…and waste handling: Does not include the various day-to-day and periodic operations of both the compressor and wellhead sites;**
- **Handling of hazardous materials and hazardous events – transferring glycol, natural gases, produced waters, etc.**
- **Handling of instruments specifically to identify natural gas is a hazardous activity especially when using a flame ionizer system to find combustible gas conditions.**
- **Handling transfer, entries, and exiting of pig and slugs from pipe cleaning is a hazardous activity.**
- **Eliminate or minimize public exposure to hazardous materials during construction…and waste handling.**

B5-519

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p. D.6-1 **D.6.1 Environmental Setting for the Proposed Project**

Contaminated soil may qualify as hazardous waste, thus requiring handling and disposal according to local, state, and federal regulations. (emphasis added.)

Information on known hazardous material sites was ***collected*** from the review of several documents, including the Proponent's Environmental Assessment (PEA) (SNGS, LLC 2007a), the addendum to the PEA (2007b), the environmental site assessment prepared for the project

B5-520

(Kleinfelder 2007), and the study conducted for the closure and reuse of the former ***Sacramento Army Depot (Ebasco Environmental 1992)***. (emphasis added.)

D.6 Hz-3 Comment: No discussion regarding presence or prospective locations of contaminated soils and hazardous wastes…

No discussion regarding presence or prospective locations of hazardous materials…

B5-520 (Cont.)

Hazardous materials can be first found through the databases of the Sacramento Fire Department in addition to other direct records (Ebasco Env., 1992) but not from those of the PEA and amendment as these are minimal and secondary. Referencing of Ebasco, however, is unacceptable as the document is not most up-to-date and not accessible by the Public for review and confirmation. As the US Army is still operating remediation and groundwater cleanup, current reports should be accessed and incorporated into the current section setting and other elements.

B5-521

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p. D.6-1 ***D.6.1.1 Overview***

The Proposed Project study area encompasses a variety of land uses, including ***industrial***, residential, commercial businesses, educational facilities, recreation, agricultural, and open space. (emphasis added.)

D.6 Hz-4 Comment: No discussion regarding:

- **Agricultural uses of pesticides and that the surface water are restricted based on leachate residues of pesticides;**
- **Railroad uses of polychlorinated biphenyl and other common railroad related contaminants;**
- **Army Depot groundwater remediation related to TCEs contamination;**
- **Past military depot activities and materials.**

B5-522

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p. D.6-1 ***D.6.1.1 Overview***

Existing and past land use activities are potential indicators of hazardous material storage and use. For example, many industrial sites, historic and current, are known to have soil or groundwater contamination by hazardous substances…leaking underground storage tanks (LUSTs), surface runoff from contaminated sites, and migration of contaminated groundwater plumes.

A number of ***potentially contaminated soil and/or groundwater sites*** have been ***identified within the vicinity*** of the wellhead and compressor station and underground project study area. (emphasis added.)

D.6 Hz-5 Comment: No information or discussions are presented especially in relationship to:

- **Agricultural pesticides surface runoff through Morrison Creek from previous agricultural crop applications, soils erosion, and leachate;**
- **Depot residues of TCE in groundwater and perhaps surface waters;**
- **Railroad related PCB and other railroad sources; and**
- **Perhaps gasoline, MTBE, etc. contaminants from previous industrial and transport related uses/activities, and AST and USTs.**

B5-523

No information or discussions are presented especially in relationship to:

- ***Potentially contaminated soil and/or groundwater sites***
- ***Migration pathways***

B5-523 (Cont.)

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p. D.6-2 ***D.6.1.1 Overview*** - **Existing Sources of Release of Hazardous or Toxic Materials**

City of Sacramento

D.6 Hz-6 Comment: No information or discussions are presented especially in relationship of the proposed Project to transport-related hazards of future releases from rail, road, and pipeline facilities and users and from industrial landuses without any specific identification or location in relationship to the Project sites and routes.

B5-524

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p. D.6-2 ***D.6.1.1 Overview*** - **Characteristics of the Former Florin Gas Field**

A total of eight wells were drilled in the area by Union Oil, Venada National, TXO Production, and Proctor and Gamble. Five of these wells were used as production wells for natural gas only, with no oil produced.

D.6 Hz-7 Comment: No locations are given for the eight wells and their related loading, dumping, and pipeline facilities (some of which may have been abandoned in place. Three wells did not encounter the Florin Field. No detailed description of potential hazards arising from facilities and activities of the Field is provided. The block diagram of geological units is both overly generalized and distorted and provides no characteristics of the Field.

B5-525

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p. D.6-2 ***D.6.1.1 Overview*** - **Characteristics of the Former Florin Gas Field**

No pipelines connected the ***site*** to the natural gas distribution grid. Natural gas was either used by local manufacturing plants or the gas was processed into compressed natural gas and transported via truck to other areas. (emphasis added.)

D.6 Hz-8 Comment: Information or discussions are not presented regarding the past and existing gas pipelines that transported gas from the non-abandoned commercial wells and their locations and routes. The abandoned gas pipelines are most probably still in place and could represent potential hazardous materials/wastes sites.

B5-526

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p. D.6-2 ***D.6.1.1 Overview*** - **Characteristics of the Former Florin Gas Field**

After the wells were depleted, the field was abandoned in 1993 and ***all wells were plugged and capped, in accordance with Division of Oil, Gas, and Geothermal Resources (DOGGR) regulations (Weatherwax and Weatherwax 2007).*** (emphasis added.)

D.6 Hz-9 Comment: W&W 2007 does not discuss or have anything to do with the plugging and abandonment of the Florin-related wells.

Review of available information (Matthews, 2006) indicates that the wells were not plugged nor abandoned in accordance with the DOGGR requirements at the time. Review of DOGGR documents available via CPUC and SNGS, but not accessible to the public for review, indicates considerable variations and some contradictions between those of Matthews and those DOGGR (and between different DOGGR documents).

B5-527

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p. D.6-2 ***D.6.1.1 Overview*** **- Characteristics of the Former Florin Gas Field**

Because the gas field has been depressurized and the wells abandoned according to DOGGR standards, there is currently little potential for gas to migrate to the surface or leak through the abandoned wells (see discussion under Impact Haz-2a).

D.6 Hz-10 Comment: No information is available regarding the pressures in the Field at this time for anyone. Thereby discussions cannot verify any statement and are conjectures, estimates, calculated, etc. but not objective and facts-based regarding what exists in the current Setting of the field and overlying formations and soils. B5-528

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p. D.6-3 ***D.6.1.2 Project Component,*** **Wellhead Site**

The proposed wellhead site is currently undeveloped. While the site is not listed on any federal, state, or local regulatory database indicating on-site contamination, ***20 sites located in the project's vicinity have been identified.*** (emphasis added.)

D.6 Hz-11 Comment: No map or other information regarding the 20 sites is provided, and no information is provided regarding historic uses of the existing site and current uses and users of hazardous materials within 500ft of the site boundary. B5-529

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p. D.6-3 ***D.6.1.2 Project Component,*** **Wellhead Site**

One site, the former Sacramento Army Depot **[including the proposed Compressor Station site]**, was listed as the potential land use responsible for contaminating the groundwater beneath the Proposed Project site. Currently, the groundwater ***beneath the Depot site is being treated***. (emphasis added.)

D.6 Hz-12 Comment: No map or other information regarding the Depot sites, groundwater table levels and characteristics, and degree of potential contamination of groundwater and soils beneath both Project sites and the two pipeline segments is provided. B5-530

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p. D.6-3 ***D.6.1.2 Project Component,*** **Wellhead Site**

According to the Phase I environmental site assessment ***(Kleinfelder 2007)***, past land uses at the wellhead site and parcels in the vicinity were agricultural. This could result in the presence of pesticide and herbicide residues in the area. ***Historical photographs*** indicate that a ranch was once located in close proximity to the wellhead site. **[Old USGS Topograhic Map, 25,000 scale, SNGS p.378 (pdf SNGS 0356), p. 23/74]**

D.6 Hz-13 Comment: The Kleinfelder document is an Applicant's consultant's report and was not provided in the appendices and is not readily available and therefore cannot be reviewed by the general public and the reviewer. No historic photographs nor historic USGS topographic maps are provided to assure statements actually reflect the reality of the statements. B5-531

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p. D.6-3 ***D.6.1.2 Project Component,*** **Wellhead Site**

The environmental site assessment further revealed that the Purity Oil Sales Company conducted operations ***south of the wellhead site*** over 30 years ago. There was no data found concerning past operations of the ***Purity Oil Sales Company at the site.*** (emphasis added.) B5-532

D.6 Hz-14 Comment: No map location is presented for Purity Oil Sales site and no distance south is given for independent verification and assessment. B5-532 (Cont.)

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p. D.6-3 ***D.6.1.2 Project Component,*** **Compressor Station**

According to an environmental site assessment completed for Depot Park, past land uses were found to have contaminated on-site soils and groundwater ***(Ebasco Environmental 1992).*** (emphasis added.)

D.6 Hz-15 Comment: No map or other information regarding the Depot Park sites is provided. No map or other information regarding the contaminated groundwater depths, levels, flows, concentrations, treatment and residual levels, etc.. B5-533

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p. D.6-3 ***D.6.1.2 Project Component,*** **Compressor Station**

While sites surrounding Depot Park were found…the environmental site assessment determined that these sites have little potential to impact the compressor station site.

D.6 Hz-16 Comment: As the ESA is not readily available the determination and consideration in this DEIR cannot be verified or confirmed and requires further review. As no access is available to the Ebasco report, the "determination" by the report that the contaminated sites "…have little potential to impact the compressor station site" cannot be reviewed, confirmed, or denied. B5-534

The DEIR preparers, the environmental site assessors, and Proponent have not provided any information to support their "determination" and thereby the entire discussion is considered as incomplete and insufficient in factual information and totally inadequate in the assessment of groundwater impacts on the Project sites. B5-535

No consideration is given to the numerous railroad ROWs (main line and sidings) to the west and north of the Compressor Station Site and over the proposed pipeline routes. B5-536

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p. D.6-4 ***D.6.1.2 Project Component,*** **Pipeline Segments 1 and 2**

The proposed pipeline parallels but is not within the railroad alignment except where it crosses the track using horizontal directional drilling (HDD). The remainder of the alignment is within City streets or rights-of-way. **[Old USGS Topograhic Map, 25,000 scale, SNGS p.378 (pdf SNGS 0356), p. 23/74]**

D.6 Hz-17 Comment: Some documents are available that indicates that more sidings and tracks were present but are now abandoned and Rights-of-Way (ROW) restored. Excavations and borings for the proposed pipelines may encounter hazardous substances in contaminated soils beneath the current and historic railroad ROWs and thereby may generate hazardous conditions and hazardous wastes/materials requiring special handling not considered in the EIR. B5-537

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p. D.6-11 ***D.6.2.2 State Regulations -*** *California Public Utilities Commission General Order 112-E*

State pipeline facilities are under the jurisdiction of the California Public Utilities Commission (CPUC) as a result of their certification by the OPS.

The retrieval/storage wells are within the jurisdiction of California's DOGGR. CPUC General Order 112-E ***provides regulations to ensure adequate services*** are maintained by gas facilities located within the jurisdiction of the CPUC. (emphasis added.) B5-538

The regulations provide the following in relation to ***public health and safety: minimum requirements*** for the design, construction, quality of materials, locations, testing, operation and maintenance of facilities used in the gathering, transmission, and distribution of gas and minimum requirements for similar equipment and procedures used in LNG facilities. (emphasis added.)

These ***requirements are considered adequate for safety*** for standard conditions encountered within the gas industry. (emphasis added.)

D.6 Hz-18 Comment: As evidenced by the situations in Montebello and Playa del Rey, CPUC regulations of gas storage facilities and other related facilities (including wells and pipelines) have not controlled hazardous situations for the general public until the operators requested further actions, i.e., expansion of activities, divestures to others, etc. and subsequent environmental reviews by CPUC uncovered non-compliance and potential unsafe facilities and operations.

B5-538 (Cont.)

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p. D.6-11 **D.6.2.2 State Regulations -** *California Code of Regulations*

The construction and operation of natural gas wells are regulated per CCR Title 14, Division 2, Chapter 4, entitled Development, Regulation, and Conservation of Oil and Gas Resources (14 CCR 1712 et seq.). Article 3, entitled Requirements, contains regulations specific to oil and gas field practices, including preparation of an oil spill contingency plan and a blowout prevention and control plan.

Section 1724.6, entitled Approval of Underground Injection and Disposal Projects, requires DOGGR approval prior to the beginning of any underground injection project. Section 1724.7, entitled Project Data Requirements, identifies the documents required by DOGGR in order to obtain approval, which includes geologic and engineering studies and an injection plan.

Section 1724.9, entitled Gas Storage Projects, requires submittal and approval from DOGGR of the characteristics of the cap rock; calculations of the oil and gas reserves of storage zones prior to injection; a list of proposed surface and subsurface safety devices to ensure safety of the project; and the proposed wastewater disposal method.

Similarly, Section 1724.10 contains requirements for underground injection projects, including drilling procedures; a chemical analysis of the injecting product; and data showing that no damage to life, health, property, or natural resources is occurring as a result of the project.

Section 1775, entitled, Oilfield Wastes and Refuse, regulates the disposal of drilling fluids. Disposals are to be carried out in a manner to avoid impacts to life, health, property, natural resources, and public safety. Chapter 4 also contains provisions for the testing of idle wells that have been out of continuous service for more than 5 years.

D.6 Hz-19 Comment: Based on the review of the well abandonment records and numerous errors and inconsistencies, the fact that the entire financial resources for the DOGGR are provided by the exploration and production industrial sector, and previous retracted pronouncements regarding the Fairfax Explosion site causes, seriously jeopardizes the credibility and quality control/assurance capabilities of the organization for exploration and production within urbanized areas. Independent, third party enforcement would assure compliance and perhaps reduce the risks of significant impacts on the community and environment. If the CPUC would approve this Project, the CPUC should impose a viable enforcement and oversight mechanisms as conditions of the permit The City of Sacramento, and AGENA would be top on the list of potential third-party-enforcement candidates.

B5-539

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p. D.6-12 **D.6.2.3 Local Regulations -** *City of Sacramento General Plan*

B5-540

The City of Sacramento has identified several goals and policies concerning hazards and hazardous materials in the city. Those that are relevant to the Proposed Project are discussed below and can be found in the Health and Safety Element of the City of Sacramento's General Plan (1988).

> ***Goal A*** Provide for the health and safety of the citizens of Sacramento and for the ***protection of the environment by reducing, and where possible, eliminating, exposure to hazardous materials and waste***. (emphasis added.)
>
> ***Policy 1*** Work with the county, state, federal agencies and responsible parties to ***identify, contain, and clean up*** sites that contain hazardous materials.
>
> **[LACo Community Standards District for the Baldwin Hills / Inglewood Oilfield Operations in addition to all requirements of the DOGGR.]** (emphasis added.)

D.6 Hz-20 Comment: The EIR does not state the implementation of the defined Goal and Policy in relationship to the proposed Project. As a reflection of the inadequacy of the DOGGR regulations, requirements, enforcement, and reporting oil and gas field exploration and production have been recognized through the implementation of the County of Los Angeles of the Community Standards District requirements for the PXP facilities in the urbanized field at Inglewood. These requirements better reflect the approach to achieving the aims of the Goal and Policy of the City of Sacramento and by reference to the proposed Project areas in the County of Sacramento. B5-540 (Cont.)

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p. D.6-12 - -13 - *County of Sacramento General Plan*

The County of Sacramento has identified several goals and policies concerning ***hazards and hazardous materials*** in the county. Those that are relevant to the Proposed Project are discussed below and can be found in the Hazardous Materials Element of the General Plan (1993). (emphasis added.)

> Policy HM-7 ***Encourage*** the implementation of ***workplace safety*** programs and to the ***best extent possible ensure that residents that live adjacent to industrial and commercial facilities are protected from accidents and the mishandling of hazardous materials.*** (emphasis added.)

D.6 Hz-21 Comment: The EIR does not state the implementation of the defined Goal and Policy of the County in relationship to the proposed Project. As a reflection of the inadequacy of the current State regulations, requirements, enforcement, and reporting oil and gas field exploration and production, additional measures have been recognized through the implementation by the County of Los Angeles of the Community Standards District requirements for the PXP facilities in the urbanized field at Inglewood. These requirements better reflect the approach to achieving the aims for the Goal and Policy of the County of Sacramento. B5-541

Policies and their application to the proposed Project appear to be incomplete and inadequate as they have not been applied to the proposed Project and do not apply to public health and safety with the same degree of assurances: "possible *extent possible ensure" (not = Best Practical Measures, but Maximum Achievable Measures).*

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p. D.6-14 - -15 ***D.6.3.2 Applicant Proposed Measures***

Table D.6-1 presents the applicant proposed measures (APMs) proposed by SNGS, LLC to reduce or eliminate potential impacts from hazardous materials use and storage associated with the Proposed Project, as well as existing environmental contamination along the alignment. B5-542

D.6 Hz-22 Comment: Policies and their application to the proposed Project appear to be incomplete and inadequate as they have not been applied to the proposed Project and do not apply to public health and safety with the same degree of assurances: "possible *extent possible ensure" (not = Best Practical Measures, but Maximum Achievable Measures).*** B5-542 (Cont.)

Various measures specific to this Section are not specifically included in the APMs and therefore assurances must be given for all measures to be implemented in addition to revisions as require to fully and properly respond to the comments herein. B5-543

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p. D.6-16 ***D.6.3.3 Hazardous Materials, Public Health and Safety Impact Analysis*** - **Impact HAZ-1: Potential Hazards Associated with Routine Transport, Use, and Disposal of Hazardous Materials**

D.2/B The ***emissions control*** standards established by the NESHAP apply to ***process vents*** on glycol dehydrators, storage vessels with flash emissions, and equipment leaks located in major source facilities. (emphasis added.)

D.2 The NESHAP would apply to the Proposed Project if the actual annual average throughput to the ***glycol dehydration unit*** is equal to or greater than 283,000 cubic meters of natural gas per day. (emphasis added.)

D.2 The PEA Addendum included a health risk screening assessment (HRSA) of the TAC emissions associated with ***operation of the compressor station*** (SNGS, LLC 2007b). Specifically, the HRSA evaluated the emissions of ***TAC emissions*** associated with the glycol dehydration unit. (emphasis added.)

D.2 Table D.2-13 shows the concentrations of chemicals associated with the proposed operations ***[glycol (TEG) not shown, only benzene, toluene, xylene, and hexane]*** that could have the potential to create an odor that may be perceived. (emphasis added.)

D.6 Hz-23 Comment: The EIR does not provide any documentation regarding compliance of the proposed facilities and activities of the Project with NESHAPS in order to comply with these requirements. No inventory has been provided of process vents, emergency vents and valves, flanges, valve stems, and compressor seals which could be released as fugitive or flash emissions. No meteorological data and modeling has been provided to establish the most probable adverse effects of odors and exposures of the workers or public to potential hazardous gases. The EIR does not provide any description or characterization of the rich or lean glycol and their various locations on the compressor station site or any other locations. B5-544

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p. D.2-30 - -31 ***...the SMAQMD, as a potential control measure...has proposed Rule 461 to regulate fugitive emissions from equipment leaks in valves, pumps, compressors, pressure relief devices,...flanges, and threaded connections at gas wells and associated transmission systems.*** The proposed control measure would establish inspection and repair requirements for leaking components. Therefore, odor impacts due to leakage of natural gas would be less than significant (Class III). (emphasis added.)

D.6 Hz-24 Comment: The EIR does not provide any documentation regarding compliance of the proposed facilities and activities of the Project in order to comply with these requirements. No inventory of sources of fugitive emissions has been provided and no meteorological data and modeling has been provided to establish the most probable adverse effects of odors and exposures of the workers or public to potential hazardous gases. B5-545

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p. D.2-31 In the ***absence of evidence to the contrary***,...SNGS, LLC ***would demonstrate*** compliance with all applicable rules and regulations and ***would continue to maintain*** compliance during the operation of the Proposed Project. (emphasis added.)

D.6 Hz-25 Comment: The EIR cannot be based on the "absence of evidence to the contrary" and must be based on "evidence" of compliance and implementation. The Applicant has not defined what can or cannot be "demonstrated" or "maintained" in compliance which must depend on adequate and complete description of the proposed physical facilities and their maximum operational capacity, and therefore, no assessment of insignificance, significance, or mitigation required to reduce to insignificance. The statement proposed that if there are any effects or needs for compliance, no manner what their importance, the Applicant "would" mitigate and compensate for any significant compliance issue, of which we as yet know not what. Information (specifications, designs, operating and maximum levels, etc.) is required specifically for the following equipment B5-546

Wellhead Operations (based on Section B and site drawings)

Dewatering Facilities and Gas Withdrawals

Produced Water Tanks and Injection Systems

Pigging and Slug Facilities

Compressor Operations (based on Section B and site drawings)

TEG and Other Dehydrator Operations

Pigging and Slug Facilities

Flow and Pressure Metering and Pipeline Cleaning (Slugs and Pigs) Systems (emphasis added.)

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p.D.6-15 **APMs 5, 7, 8, 9, 10** and p. B-29 **APMs 7, 8, 9, 10**

D.6 Hz-26 Comment: The entire APM approach appears to be internally inconsistent between MMRP, various D subsections, and even the Description, and the other related, but not APM-designated, measures. As indicated elsewhere, a single coordinated presentation of all measures for mitigation, compensation, monitoring, compliance-assurance, and reporting must be provided in order to assure that the mitigations are complete and adequate. Such compilation will ensure Applicant's specific and complete dedication to the implementation of the measures, their adequacy to achieve mitigation to less than significant levels, and reporting as required by CEQA. B5-547

Various measures specific to this Section are not specifically included in the APMs and therefore assurances must be given for all measures to be implemented in addition to revisions as require to fully and properly respond to the comments herein. B5-548

Policies and their application to the proposed Project appear to be incomplete and inadequate as they have not been applied to the proposed Project and do not apply to public health and safety with the same degree of assurances: "possible *extent possible ensure" (not = Best Practical Measures, but Maximum Achievable Measures).* B5-549

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p. D.6-16 ***D.6.3.3 Hazardous Materials, Public Health and Safety Impact Analysis -***

Impact HAZ-1: Potential Hazards Associated with Routine Transport, Use, and Disposal of Hazardous Materials B5-550

Impact HAZ-1a: Potential Hazards Associated with the Routine Use, Transport, and Disposal of Hazardous Materials During *Construction* of the Proposed Project

Implementation of the Proposed Project ***would*** involve the transport, use, storage, and disposal of hazardous materials during the construction phase. This material would include fuels (gasoline, diesel and propane), lubricants, solvents, hydraulic fluids, and other toxic or flammable materials. (emphasis added.)

This impact is considered significant, but ***can be reduced*** to a less-than-significant level (Class II; refer to Section D.1 for classification of impact significance) through implementation of APMs 7, 8, 9, and Mitigation Measure HAZ-1a. (emphasis added.)

D.6 Hz-27 Comment: Impacts and mitigation measures are incompletely and inadequately documented as indicated by "can be" rather than "shall be", and therefore implementation of the measures cannot be demonstrated to ensure reduction of the impacts.

B5-550 (Cont.)

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p. D.6-19 ***D.6.3.3 Hazardous Materials, Public Health and Safety Impact Analysis*** **-Mitigation Measures for Impacts HAZ-1a, HAZ-1b, and HAZ-1c:**

HAZ-1c*ii*: SNGS, LLC shall require that the route used to deliver methyl mercaptan be US-50 (instead of SR-99) and Howe Avenue to either Power Inn Road or to Folsom Boulevard, Jackson Road, and Florin Perkins Road. This will minimize exposure to sensitive receptors.

HAZ 1c*iii*: SNGS, LLC ***shall only store and inject methyl mercaptan exclusively at the compressor station. If that is not feasible***, the methyl mercaptan shall be stored in a specialized structure and the delivery routes shall be similar to that for the compressor station, except that only a small portion of Power Inn Road shall be used. (emphasis added.)

D.6 Hz-29 Comment: The Applicant does not indicate whether mercaptan related facilities, equipment, and systems shall be included or excluded to "*...proposed Rule 461 to regulate fugitive emissions from equipment leaks in valves, pumps, compressors, pressure relief devices,...flanges, and threaded connections at gas wells and associated transmission systems." This must be described definitively in order for it to be properly assessed and mitigated if required.*

B5-551

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p. D.6-20 **Impact HAZ-2: Potential to Expose *People [and significant utility resources]* to a Significant Risk of Fire or Explosion**

The torch fire would be relatively localized but would result in radiant heat injuries near the source (up to 600 feet for a 15-inch pipeline).

An incident heat flux level of 1,600 British thermal units per square foot per hour (Btu/ft2-hr) is ***considered hazardous for people located outdoors and unprotected. Generally, humans located beyond this heat flux level would not be at risk to injury from thermal radiation resulting from a fire...***

- ***1,600 Btu/ft2-hr (5.0 kW/m2)[down to 500Btu/ft2-hr]—Second-degree skin burns after 30 seconds of exposure... (CDE 2007; Quest Consultants 2003)***. (emphasis added.)

D.6 Hz-30 Comment: The EIR does not provide any assessment as to the most probable locations of fire or explosion for the proposed Project facilities and pipelines and to the high volume of gas which may be released. The EIR does not provide any meaningful description as to the physical facilities (blast walls, cellars, etc.) for monitoring, controlling, and

B5-552

mitigating any releases from the identified high-moderate risk facilities. Review of the available Project description and various utilities appear to indicate potential risks of the Wellhead Site releases for the adjacent (Westside) powerline towers. B5-552 (Cont.)

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p. D.6-22 **Impact HAZ-2: Potential to Expose People to a Significant Risk of Fire or Explosion**

Impact HAZ-2a: Potential Impact from Gas Leaking From the Gas Reservoir After Repressurization of the Gas Field for Gas Storage

Potential Gas Migration Through Wells

In regard to potential gas leakage via improper well cementing, ***abandoned wells at Florin have been sealed into the cap rock and plugged per the stringent requirements permitted and enforced by DOGGR.*** (emphasis added.)

The grouting of the wells during the abandonment procedures is done using ***greater pressure than would be exerted by the repressurized Florin Gas Field*** during storage in order to form an effective bond between the cementing material and the surrounding native formation; therefore, even with the proposed increased storage pressure, the ***possibility of failure of the seals of the abandoned wells is remote and less than significant (Class III).*** (emphasis added.) B5-553

D.6 Hz-31 Comment: Available DOGGR documents do not support that 1) the "…abandoned wells at Florin have been sealed into the cap rock…" and 2) "…abandoned wells…have been…plugged per the stringent requirements permitted and enforced by DOGGR", and 3) the DEIR and referenced documents do not justify the statements provided in the DEIR.

No grouting was used. Only cementing and drilling muds were used, but were not placed in accordance with the field requirements and DOGGR general requirements. The abandonment clearance appears to have been wrongly endorsed by inspectors and DOGGR. Whether this is the case should be analyzed as well as the risk of leakage despite hypothetical compliance with DOGGR abandonment requirements. B5-554

"Grouting" was not done using "greater pressure than would be exerted by the repressurized Florin Gas Field" (=1600-1800+ psi). Large sections of the wells between the perforated sections and the base of fresh water were not "grouted" and not even filled with appropriate drilling mud (75lbs/cuft). Therefore, the statement, "…possibility of failure of the seals of the abandoned wells is remote and less than significant (Class III)" is incomplete, inadequate, and in error. B5-555

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p. D.6-22 - -23 **Impact HAZ-2: Potential to Expose People to a Significant Risk of Fire or Explosion - Impact HAZ-2a: Potential Impact from Gas Leaking From the Gas Reservoir After Repressurization of the Gas Field for Gas Storage**

Potential Gas Migration Through Wells

Conceptually, the drilling…initial drilling pass [First Section] will be made to install large-diameter conductor casing to approximately 100 feet below the freshwater table [through the Mehrten/Valley Springs and perhaps into the Cap Rock, unless the D.7 is incorrect and Mehrten does not overlie the Cap Rock]. The annulus, or gap between the conductor casing and the borehole through the freshwater aquifer, will be ***sealed with cement grout*** [through the Modesto and Mehrten formations]. An intermediate diameter borehole will be drilled through the conductor pipe and partially into the cap rock [100ft or more into the Cap Rock]. The annulus between this casing [Second Section] and the cap rock will be ***sealed with cement grout*** [from B5-556

surface through the top 100+ ft of Cap Rock]. A third small-diameter borehole will be directionally drilled and ***cased*** [Third Section] to provide access [through the Cap Rock >150-500ft] to the Winters Sand gas reservoir rock [>150 feet, as near horizontal screen, extension from the Third Section Casing], with completion of the screened production section approximately horizontal. (emphasis added.)

The combination of ***one or perhaps two conductor casings and associated cement annular seals*** will ***effectively*** block ***any*** migration of gas ***through*** the wells into the aquifer or to the surface. Therefore, the impact ***would*** be considered less than significant (Class III). (emphasis added.)

D.6 Hz-32 Comment: The EIR does not provide adequate, complete, and consistent information regarding the depths to the Base of Fresh Water (BFW; Cap Rock, "Winters Sand gas reservoir") for existing abandoned wells and proposed eight wells, their designs and specifications for the casings and "sealed with cement grout" for the casings and annuli above the BFW and through the "Cap Rock".

B5-556 (Cont.)

The EIR uses tentative words and phrases "one or perhaps two", "effectively", "any", and "would be considered" as the designs and specifications have not been provided to clearly state in the affirmative manner.

B5-557

The EIR does not fully consider the migration paths not "through the wells" but "around" the cement fill and between steel casings and bored alluvium and bedrock. No design and specifications are provided in the Project description and herein this section to assure that when various redrillings through cement plugs do not vibrate the outer and intermediate cement seals and thereby break the adhesion between the steel casings, cement plugs, and outer alluvium, bedrock, and cap rock, especially at the Cap Rock/Sand Reservoir contact.

B5-558

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p. D.6-23 *Potential Gas Migration Through Existing Cracks or Faults in the Cap Rock*

The Florin Gas Field reservoir is ***contained by a shale cap rock of 150 to 300 feet thick***. This cap rock ***has apparently contained the gas*** within the original Florin Gas Field ***without substantial leakage.*** (emphasis added.)

Most documented leakage from gas storage reservoirs have occurred in shallow salt formations rather than in formations contained by a shale cap rock (Mannon Associates 2008). However, leakage of stored gas has occurred in California at the ***El Segundo Oil Fields, Castaic Hills Oil Field, and the Montebello Oil Field*** (Khilyuk et al. 2000). The route[s] of escape for stored gas leakage can include cap rock structure, existing or new cap rock fractures, faults, defective cement well seals, and/or substandard abandonment cementing of oil and gas wells. ***There have been no documented incidences of leakage of natural gas from the former Florin Gas Field operations.*** (emphasis added.)

D.6 Hz-33 Comment: No specific records and evidence of the thickness has been provided in the EIR or the referenced documents to the thicknesses, tops, and bottoms of either the "Cap Rock" or "Floor Rock". Either as erroneous designation or incompleteness, the EIR does not include the Playa del Rey gas storage system.

B5-559

The EIR or referenced documents herein does not provide any evidence or documentation regarding absence or presence of gas leakage to either above the fresh water or surface via "natural pathways" or via artificial improperly abandoned wells. No information has been referenced or provided with regard to the actual operations of the "...Field operations".

B5-560

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p. D.6-23 *Potential Gas Migration Through Existing Cracks or Faults in the Cap Rock*

An analysis by Ryder Scott Company (2008), based on reservoir computer modeling, ***has concluded*** that the pressure within the gas field at the projected storage capacity may exceed pressures of the original gas field by almost 8%. In testimony to the CPUC, ***Bruce Palmer of the Ryder Scott Company*** indicated that ***standard industry practice is that gas reservoir caps*** can withstand 10% overpressure above the original reservoir without substantial risk of gas leakage ***(Palmer 2008)***. (emphasis added.)

D.6 Hz-34 Comment: The referenced RSC documents "has NOT concluded" but only suggests, all other information being equal, a "model" based on undocumented and no third-party verified information.

The EIR is required to have Project and sites specific information and should not use "standards of industry" and "general information" to apply to specific Project conditions without adequate and complete supporting information and evidence.

B5-561

B5-562

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p. D.6-23 *Potential Gas Migration Through Existing Cracks or Faults in the Cap Rock*

Existing data from previous drilling in the Florin Gas Field does not include laboratory data substantiating the strength of the reservoir cap rock. ***This [lack of information] would raise concern*** that sufficient cap rock strength to contain gas at anticipated pressure has ***not been objectively demonstrated***. In addition, ***there may be existing fractures*** within the reservoir cap that ***are substantially closed at ambient pressures*** that ***could dilate and leak*** under proposed operation pressure. See Section D.7, Hydrology and Water Quality, for an analysis of impact to groundwater. (emphasis added.)

D.6 Hz-35 Comment: The reviewer generally agrees with the above DEIR statement, although they are not consistently applied throughout the DEIR. Existing data does not apply to the existing conditions of the surface setting and provided information regarding the proposed Project facilities. Activities are not adequate and complete to provide a sufficient assessment of impacts and assignment of mitigation measures (or compensation, for that matter) for significant impacts.

B5-563

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p. D.6-23 - -24 *Potential Gas Migration to the Surface Through Formation of New Fractures in the Cap Rock from the Proposed Gas Injection and Cycling of Gas Associated with Gas Storage Procedures*

There is a ***remote potential*** that gas ***could migrate*** to the surface from around or through the cap rock, either through existing fractures or faults or other discontinuities in the cap rock. Golder Associates (2008) addressed the potential for migration of gas from the reservoir to the surface through cracks or fissures and identified five potential mechanisms (described as follows) that could result in this…occurrence. ***This analysis was based on information on the cap rock*** and ***other geologic structures***. It should be noted that laboratory analysis of core samples could not be conducted at this time since ***it would require the drilling of new wells***. **adequate and complete**

D.6 Hz-36 Comment: No quantitative definition of remote potential is assigned and no adequate consideration is given to "spill-point" releases into the Winters sand bodies extending from the reservoir area. At the same time, the Applicant states that the Southeast barrier is complete and does not allow gas storage to the SE and does not require surface owners to have storage rights and reimbursements.

The only direct data or evidence regarding the "Cap Rock" would be from the physical/E-logs of the eight wells and the seismic surveys conducted more than 10 years ago

B5-564

without any indication as to quality controls/assurances. No identification is provided as to the "other geologic structures" which are being referenced.

Golder does not provide any new information but references works of Ryder Scott Co. for their basis, which also does not contain any direct data and evidence for the "Model".

For an adequate and complete EIR, new drilling should be required to specifically define the character of the "Cap Rock", the "Linear Anomaly", the reservoir "floor", the Southeast barrier, and lateral continuity/spill-points of the gas reservoir zone and the various zones .

B5-564 (Cont.)

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p.D.6-24 **1. Degradation of cap rock due to cyclic loading associated with the gas storage process.**

The ***opinion by Golder Associates*** (2008) ***indicates*** that the proposed gas pressures involved in the cyclic loading and unloading of the reservoir ***would likely not be high enough*** to result in degradation of the cap rock. However, this is based on ***information describing the cap rock*** and drilling logs and does not reflect laboratory tests, including strength testing of the cap rock core samples. (emphasis added.)

D.6 Hz-37 Comment: The tentative phrases, "would likely" and "not be high enough", cannot be defined as appropriate standards for an DEIR and reflect the uncertainty contained in largely unsubstantiated conjectures (opinions without evidence and analysis). Unspecified "information" for the cap rock is not provided in the EIR, in the EIR referenced documents, or in secondarily referenced documents, and therefore the statements cannot be documented.

B5-565

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p.D.6-24 **2. Failure of the cap rock due to hydraulic fractures.**

Golder Associates (2008) have ***concluded that the pressures associated with injection of the gas are not high enough to cause fractures***. This is based on the ***information available on the cap rock*** but does not include laboratory testing, including an analysis of the strength of the cap rock core samples. (emphasis added.)

D.6 Hz-38 Comment: The definitive statement, "concluded", above, which projects far more certainty than the text supports, is in conflict with the associated, but more qualified, statement, "not high enough" to cause fractures as compared to pressures required to open fracture already present. The EIR does not define these generalized terms and phrases as is required of aDEIR and they are largely unsubstantiated conjectures (opinions without evidence and analysis). Unspecified "information" for the cap rock is not provided in the DEIR, in the DEIR referenced documents, or in secondarily referenced documents, and therefore the statements cannot be documented.

B5-566

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p.D.6-24 **3. Damage to the cap rock due to historical reservoir production.**

Golder Associates (2008) ***did not identify evidence that the cap rock has been damaged*** based on previous production data and records for the Florin Gas Field wells. The production data records for the field would only allow inference of damage from the pressure and flow characteristics of the wells. (emphasis added.)

D.6 Hz-39 Comment: Golder Associates (2008) did not identify evidence either that the cap rock has been damaged or is intact without damage as no one has evidence either way. The implication of this DEIR statement suggests conditions and characterizations not provided in the Golder report or more importantly the secondary reference of Ryder Scott.

B5-567

p.D.6-24 ***Quantities of gas leakage from minor fracture zones in the gas reservoir, which would not be significant in gas field production operations, could produce effects in the overlying groundwater aquifers that could accumulate over time and result in gas leakage to the surface. Thus, such minor reservoir damage may not have been noted or may not be apparent.*** (emphasis added.)

D.6 Hz-40 Comment: No reliable or quantified data regarding any leakage or lack thereof are available; similarly none are available for the presence or absence of "minor fracture zones". No definition is presented regarding the terms/phrases: quantities, minor, effects, "could accumulate", "over time", and "minor reservoir damage". Damage cannot be assessed without direct data from new wells and sampling and testing; no real evidence exists for current conditions and current leakage or containment. B5-568

p.D.6-24 ***This portion of the analysis by Golder Associates (2008) was not intended to account for additional potential damage to the cap rock through the recycling of storage gases and the fluctuation in pressure.*** (emphasis added.)

p.D.6-24 **4. Gas Migration via preexisting faults due to gas injection pressure changes.**

Based on analysis of drilling logs for the previously drilled wells in the Florin Gas Field and four seismic reflection data lines evaluated by Ryder Scott (2008), no preexisting faults have been identified in the cap rock. However, these wells and seismic data constitute only a small portion of the reservoir area and ***small*** preexisting faults or fracture zones may be present between wells and seismic profiles. (emphasis added.)

D.6 Hz-41 Comment: No reliable or quantified data exists regarding additional potential damage to the cap rock, which cannot be assessed because the character and condition of the current cap rock has not been and maybe cannot be provided and made available by the Applicant. The earlier data cannot characterize the current setting of the "cap rock", its form, its fractures/jointing or rock quality, all of which would be required to assess the potential impacts on the cap rock of the cycling pressures of the proposed Project. B5-569

No definition is presented regarding the terms/phrases - "additional", "potential", "small [x2]", fractures/faults, etc.; no real evidence exists for current representative conditions, jointing (RQD), fractures, small, medium, and large ancient, inactive, and active apparent and blind faults. No micro-seismicity studies have been conducted for this Project or for the area. B5-570

p.D.6-24 - -25 **5. Gas seepage through the cap rock.**

Golder Associates (2008) ***expect*** that the permeability of the cap rock is ***sufficiently low that it is not likely that the gas will migrate substantially through the cap rock during the lifetime…***of the project. Based on ***assumed*** cap rock properties, Golder Associates (2008) ***concludes*** that gas ***would be expected*** to migrate only a small fraction of an inch a year and it would take several thousands of years to permeate the cap rock **[at the assumed rates of a few inches per year]**. These would be well beyond the life of the project. This portion of Golder's evaluation only considers the cap rock matrix (shale) physical properties and is not intended to account for possible localized imperfections (faults, fractures, course-grained channels with the cap rock shale) that could provide pathways for gas migration. (emphasis added.) B5-571

D.6 Hz-42 Comment: No reliable or quantified data exists regarding additional potential damage to the cap rock cannot be assessed as the character and condition of the current cap rock has been or can be provided and made available by the Applicant. Even the earlier data cannot characterize the current setting of the "cap rock", its form, its fractures/jointing or rock quality, all of which would be required to assess the impacts of cycling pressures of the proposed Project. B5-571 (Cont.)

No definition is presented regarding the terms/phrases - "additional", "potential", "small [x2]", fractures/faults, etc.; no real evidence exists for current representative conditions, jointing (RQD), fractures, small, medium, and large ancient, inactive, and active apparent and blind faults. No micro-seismicity studies have been conducted for this Project or for the area. B5-572

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p.D.6-25 **6. Lateral spreading of gas along the edges of the reservoir.**

Neither the bottom of the reservoir nor the sides of the reservoir has been well defined in detail, especially since ***drilling and core sampling has not been conducted at the well field perimeter.*** (emphasis added.)

Therefore, ***it is not known whether gas would seep in this area under pressures exceeding original reservoir pressure.*** The shape and limits of the Florin Gas Field structure was inferred by Ryder Scott (2008) from well logs, seismic data, and a reservoir computer model. During calibration of the reservoir computer model to the known gas production history, it was found necessary to reduce the reservoir footprint ***by eliminating the southern one-third*** (approximately) of the conceptual reservoir footprint from the volume available for gas storage **(Palmer 2008).** The ***nature and geometry*** of the hydraulically interconnected northern area and the substantially isolated southern area ***have been approximated***, but ***have not been verified with drilling***. Therefore, it is not known whether stored gas could seep from the edges of the reservoir. (emphasis added.) B5-573

D.6 Hz-43 Comment: No reliable data is provided in the DEIR regarding any leakage, seepage, gas-drive or lack thereof, passed the "spill-point" and any other "spill-points or gaps".

No one can infer from the Ryder Scott model since that model is itself an inference hypothesized by Ryder Scott (and deemed acceptable to the Applicant). However, it is without independent third party confirmation of the inferences and interpretations from even the limited well and survey data available. B5-574

No reliable or quantified data nor interpretations exists regarding the floor, SE barrier, and the NE, NW, and SW sides of the Winters sand body and reservoir. Additional potential damage to the cap rock cannot be assessed as the character and condition of the current cap rock has been or can be provided and made available by the Applicant. Even the earlier data cannot characterize the current setting of the "cap rock", its form, its fractures/jointing or rock quality, all of which would be required to assess the environmental mpacts of the cycling pressures of the proposed Project. B5-575

When a problem arose regarding gas volumes and pressures (too much volume for the pressures used) Ryder Scott lopped-off the SE third of the "approximated" reservoir. The available data (i.e., field pressure and geophysical and E-log surveys are greater than 20 years old) conflict with the hypothetical model, so Ryder Scott conveniently removed part of the "approximated" inference from the data and the data itself. This obfuscatory tactic must be challenged and reviewed in great detail. B5-576

Two major statement typify the question of completeness and adequacy of the Environmental Setting for the entire reservoir –

"since drilling and core sampling has not been conducted at the well field perimeter."

AND

***"have been approximated*, but *have not been verified with drilling*." (emphasis added.)**

and thereby all assessment and mitigation recommended based on an inference and approximated conceptual model 3800ft below the surface and under >700 residences.

B5-577

No definition is presented regarding the terms/phrases - "approximated", "verified by drilling", "small [x2]", well-defined in detail", , etc.; no real evidence exists.

B5-578

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p.D.6-25 *Conclusion*

There is sufficient information to conclude that the leakage of stored gas into the overlying groundwater aquifer and perhaps to the ground surface ***is unlikely to occur***. There is ***insufficient information to conclude categorically that stored gas migration*** to the overlying groundwater aquifer and/or ground surface ***would not occur. Therefore, it is assumed that there is a low potential*** that gas could migrate to the overlying groundwater aquifer and/or to the ground surface. Gas migration could result in groundwater impacts, health effects, and potentially flash fires or explosions. **(emphasis added.)**

D.6 Hz-44 Comment: No reliable data regarding any migration or lack thereof exists and the Applicant proposes to accept that the risk of migration is a "low potential" rather than saying no reason exists for not accepting a "high potential". We do have information that shows that wells were not properly isolated and that migration routes do exist between the reservoir levels and higher formations and between higher formations and formations and alluvium above the Base of Fresh Water. This must be analyzed.

B5-579

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p. D.6-26 2. While mitigation measure HAZ-2*aii* ***would*** mitigate for ***any possible release*** of natural gas by depressurizing the reservoir, **there will be a lag in the time** to remediate any gas migration from the time gas is detected and the reservoir depressurized. **(emphasis added.)**

D.6 Hz-47 Comment: No reliable information exists regarding the field and the ability to "de-pressurize" the reservoir, storage, and field in a timely manner with only the residents occupying the surface over the depressurizing field being at risk. Use of words without definitions and limits such as *"would" and "any possible release"* appear to be self-contradictory. "Would" suggests that the measure will not be implemented while CEQA definition requires that the Applicant make a commitment to implement such measures. "Any possible release" is not quantified and thereby is without meaning and distractive.

Depressurizing the field is a deceptive mitigation measure because its effectiveness at stopping gas from migrating depends on the validity of the "reservoir" contours as inferred by the Applicant's consultant, the most probable withdrawal rates, and the quantities of gas already in the migratory paths stemming from the release point. Migrating gas would depart the reservoir at roughly a depth of 3800ft and travel up to several miles laterally and vertically beyond the boundary of the reservoir as measured from the center of the field (e.g., one mile or more of gas rising at approximately a

B5-580

45°angle from the inferred margins of the current model). Depressurizing could only stop the amount of gas escaping from increasing, but the already escaped gases would continue unstopped and unstoppable along their entirely unpredictable migration routes. B5-580 (Cont.)

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p. D.6-27 *Wellhead Site*

Although the potential for pipeline rupture and release of gas is low, this impact is considered significant and unavoidable (Class I), because of the consequences of a fire or explosion.

Despite implementation of APM 8 and Mitigation Measures HAZ-2b*i* through HAZ-2b*vii*, which will ***further reduce this already low potential***, the impact would remain significant and unavoidable. (emphasis added.)

D.6 Hz-48 Comment: Risk analyses for pipelines and their setting can be accomplished as most factors are readily observable and industry calculation and estimating methods are well developed. None have been attempted and no maximum credible release has been estimated in the DEIR. B5-581

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p. D.6-27 Compressor Station

…these impacts can be mitigated to less-than-significant levels (Class II) through implementation of Mitigation Measure HAZ-2b*viii*.

D.6 Hz-49 Comment: No reliable design, specifications, and operating data regarding the Compressor Station is provided in the Project Description (e.g., operating pressures and durations capable for both the initial and the included third compressor sets). B5-582

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p. D.6-27 **[Radiant – Torch Pipeline Fires]**

As indicated in Table D.6-4, for a pipeline rupture, ***one would expect*** a radiant heat flux of 3,500 Btu/ft2-hr (second-degree skin burns after 10 seconds of exposure, 15% probability of fatality if exposure is prolonged) at up to 600 feet from a release from the 16-inch pipeline segments. (emphasis added.)

For the proposed facilities, the fire impacts that could result in an injury are ***limited to relatively short distances*** from the release. Since these distances are ***small***, ***one would generally expect affected individuals to find shelter*** or ***move beyond the impacted distance before they could be fatally injured***. (emphasis added.)

In these cases, one would ***only have to move slightly over 100 feet*** **[20 secs following realization and decision as to direction]** from the release to avoid potentially serious or fatal injuries. As a result, it is ***highly probable that affected individuals*** **[without prior training and drills]** ***would avoid serious injuries and fatalities*** resulting from torch fires, ***unless they were exposed directly to the flame***, which would extend an estimated 30 feet for a full-bore release. (emphasis added.) B5-583

D.6 Hz-50 Comment: Risk analyses for pipelines and their setting can be accomplished as most factors are readily observable and industry calculation and estimating methods are well developed. None have been attempted and no maximum credible release has been estimated in the EIR. The maximum credible releases and fires can be estimated based on surface facilities and their pressures, contained volumes, and shut-in/off controls. Such calculation could be made for each of the major sites and even the worst-case pipeline; the pipeline between the discharge point of the compressors manifold and the manifold of the

wellhead site has the highest pressures and volumes and may have the highest exposure on the surface at either site. B5-583 (Cont.)

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p. D.6-33 **Mitigation Measures for Impacts HAZ-2a and HAZ-2b: Potential Hazards Associated with Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials**

HAZ-2a*i* SNGS, LLC ***shall*** conduct laboratory tests of cores and may also conduct in situ (in place) bore-hole tests of the cap rock structure, ***if recommended after review by qualified industry experts*** prior to storage of natural gas. These tests ***shall*** include determination of the cap rock strength properties to facilitate assessment of the cap rock integrity relative to the projected pressures exerted by the stored natural gas. (emphasis added.)

D.6 Hz-51 Comment: The mitigation begins with a definitive instruction but then is subject to the conditional phrase, "if recommended after review by qualified industry experts", which converts the mitigation measure to a conditional or hypothetical possibility; this is not allowed under CEQA, which requires commitments to mitigation measures. Furthermore this measure is proposed for implementation after-the-fact rather than being a concrete measure and permit condition undertaken to address a recognized risk or impact of risk realized. The entire DEIR is basically a "desk-top" study, which defers all of the necessary field work, i.e., the development of specific mitigation measures, after the postulated approval of what would be a deeply flawed EIR. These statement do not define the character of the review, types of recommendations to be made, qualifications of the "experts", who selects the "experts", when the "expert" review and what they review, the types of tests and results to be reviewed, etc. B5-584

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p. D.6-33 **Mitigation Measures for Impacts HAZ-2a and HAZ-2b:**

If possible, these tests will also provide data that allows assessment of the effects of the cycling of gas pressure during operation of the gas storage facility. These tests ***shall*** determine the properties of the cap rock itself, including permeability and strength of the cap rock within the range of the projected gas storage pressures. (emphasis added.)

D.6 Hz-52 Comment: The discussion of mitigative tests includes mandatory language, i.e., "shall" and even "will", but then is subject to the conditions, "if recommended after review by qualified industry experts" and "[i]f possible…"; this is not allowed under CEQA, which requires commitments to mitigation measures. Furthermore this measure is after the fact rather than being a measure to address a recognized risk or impact of risk realized. B5-585

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p. D.6-33 **Mitigation Measures for Impacts HAZ-2a and HAZ-2b:**

These tests ***shall be monitored and approved by the DOGGR*** prior to allowing the storage of natural gas. (emphasis added.)

D.6 Hz-53 Comment: Various other comments have highlighted the issue that half of the existing "abandoned wells" were abandoned without compliance with DOGGR requirements but signed off by DOGGR inspectors and on DOGGR forms even with contradictions in measurements and conditions for various forms. However, since the measures and tests are conditioned, their consideration fails to have validity for mitigation and should have been removed rather than distracting readers, reviewers, and the public. B5-586

p. D.6-33 **HAZ-2*ai*** SNGS, LLC ***shall*** develop a ***gas detection plan*** at ***key points within the*** **[surface]** ***area over the Florin Gas Field***. The plan will include the ***installation of monitoring wells*** for detection of anomalous pressure changes in the ***deep groundwater aquifer*** immediately above the cap rock structure. These ***wells*** shall be equipped with instrumentation to monitor and record (with electronic data loggers) ***aquifer*** pressure, temperature, and other parameters ***as needed*** **[presumably gases and hydrocarbon in solution and as gas bubbles]**. The number, location, depth, screened interval, and instrumentation of the deep aquifer monitor wells will be ***selected jointly by qualified petroleum industry and groundwater experts***. The intent of the ***deep aquifer wells*** is to allow detection of the anomalous pressure, which is a way to tell if there is leakage of stored gas into zones above the cap rock from the underlying Florin Gas Field. (emphasis added.)

D.6 Hz-54 Comment: The gas detection plan is ill-defined and so generalized as to be unenforcible, unmonitorable, and thereby totally ineffective. No draft is included and the text is arbitrary. The "plan" shall be prepared sometime in the future and "deep wells" will be selected by undefined "experts". The depth of the wells could be in the "deep aquifers" (including non-fresh water i.e., saline or formation or associated waters) but the base of the Fresh Water is generally placed above 1500ft below ground level (bgl), while the detection of leakage into "zones above the cap rock" could be at any levels from 3500ft up to 0ft bgl, i.e., the ground's surface. B5-587

p. D.6-33, **HAZ-2*ai***

This plan shall also include gas detection instruments, well probes, and sampling of the aquifer for entrained natural gas. This ***plan shall be reviewed and approved by DOGGR***, the City of Sacramento Fire Department, and the Sacramento County Environmental Management Department prior to implementation and shall include ***natural gas detectors at strategic*** **[surface]** ***locations***. In the event that natural gas is detected and ***confirmed to be seeping*** from the reservoir, the gas reservoir shall be ***reduced to lessen and eliminate the potential for seepage***. The ***deep aquifer monitoring will commence prior to repressurizing*** the Florin gas reservoir, so that baseline conditions can be established, including ambient levels of natural gas if present. (emphasis added.)

D.6 Hz-55 Comment: Various other comments have highlighted the issue that half of the existing "abandoned wells" were abandoned without compliance with DOGGR requirements but signed off by DOGGR inspectors and on DOGGR forms even with contradictions in measurements and conditions for various forms. However, since the measures and tests are conditioned, their consideration fails to have validity for mitigation and should have been removed rather than distracting readers, reviewers, and the public. B5-588

Phrases of "reviewed and approved" suggest that the appropriate authorities would have no choice but to approve the plan at some future date, after the application has been approved. B5-589

Short response times are imperative if gases are detected by whatever means that detection occurs; the procedure and requirements for assignment of responsibilities for gas remediation should be assigned prior to the decision regarding the Project, not after. Depressurizing cannot do any significant mitigation if the gas is detected above 1500ft bgl as the volume of released gases in the formations and alluvium above the field may be quite large and already on its way to the surface, we know not where to reach. B5-590

A few monitoring wells (10) located over an area of 10 square miles (the potential area of impact from a release of gas from the reservoir) would have a very low probability of effectively detecting any gases released at 3800ft bgl. Thus, even if gas were released and began making its way toward the ground's surface, the Applicant would likely report that no gases were found before pressurization, probably after pressurization, and before any house or group of houses were found to be uninhabitable due to dangerous accumulation of gas. Then it would be too late. B5-591

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p. D.6-34 **HAZ-2*aii***

The four primary elements of this gas monitoring mitigation measure are:

1) **Establish a baseline** or background level for natural gas ***at the surface*** prior to storage operations. This will allow ***comparison and sound evaluation of future project-related gas monitoring*** results. (emphasis added.)

2) **Periodically measure** for levels of detectable gas at ***predetermined surface locations***. This will allow the storage operator to ascertain ***whether the levels of gas detected at the surface, if any, have increased noticeably above the previously established background levels***. It is expected that ***small variations may occur***, which ***may not individually rise to any significant level*** but trends over several sample periods could provide an indication of a change that ***requires further investigation***. (emphasis added.)

3) **Quantify** and, ***if necessary***, qualify any changes in an attempt to identify the source. First, based on sampling and testing of gas samples, it should be determined whether the gas quality signature is similar to the native gas production in the area or to pipeline gas. Gas in the storage reservoirs will be ***almost exclusively pipeline gas*** with components that ***should be relatively easy to identify*** compared to ***native gas.*** (emphasis added.)

D.6 Hz-56 Comment: A few gas monitoring probes would have to monitor not just from the surface layer since methane is a buoyant gas and can not be reliably measured in free-air monitoring programs. Nevertheless, a few monitoring wells (10) located over an area of 10 square miles (the potential area of impact from a release of gas from the reservoir) would have a very low probability of effectively detecting any gases released at 3800ft bgl. Thus, even if gas were released and began making its way toward the ground's surface, the Applicant would likely report that no gases were found before pressurization, probably after pressurization, and before any house or group of houses were found to be uninhabitable due to dangerous accumulation of gas. Then it would be too late. B5-592

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p. D.6-34 **HAZ-2*aii***

4) Based on ***any specific changes*** observed, the operator shall respond to the data and corresponding analysis with additional testing, surveillance, or mitigation, as appropriate. ***If the data indicates that any detected surface gas is from the storage operation***, then a ***plan will be developed*** to identify the leaking pipeline, well or reservoir, ***including procedures to further test and correct the situation***. If it appears that the source of the gas is related to a non-storage facility, the operator ***should attempt to identify*** the owner or operator of that facility ***and inform*** them of the findings of the study. The overall gas monitoring program will be evaluated after 5 years ***to determine its future usefulness***. (emphasis added.) B5-593

D.6 Hz-57 Comment: Presence of gas at or near the surface in an urbanized setting should be sufficient to mobilize all activities. "Native gases" may be released from the storage zone due to the "gas-drive" or "water-drive" caused by the repressurization of the reservoir and movements of formation waters, which would be a result of the Applicant's actions. Evaluation of the program resembles the evaluation of the original 24-hr on-call spill response team stationed at Valdez, Alaska which led to its cancellation three years before the Exxon-Valdez ran aground and spilled oil at one then already-identified high risk location. Let's not make that same mistake here. B5-593 (Cont.)

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p. D.6-34 **HAZ-2a*ii***

The monitoring program will consist of the following features:

- Permanent ***monitoring/testing sites at the project*** wellhead site and compressor station site
- ***Leakage surveys*** at predetermined locations on a regular basis
- Utilize standard, industry-approved gas measurement equipment
- Field personnel trained on gas sampling methods and instrumentation, identifying stressed vegetation and other indicators of potential leakage. (emphasis added.)

D.6 Hz-58 Comment: As indicated above, this "program" or "plan" is not designated as an APM and may be subject to conditional statements and decisions not incorporated in the EIR or in a draft MMRP and thereby cannot be considered as reliable or a formal commitment of the Applicant. B5-594

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p. D.6-35 **HAZ-2a*ii***

Two permanent test stations will be located at the wellhead site. Two additional test stations will be installed ***at the compressor station site***. Additional sites for sampling ***shall be identified in the sampling plan***. Baseline measurements, using portable analytical gas instruments, will be made within 48 hours of the installation of the test station. Portable analytical gas instruments will consist of infrared gas analyzers or ***other combustible gas analyzers***. (emphasis added.)

D.6 Hz-59 Comment: The proposed program does not recognized the basic character of methane as a buoyant gas and thereby test stations and sensors of instruments must be appropriately located and specific shrouds for high risk equipment must be developed but are nowhere indicated in the Project Description nor in the "program". B5-595

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p. D.6-35 **HAZ-2a*ii***

Flame Ionization Detectors (FIDs) may be used as the primary detector for monitoring. All portable analytical gas equipment will be calibrated daily using a laboratory-certified methane calibration gas. All test sites will be identified and all test data will be gathered and recorded. The testing program will be conducted ***prior to initiation of injection of gas and weekly thereafter***. (emphasis added.)

D.6 Hz-60 Comment: As proposed use of such instruments in a classified environment and setting is totally inappropriate as their flames would provide ignition points. B5-596

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p. D.6-35 - -36

HAZ-2b*ii* The following mitigation shall be incorporated into the wellhead site portion of the project.

- A ***third-party peer*** review shall be conducted by a ***well control specialist***, under the supervision of the Sacramento City Fire Department. (emphasis added.)

D.6 Hz-61 Comment: Although appropriate, as indicated, no selection and reimbursement methods for the "peer" are provided through the Fire Department and not the Applicant. B5-597

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p. D.6-36 **HAZ-2b*iii*** The CPUC shall conduct, or cause to be conducted in coordination with the DOT, an ***independent, third-party design review*** of the applicant's construction drawings, supporting calculations, and specifications and ***[who, independent, third-party]*** shall monitor and observe construction to ensure compliance with all applicable laws, ordinances, regulations, and standards (LORS). The applicant shall make payments to the CPUC for ***these design review, plan check, and construction inspection services***. These design review and construction observation services shall not in any way relieve the applicant of its responsibility and liability for the design, construction, operation, maintenance, and emergency response for these facilities. (emphasis added.)

D.6 Hz-62 Comment: Although appropriate, as indicated, no selection and reimbursement methods for the "peer" are provided through the Fire Department and not the Applicant. The Scope of LORS herein does not appear to include ALL mitigation measures mentioned in the DEIR, the APM and all others, including this specific measure for design review. B5-598

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p. D.6-37 **HAZ-2b*vi*** The applicant shall submit to the CPUC an ***operation and maintenance (O&M) manual***, prepared in accordance with 49 CFR 192.605. The O&M manual shall address internal and external maintenance inspections of the completed facility, including but not limited to details of integrity testing methods to be applied, corrosion monitoring and testing of the cathodic protection system, and leak monitoring. (emphasis added.)

In addition, the O&M manual shall also include a ***preventative mitigation measure analysis*** for the use of automatic shutdown valves per DOT Part 192.935(c) requirements. ***The O&M manual shall also incorporate all of the APMs.*** (emphasis added.)

D.6 Hz-65 Comment: Although the statement is definitive ("shall" rather than "will" or "would"), the preparation of the manual after approval does not allow for review and assurance to the public and the reviewer that the conditions shall be actually fulfilled and when they will be fulfilled. Furthermore, the O&M Manual is a standard gas-industry document and a draft from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Manual with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-599

For the O&M Manual, the critical elements should clearly state the operational process for all three compressors, the dehydrators, produced waters tanks, injection/withdrawal, water injectors, and reservoir monitoring wells, and pipeline slug/pig handling, launching, and catching. Without a full compiled draft, the EIR cannot completely and adequately assess the operations and maintenance impacts for the next 50 years and on all aspects and elements of the environment and community.

Furthermore the statement does not indicate whether any approvals by relevant authorities are required or will be provided before implementation of the O&M Manual. B5-600

p. D.6-38 **HAZ 2b*ix*** An integrity management program for HCA portions of the pipeline ***shall*** also be ***prepared*** in accordance with 49 CFR 192, Subpart O. The integrity management program shall be ***submitted to DOT and CPUC.*** (emphasis added.)

D.6 Hz-66 Comment: Although the statement is definitive ("shall" rather than "will" or "would")), the preparation of the program after approval of this application and certification of the EIR does not allow for review and assurance to the public and the reviewer that the conditions of the program shall be actually fulfilled and when they will be fulfilled. Furthermore, the Program is a standard gas-industry document and a draft from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Manual with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-601

For the Program, the critical elements should clearly state the operational process for all pipeline facilities and those controlling, measuring, and relieving pipelines and pipeline slug/pig handling, launching, and catching. Without a full compiled draft, the DEIR cannot completely and adequately assess the pipelines operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community. B5-602

Furthermore the statement does only indicate that the Program shall be prepared and submitted, but does not indicate whether any approvals by relevant authorities are required or will be provided before implementation of the Program. B5-603

p. D.6-39 **Impact HAZ-5: Interference with an Adopted Emergency Response Plan or Emergency Evacuation Route -** *Wellhead Site, Compressor Station, and Pipeline Segments 1 and 2*

As discussed in APM 9, SNGS, LLC will ***prepare an emergency response plan*** for the Proposed Project. Currently, no emergency response plan exists for the area. (emphasis added.)

D.6 Hz-67 Comment: Although the statement is definitive (shall rather than will or would), the preparation of the program after approval of this application and certification of the EIR does not allow for review and assurance to the public and the reviewer that the conditions of the program shall be actually fulfilled and when they will be fulfilled. Furthermore, the Program is a standard gas-industry document and a draft from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Program with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-604

For the Program, the critical elements should clearly state the operational process for all pipeline facilities and those controlling, measuring, and relieving pipelines and pipeline slug/pig handling, launching, and catching. Without a full compiled draft, the EIR cannot completely and adequately assess the pipelines operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community. B5-605

Furthermore the statement does only indicate that the Program shall be prepared and submitted, but does not indicate whether any approvals by relevant authorities are required or will be provided before implementation of the Program. B5-606

p. D.6-39 **HAZ-6 Preparation of a Fire Protection Plan.** SNGS, LLC ***shall prepare*** a ***fire protection plan*** that shall be ***[submitted for review by and implemented only when]*** approved by the City of Sacramento Fire Department during the construction of the facilities.

This plan shall include procedures to reduce the potential for creation of fires from welding and the ***provision of firefighting equipment and trained personnel*** to put out any fire that may be ignited. (emphasis added.)

D.6 Hz-68 Comment: Although the statement is definitive (shall rather than will or would), the preparation of the Plan after approval of this application and certification of the EIR does not allow for review and assurance to the public and the reviewer that the conditions of the program shall be actually fulfilled and when they will be fulfilled. Furthermore, the Plan is a standard gas-industry document and a draft from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Plan with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-607

For the Plan, the critical elements should clearly state the fire detection, protection, and suppression measures not now currently shown in the Project Description (e.g., fire water mains, hydrants, monitors, flash walls, foam systems, etc.) and operational process for all above ground facilities and required during high risk activities, e.g., cleaning pipelines, water tanks, slug/pig systems, etc.. Without a full compiled draft Plan, the EIR cannot completely and adequately assess the Project operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community. B5-608

Furthermore the statement does only indicate that the Plan shall be prepared and presumably submitted and then states as a matter of direct action, approval of the fire department without considerations of other relevant authorities. Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled. B5-609

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p. D.6-45 **References**

Mannon Associates. 2008. *Analysis of the Florin Gas Field for Gas Storage*. Sacramento, California: Prepared by Mannon Associates for SNGS, LLC. July 3.

Palmer, J. 2008. Testimony before the CPUC.

Ryder Scott Company. 2008. Letter to Mr. Jim Fossum, SNGS, LLC. Dated May 16, 2008

p. D.6-46

Weatherwax, R.K. **[et al = Weatherwax, Weatherwax& Weatherwax]**, 2008. *Probabilistic Risk Assessment, Sacramento Natural Gas Storage Project*. Roseville, California: Sierra Energy and Risk Assessment, Inc. July 2008. [Not Weatherwax 2002 or others] (emphasis added.)

Weatherwax R.K., and M.R. Weatherwax. 2007. *California Natural Gas Storage Facilities: A Contemporary History of Incidents*. Roseville, California: Sierra Energy and Risk Assessment, Inc.

D.6 Hz-69 Comment: Most references are not readily available or accessible to the Public for review in relationship to the references within the text in this sub-section and therefore no meaningful review and comments can be made with regard to the factual basis of B5-610

completeness, adequacy of summarization and inclusion in the EIR. Weatherwax references are confusing if not consistent. B5-610 (Cont.)

D.7 HYDROLOGY AND WATER QUALITY

p. D.7-1

D.7 W-1 Comment: Basic Comment (as for all sections)

The Proponent has done a "desktop" study of water resources, impacts, and mitigations and relies on inferences from previous studies without the actual field investigations specifically focused on the proposed Project and therefore the assessment and mitigation for Biological Resources cannot be considered as Complete, Adequate, or Sufficient to meet the requirements as an Environmental Impact Report under CEQA . B5-611

The Proponent has failed to recognize that all activities of the Proponent as part of the proposed Project MUST comply with all appropriate regulations, ordinances, and laws of the City and County of Sacramento, the State of California, and the Federal Government and therefore "Compliance" cannot be part of "mitigation" and any "non-compliance" would be void the Project, rather than it being considered as a "significant impact" to be mitigated by "compliance". B5-612

Rather than doing the field investigations prior to or for the preparation of the DEIR, the Proponent proposes to do additional studies after certification of the FEIR as part of the Mitigation, Monitoring, Compliance, and Reporting Plan (MMRP, not MMCRP) which has not been presented in sufficient, adequate, and complete details to assure mitigation of any and all possible impacts. The Proponent has placed the cart before the horse (mitigation before assessment), and reviewers must ASSUME that the MMRP may be carried out completely, adequately, and sufficiently to identify, mitigate/compensate for any assessed significant impacts, monitor successful reduction of impacts, and report such implementation, failures, revisions, and successes to the CPUC and relevant but as yet unidentified organizations. B5-613

Without such information, the setting, any impact assessments, mitigations, or even compliance cannot to confirmed. Appeal to the future review by government agencies of further investigations, designs, and other consideration defeat the CEQA purposes of clear, objective, and adequate information for decision maker at this time to make informed discretionary judgments as the impacts, mitigations, and their significance. These absences render this section totally incomplete, inadequate, and incomplete with regard to groundwater resources, setting, impacts, and mitigation. B5-614

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p. D.7-1 D.7.1 Environmental Setting for the Proposed Project

D.7 W-2 Comment: Basic Comment (as for all sections) Levels of Setting specificity for all hydrological elements are incomplete and far too generalized to provide sufficient and adequate documentation for assessment: B5-615

- Watershed and drainage area boundaries are not provided;
- Existing surface runoff drainage systems are not defined and located in relationship to the proposed Project and other current and proposed projects (including those of others);

- Stormwater watersheds, runoff conditions, and estimated flood-flows are not provided and not related to the Project and its contribution thereto;
- Surface water, drainage, and flooding are part of the same but herein separated but so generalized that the Project's impacts and setting impacts on the Project cannot not be completely or adequately assessed (insufficient information on flows, levels, and capacities);
- Stormwater characteristics and water quality are not provided for the affected watersheds;
- Sources of surface water contamination are not identified'
- Required stormwater measures are not identified for Morrison Creek nor related to the Project and affected watershed changes;
- Groundwater resources are divided into only two generalized units: Modesto and Mehrten while at least four are recognized beneath the South American and East Sacramento basins;
- Recharge areas are not identified nor related to the Project;
- Wells within one mile of the overall Project (including the field) have not been identified, especially those west of the Project elements.

B5-615 (Cont.)

D.7.1.1 General Setting

D.7 W-3 Comment: Basic Comment (as for all sections) The Generalized "County" level of description for the Project setting provides no framework for the specific area of the Project, watersheds, and underground water resources down to the "Cap Rock" (See also above).

B5-616

D.7.1.2 Surface Water

Fig. B-3 indicates that the Compressor Site lies on the "Old Morrison Creek" waterway which is now relocated to north side of Elder Creek Road, west side of Caroline Rd. (between RR ROWs) corridor, and turns and extends southwesterly along its original route from the approximate center of the west boundary of the Compressor Site.

Fig. B-6 shows a presumably "To Be Abandoned" and "Existing Drainage Ditch" running SE-NW through the center of the Compressor facilities and a Retention Pond, Sump Tank and Pump, and Bermed "Liquids Storage Tanks".

Section B No mention of drainage and watershed plan or requiring SacCity approval of plans.

D.7 W-4 Comment: The Project as indicated in Fig. D.7-1 does not show the cited hydrologic elements and tributary watersheds, e.g., Beach-Stone Lakes flowing southwest to the Delta, 11 tributary creeks to the Morrison Creek: Elder Creek, Elk Grove Creek, Strawberry Creek, Florin Creek, Union House Creek, Gerber Creek, Whitehouse Creek, and OTHERS are cited or identified.

B5-617

The proposed compressor station, wellhead, and pipeline would be located within the Morrison Creek watershed, but section does not indicate where in the watershed or tributary watersheds the Project facilities would be located and the watershed areas above and below the Project. No indication (estimates, calculations, etc.) of general and storm runoffs above and below the Project is provided, and therefore the degree of potential influence on water volumes and qualities.

B5-618

The setting does not provide any topographic information regarding the existing ground surface elevations nor the surface profiles of the existing sites and routes and proposed final grade levels with the Project.

These absences and those below render this section totally incomplete, inadequate, and incomplete with regard to surface water resources, setting, impacts, and mitigation. B5-619

D.7 W-5 Comment: The Section does not indicate the dimensions of portions of channelized vs semi-channelized vs unchannelized vs "natural channels" both above and below the Project or in the vicinity of the Project. B5-620

D.7 W-6 Comment: The Section does not provide channel flows (either measured or calculated for typical storms and rainfall events) for those sections of the watersheds above and below the Project, within the direct zone of effect of the Project, or an arbitrary 1 mile (or any other dimension) radius of the project . B5-621

D.7.1.3 Groundwater

"The depth to groundwater has been documented at 65 to 75 feet below the ground surface (SNGS, LLC 2007[*Proponent's Environmental Assessment(PEA) for the Sacramento Natural Gas Storage (SNGS) Project*. Sacramento, California: Sacramento Natural Gas Storage, LLC and EIP Associates, a division of PBS&J. April 5, 2007])."

D.7 W-7 Comment: The Groundwater Setting does not indicate the depth to groundwater at the Project sites, at locations where deep excavation would be undertaken (one reference indicates that the groundwater level may be 65-75 feet and another at -80ft below the ground surface and that excavation for HDD would be at 80ft depth, which seems impossible and would require major design and construction considerations to go from -6ft to -80ft).

The geotechnical report for both the Wellhead and Compressor Sttion sites indicate no groundwater was reached within the upper 40ft of alluvium and fill and could not make any factual assessment of groundwater resources or the causes of the depressed groundwater table.

At either 65 or 80ft below surface, a groundwater level would be equivalent to -35 to -45ft below sea level and the levels of the Sacramento and American Rivers. Such levels would indicate severe dewatering of the unconfined aquifers beneath the sites.

The Proponent has not provided any geotechnical borings which would have indicated the depth of groundwater for the Project sites and routes. These absences render this section totally incomplete, inadequate, and incomplete with regard to groundwater resources, setting, impacts, and mitigation. B5-622

The large vadose zone beneath the proposed Project surface facilities and the residences over the proposed Project reservoir may affect the migration of gases from the "natural" and Project repressurization of the field. If the groundwater is drawn down then more space is available for accumulation of gases within the dry vadose zone above the groundwater. Without knowing and understanding the groundwater dynamics, any sudden elevation of the groundwater table from >30ft below sea level to sea level or above could "water-drive" the vadose gas into the surface soils and structures. B5-623

Therefore the absence of setting regarding the groundwater conditions and dynamics is a serious deficiency for the completeness and adequacy of the EIR. B5-623 (Cont.)

D.7 W-8 Comment: The Groundwater Setting reference to the Proponent's Proponent's Environmental Assessment (2007) cannot be used to document the occurrence of geo -hydrological setting as the PEA is also subject to the same considerations regarding adequacy and completeness. The PEA also does not provide field data and investigations which would either confirm or deny the Proponent's summary or description of the Project's setting herein. Furthermore, the PEA section does not appear to be consistent with the DEIR; however, the purposes of the DEIR review does not include highlighting differences between the Proponent's PEA and the DEIR. B5-624

D.7.1.3 Groundwater

"…shallow aquifer in the Modesto Formation down to 200 to 300 feet below the ground surface."

D.7 W-9 Comment: The Groundwater Setting (either PEA or DEIR) does not indicate the depth(s) to the base of the "shallow", "intermediate" or "deep" groundwater "aquifer(s)" [SNGS 2007 indicated four aquifers and a base of -230ft] at the Project sites, nor the recharge areas for the groundwater table or the "aquifer(s)", nor those users of the existing "aquifer(s)" down to 200 to 300 ft, nor whether the "aquifer(s)" is adjudicated, nor whether the Proponent has established groundwater rights. B5-625

The PEA (Fig. 2-3) indicates that upper groundwater aquifers (=Rock and Fresh Water) above the Mehrten formation (Sand and Shale and Sand) are 1000ft thick.

Without consistent and adequate information, the setting, any impact assessments, mitigations, or even compliance cannot to confirmed.

Appeal to the future review by government agencies of further investigations, designs, and other consideration defeat the CEQA purposes of clear, objective, and adequate information for decision maker at this time to make informed discretionary judgments as the impacts, mitigations, and their significance. B5-626

These absences render this section totally incomplete, inadequate, and incomplete with regard to groundwater resources, setting, impacts, and mitigation.

D.7.1.3 Groundwater

"…deep aquifer in the Mehrten Formation from 300 to as much as 1,300 feet below the ground surface."

D.7 W-10 Comment: The Groundwater Setting of the PEA indicated water samples were taken by others at depths of 1,400 feet and again did not give the base or thickness of the Mehrten formation. B5-627

The PEA Figure 2-3 (SNGS, 2007) does show a schematic block diagram with a variable depth scale indicating the top of the Cap Rock lies approximately 3100ft below surface and is up to 500ft thick. Therefore the combined thickness of the Mehrten would be either 800ft, if only the Sand unit (with an as yet unnamed Shale and Sand unit), or 2000ft, if including both the Sand and Shale and Sand Units.

The PEA also notes that the Mehrten is both an unconfined or semi-confined aquifer (depending on section read), perhaps reflecting the confusion with regard to whether the Mehrten includes the "Shale and Sand" unit shown in Fig. 2-3. B5-628

The DEIR does not provide any information regarding the deep (>1000ft) wells installed by SacCo. and others within southeastern Sacramento area, although it refers to such and claims that they are used for municipal services but with considerable treatment for potable service. B5-629

The PEA (Fig. 2-3) indicates that upper groundwater aquifers (=Rock and Fresh Water) above the Mehrten formation (Sand and Shale and Sand) are 1000ft thick while the lower units reach 2000ft thick. B5-630

Without consistent and adequate information, the setting, any impact assessments, mitigations, or even compliance cannot to confirmed. B5-631

D.7.1.3 Groundwater

"Cap rock consisting of shale from 150 to 300 feet thick ***occurs*** below the aquifer…" (emphasis added.)

The Project Description also states: (p. B-10) "A porous sandstone unit within the Winters Formation measuring approximately 150 feet thick formed the Florin Gas Field. An impermeable shale cap measuring approximately 150 to 300 feet thick above the sandstone unit prevented the natural gas from escaping (see Figure B-4).

FIGURE [DEIR Section D.5, p. D.5-4, indicates the reservoir level is "…overlain (capped) by a 150- to 500-foot-thick shale unit." and PEA Section 3, April 5, 2007, p. 3.12 - -13, Public Health and Safety Also discussed that "…the cap rock above the reservoir is between 150 feet and 500 feet thick with no apparent structural faults within the field. DOGGR will review the proposed injection pressures and determine an acceptable operational pressure, which would maintain a margin of safety to prevent migration through natural pathways within the cap rock."] B5-632

p. B-11, Fig. B-4 and 2007, Fig. 2-3

Summaries of Figure 1100ft Soil, Clay, Rock, and Freshwater

1900ft base of sand

3100ft base of shale and sand and top of Cap Rock

Base of Cap Rock ≥3,500ft depth

Base of Permeable Winters Sandstone =Storage Reservoir)–3600-3800ft]

D.7 W-11 Comment: The Cap Rock actually separates aquifers as the reservoir sandstone contains a water drive condition, the formation water which has not been described as to quality and resources is in fact an aquifer of "formation water", although it may be non-potable and impractical to extract at the Project site.

The Groundwater Setting contains conflicting and inconsistent description of the setting. Therefore the entire discussion of setting and potential impacts to the groundwater resources of the Florin Gas Field and surroundings is incomplete, inadequate, and insufficient to support any meaningful assessment or mitigation regarding the release of gases from beneath the cap rock (or capping shale unit) and the movement of such from the cap rock through the Mehrten and overlying groundwater bearing units one to four units or more. B5-633

Without consistent and adequate information, the setting, any impact assessments, mitigations, or even compliance cannot to confirmed. Conflicting information and B5-634

absences of reliable direct information render this section totally incomplete, inadequate, and incomplete with regard to groundwater resources, setting, impacts, and mitigation. B5-634 (Cont.)

D.7.1.3 Groundwater

Groundwater in both the upper and lower aquifers is suitable for municipal water supplies, with the upper aquifer generally having higher quality.

D.7 W-12 Comment: The Groundwater Setting does not indicate information from the PEA that the Mehrten waters at 1400ft were unsuitable without further treatment for potable use, high dissolved solids. The Proponent does not provide Sacramento County information regarding the county wells nor the water quality analyses related thereto. B5-635

D.7.1.3 Groundwater Other Section References for Groundwater Resources

p. 3.8-6 The upper, unconfined aquifer system consists of the Victor, Fair Oaks, and Modesto Formation and a lower, unconfined aquifer system consists primarily of the Mehrten Formation.

p. 3.8-7 However, the Sacramento County Water Authority policies and practices have led to construction of large municipal wells within the Mehrten Formation.

Several production wells are located within 0.5 miles of the wellhead site and within 2 miles of the compressor site.

D.7 W-13 Comment: The various aquifers and the groundwater table are not completely and adequate developed in the Environmental Setting and thereby any and all assessments cannot be adequate and complete. The EIR does not provide a summary of the geotechnical report and the absence of any directly observed groundwater table beneath the Project sites and routes. No appreciation is indicated that the current groundwater table appears to be significantly depressed below sea level, the elevation of Sacramento River, and below an expected level at the Florin Field of approximately 25ft amsl or 13-20ft below ground levels. B5-636

No description of the various post-Mehrten alluvial formations has been provided herein or in the Geology and Soils Subsection; no discussion or description has been provided of the late Tertiary Mehrten and Valley Springs formations. No relationship are given for these formations and the DOGGR levels for the "Base of Fresh Water" (e.g., 1200-1500ft bgl) which would be expected within one or the other group of formations. B5-637

Several production wells are mentioned but no mention is provided for those that once served the Sacramento Army Depot; no other information is provided for the referenced wells wherever they may be and those for the Depot groundwater remediation within the vicinity of both the Compressor and Wellhead sites or others within the 0.5-2.0 mile radii of the sites. B5-638

D.7.1.3 Groundwater Several areas of soil and groundwater contamination have been documented at the Depot Park where the proposed compressor station would be located. Prior to remediation, the soil and groundwater at the site were contaminated with heavy metals, trichloroethylene (TCE), tetrachloroethylene, carbon tetrachloride, pesticides, volatile organic compounds (VOCs), and polychlorinated biphenyls. B5-639

Currently, the only groundwater contamination above the action levels is TCE. The TCE plume is being pumped and treated, and the U.S. Army monitors the groundwater conditions quarterly.

D.7 W-14 Comment: The EIR does not indicate where, when, and how badly the groundwater and presumably soils between the surface sources and groundwater levels have been contaminated nor the current status of contamination and remediation. B5-639 (Cont.)

Many wells are known to exist in the vicinity (<250ft) of sites and routes, but the EIR makes no mention for those that currently serve or have served the Sacramento Army Depot. No other information is provided for the referenced wells wherever they may be and those for the Depot groundwater remediation within the vicinity of both the Compressor and Wellhead sites or others within the 0.5-2.0 mile radii of the sites. B5-640

No documents are referenced for these critical items. B5-641

D.7.1.4 Water Quality

…urban runoff transported by municipal stormwater conveyance systems is one of the ***principal causes of water quality problems*** in most urban areas…Beneficial uses for Morrison Creek are associated with the Sacramento River but exclude aquatic life support, warm freshwater habitat, and overall use support due to pesticides from agricultural and municipal/urban runoff. (emphasis added.)

D.7 W-15 Comment: The EIR does not provide any hydrological setting for the proposed Project, especially for the current topography and stormwater drainage network and how the "natural" drainage has been modified by the Depot and railroad development. For the assessment, descriptions of the two surface sites as being only partially "impervious does not reflect the construction impacts on existing soils and their structure and probable stormwater generation. B5-642

The EIR setting does not identify where and status of the hydrocarbon contamination of soils in the old Army Depot and the relationships between surface and soil contamination, runoff, and groundwater conditions and infiltrations. Contaminated soil leachate may have been moved into the Project areas or pipeline routes but the EIR does not indicate where leachate and runoff may be contaminated on or adjacent to the proposed Compressor Site. B5-643

Railroad rights-of-way are widely know to be contaminated, especially where numerous sidings or yards have been used before 1970. The EIR provides no information regarding the presence of railroad sidings and potential for contaminated soils and potential for soil leachates and runoffs to be contaminated and to be discharged to storm drains and to the Morrison Creek adjacent to the Compressor site. B5-644

The Project dewatering for HDD and other elements may contain contaminated leachate and would most likely be discharged to the adjacent Morrison Creek. B5-645

D.7.1.4 Water Quality The Federal Clean Water Act (CWA) Section 303(d) requires that states to assess the quality of their waters every 2 years and publish a list of those waters not meeting established water quality standards. Water quality standards found in the Basin Plan (CVRWQCB 1994) include beneficial uses, water quality objectives necessary to protect beneficial uses, and the antidegradation policy. For waterbodies placed on the 303(d) List of Water Quality Limited Segments, states are required to develop total maximum daily loads (TMDLs) for the pollutant(s) that are causing standards impairment. A waterbody remains on the list until a TMDL is adopted and the water quality standards are attained or there are sufficient data to demonstrate that water B5-646

quality standards have been met and that delisting should take place. Table D.7-2 provides a summary of impaired waters in the vicinity of the Proposed Project.

D.7 W-16 Comment: The EIR does not provide any information regarding the current character of Morrison Creek water quality, whether the Creek meets water quality standards, whether any limits have been established for the Creek, its upstream tributary (including the Depot drainage system) or its downstream waterways. Some statements indicate the Creek may have limits for past agricultural uses of Diazinon and its leaching from soils into runoff and discharge to the Creek but no documentation is provided to assess runoff potentials for construction stormwater or drainage from future site surfaces. B5-646 (Cont.)

D.7.1.5 Floodplains

D.7 W-17 Comment: The entire setting for floodplains is totally inadequate and incomplete as no information is provided regarding the current drainage systems above, around, and below the Project areas and routes, their total and available capacities, their current runoff-flow characteristics, detention/retention capacities, and potential runoff of the Project. The one figure shows that the Compressor site is at the edge of the 100-year flood inundation zone, but the figure is at such a general scale so as to render it useless for setting, assessment, and mitigation.

The floodplain setting must focus on the original Morrison Creek and its floodplain and then the connection of the Morrison Creek channel and floodplain and that of the "100-year" floodplainof the American River and backwater effects between the Sacramento and American Rivers as shown in the EIR (Fig. D.7-2). Also, construction of the Army Depot and railroad sidings and mainline (and all other developments on the floodplain[s]) required considerable filling which reduce or changed the floodplain stormwater storage factors for all flooding. B5-647

D.7.1.5 Floodplains The Sacramento area is relatively flat and has required a comprehensive system of dams, levees, overflow weirs, drainage pumping plants, and flood control bypass channels to control flow from regional streams and creeks during large storm events.

During large storm events, tributaries such as Morrison Creek discharge into the Sacramento and American rivers, increasing the risk of flooding in the area.

According to the Federal Emergency Management Agency (FEMA) flood zone map shown in Figure D.7-2, the compressor station, pipeline segment two, and portions of pipeline segment one would be subject to flooding during a 100-year storm event.

D.7 W-18 Comment: The entire flood zone of the Morrison Depot is affected by filling for the Depot area as indicated in the Figure D.7-2. The Depot causes flooding upstream by reducing flows through the "channel" provided through and around the Depot. Unusually the sidings and main line of the railroad are inundated by the 100-year flood zone; this needs to be confirmed with more detailed delineation of the flooding in and around the Depot. B5-648

D.7.1.5 Floodplains The wellhead site and portions of pipeline segment one would not be within the 100-year flood zone.

D.7 W-19 Comment: No direct information or references are provided to substantiate this statement and no details are provided within the Project district to establish where the 100- B5-649

year flood zone exists. As no drainage network/system drawings and information are provided the statement must be questioned and demonstrated. B5-649 (Cont.)

D.7.1 Table D.7-3 Proponent Proposed Measures for Hydrology and Water Quality

APM No. Description

1 SNGS, LLC ***would*** identify work areas and ***would*** ensure that:

- Construction activities, equipment, and associated activities (e.g., staging areas) are confined to the designated work zones
- Areas supporting sensitive resources (e.g., nearby seasonal wetlands and special-status species' habitat) are avoided.

Construction equipment ***would*** be ***confined*** to a ***designated work zone*** in the project area. (emphasis added.) B5-650

Before ground disturbing activities are initiated, the work zone ***would*** be clearly staked and flagged. (emphasis added.)

Where ***feasible***, all adjacent waters and wetlands ***would be avoided and would be designated*** as exclusion zones during the preconstruction phase. (emphasis added.)

D.7 W-20 Comment: The APM 1 is tentative (would rather than will or best SHALL) and open to considerable interpretation for "confined", "designated", "feasible" and "avoided".

Measure does not specifically or even generally apply to the Hydrology and Water Quality. B5-651

No specific areas are indicated in the Project Description or settings, and as provided, this APM cannot be considered to be adequately defined and involved in the assessment of potential impacts on hydrology and water quality. B5-652

D.7.1 Table D.7-3 Proponent Proposed Measures for Hydrology and Water Quality

APM No. Description

2 SNGS, LLC would conduct Worker Environmental Awareness Program (WEAP) training for construction crews before construction activities begin. The WEAP training would include a brief review of the **special-status species and other sensitive resources that could occur in the Proposed Project area (including their life history and habitat requirements and what portions of the Proposed Project area they may be found in) and their legal status and protection.** The program would also cover all mitigation measures; environmental permits; and Proposed Project plans, such as the BMPs, erosion control and sediment plan, and any other required plans. (emphasis added.)

During WEAP training, construction personnel would be informed of the importance of avoiding ground disturbing activities outside of the designated work area. The designated environmental inspector would be responsible for ensuring that construction personnel adhere to the guidelines and restrictions. WEAP training sessions would be conducted as needed for new personnel brought on to the job during the construction period (relative to the area in which the employee would be working and the tasks the employee would be completing). B5-653

D.7 W-21 Comment: Measure does not specifically or even generally apply to the Hydrology and Water Quality. No actual document is provided as draft or otherwise and therefore the definition and content of the mitigation measure cannot be reviewed and therefore its reduction of significant effects cannot be assessed.

Training is important and therefore the proposed measure is inadequate and insufficient for establishing the level of mitigation and therefore the remaining effects and their significance. B5-654

No specific areas are indicated in the Project Description or settings, and as provided, this APM cannot be considered to be adequately defined and involved in the assessment of potential impacts on hydrology and water quality. B5-655

In addition, later on in mitigation, the DEIR section states: "SNGS, LLC has proposed APMs 1, 2, and 14 to reduce erosion and control sedimentation from construction. These measures require implementation of erosion and sediment BMPs; confining construction activities to well-defined work zones; avoidance of sensitive features, including adjacent waters and wetlands; and conducting a WEAP, which includes training on all mitigation measures; including BMPs; an erosion and sediment plan; and the covering of trucks hauling soils, sand, and other loose materials." **but these measures are not included within the table and cited sections. (emphasis added.)**

APM 5 The DOGGR is responsible for wells drilled into an underground gas storage facility. SNGS, LLC ***would*** complete engineering and geology studies and an injection plan and submit them to **DOGGR for approval.** (emphasis added.)

D.7 W-22 Comment: As indicated elsewhere, the DEIR contains inconsistent mitigation measures and thereby presents many opportunities for confusion and minimal compliance with the least stringent elements included in the DEIR and therefore mitigation measures are considered as inadequately and inconsistently defined and presented. As indicated above, some conditionality is implied by "would" along with an assumption that no matter what the Applicant submits, DOGGR will approve after the approval of the application of this DEIR. B5-656

These studies would describe the well drilling and abandonment plans; reservoir characteristics; ***all geologic units, aquifers, and oil and gas zones***; and the monitoring system to ensure that injected gas is confined to the intended zone. (emphasis added.)

D.7 W-23 Comment: As indicated repeatedly elsewhere claims of full development of the environmental setting and future prospective actions cannot be considered as full, complete, and adequate compliance with CEQA after the discretionary decisions have been made. B5-657

SNGS, LLC ***would*** be required to post a bond with DOGGR to ensure proper completion or abandonment of any well drilled. (emphasis added.)

Additionally, DOGGR ***would*** be responsible for ***approving*** a ***water injection plan that would allow SNGS, LLC to inject water that is extracted from the gas field back into the gas field.*** **(emphasis added.)**

D.7 W-24 Comment: As indicated above, some conditionality is implied by "would" along with an assumption that no matter what the Applicant submits, DOGGR will approve after the approval of the application of this DEIR. B5-658

Referenced bonds are generally adequate of conducting a simple re-abandonment and do not provide for costs of ancillary damages arising from the results of the initially improperly abandoned well in a fully developed residential urban environment. Therefore the adequacy of the referenced bonding and completeness of its coverage does not B5-659

support adequate and sufficient mitigation of risks of potential impacts of improperly abandoned wells. B5-659 (Cont.)

D.7.1 Table D.7-3 Proponent Proposed Measures for Hydrology and Water Quality

APM No. Description

7 The following measures ***would*** be incorporated into the construction contract specifications to address hazardous materials generated from construction-related activities:

- Diesel fuel and petroleum-based lubricants shall be stored only at designated staging areas.
- Regardless of the quantity spilled, all hazardous material spills or threatened releases (including petroleum products such as gasoline, diesel, and hydraulic fluid) must be immediately reported if the spill has entered or threatens to enter ***a water of the State of California or the U.S.***, or has caused injury to a person or threatens injury to public health. (emphasis added.)

D.7 W-25 Comment: D.7 W-24 Comment: As indicated above, some conditionality is implied by "would" along with an assumption that no matter what the Applicant shall incorporate such terms and conditions in their contracts, without having drafts of such contracts to assure the mitigative clauses are included. B5-660

The D.7 Section does not delineate the waterways and drainage system for the entire Florin district, much less the subdivision of Waters of the US, Waters of California, or "others". B5-661

D.7.1 Table D.7-3 Proponent Proposed Measures for Hydrology and Water Quality

APM No. Description

8 SNGS, LLC **would** prepare a ***Hazardous Materials Contingency Plan*** that ***would*** be implemented if a spill occurs or if any hazardous materials are encountered during construction.

Provisions outlined in this plan ***would*** include phone numbers of city, county, state, and federal agencies and primary, secondary, and final cleanup procedures. (emphasis added.)

In addition, SNGS, LLC ***would*** require the project contractor to prepare a ***Health and Safety Plan (HSP)*** to ***minimize*** environmental impacts in the event that hazardous soils or other materials are encountered during construction of the project. The HSP ***would*** include elements that establish worker training, engineering controls, and monitoring. The HSP also ***would*** establish security measures to ***prevent*** unauthorized entry to cleanup sites and to ***reduce*** hazards outside the investigation/cleanup area. (emphasis added.)

D.7 W-26 Comment: The various statements are less than definitive (would rather than shall or even will), the preparation of the Plans if done would be done only after approval of this application and certification of the EIR and therefore does not allow for review and assurance to the public and the reviewer that the conditions of the Plans shall be actually fulfilled and when they will be fulfilled. Furthermore, the Plans are a standard gas-industry documents and drafts from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Plans with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-662

For the Plans, the critical elements should clearly state the fire, accident, and release detection, protection, and suppression measures not now currently shown in the Project B5-663

Description and operational process for all above ground facilities and required during high risk activities, e.g., cleaning pipelines, water tanks, slug/pig systems, etc.. Without full compiled draft Plans, the EIR cannot completely and adequately assess the Project operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community. B5-663 (Cont.)

Furthermore the statement does only indicate that the Plan shall be prepared and presumably submitted and then does not state any manner of approval of the fire department or other relevant authorities. Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled. B5-664

D.7.1 Table D.7-3 Proponent Proposed Measures for Hydrology and Water Quality

APM No. Description

12 The equipment used for the Proposed Project ***would*** require periodic maintenance and refueling. To ***reduce the potential*** of contamination by spills, no refueling, storage, servicing, or maintenance of equipment ***would*** be performed within ***100 feet of sensitive environmental resources*** (e.g., ***seasonal wetlands and Morrison Creek***). (emphasis added.)

Additionally, all refueling or servicing ***would*** be done with absorbent material or drip pans underneath equipment to contain spilled fuel or fluids. Any fluids drained from the machinery during servicing ***would*** be collected in leak-proof containers and taken to an appropriate disposal or recycling facility. If such activities result in spillage or accumulation of a product on the soil, the contaminated soil ***would be assessed and disposed of properly***. (emphasis added.)

Under no circumstances ***would*** contaminated soils be added to a spoils pile. (emphasis added.)

Mobile refueling trucks ***likely would*** be used for on-site refueling of stationary construction equipment. The refueling trucks ***would*** be independently licensed and regulated to haul and dispense fuels and to ensure that the ***appropriate spill prevention techniques*** are implemented. All maintenance materials (i.e., oils, grease, lubricants, antifreeze, and similar materials) would be stored in a designated storage area, away from site activities and more than ***100 feet from sensitive resources***. During construction, all vehicles and equipment required on site ***would*** be parked or stored at least ***100 feet from waterbodies, wetlands, and other sensitive resource areas***. These areas ***would*** be identified on the ***construction drawings, as appropriate***. All wash-down activities ***would*** be conducted at least ***100 feet from sensitive environmental resources.*** (emphasis added.) B5-665

D.7 W-27 Comment: The DEIR does not establish and identify the hydrologic and flooding setting of the Project area and thereby the tentative nature of the mitigation ("would" rather than "shall") renders the mitigation measure and setting totally incomplete and inadequate for establishing the significance of impacts from an inadequate setting and thereby cannot provide complete and adequate mitigation for any as-yet-undescribed impacts on Morrison Creek, 100-year flood area, and undescribed waterways and storm drains for Project areas.

D.7.1 Table D.7-3 Proponent Proposed Measures for Hydrology and Water Quality

APM No. Description B5-666

13 Following installation of the pipeline, the right-of-way (ROW) ***would*** be graded to preconstruction grades and contours and would be seeded with an appropriate seed mix. The seed mix ***would*** be composed of the appropriate mix of species and be acceptable to the landowner. All disturbed areas of paved roadways ***would*** be repaved. (emphasis added.)

D.7 W-28 Comment: APM 13 has virtually no relevance to the hydrological impacts as the sites and corridors are in fact already impacted or would be totally impacts by construction compaction and reseeding of compacted and graveled area would have no mitigation value for this Section D subsection.

B5-666 (Cont.)

D.7.1 Table D.7-3 Proponent Proposed Measures for Hydrology and Water Quality

APM No. Description

14 SNGS, LLC would prepare an ***erosion and sediment control plan*** and a ***post-construction erosion and sediment control plan*** that describes when, where, and how the site reclamation ***BMPs*** would be implemented. The City of Sacramento would review and approve these plans prior to construction. (emphasis added.)

D.7 W-29 Comment: Although the statement is tentative (would rather than shall), the preparation of the Plan after approval of this application and certification of the EIR does not allow for review and assurance to the public and the reviewer that the conditions of the program shall be actually fulfilled and when they will be fulfilled. Furthermore, the Plan is a standard city and county document and a draft document from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Plan with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures).

B5-667

For the Plan, the critical elements should clearly state the erosion and runoff detection, protection, and suppression measures are not now currently shown in the Project Description (e.g., drainage discharge and collection systems, runoff treatment facilities, downstream monitors, etc.) and operational process for all above ground facilities and required during high risk activities, e.g., cleaning pipelines, water tanks, slug/pig systems, etc.. Without a full compiled draft Plan, the EIR cannot completely and adequately assess the Project operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community.

B5-668

Furthermore the statement does only indicate that the Plan shall be prepared and presumably submitted and then states as a matter of direct action, approval of the City without considerations of other relevant authorities and without the possibility of disapproval and the activities resulting from such disapproval. Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled.

B5-669

D.7.1 Table D.7-3 Proponent Proposed Measures for Hydrology and Water Quality

APM No. Description

16 SNGS, LLC would prepare a ***Bore Plan and Frac-Out Contingency Plan*** that would both ***reduce the potential*** for a frac-out to occur and ***minimize*** any negative impact should a frac-out occur. The plan will include specific measures for monitoring frac-out, containing drilling mud, and notifying agency personnel. (emphasis added.)

B5-670

The plan will be submitted to CPUC and agencies with jurisdiction prior to horizontal directional drilling (HDD) activities. ***The contractor will be responsible for hauling and the disposal of all waste drilling fluid at an approved location.*** (emphasis added.)

D.7 W-30 Comment: Although the statement is tentative (will or would rater than shall), the preparation of the Plan after approval of this application and certification of the EIR does not allow for review and assurance to the public and the reviewer that the conditions of the program shall be actually fulfilled and when they will be fulfilled. A Plan is a standard drilling/pipeline-industry document and a draft from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Plan with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-670 (Cont.)

For the Plan, the critical elements should clearly state the process, areas, and measures not now currently shown in the Project Description and operational process for all above ground facilities and required during high risk activities, e.g., startup, cleaning bore and reaming, pipe installation, etc.. Without a full compiled draft Plan, the EIR cannot completely and adequately assess the Project operations risks and impacts for the next 5 years and on all aspects and elements of the environment and community. B5-671

Furthermore the statement does only indicate that the Plan shall be prepared and presumably submitted and then states as a matter of direct action, approval of the CPUC without considerations of other relevant authorities, City and County of Sacramento. Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled. B5-672

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p. D.7-15 ***D.7.3.3 Hydrology and Water Quality Impact Analysis,*** **Impact H-1: Water Quality Degradation from Erosion and Sedimentation during Construction**

D.7 W-31 Comment: This subsection has not been coordinated with the above mentioned APMs and different measures reflect the uncoordinated nature of the setting, assessment, and the as-yet-to-be-committed measures of the Applicant found in this subsection and most others. B5-673

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p. D.7-16 SNGS, LLC has proposed APMs 1, 2, and 14 to ***reduce*** erosion and control sedimentation from construction. These measures require implementation of erosion and sediment BMPs; confining construction activities to well-defined work zones; avoidance of sensitive features, including adjacent waters and wetlands; and conducting a WEAP, which includes training on all mitigation measures; including BMPs; an erosion and sediment plan; and the covering of trucks hauling soils, sand, and other loose materials. Implementation of these APMs ***would*** protect water quality in the project area due to erosion from construction activities; therefore, this impact ***is considered*** less than significant (Class III; see Section D.1 for classification of impact significance), and no further mitigation is required. (emphasis added.)

D.7 W-32 Comment: This subsection continues the inadequate and incomplete coordination with the above mentioned APMs and different measures reflect the uncoordinated nature of the setting, assessment, and the as-yet-to-be-committed measures of the Applicant found in this subsection and most others. Since the setting does not establish where and when the impacts may occur and the assessment does not reflect the reality of construction site and conditions, the tentative reduction and supposed implementation cannot be demonstrated, rather than "considered" to eliminate, not reduce by some undefined degree assumed by the Applicant, the undefined impacts on undesignated and delineated hydrologic resources. B5-674

p. D.7-16 Impact H-2: Degradation of Water Quality through Spill of Potentially Harmful Materials Used in Construction

The primary receiving waters for runoff from proposed construction activities, including the wellhead site, compressor station, and pipeline construction, include Morrison Creek, Elder Creek, the remnant Morrison Creek corridor, wetlands, other drainage ways, the Sacramento Valley Groundwater Basin, and the South American Subbasin…

APM 8 requires development of a Hazardous Materials Contingency Plan and Health and Safety Plan for ***quick and safe cleanup*** of accidental spills occurring during construction. (emphasis added.)

Implementation of these APMs ***would*** protect the water quality of both surface water and groundwater in the project area from accidental spills of hazardous materials occurring during construction. Therefore, this impact is considered less than significant (Class III), and no further mitigation is required. (emphasis added.)

D.7 W-33 Comment: This subsection continues the inadequate and incomplete coordination with the above mentioned APMs and different measures reflect the uncoordinated nature of the setting, assessment, and the as-yet-to-be-committed measures of the Applicant found in this subsection and most others. Since the water quality setting of surface and groundwater resourcesdoes not establish where and when the impacts may occur and the assessment does not reflect the reality of construction site and conditions, the tentative reduction and supposed implementation cannot be demonstrated, rather than "considered" to eliminate, not reduce by some undefined degree assumed by the Applicant, the undefined impacts on undesignated and delineated hydrologic resources.

B5-675

p. D.7-17 ---18 **Impact H-3: Impacts to Surface Waters -** *Wellhead Site and Compressor Station*

As depicted on Figure D.7.1, there are ***no streams or creeks*** within the proposed wellhead, or compressor station, site limits. Therefore, there ***would be no direct impacts*** to surface waters at the project sites. (emphasis added.)

D.7 W-34 Comment: This subsection continues the inadequate and incomplete coordination with the above mentioned APMs and different measures reflect the uncoordinated nature of the setting, assessment, and the as-yet-to-be-committed measures of the Applicant found in this subsection and most others. Statements as to "no streams or creeks" may be correct as far as the Applicant has provided, but the hydrologic setting provides not such documentation and specifically does not provide the current drainage sytem for stormwater for the sites and pipeline routes. Since the setting does not establish where and when the impacts may occur, and the assessment does not reflect the reality of construction site and conditions, the tentative reduction, and the supposed implementation cannot be demonstrated, rather than "considered" to eliminate, not reduce by some undefined degree assumed by the Applicant, the undefined impacts on undesignated and delineated hydrologic resources.

B5-676

p. D.7-17 *Pipeline Segments 1 and 2*

An ***inadvertent release*** of drilling mud (i.e., a frac-out) during the HDD [horizontal directional drilling] under Morrison Creek ***could*** result in sedimentation and turbidity to ***nearby*** water resources. With implementation of APMs 8 and 16 (which require preparation of a Hazardous Materials Contingency Plan, a Health and Safety Plan, an Emergency Response Plan, and a Bore

B5-677

Plan) and Mitigation Measures H-3a and H-3b, impacts to surface waters **would** be reduced to a less-than significant level (Class II). (emphasis added.)

B5-677 (Cont.)

D.7 W-35 Comments: This subsection continues the inadequate and incomplete coordination with the above mentioned APMs and different measures reflect the uncoordinated nature of the setting, assessment, and the as-yet-to-be-committed measures of the Applicant found in this subsection and most others. Statements as to "nearby water resources" may be correct as far as the Applicant has provided, but the hydrologic setting provides documentation as to proximity of resources and specifically does not provide the current drainage sytem for stormwater for the sites and pipeline routes. Since the setting does not establish where and when the impacts may occur, and the assessment does not reflect the reality of construction site and conditions, the tentative reduction, and the supposed implementation cannot be demonstrated impacts of the Project and value of mitigation and rather than "would reduce" the DEIR's mitigation "shall eliminate", the undefined impacts on undesignated and delineated hydrologic resources.

B5-678

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p. D.7-17 In addition, APM 13 requires that, following construction, the pipeline ROW be graded to preconstruction grades and contours and be revegetated with an appropriate seed mix, which **would reduce** impacts to surface water during operation to less than significant (Class III). (emphasis added.)

D.7 W-36 Comment: As indicated above, APM 13 has little relevance to the hydrologic impacts of the constructed sites. Since the setting has not be established, the impacts assessment cannot be considered as adequate or complete, and therefore the proposed measures cannot be reviewed as adequate or complete to mitigation as-yet-undocumented impacts to "less than significant".

B5-679

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p. D.7-17 **Mitigation Measures for Impact H-3: Impacts to Surface Waters**

H-3a Creek Crossing Procedures. Creek crossings ***shall*** be conducted in a manner that does not result in a sediment-laden discharge or hazardous materials release to the waterbody. The following measures ***shall*** be implemented during horizontal boring (jack and bore) operations:

(1) Site preparation ***shall*** begin no more than 10 days prior to initiating horizontal bores to reduce the time soils are exposed adjacent to creeks and drainages. (emphasis added.)

(2) Trench and/or bore pit spoil ***shall*** be stored a minimum of 25 feet from the top of the bank or wetland/riparian boundary for Morrison Creek. Spoils shall be stored behind…p. D.7-18…a sediment barrier and covered with plastic or otherwise stabilized (i.e., tackifiers, mulch, or detention). (emphasis added.)

(3) Portable pumps and stationary equipment located within 100 feet of a water resource (i.e., wetland/riparian boundary, creeks, drainages) ***shall*** be placed within secondary containment with adequate capacity to contain a spill (i.e., a pump with 10-gallon fuel or oil capacity should be placed in secondary containment capable of holding 15 gallons). A spill kit ***shall*** be maintained on site at all times. (emphasis added.)

(4) Immediately following backfill of the bore pits, disturbed soils ***shall*** be seeded and stabilized to prevent erosion and temporary sediment barriers left in place until restoration is deemed successful. (emphasis added.)

(5) SNGS, LLC ***shall*** obtain the required permits prior to conducting work associated with HDD activities and provide proof to CPUC. Required permits may include ACOE CWA Section 404, RWQCB CWA 401, and CDFG Streambed Alteration Agreement 1602. SNGS, LLC

B5-680

shall implement all pre- and post-construction conditions identified in the permits issued for HDD activities. (emphasis added.)

D.7 W-37 Comment: The various statements are definitive (shall rather than would or will) but do not reference the plans discussed elsewhere or the related APMs, approvals of relevant authorities, and submittals which appear to come after the approval of this application and certification of the EIR and therefore does not allow for review and assurance to the public and the reviewer that the conditions of the Plans shall be actually fulfilled and when they will be fulfilled. Furthermore, the Plans are a standard gas-industry documents and drafts from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Plans with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-680 (Cont.)

For the measure, the elements should clearly state the resources in the hydrologic setting, the locations of potential impacts, and thereby the locations, schedule, and extent of these measures required and coordinated with related APMs and Plans not now currently shown in the Project Description and construction and operational facilities and required during high risk activities, e.g., cleaning pipelines, HDD, water tanks, slug/pig systems, etc.. Without full compiled draft Plans, the EIR cannot completely and adequately assess the Project operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community. B5-681

Furthermore the statement does not indicate where and when the measures are to be applied. Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled. B5-682

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p. D.7-18 **H-3b** (1) Prior to construction, SNGS, LLC ***shall consult*** with the CVRWQCB to determine if an individual discharge ***permit is required*** for dewatering at any of the project sites anticipated to encounter groundwater. A copy of the permit or a waiver from the RWQCB, if required, ***shall be provided to the CPUC prior to dewatering.*** **(emphasis added.)**

(2) In addition, SNGS, LLC ***shall submit*** a typical dewatering drawing that shall be implemented during dewatering activities. The drawing shall include the location of pumps within secondary containment; fuel storage areas; anticipated discharge point; scour protection measures; intake hose screening; and monitoring procedures to ensure that hazardous materials spills are addressed in a timely manner and discharge hoses are frequently inspected for leaks. **(emphasis added.)**

D.7 W-38 Comment: The various statements are almost definitive (shall rather than would or even will). However, the Applicant has not established whether a construction or operating permit is required for the surface and HDD subsurface facilities and activities if a permit is required the mitigation would be to prepared documents and submission which are usually done in parallel with the CEQA process. Determination and submission done only after approval of this application and certification of the EIR and therefore does not allow for review and assurance to the public and the reviewer that the conditions of the Plans shall be actually fulfilled and when they will be fulfilled. Furthermore, as is indicated above the measures are extracted from standard water-related documents, and drafts from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Plans with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-683

The statements do only indicate that the measures may be implemented only after the determination shall be prepared and presumably submitted and then does not state any manner of approval of the other relevant authorities (City and County of Sacramento). Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled. B5-684

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p. D.7-18 **Impact H-4: Increased Runoff from New Impervious Areas and Alteration of Existing Drainage Patterns**

D.7 W-39 Comment: The various statements in H-4 measures but do not reference the plans discussed elsewhere or the related APMs, approvals of relevant authorities, and submittals which appear to come after the approval of this application and certification of the EIR and therefore does not allow for review and assurance to the public and the reviewer that the conditions of the Plans shall be actually fulfilled and when they will be fulfilled. B5-685

The impacts are not based on direct evidence and data provided in the hydrologic setting and do not completely locate the affected and mitigated areas and hydrologic elements. The assessment of impacts does not adequately or completely cover the actual activities and effects of construction, including laydown, stabilized equipment areas, and offices. B5-686

For the measures, the elements should clearly state the resources in the hydrologic setting, the locations of potential impacts, and thereby the locations, schedule, and extent of these measures required and coordinated with related APMs and Plans not now currently shown in the Project Description and construction and operational facilities and required during high risk activities, e.g., cleaning pipelines, HDD, water tanks, slug/pig systems, etc.. Without full compiled draft Plans, the EIR cannot completely and adequately assess the Project operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community. B5-687

Furthermore the statements throughout the assessment and mitigation subsection do not indicate where and when the measures are to be applied. Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled. B5-688

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p. D.7-18 **Impact H-4,** *Wellhead Site and Compressor Station*

Construction of the wellhead site ***would*** increase the impervious surface area by approximately0.2 acre, resulting in an approximately ***11% increase*** in runoff (SNGS, LLC 2007). (emphasis added.)

D.7 W-40 Comment: Without details of the site and drainage system in the DEIR, the reviewers must depend upon a document not readily available to the public in order to evaluate the calculation of 11% (say, rather than 15%). The estimated 11% also requires the levels of detail not provided in the DEIR (general comment throughout), such as specific areas, rainfall/runoff calculations, and times of concentration and drainage network. B5-689

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p. D.7-18 The remaining approximately 3.8 acres ***would b*** (emphasis added.)***e covered*** with crushed rock, a ***pervious surface*** that ***would not impede*** infiltration of runoff.

D.7 W-41 Comment: Areas covered with crushed rock ae areas which would be graded and compacted for general access and perhaps have a geotextile cover for retaining crushed rock on the surface. Without a specific design, the graded, compacted, and cover surface of B5-690

the remaining would be considered as impervious surface although the time of concentration may be lengthened. B5-690 (Cont.)

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p. D.7-18 A 10-foot-high wall would surround and ***isolate the wellhead site from runoff to and from the site,*** with the exception of a culvert from the Power Inn Road ditch, which will be in the developed portion of the wellhead site. (emphasis added.)

D.7 W-42 Comment: Without a detailed drainage plan for this and all sites for the Project, walls and berms may adversely affect the drainage system in the area as exclusion of drainage waters may create higher inundation levels up and downstream of the Project facilities in addition to the point-discharge rather than wider area discharges at present. B5-691

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p. D.7-19 The wellhead site currently acts as a ***detention area for flows that run onto the site***. Construction activities on site ***could change the current drainage patterns***, which could contribute to off-site runoff to surrounding areas, which would be a potential significant impact. With implementation of Mitigation Measure H-4a, which requires preparation of a ***Drainage Study and Shed Map***, impacts to drainage would be reduced to less than significant (Class II). (emphasis added.)

D.7 W-43 Comment: This is the first time that local drainage discussion has been presented and "as a detention area [equals periodically inundated by existing waterways]" but without context and documentation, especially as earlier statements indicated that the area was NOT within the 100-year flood level but herein is stated as a detention area (=inundation or flood zone). B5-692

The 10ft high wall would clearly indicate that the area perimeter and drainages into and from within the wall would affected by its presence. B5-693

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p. D.7-19 Construction of the compressor station ***would*** increase the impervious surface area and alter existing drainage patterns of the approximately 5-acre site. The impervious surface area ***would*** increase by approximately ***1 acre, resulting in about 22% increase in runoff*** (SNGS, LLC 2007). (emphasis added.)

Because 1 acre of impervious surface area will be added and on-site drainage patterns would be altered due to a new building on site, there could be a ***potential for a significant impact to runoff and changes*** to the existing drainage pattern on site. With implementation of Mitigation Measures H-4a and H-4b; which require ***preparation of a drainage study, shed map, and erosion and sediment control plans***; impacts to ***increased runoff and drainage would be reduced*** to a less than-significant level (Class II). (emphasis added.)

D.7 W-44 Comment: Both the Project Description and this subsection are incomplete and inadequate by not providing appropriate drawings and drafts of the various documents required for submission and the implied requests for approval of the application before the plans are provided and thereby circumvent the CEQA requirements of impacts and mitigations prior to certification of the EIR and discretionary decisions regarding the Project and what the Applicant is dedicated to do for mitigation and compensation. B5-694

The assessment does not consider the effects of operating heavy construction equipment and laydowns across the site, therefore the placement of artificial, impervious does not represent the only impervious area. All construction areas should be considered and assessed as compacted and generally impervious. B5-695

The "plans" must include physical facilities and equipment to deal with the runoff and drainage of the sites, and therefore the plans must be be prepared based on the actual Project Description of the Project. Preparation of the plans after the application is decided is to avoid integration of the "mitigation" and the Project. B5-696

As the Compressor and Wellhead sites are enclosed and with higher runoff coefficients than the sites at present the areas of inundation and risk of 100-year flooding apply to at least one site and one pipeline route. Overall runoff control and the plans should be established to promote no net change in runoff. B5-697

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p. D.7-19 *Pipeline Segments 1 and 2*

Construction of the proposed pipelines ***would*** not result in increased runoff, as there are no impervious surfaces associated with installation of the pipelines. During construction, there ***could*** be a minor alteration of drainage patterns due to the spoils adjacent to the trenches; however, as **installation of the pipelines is proposed during the dry season**, and due to the temporary nature (approximately 3 days) of the areas being exposed, this is considered less than significant (Class III), and ***no mitigation is required***. (emphasis added.) B5-698

D.7 W-45 Comment: Compaction requirements over a 6+ft deep trench would provide an impervious surface given the clay and silt content of the compacted materials.

This section also indicates a mitigation measure commitment not previously indicated in other "measures" and "APMs": presumably excavation, installation, and backfilling of ALL pipelines would occur ONLY during the "Dry Season" (= April 15-October 15). B5-699

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p. D.7-19 After construction of the pipelines, excavated soils ***would*** be backfilled into the open trenches, and the area of ***potential effect*** would be ***graded to preconstruction grades and contours***. Therefore, there ***would be no increased runoff or alteration of drainage patterns***, and no long term impacts would occur (Class III). (emphasis added.) B5-700

D.7 W-46 Comment: The construction of deep trenches, more than 8ft, requires heavy equipment, backfill piles, laydown areas, etc. which all must be compacted and often graveled. Such activities results in a fully compacted soil zone which when graded is largely impervious and runoff is increased.

No hydrologic setting is provided from which the "potential effect" and "drainage patterns" can be assessed; no topography/contours or existing grades are provided and therefore the mitigation of adverse effects cannot be assessed. B5-701

Given that the pipeline bedding and trench-backfill will be less than naturally compacted, a large amount of excess cut-materials will be generated but no provision is indicated for its disposition. The typical disposition would be to either of the Project sites for raising their grades or on-site placement as part of the laydown and back-dirt piles zones along the pipeline trenches. There the "graded to preconstruction grades and contours" does not appear realistic or mitigated. B5-702

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p. D.7-19 **Mitigation Measures for Impact H-4: Increased Runoff from New Impervious Areas and Alteration of Existing Drainage Patterns - H-4a Drainage Study and Shed Map.** B5-703

SNGS, LLC ***shall*** prepare a drainage study and shed map as described in Section 11.7 of the City of Sacramento's Design and Procedures Manual. The drainage study ***shall*** include an overland flow release map for the Proposed Project. Sufficient off-site and on-site spot elevations shall be

provided in the drainage study to determine the direction of the storm drain runoff. The Department of Utilities ***shall approve*** this study and shed map. The on-site storm drain system ***shall*** be sized per the latest design runoff standards. Prior to design, SNGS, LLC ***will contact the Department of Utilities for the design criteria***. (emphasis added.)

D.7 W-47 Comment: Although the statements are definitive (shall rather than will or would), the preparation of the Study and Map after approval of this application and certification of the EIR does not allow for review and assurance to the public and the reviewer that the conditions of the program shall be actually fulfilled and when they will be fulfilled. Furthermore, the Study and Map are standard city/county document and a draft from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Study and Map with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-703 (Cont.)

The Applicant should have established before the CEQA process as to what and when such documents would be required by the City and perhaps County of Sacramento. B5-704

For the Study and Map, the critical elements should clearly state the on-site drainage collection for both sites and any treatment of runoff not now currently shown in the Project Description and operational process for all above ground facilities and required during high risk activities, e.g., cleaning pipelines, water tanks, slug/pig systems, etc.. Without fully compiled draft Plan, Study, and Map, the EIR cannot completely and adequately assess the Project operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community. B5-705

Furthermore the statement does only indicate that the Plan shall be prepared and presumably submitted and then states as a matter of direct action, approval of the Department of Utilities without considerations of other relevant authorities (e.g., County). Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled. B5-706

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p. D.7-20 No Spill Prevention, Contingency, and Control Restoration Plan…

p. D.7-24 **H-8a Spill Prevention, Control, and Countermeasure Plan.** SNGS, LLC ***shall*** prepare a Spill Prevention, Control, and Countermeasure (SPCC) ***Plan*** in accordance with 40 CFR112. A copy of the plan ***shall*** be submitted to the CPUC prior to project start-up. (emphasis added.)

SNGS, LLC has proposed APMs 7, 8, and 12 to ***reduce the potential*** for an inadvertent release and to provide guidelines for ***containing and cleaning up spills*** in the event that a hazardous material is released to the ground. (emphasis added.)

APM 8 requires development of a Hazardous Materials Contingency Plan and Health and Safety ***Plan*** for ***quick and safe cleanup*** of accidental spills occurring during construction. Implementation of these APMs ***would protect*** the water quality of both surface water and groundwater in the project area from accidental spills of hazardous materials occurring during construction [not during operations]. (emphasis added.)

D.7 W-48 Comment: Although the statements are partially definitive (shall and would), the preparation of the Plans, Study, and Map after approval of this application and certification of the EIR does not allow for review and assurance to the public and the reviewer that the conditions of the program shall be actually fulfilled and when they will be fulfilled. Furthermore, the Plan are standard city/county/CRWQCB document and a draft from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Project, related Plans, Study, and Map B5-707

with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-707 (Cont.)

The Applicant should have established before the CEQA process as to what and when such documents would be required by the City and County of Sacramento and the CRWQCB. B5-708

For the Plans, Study and Map, the critical elements should clearly state the on-site drainage collection for both sites and any treatment of runoff not now currently shown in the Project Description and operational process for all above ground facilities and required during high risk activities, e.g., cleaning pipelines, water tanks, slug/pig systems, etc.. Without fully compiled draft Plan, Study, and Map, the EIR cannot completely and adequately assess the Project operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community. B5-709

Furthermore the statement does only indicate that the Plan, Study, and Map shall be prepared and presumably submitted and then states as a matter of direct action, approval of the Department of Utilities without considerations of other relevant authorities (e.g., County). Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled. B5-710

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p. D.7-20 **H-4b Compliance with Grading, Erosion and Sediment Control Ordinance.** SNGS, LLC ***shall*** comply with the City of Sacramento's Grading, Erosion, and Sediment Control Ordinance. This ordinance requires the applicant to prepare ***erosion and sediment control plans*** for both during and after construction of the Proposed Project and to prepare preliminary and final grading plans and plans to control urban runoff pollution from the project site during construction. (emphasis added.)

This project is greater than 1 acre in size; therefore, SNGS, LLC ***is required to comply*** with the state's NPDES General Permit for Stormwater Discharges Associated with Construction Activity (General Permit). To comply with the General Permit, SNGS, LLC ***will need to file an NOI*** with the SWRCB and ***prepare a SWPPP*** prior to construction. The SWPPP ***will be reviewed*** by the Department of Utilities ***prior to issuing a grading permit***. The following items shall be included in the SWPPP: (1) vicinity map, (2) site map, (3) list of potential pollutant sources, (4) type and location of erosion and sediment BMPs, (5) name and phone number of person responsible for SWPPP, and (6) certification by property owner or authorized representative. (emphasis added.) B5-711

D.7 W-49 Comment: These documents should have been provided as drafts in the DEIR for appropriate review and comment before the DEIR is considered for certification and the application considered by the CPUC. Without the required information (and others) and without appropriate design and layout provided in the Project Description, the setting and impacts of the proposed Project's construction and operations cannot be completely and adequately reviewed. Without an objective and full disclosure of the expected documented impacts, mitigation cannot be established to reduce or eliminate anticipated significant impacts of the proposed Project designs and layouts and their construction.

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p. D.7-20 **Impact H-5 -** *Compressor Station* Construction of the compressor station ***is not expected*** to impact groundwater since construction ***will be above*** groundwater levels ***(no impact)***. (emphasis added.) B5-712

D.7 W-50 Comment: As indicated in comments elsewhere the DEIR does not provide information regarding the groundwater settingwhich from the available data and geotechnical boring the groundwater table may be artificially depressed due to current

pump/treated/discharge system for remediation of contaminated groundwater of the Depot area, including the Compressor site. With the current inadequate and incomplete setting, the assessment that the surface and subsurface facilities and activities of the proposed Project and the Depot cannot establish that "no impact" will occur from future operations if the depressed groundwater table rises significantly (to within 12ft of surface) after completion of groundwater remediation by others. B5-712 (Cont.)

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p. D.7-21 **Mitigation Measures for Impact H-5: Construction Impacts to Groundwater Disturbance and Water Quality Degradation - H-5a Compliance with Regulations.** SNGS, LLC and its contractors ***shall*** comply with all local, state, and federal regulations pertaining to stormwater and non-stormwater discharges. (emphasis added.)

D.7 W-51 Comment: As indicated elsewhere the Applicant has not established what local, County, State, and Federal jurisdictions and regulations will apply to the proposed Project, although the Applicant assures that they will comply with them if necessary no matter what they may be after the approval of the current CPUC application and certification of the EIR without documentation as to what shall be done and when and where it will be done. B5-713

As indicated elsewhere, proposed construction activities and constructed facilities and operations will reduce or eliminate surface water infiltration to the groundwater table and thereby disturb the groundwater resources of the sites and corridors and those areas down-slope from the sites and corridors. Reduction of groundwater infiltration may disrupt the movement of contaminants above the groundwater table and prolong the semi-natural movement of contaminants by the leaching effects of infiltrated surface water. B5-714

Compliance in CEQA documents is always assumed and therefore impacts should be those effects over and above the compliance levels; no authority can approve illegal non-compliant activities and facilities unless by stated variances. B5-715

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p. D.7-21 **Mitigation Measures for Impact H-5 - H-5b Use of Non-Toxic Drilling Muds.** SNGS, LLC and its contractors ***shall*** use non-toxic drilling muds during the drilling of the wells within the areas above the shale cap. [= Toxic Drilling Muds below Cap] (emphasis added.)

D.7 W-52 Comment: Although the definitive character of the statement differs from many others and therefore suggests different sources and different levels of commitments by the Applicant, the statement is only in compliance with requirements of DOGGR and the CRWQCB when drilling in the zones above the Base of Fresh Water. In fact, this statement suggests that "Toxic Drilling Muds" may be used in and below the shale cap (=Cap Rock or Winters Shale member). This measure is not incorporated into a single presentation and compilation of all measures for Hydrologic Impacts and the entire MMRP. B5-716

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p. D.7-21 **Mitigation Measures for Impact H-5 - H-5c Groundwater Procedures.** ***If groundwater is encountered*** during the pipeline trenching or HDD, the site ***shall*** be dewatered prior to continuing construction. ***An NPDES permit shall be obtained for proper disposal of water. Treatment may be required prior to discharge***. (emphasis added.)

D.7 W-53 Comment: The hydrologic setting and geotechnical report have indicated that the groundwater may be below 40ft bgl, while other information indicates that a groundwater B5-717

quality remediation project may have depressed groundwater levels within the proposed Project area and could be at any time raise quickly perhaps up to 12ft bgl (28ft elev.). B5-717 (Cont.)

The potential impacts and mitigation should be based on facts and geotechnical information not on what may happen during construction and submission/receipt of an NPDES permit in a timely fashion. B5-718

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p. D.7-21 **Impact H-6** – *Pipeline Segments 1 and 2*

The ***majority*** of Pipeline Segment One ***would*** be placed ***outside*** the 100-year floodplain; therefore, there is ***no risk*** of exposing structures to flooding hazards or increase in flooding hazards in this section of Pipeline Segment One. ***The HDD segment under Morrison Creek would be at least 80 feet below the ground surface.*** As discussed under Impact H-3, less-than-significant impacts (Class III) to local surface water hydrology and drainage ***are anticipated*** due to proposed horizontal boring or HDD. (emphasis added.)

D.7 W-53 Comment: The assessment and mitigations are based on a "majority" rather than a "total". From these conditional phrases and words, declaration of "no risk" (=0) appears unfounded. The setting does not establish where the 100-year flood zone is specifically along this segment, the relationship of the 100-year flood zone and the HDD crossing of Morrison Creek and of the "sectionalizing valve station", and the relationships of the overall stormwater drainage and waterways to the Project areas and sites. Therefore the statement of "no risk" cannot be supported. B5-719

No design drawings are provided that documents the depth of the HDD segment and the conditions of existing contours, topography, or flood zones. B5-720

Without complete and adequate description of the current and future 100-year flood zone levels and without construction and design drawings for the Pipeline corridors and facilities no clear, complete, and adequate assessment of impacts can be supported. Similarly, the designation as impacts "are anticipated" to be less than significant for local surface water hydrology and drainage have not been documented in accordance with CEQA. B5-721

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p. D.7-22 **Impact H-6** – *Pipeline Segments 1 and 2* The proposed pipeline segment two and a portion of segment one ***would*** be within the FEMA 100-year flood zone (see Figure D.7-2). As proposed, pipeline segment two ***would*** be at least 6 feet below the ground surface. As discussed under Impact H-3, less-than-significant impacts (Class III) to local surface water hydrology and drainage ***are anticipated*** due to proposed trenching, ***horizontal boring, or HDD***. (emphasis added.)

D.7 W-54 Comment: Statement appears to contradict previous statements for Segment One, see Comment W-53. B5-722

The assessment and mitigations are based on a "portion" rather than a "total". From these conditional phrases and words, the assessment of less-than-significant impact for all flooded sections appears unfounded. The setting does not establish where the 100-year flood zone is specifically along these segment, the relationship of the 100-year flood zone and the horizontal boring and HDD of or near Morrison Creek and of the railroad sidings in Segment Two, or the metering and valve station between Segment Two and the main PG&E/SMUD pipelines. B5-723

The Applicant appears to not understand that being under the 100-year flood level is not beneficial to the pipeline segments, metering stations, and valve boxes or stations; no B5-724

information has been provided as to the actual elevation of the 100-year flood levels and no existing and proposed grades of ground levels have been provided for any sites or corridors. Therefore the statement of "no impact" cannot be supported. B5-724 (Cont.)

No design drawings are provided that documents the depth of the Segment Two and the conditions of existing contours, topography, or flood zones. B5-725

Without complete and adequate description of the current and future 100-year flood zone levels and without construction and design drawings for the Pipeline corridors and facilities no clear, complete, and adequate assessment of impacts can be supported. Similarly, the designation as impacts "are anticipated" to be less than significant for local surface water hydrology and drainage have not been documented in accordance with CEQA. B5-726

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p. D.7-22 **Impact H-7: Construction in a Potential Dam Inundation Area -** *Wellhead Site and Compressor Station [Pipeline Segments 1 and 2]*

The unlikely event of a dam failure could result in a dam-inundation floodplain and could cause severe flooding and damage to structures located within the inundation zone. T***he proposed wellhead site and compressor station sites [and Pipeline Segements] could be affected by a dam failure.*** However, since the risk of dam inundation and resulting adverse environmental consequences is considered low, this impact would be considered less than significant (Class III). [Therefore no mitigation is required.] (emphasis added.)

D.7 W-55 Comment: As indicated elsewhere no information is provided regarding the inundation zone or expected elevation of such an event. The 100-year flood zone is graphically provided at an inadequate scale to establish risk or lack of risk and appropriate assessment and mitigation for either the 100-year or the dam-breaking events. As the Project Description does not provide adequate or complete information regarding the existing or Project elevations and grading plans for all sites and corridors, independent review and evaluation of the risks, potential impacts, and appropriate mitigation cannot be provided by the reviewer. Therefore all considerations of the 100-year flood zone and related inundation zone is incomplete and inadequate. B5-727

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p. D.7-22 **Impact H-8: Operation and Maintenance Impacts to Surface Water and Groundwater Quality -** *Natural Gas Field, Wellhead Site, and Compressor Station*

Operations and maintenance of the proposed wellhead site and compressor station ***would*** entail periodic ground checks and routine repairs of the equipment. The equipment of the wellhead site ***would*** be accessed on paved or gravel roads within the walls of the wellhead site, and no impacts to surface water ***would*** occur. Equipment for the compressor station ***would*** be ***inside a structure, and no impacts to surface water would occur***. (emphasis added.)

D.7 W-56 Comment: As indicated elsewhere, a full, complete, and adequately detailed operations and maintenance plan is required at least in draft, in order to be reflected in the Project Description, establish potential interactions of the Project facilities and activities with the environment and urban settings, assess the impacts of operations and maintenance over a 50 year period (especially for the upgrading with an additional injection/withdrawal well and the third compressor for an additional 50% increase in injection capacity into the reservoir. B5-728

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p. D.7-22 **Impact H-8 -** *Natural Gas Field, Wellhead Site, and Compressor Station* B5-729

Implementation of the Proposed Project ***will present*** the ***potential*** of contamination of the groundwater aquifer through the storage of natural gas. ***Of concern would*** be the contamination of the aquifer through migration of gas into the aquifer. (emphasis added.)

A detailed discussion of the ***potential*** for the stored natural gas to seep into the aquifer and to the surface is provided in Section D.6, Hazardous Materials, Public Health and Safety (Impact HAZ-2a). This section summarizes the conclusions in that analysis and focuses the impacts toward water quality. (emphasis added.)

D.7 W-57 Comment: As no information has been provided regarding the existing groundwater table and the several (pressurized and confined above and below) aquifers known or expected below the proposed Project and above the proposed Winters Sand Body/Member gas storage zone or reservoir and their current water qualities, the entire subject as to the existing conditions and qualities, the impacts of past well drilling, abandonment, and production/depletion, the impacts of proposed surface and subsurface facilities, and the mitigation of forecasted impacts cannot be completely or adequate considered, reviewed, or even provided. B5-729 (Cont.)

The central issue of the entire DEIR is that no information is presented or available, much less adequate and complete, regarding the proposed Project area from about 50ft below ground level down to 4000ft bgl. Therefore the impacts and any mitigations are conjectures and potentials with regard to 3950ft of geological and hydrological conditions, the effects of high pressure injection 7.5Bcf of flammable gases, and the risks to those living and working above or in the migrating pathways if such gases are released from an as-yet-to-be-delineated and tested reservoir. B5-730

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p. D.7-24 **H-8a Spill Prevention, Control, and Countermeasure Plan.** SNGS, LLC ***shall*** prepare a Spill Prevention, Control, and Countermeasure (SPCC) ***Plan*** in accordance with 40 CFR112. A copy of the plan ***shall*** be submitted to the CPUC prior to project start-up. (emphasis added.)

SNGS, LLC has proposed APMs 7, 8, and 12 to ***reduce the potential*** for an inadvertent release and to provide guidelines for ***containing and cleaning up spills*** in the event that a hazardous material is released to the ground. (emphasis added.)

APM 8 requires development of a Hazardous Materials Contingency Plan and Health and Safety ***Plan*** for ***quick and safe cleanup*** of accidental spills occurring during construction. Implementation of these APMs ***would protect*** the water quality of both surface water and groundwater in the project area from accidental spills of hazardous materials occurring during construction [not during operations]. (emphasis added.)

D.7 W-58 Comment: Although the statements are partially definitive (shall and would), the preparation of the Plans, Study, and Map after approval of this application and certification of the EIR does not allow for review and assurance to the public and the reviewer that the conditions of the program shall be actually fulfilled and when they will be fulfilled. Furthermore, the Plan are standard city/county/CRWQCB document and a draft from an existing Applicant facility or one prepared specifically for the Project would typically be provided for comparison of the entire Project, related Plans, Study, and Map with the Project Description and implied operational constraints indicated elsewhere and the mitigation requirements (both APM and specific section measures). B5-731

The Applicant should have established before the CEQA process as to what and when such documents would be required by the City and County of Sacramento and the CRWQCB. B5-732

For the Plans, Study and Map, the critical elements should clearly state the on-site drainage collection for both sites and any treatment of runoff not now currently shown in the B5-733

Project Description and operational process for all above ground facilities and required during high risk activities, e.g., cleaning pipelines, water tanks, slug/pig systems, etc.. Without fully compiled draft Plan, Study, and Map, the EIR cannot completely and adequately assess the Project operations risks and impacts for the next 50 years and on all aspects and elements of the environment and community. B5-733 (Cont.)

Furthermore the statement does only indicate that the Plan, Study, and Map shall be prepared and presumably submitted and then states as a matter of direct action, approval of the Department of Utilities without considerations of other relevant authorities (e.g., County). Also the focus on construction activities and the fact that the Plan would be approved during construction appears mis-directed and mis-scheduled. B5-734

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p. D.7-36 D.7.5 Mitigation Monitoring, Compliance, and Reporting

Table G-1 discusses the mitigation monitoring, compliance, and reporting program for hydrology and water quality.

CPUC ***shall*** be responsible for ensuring compliance with the provisions of this mitigation monitoring program. In addition, the RWQCB ***may elect*** to enforce mitigation measures under their jurisdiction at ***any point*** during the project. (emphasis added.)

D.7 W-59 Comment: Table G does not fully, completely, or adequately compile all measures mentioned within the APMs and within the relevant subsections. As indicated above, the coordination between settings, impact assessments, and mitigation is incomplete and inadequate; conflicts and degrees of application of measures are largely defined as being "post-CEQA" rather than being part of CEQA as the basis for assessment and definition and effectiveness of mitigation requires a complete and adequate setting and definite impacts assessment, rather than conjectures and potential (e.g., "shalls" rather than "woulds", sometime in the future). B5-735

As indicated elsewhere the clear definition of requirements as part of the Project and their presence in the Project Description involves, DOOGR, CRWQCB, CPUC, AQMD, County of Sacramento, City of Sacramento, various utilities and services departments, the Applicant, and the Applicant's contractors. B5-736

D. 11 SERVICES AND UTILITIES

p. D.11-1 **D.11.1 Environmental Setting for the Proposed Project**

This section presents the utility and service providers in the project area and provides an overview of the type and general locations of utilities and services in relation to the Proposed Project. Government agencies have recently categorized data pertaining to utility systems (including their location, capacity, and type) as sensitive, critical infrastructure information, so public access to much of this type of data has become restricted for security reasons.

As such, only information that continues to be made public and is readily available is presented in this section.

While specific data would provide a better picture of the existing utilities within the project study area, in large part, this level of detail is unnecessary for the analysis needed to determine the impacts generated by the Proposed Project.

ALSO

B5-737a

p. D.11-6 **D.11.2 Applicable Regulations, Plans, and Standards**

The following section presents the state, regional, and local utility service system regulations, plans, and standards that are directly applicable to the Proposed Project and its alternatives.

D.11.2.1 State Regulations

D.11.2.2 Regional and Local Regulations

D.11 U-1 Comment: No information is provided in Section D.11.1 nor in D.11.2 regarding the instructions and authority for such prohibition regarding what is and is not available in the Public access (via County Assessor's maps of ROWs, SacCity GIS System, Google Earth, Google Maps, etc.) and what information must be excluded. Any information which is currently available should be included in the preparation of the DEIR. Likewise, drawings and descriptions have been provided in other sections of the DEIR which indicates that activities and conditions of the proposed Project construction and operations could impose risks to existing and perhaps future public utilities and services. B5-737b

SMUD provide far greater detail in their current Draft Initial Study/Mitigated Negative Declaration for the SMUD Easton 69-kV Subtransmission Line Relocation and Substation Project (http://www.smud.org/en/about/Documents/ceqa-pdfs/Easton-ceqa-5-20-09.pdf) **and** Solano Wind Project Phase 3 (http://www.smud.org/en/about/Documents/ceqa-pdfs/SolanoWind3.pdf) **than included in the DEIR, and therefore not verifying the detail requirements exclusion herein. (See attached.)** B5-738

Exclusion of stormwater drainage systems while retaining solid waste facilities and activities does not seem to support the basic concepts provided in this statement, above. Similarly if applied to the important facilities for underground gas storage, the levels of detail and discussion for this Project would require far high classification and even more absence of detail than provided in this document, DEIR. B5-739

Under D.11.2 no mention is made of any order or regulation to exclude "sensitive detailed information" and thereby the section is incomplete and inadequate. B5-740

The entire D.11 section of the DEIR should be considered as incomplete and inadequate with respect to those utilities and services and their facilities, unless clear and specific requirements and their authority are provided, which they are not. B5-741

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p. D.11-1 **D.11.1.1 Existing Utilities**

The Proposed Project area is served by the public service and utility providers within the City of Sacramento and the County of Sacramento. Publicly and privately owned local purveyors in this area provide and maintain utilities associated with electricity, water, ***stormwater*** and wastewater, solid waste, and natural gas. Municipally operated lines provide sewer services in each of the jurisdictions within the project study area. Similarly, ***stormwater conveyance systems*** are regulated and maintained by ***each respective jurisdiction***. Table D.11-1 summarizes the public service and utility providers serving the study area and lists information for major utility types that would likely share utility corridor space with the Proposed Project. (emphasis added.) B5-742

[Table D.11-1 No item for stormwater or drainage unless grouped with water supply or wastewater]

D.11 U-2 Comment: No discussion as to impact on stormwater or drainage systems, although many documents and figures clearly indicate that the Compressor Station site is immediately on the floodplain and channel of Morrison Creek which was relocated to the

south of west. Absence of any information regarding stormwater is a serious lack of completeness as at least part of the Project lies within flooding areas. B5-742 (Cont.)

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p. D.11-2 - -6 ***D.11.1.2 Public Services* - Fire, other public services and Solid Wastes**

D.11 U-3 Comment: No discussion as to stormwater or drainage systems, impact on, or mitigation required. B5-743

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p. D.11-1 ***D.11.1.1 Existing Utilities***

The Proposed Project area is served by the public service and utility providers within the City of Sacramento and the County of Sacramento. Publicly and privately owned local purveyors in this area provide and maintain utilities associated with ***electricity,*** water, stormwater and wastewater, solid waste, and ***natural gas***. (emphasis added.)

Table D.11-1 summarizes the public service and utility providers serving the study area and lists information for major utility types that would likely share utility corridor space with the Proposed Project.

Table D.11-1 Utility and Service Providers by Jurisdiction, Jurisdiction Utility or Service System Providers

City of Sacramento

- ***Natural Gas and Electricity—Pacific Gas & Electric Company*** (emphasis added.)
- Water—Sacramento County Water Agency—Zone 41
- Wastewater—City of Sacramento Department of Utilities

D.11 U-4 Comment: No mention is made of SMUD, although SMUD will contract for more than 40% of the total gas capacity of the field and Project and is the City's provider of electricity. No mention is made of SMUD's plans "to activate a latent power and provide thermal energy services (i.e., heat) to retail customers…, otherwise known as district energy services." which would require thermal power from gas-fuelled power stations and perhaps change the use of gas. B5-744

This absence of a primary stakeholder and misallocation of the electricity provider clearly indicates the incompleteness and inadequacy of the Utilities setting, assessment, and mitigation and requires major improvements and perhaps assistance by qualified utilities specialists familiar with the Sacramento setting. B5-745

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p. D.11-1 -20 ***Powerlines and Other Utilities and Services (Transport-Railroad)***

p. B-5, Fig. B-2 and Google Maps images show Power Inn Road and dual powerline towers along the pipeline route, at the south end of the Wellhead Site, at the first eastward turning of the route north of the Wellhead site, and northward, along with the mainline UPRR and spurs.

p. B-10 ***B.2.1.2 Wellhead Site, Compressor Station, and Associated Pipelines*** B5-746

Wellhead Site

Up to six new injection/withdrawal wells, one water disposal well, and one observation well are proposed to be drilled and constructed on a currently vacant 4-acre parcel at the intersection of

Power Inn Road and Junipero Street (refer to Figure B-3). There is an approximately ***100-footwide power easement along the western edge of the property***. (emphasis added.)

D.11 U-5 Comment and B. P-9 Comment: The Section D.11 does not discuss the presence of the 100-ft wide overhead power line and the two main supporting towers immediate adjacent to the wellhead site and the main pipeline eastward turning north of the site and the possible at-risk of involvement of the towers of the powerline in the event of a torch/cloud-fire at the wellhead site. As no environmental setting, assessment, or mitigation of risks are provided in Section D, although the element is included in the Project Description, Section B, the DEIR, Section D.11 and others, is considered as incomplete and requires revisions for this issue.

B5-746 (Cont.)

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p. D.11-3 ***D.11.1.2 Public Services*** – **Fire** - *City of Sacramento*

Station 10, located at 5642 66th Street, is approximately 1 mile to the northwest of Depot Park. This station maintains 1 fire engine, 1 truck, and a medic.

Water required for fire suppression is supplied by fire hydrants connected to local water mains throughout the area.

County of Sacramento

The limits of the Florin Gas Field are located within the jurisdiction of the Sacramento Metropolitan Fire District (SMFD), SFD, and the Cosumnes Community Services District (CSD) Fire Department (Sacramento, City of 2008).

Station 50, located at 8880 Gerber Road, services the community of Florin and is located in nearest proximity to the southern limits of the Florin Gas Field. The station includes Engine 50,Medic 50, Battalion 9, and Truck 50. A total of 2,140 calls for Engine 50, 2758 calls for Medic 50, 901 calls for Battalion 9, and 751 calls for Truck 50 were received during 2004 (SMFD 2008).

D.11 U-5 Comment: The listing of available stations and equipment does not provide indication of the levels of services provided to the Project site or the surrounding service areas. As gas-sourced fires and explosions require specialized equipment and training of fire control staffs, the setting requires more adequate information regarding the specifics of industrial and gas/petroleum fires and their prevention.

B5-747

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p. D.11-11 **Impact U-2: Public Service System Disruption** - *Fire Facilities*

Gas well firefighting strategies and tactics require infrastructure, equipment, and training that the SFD ***does not currently provide***. In addition, SFD does not have adequate training for the types of emergencies that could occur at the facility, nor do they have a way to maintain any such training within the department at this time. This could require additional services and personnel from the SFD in terms of inspection of facilities during construction and operation. This ***impact is considered significant and would be mitigated to less than significant*** (Class II) with implementation of Mitigation Measure U-2. (emphasis added.)

Mitigation Measure for Impact U-2: Public Service System Disruption

U-2 SNGS, LLC shall coordinate with the City of Sacramento and reimburse the city for their ***fair share*** of additional equipment and personnel as determined by the city's needs study. (emphasis added.)

B5-748

Once identified, mitigating action costs, both one-time and recurring, are to be borne by SNGS, LLC.

Additionally, SNGS, LLC's ***Emergency Response Plan*** shall have provisions to reimburse the City of Sacramento for ***any costs of responding to an emergency***, as well as damage caused by a project-related incident. (emphasis added.)

The Emergency Response Plan shall be submitted to the SFD for ***review and approval*** prior to construction. (emphasis added.)

D.11 U-6 Comment: The DEIR does not establish the setting separately from the mitigation. Here in the impact and mitigation the Applicant accepts that the fire services do not have the capabilities to control fires on the Project facilities, and then both says "fair share" for immediate requirements and "any costs" for future responses. Development of the impacts and mitigation is inadequate and, as indicated elsewhere, inadequate and incomplete for risks of fires and explosions within the Project facilities appears to understate the risks for fire services and therefore "fair share" costs may be insufficient.

B5-748 (Cont.)

E. COMPARISONS OF ALTERNATIVES

p. E-1 This comparison is designed to satisfy the requirements of State CEQA Guidelines section 15126.6, subd. (d), Evaluation of Alternatives, which states that: The EIR shall include ***sufficient*** information about each alternative [including the proposed Project] to allow ***meaningful*** evaluation, analysis, and comparison with the proposed project. (emphasis added.)

AI-6 Comment: The proposed Project is not supported by direct and current field data and surveys (except for the geotechnical investigations) and therefore the Project (as an alternative in comparisons) does not have sufficient, adequate, and complete information (see comments on Section D subsections) to allow meaningful evaluations, etc.. Other alternatives are presented without even similar levels of information or have been presented with information considered to be adequate, but in fact suffers from those of the proposed Project.

B5-749

p.E-2 The following methodology was used to compare alternatives in this EIR:

> **Step 1: Identification of Alternatives.** An alternative screening process ***(described in Section C)*** was used to **identify 17** alternatives to the Proposed Project. That screening process identified six alternatives for detailed EIR analysis. Three of the alternatives consist of alternative storage site locations and the remaining alternatives ***[14]*** consist of ***project design alternatives***. (emphasis added.)

AI-6 Comment: Differences in the identified alternatives exists between Section C (18) and Section E (17). The screening process is not documented in Section C and appears arbitrary and unsupported. Numerous Florin alternative locations were dismissed although they would reduce or eliminated risks from the surface facilities and the near-surface pipelines. Relocation of the wellhead site to or near the original Florin well sites to the east and south of the proposed site could reduce the Project risks and impacts on the residential and roads. As indicated elsewhere even different arrangements within the same wellhead site or immediately to the east of the proposed wellhead site would less the impacts compared to

B5-750

the proposed that is closer to important roads, residential areas, and the powerline towers immediately adjacent to the proposed site. B5-750 (Cont.)

p. E-16 **E.2.3 Project Design Alternatives, Alternative Wellhead Site to Compressor Station Pipeline Route 1**

Generally, development of the Proposed Project using the Pipeline Route 1 design alternative between the proposed Florin Gas Field wellhead site to the proposed compressor station would result in ***slightly greater impacts*** to the environment due to a ***slightly greater construction impact area***. (emphasis added.)

AI-7 Comment: Pipeline Segment 1 has a significantly high risk of endangerment of residential and transport areas along the southerly half due to the long length, moderate diameter, and highest pressures. Therefore relocations of the pipeline to the east, shortening the pipeline length, and replacement pipeline length with well length would all reduce the assessed risks of the proposed pipeline as defined in the Project Description (Sec.B). The presented comparison of alternatives thereby cannot be considered to include practical and technically feasible alternatives to the proposed Project pipelines. B5-751

p. E-19 **E.3 Environmentally Superior Alternative**

CEQA requires that the ***environmentally superior alternative*** be selected from a range of reasonable alternatives that could ***feasibly attain the basic objectives...*** the environmentally superior alternative was determined to be the ***No Project Alternative***. (emphasis added.)

AI-8 Comment: Although the section states that the superior alternative, "No Project Alternative" feasibly attains the basic objectives, the interpretation cannot meet the stated objectives and therefore cannot be considered as superior. As indicated above several cumulative modifications of the proposed Project would greatly reduce the impacts and risks of impacts and thereby would be a superior. Moving the Wellhead site closer to the Compressor site would reduce Wellhead impacts and those of the Segment 1 pipeline while lengthening the well casings and pipeworks; eight previous wells were drilled, directionally, and later operated from sites further east and south of the proposed Wellhead site. B5-752

p.E-20 **E.4 Economic Considerations**

Economic feasibility was not considered in this EIR in the evaluation of alternatives to the Proposed Project and may be considered separately in the CPUC's CPCN proceedings. The following economic factors are provided to evaluate the comparative merits of the alternatives when compared to the Proposed Project.

AI-9 Comment: Economic considerations are not generally included in the EIR process along with the merits of the Project. As indicated by the fact that eight exploratory and production wells were drilled from a more distant site from the field/reservoir, a more remote, eastern Wellhead site (perhaps the wellhead site of the original gas wells) should also be considered as practical and feasible and would have less significant impacts for several environmental sectors. B5-753

F. OTHER CEQA CONSIDERATIONS (pg. F-2)

F.1 Growth-Inducing Effects F.1.2 Growth Related to Additional Natural Gas Storage

The need for ***additional natural gas storage*** in California is reflected in the Governor's Energy Policy as well as in policy statements of both the California Energy Commission and the California Public Utilities Commission (CPUC). (emphasis added.)

In addition, Sacramento Municipal Utility District (***SMUD***) has identified the need for ***additional natural gas storage*** to

maintain reliable electric service and to

prevent extended outages and disruption of service

for existing customers in the Sacramento metropolitan area. (emphasis added.)

While the project would create ***additional storage of natural gas*** and more reliable infrastructure, it would not extend infrastructure to previously unserved areas. (emphasis added.)

No ***additional capacity to provide natural gas*** is proposed as part of the project; therefore, the Proposed Project would not provide infrastructure or service capacity that could accommodate growth levels beyond those anticipated by local or regional plans and policies. (emphasis added.)

[Also, p. B-2] *"…*reservoir estimated to contain 13 bcf (approximately 5 bcf is buffer or cushion gas that cannot be extracted)." "***The reservoir is expected to store approximately 7.5 bcf of natural gas, which meets the 4.0 bcf requirement for SMUD's local supply, and allows storage of 3.5 bcf of additional gas…(Ryder Scott Company 2008).]*** (emphasis added.)

[Also from Section B] p. B-17, Fig. B-6 One spare pad for Compressor Stands, 101C, at Compressor Site

p. B-15, Fig. B-5 One spare well head, No. 6, for injection/withdrawal of gas

G-1 Comment: As indicated by the storage capacity in excess of dedicated public service demand of 40% and given the availability of transmission and distribution during off-peak hours, 10pm to 6am, a considerable window exist for this Project to provide support for further development of fossil-fuel based industries, onsite generator capacity, and other activities not currently supported or available. B5-754

In addition to the current estimated undedicated supply, the additional compressor and well pads can be quickly brought on line perhaps without even CPUC even being informed, as indicated by skid mounted systems. Beyond the financial and operating risks, the Applicant, if approved, would find the actual storage capacity without spill-over for the storage reservoir and may find the reservoir may be expanded and increased in storage volumes, without anyone even knowing about it (expect through annual or quarterly reports which few people actually read). B5-755

Without knowing the actual agreement(s) between the Applicant and the SMUD and PG&E (and perhaps others), the reviewer can only assume that the Applicant will conduct activities which will benefit the Applicant and its stakeholders and expand their storage and supply to others to the maximum extent provided through this Application. Therefore, it would be assumed that the spare equipment could increase use by at least 20% for the additional well from 100Mcf/d to 120+Mcf/d (200 to 240+Mcf) injection (withdrawal) and perhaps another 10-20% based on an additional compressor for a total increase the annual cycles from three (3) to four (4). B5-756

Therefore, rather than stating that "No *additional capacity…" would be provided, the Section should be revise to state that the 40% undedicated storage supply can be distributed for additional industrial and utilities growth through existing pipeline systems. The available pipeline maximum capacities have not been provided in this DEIR and therefore, the Applicant cannot justify or support the statement that* "…the Proposed Project would not provide…service capacity that could accommodate growth levels beyond those anticipated by local or regional plans and policies." Furthermore the presence of a significant storage capacity within the general distribution networks can act to level out the peaking cycles and thereby provide additional base load capacity which the addition undedicated storage can used for distribution of the 3.5+Bcf of stored gas. B5-757

Additional gas storage capacity, convenient facilities upgrading and additions, and the reduced risk of gas supply and thereby industrial and commercial operations can directly support growth of these land uses through increased in plant production, upgrading and enlargement of existing facilities, and either intensifying of existing industries (e.g., warehouses to processing units) or conversion of nearby vacant industrially/commercially zoned properties supplied by existing or upgraded SMUD pipelines. B5-758

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p. F-11 **F. OTHER CEQA CONSIDERATIONS, F.4 Cumulative Impacts (p. F-3) - F.4.2 Biological Resources**

Many impacts to plant and animal species…that are not considered significant on a project-specific basis may be cumulatively considerable when the sum of all the projects listed in Table F-1 are taken into account.

Implementation of the Proposed Project, combined with the other approved and pending projects in the cumulative baseline, would create the potential for cumulatively considerable and significant impacts to biological resources.

Mitigation measures described in Section D.3, including Mitigation Measures B-1a through B-1f and B-3a and B-3b that preserve and provide for continued existence of sensitive biological resources and maintenance of natural diversity, and that ***reduce the project's impacts to less than significant for the Proposed Project.*** (emphasis added.) B5-759

Similar mitigation measures that would be implemented to those projects in the cumulative list ***would reduce cumulative impacts to biological resources to a level that would be considered less than significant and not cumulatively considerable.*** (emphasis added.)

F.4 C-1 Comment: The list does not include a complete compilation of all City and County projects and does not reflect the simple conversion of currently vacant but biologically important sites and corridors which may be supported by having a more reliable and increased gas delivery capacities.

Referenced mitigation for other projects is misleading, unless the Applicant can assure or dedicate that all projects on the "cumulative list" will be provided by the measures alluded to. B5-760

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p. F-11 **F.4.3 Cultural Resources**

Construction of the SNGS Facility would not contribute to the potential loss of known significant cultural resources…would require excavation activities that have the potential to disturb undiscovered cultural resources. When viewed cumulatively, these projects could result in a significant impact to cultural resources. B5-761

With proper environmental planning ***and appropriate mitigation***, the Proposed Project is expected to successfully preserve significant cultural resources if present, and can provide opportunities for increasing our understanding of past environmental conditions and cultural history. Therefore, the ***mitigation measures identified for the project's impacts would reduce the Proposed Project's cumulative impacts to cultural resources to a level that would be considered less than significant and not cumulatively considerable.*** (emphasis added.)

F.4 C-2 Comment: The list does not include a complete compilation of all City and County projects and does not reflect the simple conversion of currently vacant but potentially important archaeological sites and corridors which may be supported by having a more reliable and increased gas delivery capacities.

B5-761 (Cont.)

Referenced mitigation for other projects is misleading, unless the Applicant can assure or dedicate that all projects on the "cumulative list" will be provided by the measures alluded to.

B5-762

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p. F-12 **F.4.4 Geology and Soils**

Potential cumulative geologic and soil impacts (considering all proposed and in-progress development in the project area) consist of the creation of erosion potential and potential impact to paleontological resources. ***Seismic impacts (ground shaking or ground failure) are not cumulative.*** (emphasis added.)

Surface disturbance associated with construction and drilling at the wellhead and compressor station sites would contribute to erosion, soil compaction, and soil loss in the project vicinity. Pipeline installation activities would also result in ground disturbance and potential for erosion. This surface disturbance would primarily be associated with construction activities and would be temporary and mitigated through effective erosion control measures included as part of the project. Similarly, each of the other projects listed in Table F-1 would potentially impact soil loss in the project area.

Mitigation measures that would minimize construction-related impacts caused by the Proposed Project would minimize the cumulative effects of these impacts to a level that would be less than significant and not cumulatively considerable. (emphasis added.)

F.4 C-3 Comment: The list does not include a complete compilation of all City and County projects and does not reflect the simple conversion of currently vacant but soils and paleontologically important sites and areas which may be supported by having a more reliable and increased gas delivery capacities.

B5-763

As part of infrastructure which will reduce some development risks, increase available profitable gas supplies, and demonstrate (if safely developed) use of Winters Sand reservoir(s) for future gas storage projects, the Project will all support increased industrial development which will be exposed to the same seismic risk of the proposed facilities but will increase the potential damages resulting from realized risks of seismic events.

B5-764

Referenced mitigation for this project and implied other projects is misleading, unless the Applicant can assure or dedicate that all projects on the "cumulative list" will be provided by the measures alluded to.

B5-765

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p. F-12 **F.4.5 Hazardous Materials, Public Health and Safety**

B5-766

Construction of the project, as well as other projects proposed in the study area, could increase the opportunity and likelihood for exposure of people to hazardous materials or health risks associated with the disturbance of hazardous materials.

It is anticipated that adherence ***[=compliance]*** to applicable federal, state, and county laws and regulations associated with other projects in the area ***will reduce the cumulative risk of adverse public health effects*** associated with the use, storage, and transport of hazardous materials ***to less than significant.*** (emphasis added.)

Implementation of the Proposed Project would place additional pipelines and other facilities, including a compressor station and wellhead site, in the project area. ***There is a potential that a leak or rupture of these facilities may result in fire or explosion that could result in mortality to people near the facilities.*** In addition, there is a potential that natural gas could migrate through the rock cap and impact the area. This potential is remote. (emphasis added.)

A number of mitigation measures are identified in Section D.6 that will reduce the potential of occurrence but not the consequence of these impacts. Therefore, this ***cumulative impact is considered significant and cumulatively considerable.*** (emphasis added.)

F.4 C-4 Comment: The list does not include a complete compilation of all City and County projects and does not reflect the simple conversion of currently vacant to developments and land uses which may be supported by having a more reliable and increased gas delivery capacities.

B5-766 (Cont.)

As part of infrastructure which will reduce some development risks, increase available profitable gas supplies, and demonstrate (if safely developed) use of Winters Sand reservoir(s) for future gas storage projects the Project will all support increased and potentially equal or more dangerous, higher risk, activities, materials, and facilities in new industrial developments. These facilities will be exposed to the same seismic risk of the proposed facilities but will increase the potential damages resulting from realized risks from industrial spills and releases of hazardous materials and generation/storage of hazardous wastes near major railroad corridors and residential areas.

B5-767

Referenced mitigation for this project do not herein apply to other listed or prospective projects and thereby cannot reduce risks or occurrence from the cumulative developments (both listed and prospective), and the Applicant should indicate the cumulative effects and risks of realized hazards (consequences) of and for the proposed Project and other prospective projects would be cumulatively considerable.

B5-768

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p. F-12 - -13 **F.4.6 Hydrology and Water Quality**

Future and proposed construction projects in close proximity to the Proposed Project could result in cumulative hydrologic impacts on the study area. (emphasis added.)

Mitigation measures identified for the Proposed Project would ***reduce the Proposed Project's cumulative impacts*** to hydrology and water quality to a level that would be less than significant and ***not cumulatively considerable.*** (emphasis added.)

There is a remote but potential possibility that natural gas could migrate into the aquifers used for drinking water supplies.

This impact could be cumulatively considerable to the water supply, since use of water sampling and remediation may not reduce this impact to less-than-significant levels. (emphasis added.)

B5-769

F.4 C-5 Comment: The list does not include a complete compilation of all City and County projects and does not reflect the simple conversion of currently vacant but within the drainage basin of the Morrison Creek and dependent stormwater drainage system, wherever they may be and those drainage basins for industrially and commercially properties which may be supported by having a more reliable and increased gas delivery capacities. B5-769 (Cont.)

As part of infrastructure which will reduce some development risks, increase available profitable gas supplies, and demonstrate (if safely developed) use of Winters Sand reservoir(s) for future gas storage projects, the Project will support increased industrial development which will be exposed to the same seismic risk of the proposed facilities but will increase the potential damages resulting from realized risks (e.g., spills, firewater runoff, etc.) of seismic events. B5-770

Cumulative impacts from the Project and other supported industrial developments may include direct extraction of shallow and deep water resources for industrial purposed and when combined with Project-related releases from the deeper formation may cause significant degradation of the groundwater resources for industrial and shallower potable water users. B5-771

Referenced mitigation for this project and implied other projects is misleading, unless the Applicant can assure or dedicate that all projects on the "cumulative list" will be provided by the measures alluded to. B5-772

G. MITIGATION MONITORING AND REPORTING

Table G-1 - HAZ-2a HAZ-2a*ii*

This plan ***shall*** be reviewed and approved by DOGGR, the City of Sacramento Fire Department, and the Sacramento County Environmental Management Department prior to implementation and ***shall include natural gas detectors at strategic locations***. In the event that ***natural gas is detected and confirmed to be seeping from the reservoir***, the gas reservoir shall be reduced to lessen and eliminate the potential for seepage. ***The deep aquifer monitoring will commence prior to re-pressurizing the Florin gas reservoir, so that baseline conditions can be established, including ambient levels of natural gas if present.*** (emphasis added.)

G. M-1 Comment: As indicated below "strategic locations are restricted to four in Project sites and perhaps others in undefined "strategic locations". B5-773

Table G-1 - HAZ-2a HAZ-2a*ii*

The four primary elements of this gas monitoring mitigation measure are:

1) Establish a ***baseline or background level for natural gas at the surface*** prior to storage operations. This will allow comparison and sound evaluation of future Project related gas monitoring results. (emphasis added.)

G. M-2 Comment: Without adequate and complete protocols and procedures to support the measure, "establishing a baseline for natural gas at the surface" cannot provide the B5-774

adequate and sufficient basis for comparisons and evaluation of the origin and migration of the gas levels found at the surface and later variations of the same. B5-774 (Cont.)

Table G-1 - HAZ-2a HAZ-2a*ii*

2) Periodically measure for levels of detectable gas at predetermined surface locations. This will allow the storage…[Different from p. D.6 - operator to ascertain whether the levels of gas detected]…at the surface, if any, have increased noticeably above the previously established background levels. It is expected that small variations may occur which may not individually rise to any significant level, but trends over several sample periods could provide an indication of a change that requires further investigation. (emphasis added.)

G. M-3 Comment: This measure differs slightly from that given in Section D.6 and thereby demonstrates the issue that having measures described in more than one section leads to risks of confusion, differences, and dispute and enormous wastes of reviewers time comparing line-by-line to assure no substantive differences exists and questions as to which section shall be incorporated into the MMRP. B5-775

Table G-1 - HAZ-2a HAZ-2a*ii*

3) Quantify and, if necessary, qualify any changes in an attempt to identify the source. First, based on sampling and ***testing of gas samples***, it should be determined whether the gas quality signature is similar to the native gas production in the area or to pipeline gas. ***Gas in the storage reservoirs will be almost exclusively pipeline gas*** with components that should be relatively easy to identify compared to native gas. (emphasis added.)

G. M-4 Comment: The measures to "quantify" and "qualify" any changes appear confused and are totally inadequate and incomplete as once *any detected SURFACE GAS is identified as from the STORAGE OPERATIONS*, a plan must be in place and implemented immediately, not be prepared, submitted, and approved… B5-776

First time reference to gas sampling and testing thereof but without context and coordination with other measures; sampling in inadequately defined and coordination and interfaces with other measures is incomplete. B5-777

Project gas and injected pressures in the storage zone may be responsible for the gas push of field gas beyond the confines of the storage zone, similar to Enhanced Gas Production using water flooding or other injections. Furthermore, Project gas in the perimeter of the storage zone would be expected to commingle with field gas and take on many characteristics of field gas through the rise through other overlying formations and formation waters. Therefore the concept that Project gas can be distinguished in or at the top of its rise through 3000feet of formations, alluvium, and waters demonstrated an inadequate and incomplete knowledge, appreciation, and assessment of gas migration hydrogeology, and good engineering preparation. B5-778

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4) Based on any specific changes observed, the operator shall respond to the data and corresponding analysis with additional testing, surveillance, or mitigation, as appropriate. If the data indicates that ***any detected surface gas is from the storage operation***, then a ***plan will be developed to identify the leaking pipeline, well or reservoir, including procedures to further test and correct the situation***. If it appears that the ***source of the gas is related to a non-storage facility, the operator should attempt to identify the owner or operator*** of that B5-779

facility and inform them of the findings of the study. The overall gas monitoring program will be evaluated after 5 years to determine its future usefulness. (emphasis added.)

G. M-5 Comment: The measures are totally inadequate and incomplete as once *any detected surface gas is identified as from the storage operation*, a plan must be in place and ready to implement. A plan shall be part of the initial development of the Florin Field, before the first well is drilled along procedures for further testing, sampling, and mitigation/remediation to correct the situation related to the reservoir, possible 3000ft of gas-contaminated groundwater above the reservoir, and risk of further releases at the surface and into any structures thereon. B5-779 (Cont.)

Table G-1 - HAZ-2a HAZ-2a*ii* The monitoring program will consist of the following features:

- Permanent monitoring/testing sites at the ***Project well site and compressor station site***
- Leakage surveys at predetermined locations on a regular basis
- Utilize standard, industry approved gas measurement equipment
- Field personnel trained on ***gas sampling methods*** and instrumentation, identifying stressed vegetation and other indicators of potential leakage. (emphasis added.)

G. M-6 Comment: Purposes, requirements, and applications for surveys and whether tested or sampled and parameters to be analyzed is unclear and inadequately established. B5-780

Detectors shall only be operated by California State certified gas testers. B5-781

Purposes, requirements, and applications for sampling, analyses, and parameters to be analyzed rather than instrument testing is unclear and inadequately established. B5-782

Table G-1 - HAZ-2a HAZ-2a*ii*

Two permanent test stations will be located at the wellhead site. Two additional test stations will be installed at the compressor station site. Additional ***sites for sampling*** shall be identified in the sampling plan. Baseline measurements, using portable analytical gas instruments, will be made within 48 hours of the installation of the ***test station***. (emphasis added.)

G. M-7 Comment: All four stations do not comply with the Florin Field storage facilities projected surface boundary. Temporal requirements and resolution are not coordinated with those given below. B5-783

Purposes, requirements, and applications for sampling, analyses, and parameters to be analyzed rather than instrument testing is unclear and inadequately established. B5-784

Table G-1 - HAZ-2a HAZ-2a*ii* Portable analytical gas instruments will consist of infrared gas analyzers or other combustible gas analyzers. ***Flame Ionization Detectors (FID)*** may be used as the primary detector for monitoring. (emphasis added.)

All portable analytical gas equipment will be calibrated daily using a laboratory certified methane calibration gas. All test sites will be identified and all test data will be gathered and recorded.

G. M-8 Comment: As proposed the statement does not comply with normal operation requirements of gas and explosion environments and with California State requirements regarding qualified gas testers. Flame ionization, or other more appropriate, detectors B5-785

shall be used only if certified for operations in natural gas storage, handling, processing, and transmission facilities. B5-785 (Cont.)

Detectors shall only be operated by California State certified gas testers. Detectors shall have shall digital storage and downloadable capabilities and read in ppm or mg/cum. B5-786

Table G-1 - HAZ-2a HAZ-2a*ii* The ***testing*** program will be conducted prior to initiation ***of injection of gas*** and weekly thereafter. (emphasis added.)

SNGS, LLC to develop a gas detection plan.

G. M-9 Comment: Testing and sampling programs shall be commenced 90 days prior to initation of construction of any facilities by the Applicant and continued weekly thereafter. B5-787

Table G-1 - HAZ-2a HAZ-2a*ii* ***Gas detection plan*** to be reviewed and approved by CPUC, City of Sacramento Fire Department, and Sacramento County Environmental Management Department

Prior to issuance of construction permit. (emphasis added.)

G. M-10 Comment: Any plan shall be submitted for review by the appropriate authorities, and only when thoroughly satisfied that the plan meets all requirements shall the plan be approved by same authorities. No plan shall be approved upon submittal without thorough review and considerations. B5-788

DEIR APPENDIX B SYSTEM SAFETY AND RISK OF UPSET, EDM Serv., 09/08

p. B-1 **APPENDIX B SYSTEM SAFETY AND RISK OF UPSET**

This appendix presents the ***potential risks*** to the public from the proposed facilities. These risks ***could primarily*** result from unintentional releases of natural gas and the possibility of subsequent fires and/or explosions. (emphasis added.)

ApB SR-1 Comment: "Potential risks" of the proposed Project should be categorized in far more detail, provided consistent terminology, standard units of measurement, and Project component descriptions (see DEIR Section B), and separated into consistent elements with all equipment pieces included in the risk analyses. Risk analyses should based based on full maximum operating capacities and more typical, worst case environmental conditions. Risk analyses is inadequate in analyses and incomplete in equipment and activities: B5-789

- **Wellhead – Odorizers, pig-lauchers/catchers/slug water separators, produced water tanks, standby diesel-fuelled generator, etc.;**
- **Compressor Station – Engine-driven compressor, pressure-reducer valve/heater, etc.;**
- **Segment No.1 - Sectionalizing valve station;**
- **Segment No.2 – Connector valves and controls.** (emphasis added.)

p. B-27 **6.3 Release Modeling**

The releases were modeled using CANARY…Literally thousands of possible data combinations could be used to evaluate individual releases. However, in order to make a ***reasonable determination of likely*** releases, the following ***assumptions*** were used:

Table 6.3-1 Release Modeling Input, Parameter Model Input

Maximum Operating Pressure

1,000 psig for ***16-inch*** segment between compressor station and SMUD Line 7008

1,965 psig for ***16-inch*** segment between well site and compressor station

Typical Flow Rate

100 ***MMSCFH*** injection and 200 ***MMSCFH*** withdrawal for 16-inch segment between compressor station and SMUD Line 7008

100 ***MMSCFH*** injection and 200 ***MMSCFH*** withdrawal for 16-inch segment between well site and compressor station

Modeled Releases

1-inch diameter release **[LEAK not rupture]**

Full Bore release **[Full pipe rupture]**

Contents Methane

Contents Temperature 70° F

Wind Speed 2 meters per second (4.5 mph) for vapor cloud explosion modeling

20 mph for torch fire modeling (emphasis added.)

ApB SR-2 Comment: The Applicant/Consultant has not used worst case conditions for wind speed and direction and related turbulence in an urban, structure environment for the model. The assumptions do not reflect the conditions and frequency of those conditions which would result in direct population impact to the most at risk population, residents to the west of the project or those with the highest frequency of occurrence. The most commonly experienced (25%) of observed conditions for wind speeds would most likely include calms, 0 to <1mph not 4.5mph or 20mph, which would put the residents to the west of the wellhead site and connecting pipeline at highest risks under either gas cloud or torch. B5-790

The Applicant/Consultant has not assessed risks from migrating reservoir leakage gases as has occurred in California under conditions of both gas storage and induced gas via enhanced oil recovery systems. Presumption that such risks do not exist and disregard that these risks have been realized (fortunately without loss of life, but with injury and relocation and land depreciation) renders the study and modeling of incomplete and inadequate development for the actual conditions of the project area. B5-791

Fundamentals of pipeline flows are not reflected in the table of inputs for the pipeline and consistent pressures and locations - *1,000* psig for *16-inch* segment between compressor station and SMUD Line 7008 and *1,965* psig for *16-inch* segment between well site and compressor station, compared to Section B, p.B-2 Initial pressure of the field was estimated to be 1,677 pounds per square inch (psi)…Proposed Project is projected to operate at a pressure of *1,804 psi*... B5-792

The Consultant has mis-used standard terms for MMSCFH, =1000x1000 (=million) standard cubic feet, is correct industry terminology but is elsewhere confused by others as Mcf. Unfortunately MMSCFH = 1000x1000 (=million) standard cubic feet per hour per hour is an ERROR as it states hours, rather than days (MMscfd), resulting in an injection rate of 2400 million standard cubic feet per day. If this listing is the basis of calculation for risk by the Applicant's consultant (experienced engineer, or expert) then the entire appendix is called into question. B5-793

The Consultant does not provide a standard process flow diagram (PFD) or piping and instrumentation diagram and does not completely and adequately reviewed the implications of inconsistencies of flow rates, pressures, and pipe requirements of the Project. Segment No.2 provides inflow and outflow of 100 and 200 MMscf/d, respectively,at 1000psi through a 16inch pipeline while Segment 2 is stated to have injection and withdrawal phases of 100 and 200 MMscf/d, respectively, at 1600-2000psi through a 16inch pipeline. B5-794

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p. B-28 **4.6.5 Well Site Incident Rate**

The anticipated annual failure rate for the well site is 4.9E-04. (Weatherwax 2008) B5-795

ApB SR-3 Comment: The annual failure rate is for a single well and should be times the maximum number of injection/withdrawal and produced water wells (=x7).

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p. B-50 Appendix B, System Safety and Risk of Upset

7.0 ENVIRONMENTAL IMPACTS AND MITIGATION

7.1 Definition and Use of Significance Criteria - 7.1.1 Individual Risk For individual fatality risks, the generally accepted significance criterion is an annual likelihood of 1 in one million per year (1:1,000,000) (CDE 2007, CPUC 2006).

7.1.2 Societal Risk Societal risk is the probability that a specified number of people will be affected by a given event…The Committee for the Prevention of Disasters, uses the criteria as shown in Figure 7.1.2-1 below. This data is the same as the criteria used in the Netherlands and is the most conservative of the published data for Western Europe. These criteria have been used to evaluate societal risk in this document. B5-796

ApB SR-4 Comment: The Applicant has grossly generalized risk assessment criteria for significance. Furthermore the worst case condition should include the most probable wind direction for the specified wind speed conditions as both industrial to the north and east, important infrastructure-powerline towers and mainline railroad along the west side, and residential lands to the west would result in very different exposures to risks.

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p. B-51, ApxB **7.2 Applicant Proposed Measures**

This section ***outlines*** the ***mitigation measures that will be incorporated into the project by the Applicant.*** (***Weatherwax 2008***; SNGS, LLC 2007): B5-797

Pipeline Segments

The following Applicant proposed mitigation ***will be incorporated*** into the pipeline portion of the project. (emphasis added.)

- The minimum depth of cover for each of the pipeline segments will be at least 6-feet.
- 100% of the circumferential welds will be inspected using radiographic techniques in accordance with API 1104.
- A ***sectionalizing valve*** will be provided on the pipe segment between the well field and the compressor station. (emphasis added.)

ApB SR-5 Comment: As the appendix summarizing all other risk-related documents for the support of the relevant subsections in the DEIR, this section should NOT outline but provide full, complete, and adequate summarize, development and provide the support to the summarization in the DEIR body. The Section B Project Description and Section G is not consistent with and does not develop from this Appendix. B5-797 (Cont.)

The APM (Applicant Proposed Mitigation) is indicated as "will be incorporated" rather than "has been incorporated"; all mitigation measures, whether as an APM or not, must be dedicated by the Applicant and confirmed by CPUC. B5-798

The Weatherwax reference is not correct (Weatherwax or Weatherwax, et al) especially when two others occur within the DEIR. B5-799

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p.B-52, Appendix B, System Safety and Risk of Upset

- A control system and associated equipment ***will*** be provided to ***facilitate rapid*** closure of ***important*** safety valves, including those in the well field and on the pipe segment between the well field and the compressor station. (emphasis added.)
- Remotely operated emergency shut-down (ESD) valves ***will*** be provided at ***both ends of each pipe segment*** that will ***automatically*** close and isolate the pipelines in the ***event of a potentially dangerous condition*** such as ***over-pressure, leak, or fire***. (emphasis added.)
- During ***periods when there is no flowing gas***, the block valves at each end of each pipe segment ***will*** be closed to "shut-in" the facilities. ***During non-operational periods***, the pipe segments will be pressurized, but will be isolated from natural gas sources. During these periods, ***it will be possible to monitor the line pressure***; a pressure drop would be ***indicative*** of an otherwise ***undetected leak*** in the system. (emphasis added.)

ApB SR-6 Comment: The Applicant's consultant indicated many other elements not specifically related to control of gas releases and consequences thereof. B5-800

Those above are the residual of the measures are inadequately defined; "facilitate rapid closure of important safety valves" and other terms require definitions including:

- **facilitate;**
- **rapid vs slow (= remotely operate motor-controlled vs manually operated motor controlled valves vs manually operated control valves;**
- **important vs not-important valves**
- **safety vs non-safety valves;**
- **Remotely operated emergency shut-down (ESD) valves vs rapidly closed safety valves;**
- **automatically (full closure in ???minutes);**
- **potentially dangerous condition;**

B5-801

B5-801 (Cont.)

- possible – Is this system part of the Project or not.

The Consultant's statement that "...it will be possible to monitor the line pressure; a pressure drop would be indicative of an otherwise undetected leak in the system." requires definition and specificity not provided herein, including:

B5-802

- Will closed-in pipelines be monitored, yes-no;
- What level of pressure drop will be deemed actionable: 10, 50, 100 psi, etc.;
- Pressure drops are usually "not indicative" but clearly show a leak depending on the characteristics of the valves, stems, and flange seals and temperatures;
- Leaks in system requires over pressure and temperature monitoring rather than that a a single pipe section with two closed-in valves.

B5-803

The Consultant does not indicate current "standards of the industry" nor the "Best Available Technology" used for high pressure gas systems in urban environments.

Apdx p. B-52, Appendix B, System Safety and Risk of Upset

B5-804

- Software based leak detection ***will*** be used to alert the operator of potential leaks on the 16-inch diameter pipe segments. (emphasis added.)

ApB SR-7 Comment: The Consultant previously and correctly indicated that the "System" could be monitored for ALL pipeline segments, compressor system (headers), wellhead system (headers), and individual wells (inter-casing) both for closed-in and dynamic operating conditions which would require flows, pressures, temperatures, and gas characteristics.

B5-805

The Consultant (Apdx B) and the Applicant (Section B) do not clearly state whether these options are included or not. Without clear definition of process and controls in Section B, the risk analyses cannot be complete and adequate and the basis for impact analyses (Section D) and mitigation (Section G).

Apdx p. B-52, Appendix B, System Safety and Risk of Upset - **Compressor Station [and Control Center]**

The following ***Applicant proposed mitigation will be incorporated*** into the compressor station site: • ***The compressor station... during periods of darkness.*** (emphasis added.)

B5-806

ApB SR-8 Comment: The Applicant's Consultant indicated the above elements as part of the mitigation for the "engineered and natural risks" of gas releases. Purposeful risk of leaks has not been discussed and no framework has been established to include the above measures. Furthermore, the Project Descripiton does not specifically state these elements. As these measures are related to "untypical" events they are not related with the remainder of the analyses of risk and are not related to control of gas releases and consequences thereof, and relevant measures, for example:

- Leakage detection by pressure changes via the control system;
- Equipment temperature monitors;
- Gas detectors at identified high risk areas (either with enclosures or free air;
- Certified electrical systems to eliminate on site ignition sources or designated; ignition sources to assure confinement of ignited gas to within the site boundaries.

B5-806 (Cont.)

have not been as definitively specify within Section B, D, and G.

The Consultant does not indicate current "standards of the gas-pipeline-storage industry" nor the "Best Available Technology" used for high pressure compressor stations in urban environments. B5-807

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p. B-53 ApxB **Well Site**

The following Applicant proposed mitigation ***will be incorporated*** into the well site portion of the project.

- The wells will be provided with ***fire and gas detectors*** and will be under continual audio/video surveillance from the continually manned compressor station. (emphasis added.)

  They will also be provided with ***three ESD valves***: a subsurface downhole ESD, an ESD located at the well head, and an ESD located at the pipeline interface. (emphasis added.)

  In the event of either a high or low pressure alarm, a fire alarm at the wellhead, or potentially dangerous level of natural gas is detected,...

  ...these ***ESD valves*** will automatically close in order to limit the supply of natural gas to the fire or leak. (emphasis added.)

- A ***third party peer review*** will be conducted by a well control specialist, under the supervision of the Sacramento City Fire Department. (emphasis added.)
- ***Security cameras*** will be installed along the inside top of the masonry wall. Visual signals will be relayed to the Control Center 24 hours per day. (emphasis added.)

B5-808

ApB SR-9 Comment: Detectors, security cameras are not shown nor mentioned

No piping and instrumentation diagrams or other drawings has confirmed any of the above measures; Section B, Fig. B-5 shows six (6) ESD stations for controlling the valves but no information regarding the ESD valves and their relationship with these components and the capability of pigging and slug activities. B5-809

These measures are indicated as "will be incorporated" rather than "has been incorporated"; all mitigation measures, whether as an APM or not, must be dedicated by the Applicant and confirmed by CPUC. B5-810

The Consultant does not indicate current "standards of the gas industry" nor the "best Available Technology" used for high pressure compressor stations in urban environments. B5-811

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p. B-57 **7.2 Applicant Proposed Measures**

This section outlines the mitigation measures that ***will be incorporated*** into the project by the Applicant. ***(Weatherwax 2008***; SNGS, LLC 2007):... (emphasis added.)

References: Weatherwax, Robert K. et al., Sierra Energy and Risk Assessment, Inc., 2008. Probabilistic Risk Assessment, Sacramento Natural Gas Storage Project, July. (emphasis added.)

ApB SR-10 Comment: The mitigation measures are indicated as "will be incorporated" rather than "has been incorporated"; all mitigation measures, whether as an APM or not, must be dedicated by the Applicant and confirmed by the CPUC. B5-812

The Weatherwax reference is not correct (Weatherwax or Weatherwax, et al) especially when two others occur within the DEIR. B5-813

Comments on [redacted], SNGS 2115 confidential, undated memo.

[redacted]

B5-814

RB-1 Comment: Good GIS and geometry are required and needs to be coordinated with the geophysical survey data,which supposedly [redacted] used [redacted] The different data points and differences are based on 20 year old information which have not been confirmed by current studies.

[redacted]

RB-2 Comment: [redacted] **the intermediate consideration of a minor ancient displacement fault and/or major fracture without displacement. Such faults/fractures are common along the eastern side of the Central Valley where rapid deposition and depressions of the Valley floor was exaggerated by rapid rising of the Sierra Nevada core and many geologic adjustments of formations. As no current surveys or direct information has been provided by the Applicant, the simple resolution would be to determine the character and conditions of the floor of the Florin/Winters Sandstone and underlying formations and of the top of the Winters Shale above the Sandstone .**

B5-815

[redacted]

RB-3 Comment: [redacted] **that the** [redacted] **information provided by the applicant is insufficient, inadequate, and incomplete for resolution of the critical element for the proposed Project whether there is a fault in the field area.** [redacted]

B5-816

[redacted]

B5-817

RB-4 Comment: [redacted] **A small fault displacement of 25-50ft could probably not be distinguished by the logs and surface surveys from a channel sandstone or erosional unconformity.**

>>>

Gd-3 Comment: Suggests that the floor of the sand body would be concave downward and flat on top and connected via channel deposits toward an eastern source. B5-820

p.8 "Operating bottom hole pressure not to exceed a pressure of 1825 psia if well-head pressure does not exceed 1630psia." (Water column depth of 3800+ft = Ft x 0.433 = 4000-3800 x 0.433 = 1732-1645 psi which would indicate no water-drive or over-pressurization of original field pressure.)

"Under these anticipated operating pressures, Ryder Scott ***has determined*** that the reservoir pressure on the cap rock will not exceed the ***original reservoir*** by more than 8%. (emphasis added)

p. B-2, par 2 "Initial pressure of the field…1,677…psi) prior to operation…field initially operated at…1,518 psi and ended at 1,115 psi…current pressure…1,200 to 1,300 psi…projected to operate at a pressure of 1,804 psi..."

Gd-4 Comment: Gas pressures do not appear consistent with text statements and calculation of 1630 x 1.08 = 1760 (compared to 1825) psia. Pressures should clearly state as to compressor discharge, wellhead, and well toe and the required gas-drive pressure differential to inject into the current field pressure regime. B5-821

p.9 Fig 2-3 Cap Rock Top of Cap inclined W>E

Gd-5 Comment: Figure appears to be a sketch and should be replaced by a single consistent set of drawings (from Ryder Scott) including both sections A and B. Other Ryder Scott figures indicate there is no inclination on the floor of the Winters Sandstone and reservoir. B5-822

p.10 3.2 Structural Confirming the absence of faults, cites Garrison 1992 Freeport (Florin Field) 3 miles ***south – Freeport Fault*** "…does not run through the Florin reservoir…" and ***"…influence*** to the Winters Formation is ***considered minimal."*** **(emphasis added)**

Gd-6 Comment: Freeport Field is five (5) miles west-south-west (not three, not south) of Florin Field. The fault in the Freeport Field is aligned NW-SE and would not intersect with the Florin Field. The Freeport fault is parallel with many other faults in other smaller southern Sacramento Valley fields and with the "lineation" within, with the central axis alignment of the Florin Field, and with the northeast containment. Freeport should not have ANY influence on the Winters Formation beyond the Freeport Field unless the sands are interconnected throughout SE Sacramento City and County and along the upslope trend between Freeport and Florin. B5-823

p.10 "Reinforcing the absence of faults,…there are no known ***active*** faults in the Sacramento area. (emphasis added)

Gd-7 Comment: Absence of the current "Holocene Active Faults" has no relationship with the faults found in most Cretaceous-Eocene fields which are fully recognized to be "Non-Active", "Ancient" faults within 30 miles of the Florin Field. Statement is not supported by evidence and the Applicant's considerations of the Freeport and Airport fields clearly show that ancient faults do exist and do not reach the surface and are not considered as "active faults". B5-824

p. 10 Lineation is "…***a lithological change associated with the submarine fan lobe***." (emohasis added)

Gd-8 Comment: Logical derivation of "if there is no fault, then a lineation is a lithological [actually correct term is depositional, stratigraphic, or sedimentological] change [rather than a structural or fault change]." All changes in the geological formations are typically "lithological" and therefore the describer is largely irrelevant and distractive as to whether the change is caused by the two vertically displaced lithologic units or by "facies" changes resulting from differences in depositional conditions and sediment particles

B5-825

p. 10 "To ***properly model and characterize the stress*** induced in the cap rock during reservoir operation, the ***in situ stress field*** based on the regional structural tectonic ***needs*** to be ***estimated***."

"***In the absence of specific data***, the in situ stress have been estimated from the World Stress Map (2008)…***should be sufficiently close*** for the geomechanical modeling performed." But not based on recommendations for future in situ studies. (emphasis added)

Gd-9 Comment: A common theme throughout Golder report, "we don't have much, if any, data, and therefore we have to take something from somewhere else and apply it without direct support of applicability and it will be 'close enough'."

B5-826

p.11, Sec. 4.0 "shale is ***believed to exhibit an extremely*** low permeability and porosity…"

"containment is ***an indication*** in itself that the cap rock is ***most likely capable*** of containing the gas injected…with ***very low risk***." (emphasis added)

and--

RSC 2007

The Florin field originally contained a stable accumulation of gas which was held entrapped over a period of millions of years. The gas would have accumulated sometime after the Winters formation was deposited over 65 million years ago, during the Cretaceous period. This demonstrates

Gd-10 Comment: In the absence of direct evidence, variations of this claim are scattered throughout this and other reports without regard to the rates of gas generation/production, migration, and replenishment of the reservoir and to the origins of the gas which was found in the Florin Field. No evidence of a "stable accumulation" has been or is provided by any author.

B5-827

p. 4, Item 5 Estimated strength properties and in-situ stresses

p. 23, 4.3 Mechanism 1 - Conclusions

Assumed "low strength shale"

"…[injection pressures would be] ***significantly less*** than would be required for caprock failure, ***indicating no adverse effect on caprock integrity***." (emphasis added)

p. 23, Estimated material data

B5-828

p. 25, Estimated bottom of the Florin reservoir

Gd-11 Comment: As indicated by these, no direct evidence exists regarding the fundamental data requirements for reservoir engineering. The entire approach is based on conjecture. B5-828 (Cont.)

p. 26, 5.2.2 Established Regulations

"***California*** has currently exempted underground gas storage facilities from the CFR [federal reg. for maximum wellhead injection pressures]…" (emphasis added)

Ryder Scott - specific gravity of field gas = 0.598, 3795ft CFR max 3035psi

anticipated well head of 1650psia…maximum proposed reservoir pressure of 1805 psia

Gd-12 Comment: California here means the Division of Oil, Gas, and Geothermal Resources which is funded by the Exploration and Production industry sector in the State of California and generally, in practice supports relatively less stringent requirements on the sector than other agencies or authorities within State, regional, county, and local-city organizations. This impact of this exemption must be examined.

There is no consistent gas pressure enumeration for the compressor discharge, wellhead entry (39ft elev.), individual well toes, 25%ile full level (well-toe sphere of influence), and spill-point levels. B5-829

p. 27, 6.0 **Mechanism 3 Existing Damage to Cap Rock Due to Historical Production**

Gd-13 Comment: This section only considers "subsidence" due to production of gas and produced water and does not review the physical aspects of historic well installation, abandonments. B5-830

p. 29, 6.2 Subsidence at Florin Field

"Record ID 77…9 miles due **east** [toward the Sierra crest] of Florin Field…resources being removed from the area include water and gas…the station is of ***similar*** lithology, stratigraphy, and resource use as the Florin reservoir area." (emphasis added)

Gd-14 Comment: Based on available data and direct information, the conditions and setting of the Record ID77 Station cannot be considered to be similar to those of Florin, 9 miles downslope Cretaceous trends. B5-831

p.30, par. 2 ***"Since the cap rock for the Florin field has successfully contained natural gas for on the order of 15 million years; any hypothesis regarding loss of containment requires changes in the shale material properties."***

Gd-15 Comment: Repeat of Unsubstantiated Project Basic Statement. B5-832

p. 30, par.3 SNGS – decrease pore pressure - "Historic subsidence in the vicinity of the Florin field has been related ***clearly*** to production from water reservoirs above the Florin gas reservoir." (emphasis added) B5-833

Gd-16 Comment: Without direct elevational monitoring in coordination with production of both gas and produced water and field pressures on all wells, subsidence cannot be "clearly" related to anything. B5-833 (Cont.)

p. 30, par.5 **7.0 Mechanism 4 – Fault Reactivation**

"…orientation of jointing sets plays and [sic] important aspect in reactivation of steeply dipping fracture sets…"

Gd-17 Comment: Jointing patterns are very important but like many other characteristics are not available from the original studies and cannot be easily discerned from geophysical surveys and logs. B5-834

p.31, par 1 "…withdrawal of gas [and produced water] from the field ***can often lead*** to a reduction of pore pressure in the reservoir [and presumably surrounding containment], which ***often facilitates*** the precipitation of minerals into existing fractures sets leading to unexpected over pressuring of the reservoir and subsequent fault reactivation [crystal-expansion pressures]." (emphasis added)

Gd-18 Comment: Although raised as an issue, no further explanation is provided as to how it relates to the Florin Field. Typical analyses would be to compare pre-production, abandonment, and pre-injection conditions, all of which have not and can not be done, no available data exists. B5-835

p.31, par. 2 "…***accurate determination*** of in-situ stress field are [sic] ***essential prerequisites for safe engineering*** of gas injection sites." (emphasis added)

Gd-19 Comment: Text statement and phrases are accurate but are not applied to the context of Golder's review. B5-836

p. 31 "Such information is ***essential*** because the increase of formation pressures arising from gas injection can reactivate existing fracture sets and lead to slip on faults…create or enhance fracture permeability giving rise to gas escape. It is ***essential to determine*** [not estimate] if previous pressure depletion may have damaged cap rock seals." (emphasis added)

Gd-20 Comment: Comments in text are accurate but not applied to the context of Golder's review. B5-837

p.31, par 4 "…there are **no known active faults** within approximately 30 miles of the Florin field (USGS, 2002)." (emphasis added)

Gd-21 Comment: Not specifically true, as indicated in [redacted]

Compressor Station Site Characteristics and Estimated Earthquakes for Regional Faults

[redacted] B5-838

[redacted] **(SNGS 1746-1842.)**

B5-838 (Cont.)

p.31, par. 4 "However the cap rock of the Florin Reservoir has ***successfully*** contained natural gas for the past seismically active 15 million years." (emphasis added)

Gd-22 Comment: Repeat of Project Basis. As no evidence can be provided for either success or failure can be provided, the adverb is self-serving.

B5-839

p.33, par 3 "…SNGS should nevertheless conduct ***site specific stress and strength testing*** to verify Golder's conclusion ***prior to commencing storage field operations***…include a ***more detailed assessment of the strength and stiffness*** of the reservoir and cap rock formations;…through a ***more accurate assessment of the in-situ stress conditions***;…prior to further injection/production operations." (emphasis added)

Gd-23 Comment: Statements are appropriate but have not been included in mitigation or other requirements, therefore "should" is important.

B5-840

p.34, par.1 ***No evidence of subsidence*** has been identified…This implies that the designed SNGS operation project will ***generate less compaction than has occurred***…therefore the SNGS operation is ***not expected to cause any observed surface subsidence.*** (emphasis added)

Gd-24 Comment: No direct evidence of subsidence over the Florin Field exists which can be related to field activities and prospective re-pressurization. Therefore, applying the past example without direct data to proposed conditions is conjectural interpretation of non-existent information.

B5-841

p. 34, par.2 "based on the historical evidence, the cap rock has provided a seal unit over the 15 million of years and has successfully contained the original natural gas…***There is no reason to doubt*** the integrity of the cap rock for any future seismic event likely to occur." (emphasis added)

Gd-25 Comment: Project's basic statement.

B5-842

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Mannon Associates March 18, 2008

storage operation a given gas pool must pass the test in three broad categories. These three categories or areas of concern are all encompassing. Virtually all the factors to be considered in the evaluation process can be placed into at least one of these categories. The three factors are:

1. The geological and engineering characteristics of the gas reservoir
2. Environmental concerns
3. Economic issues

B5-843

Mn1-1 Comments: Mannon provides an acceptable basic approach but then does not follow the same based on direct physical evidence. No current surveys, investigations, and reports are available except for geotechnical investigations for sites (only), and thereby the Item 1 and Item 2 materials are not complete nor adequate. As the Project Description and various reports and subsections in the DEIR are inconsistent or contradictory and do not fully and adequately provide Project details required for complete and adequate assessment, the Item 3 elements cannot be fully defined and have not been provided.

B5-843 (Cont.)

characteristics of this ideal field. As an example, in the case of Florin, there are no isolated sand lenses or "sand pockets" that contain gas that are disconnected from the main reservoir body that are not continuous throughout the reservoir. Instances where

Mn1-2 Comments: Mannon offers and apparently has no evidence or direct information regarding "sand lenses" or "sand pockets" and specifically avoids the issue of the SE barrier separating the Central-NW and the SE elements of the Florin Reservoir. Lack of application of evidence and use of conjecture distracts from the validity of any proposition and evaluation.

B5-844

reservoir discontinuity of this type occurs serve to severely limit the ability of the operator to maintain control of fluid movement in the reservoir.

Mn1-3 Comments: Mannon's statement and the lack of evidence and disregard to the SE barrier renders the statement herein as refuting the use of the Florin Reservoir, as the operator cannot control the fluid, and thereby the gas levels of the reservoir.

B5-845

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Sacramento Area Gas Field Selection Criteria AFJ9586

Attachment 2, Sacramento Airport Gas Field Evaluation, Mannon Associates. 03/18/08; PDF p. 28-34.

gas and water in the reservoir. The ideal situation is the case of a gas reservoir where the gas is trapped in an unfaulted anticlinal or domal shaped structure in which the producing zone is continuous across the structure. In this case the wells are all in communication with either other. As a result the operator is able to exercise maximum control over fluid movement in the reservoir by appropriate monitoring of well pressures and gas flow rates and whatever water is produced. The Florin Gas Field has the characteristics of this ideal field. As an example, in the case of Florin, there are no isolated sand lenses or "sand pockets" that contain gas that are disconnected from the main reservoir body that are not continuous throughout the reservoir. Instances where

Mn2-4 Comments: Mannon's above first and second sentences for the Sacramento Airport review clearly state ideal conditions which RSC attempts to impose on their hypothetical model. The lack of direct current and complete evidence as to the "ideal characteristics" and of disconnected, isolated, and "not continuous" gas-containing "pockets" and "lenses" the disregard to the "required" SE barrier and the 25-50 foot vertical lineation across the entire "dome" renders the statement incorrect for the Florin Reservoir.

B5-846

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Mannon , March 26, 2008

p. D.5-19 **Geology and Soils D.5** In addition, experienced California Reservoir Engineers (***Mannon 2008***; ***Matthews***, pers. comm., 2007; ***[Ryder] Scott*** 2008; ***Terracon*** 2008) indicate that the reservoir has demonstrated its ability to successfully…p.D.5-20…contain natural gas for millions of years. Moreover, the observed abrupt lateral changes in subsurface lithology (sand/shale contact) ***have been attributed [as interpretations BUT not demonstrated and documented]*** to stratigraphic [other statements as "lithological"] variation as opposed to structural-fault-related causes. The Proposed Project would not expose people or structures to potential substantial adverse effects due to strong seismic ground shaking ***[without estimated ground acceleration: 0.1-0.5g; an interpretation BUT without evidence and undemonstrated]***; thus, impacts would be less than significant (Class III). (emphasis added)

Section D.6, Hazardous Materials, Public Health and Safety, Impact HAZ-2a describes the potential for gas to migrate to the surface and groundwater from inactive faults or other anomalies in the cap rock. This is considered a significant and unavoidable impact.

Mannon, R. 2008. Letter to Mr. James Fossum, SNGS, LLC. Mannon Associates Petroleum Consultants. March 26, 2008

Mn3-1 Comments: Reliability of the reservoir experiences [excluding Terracon] cannot replace the need for direct physical information and evidence from deep borings, cross-bore geophysical surveys, and re-evaluation of abandoned wells and simple lack of direct information to justify the estimated cushion gas content and pressure, energy/Btu values of existing gases, water levels, and conditions and characteristics of the central axis lineation, the spill-point, and the SE barrier cannot be overcome for millions of years.

The Section D.5 statements appear to be contradicted by Section D.6 statement: "This is considered a significant and unavoidable impact."

B5-847

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p. 3, par.3, Executive Summary [Mannon Associates, July 3, 2008; AFJ11163]

An examination of the geologic and engineering characteristics and performance history of the Florin Gas Field ***clearly indicates its suitability for gas storage as proposed***. ***The likelihood of gas migrating through the gas cap is nil***. Accordingly, there will be ***no contamination of the fresh water sands***, located at approximately 1300 ft., by migrating gas from the Florin reservoir. In addition, there will be ***no migration of gas to the surface***. The environment of the Florin reservoir will ***provide the means to properly monitor and control the movements of fluids*** within the reservoir to ***prevent gas migration beyond the field limits***. An ***investigation of the abandoned well records indicates the proper steps were taken in the well abandonments and that they are safe***. Consultations with personnel, responsible for the ***design of the new wells***, provided assurance of the…[p.4]… ***application of appropriate design criteria*** and ***more than adequate redundancy for safe operations***. (emphasis added)

Mn4-1 Comments: Presumption of evidence is implied by "clearly indicates", "likelihood …is nil [=zero, 0.0]", "no migration", "properly monitor and control", _____.

Statements are not based on facts and use of extreme terms, "clearly", "nil", "no contamination", "no migration", "properly monitor", "prevent gas migration", "proper steps", "they are safe", and "they are safe" appear to be attempts to influence the reviewer with words rather than facts. No direct evidence or basic documentation is

B5-848

provided in discussions, only references to other studies, letters, and documents which in turn provide no factual basis other than no evidence to the contrary can yet be found, although no evidence for the statements can also be provided.

B5-848 (Cont.)

p.5 Conclusion The Playa Del Rey Gas Storage facility is the victim of the ***need for rapid development of a gas storage project to satisfy immediate gas supply requirements*** for the war effort. (emphasis added)

Mn4-2 Comments: Correct. However, the storage unit is the deepest supra-basement, post-Jurassic formation in the area (similar to that at Montebello) and errors and omissions incorporated into selection and design reflect inadequate and incomplete direct information as is the case in this DEIR.

B5-849

p.6 Conclusion It appears that the ***original project design was flawed***. A geologic cross-section through the field ***indicated the presence of a fault***. In the design of the gas injection operations it was assumed that the fault would serve as a barrier to gas flow beyond the field limits, which was not the case. It was ***risky to make this assumption and does not represent good operating practice***. The competency of a fault to block flow in a reservoir is ***usually uncertain without proper testing***. (emphasis added)

Mn4-3 Comments: Correct. Assumption that the "SE Barrier" beyond the proposed gas reservoir (Central and NW elements of the reservoir) will block gas migration and is equally "*risky to make this assumption and does not represent good operating practice*. The competencies of this barrier, the central axis lineation, and the NE boundary and spill-point to block or control flows in this reservoir are without direct evidence and are *usually uncertain without proper testing.*

B5-850

p. 8 **IGC, BGS, and SERA Studies of Incidents**

The report by ***Sierra Energy and Risk Assessment (SERA)*** [=Weatherwax and Weatherwax] in 2007 also reported on accidents and incidents in California among gas storage reservoirs.

Summary of Results of IGC, BGS, and SERA [=W&W] Studies

The results of the studies by IGC, BGS, and SERA of gas storage operations utilizing depleted gas reservoirs indicate ***there is no incident of gas*** from a gas storage reservoir ***migrating through the cap rock to the surface or migrating laterally around the cap rock*** and ***flowing*** to the surface.

The ***SERA*** **[=W&W]** report concluded that the safety record of the California gas storage projects studied was ***truly enviable*** and would make the gas storage industry a ***very attractive industrial activity even were its continued operations not absolutely essential to the economic well being and public welfare of the state*. (emphasis added)**

Mn4-4 Comments: Incorrect and inconsistent citation and reference as the SERA report was prepared by Weatherwax and Weatherwax, as refenced in the References and in other sections and reports. "No incident of gas…migrating" reflects the authors disregard of conditions at Montebello and Playa del Rey as reviewed for CPUC for applications of divestures.

B5-851

Statements are not based on facts and use of extreme terms, "no incident", "truly enviable", and "very attractive industrial activity" appear to be attempts to influence reviewers with words rather than facts; also reflects the old saying "repeat a lie long enough and some will believe it". B5-852

p. 11 **Integrity of the Florin Reservoir Cap Rock**

Questions have arisen ***regarding*** the ***integrity*** of the cap rock, and whether there can be migration through the cap, with the possibility of contaminating fresh water sands. (emphasis added)

Mn4-5 Comments: Questions have arisen, based on the lack of direct evidence and information regarding the current conditions and characteristics of the reservoir (gas content, gas composition, gas pressures, heat value, and water levels), various confinement features (central axis lineation, the NE upslope barrier and spill-point, the SE barrier within the reservoir sands, and perhaps even the SW "pinch out of the reservoir sand), and adequacy of non-compliant abandoned wells. Such questions can only be resolved with direct subsurface investigations and monitoring of the "reservoir", the Base of Fresh Water, and the intervening sands and caps. B5-853

p. 11 **Integrity of the Florin Reservoir Cap Rock**

The ***very fact*** that the Florin Gas Field, when discovered was filled with gas to the fill point [elevation of Spill Point] under normal pressure conditions, provides ***proof of the integrity*** of the cap rock. Even ***minor*** leakage through the cap rock, through ***geologic time***, would have reduced the Florin reservoir to only traces of gas, at the time of discovery. This ***[=impervious shale cap rock]*** represents a big advantage in choosing a depleted gas reservoir for gas storage, rather than a depleted oil reservoir, an aquifer, or a salt dome. (emphasis added)

Mn4-6 Comments: The "very fact" has not been demonstrated nor is based on direct evidence and "facts" or "proofs" in this Mannon Report and other supporting documents referenced in the DEIR. No evidence exists or has been provided regarding the measured gas/water levels at the time of discovery, what normal gas pressure conditions were/are, sources/generation rate for the gas in the reservoir, rates in inflow-outflow, and the effects of the reservoir's NE spill-point and SE barrier. There is no definition of "minor" and "geologic time", B5-854

p. 11 **Integrity of the Florin Reservoir Cap Rock**

Therefore, due to the ***"proven" integrity of the Florin cap rock***, there will be ***no significant migration of gas*** through the cap rock ***to the fresh water sands, or to the surface***. (emphasis added)

Mn4-7 Comments: Nothing has been "proven" without direct evidence of the current conditions of the reservoir (gas volume, gas pressures, water levels, etc.). Definition as to "significant" by direct evidence regarding reservoir conditions, first sand layer conditions above the cap rock and any confined aquifers between 1000-2500ft depths would remove controversy, B5-855

p. 11 **Integrity of the Florin Reservoir Cap Rock** B5-856

The word ***'significant'*** has been included in the above statement in order to address findings by investigators that upward migration of gas from gas storage reservoirs is, in effect, a fact of life and is 'unstoppable'. (emphasis added)

Mn4-8 Comments: Definition as to "significant" by direct evidence would remove controversy, however, these statements appear to attempt to trivialize the central issues of absence of direct evidence of the current reservoir conditions, sources and generation rates of gas in/to the reservoir (=re-pressurization), rates of gas accumulation and spill-out (across the spill-point"), and the effects and timing of the SE/Central-NW barrier formation and influence.

B5-856 (Cont.)

p. 11 **Integrity of the Florin Reservoir Cap Rock**

The statement that upward migration of gas from gas storage reservoirs is 'unstoppable' is technically correct, but needs to be put in proper perspective. The type of upward migration of gas that is unstoppable is known as 'molecular diffusion'. It acts in all types of geologic formations and is a molecular process. In cases where there is an uneven distribution of gas molecules over an area, as there always is in gas reservoirs, natural forces will strive to achieve equilibrium. As a result, there will be ***infinitely small amounts of gas molecules*** moving in different directions in an effort to accomplish this equilibrium. The magnitude of this gas movement is ***so infinitesimal*** that the time that it would take for gas to migrate from the Florin reservoir upward to the surface, or even to the fresh water sands between the cap rock and the surface, is numbered in millions of years. The end result is that the cap rock of the SNGS facility will serve as a barrier to gas flow from the reservoir to the surface for the life of the SNGS gas storage project, and for millions of years, thereafter. (emphasis added)

Mn4-9 Comments: Diffusion migration can only demonstrated by direct evidence, however, these statements appear to attempt to trivialize the central issues of: 1. fractures, 2. improperly abandoned wells penetrating the reservoir and its lateral extensions, and 3. absence of direct evidence of the current reservoir conditions.

B5-857

p. 11 **Evidence of Faults**

The potential and consequences of faulting in gas storage reservoirs is evident from the case studies presented herein. However, ***very substantial evidence points to the fact*** that there are no faults in the Florin structure. This conclusion is based on the following: [p.12]

1. ***No indication*** of faults from the interpretation of the seven seismic lines that cross the structure.
2. ***No indication*** of faults based on an examination of the well logs of the five wells in the field and three wells immediately adjacent to the field.
3. ***No indication*** of faults from geologic cross-sections of the structure or isopachous maps of the Florin producing sand and overlying shale making up the cap rock ***[and spill point and saddle, or separation of SE and Central-NW elements of the Field]***.
4. ***No indication*** of faults in the 3D model of the Florin reservoir.
5. ***No indication*** of faults intersecting the fresh water sand at approximately 1200'. (emphasis added)

Mn4-10 Comments: Information and backup for interpreted "No indication" are not provided in DEIR, appendices, referenced documents, or direct evidence.

B5-858

"Indications" do not equal "very substantial evidence" exists, only from pressure modeling, well logs, and seismic surveys but no direct data or information exist as to presence or absence of faults with >10ft displacement, faults with <10ft displacements, or fractures without displacement. B5-859

Fresh water "sand" [Base of Fresh Water, BFW) is usually given as 1300ft, however, well logs give a various depths of 1200-1500depth. B5-860

p.12 **Possible Avenues of Migration/Leakage**

The possible avenues of gas movement, from a gas storage reservoir to the atmosphere, can be in a vertical direction through the cap rock, or horizontally in a circuitous direction, to effectively bypass the cap rock.

Mn4-11 Comments: "Possible avenues" also should include "fractures" [faults with 0-10ft displacement along and across the central reservoir axis] and documented improperly abandoned wells below 1000ft depth. B5-861

[Summaries] Vertical migration

normally due to faulty cement jobs on old wells, or occasionally on new wells

Movement along reservoir faults in the cap rock (***rare*** instances).

As has been explained in some detail above*, no faults in reservoir, (**this is not a problem**).* (emphasis added)

Mn4-12 Comments: Comments: No definitions of "normally", "occasionally", "rare", "some", and "no problem" are provided. Statements are not based on facts and use of extreme terms, "rare" and "no problem" appear to be attempts to influence the reviewer with words rather than facts. No "explanation in some detail" is provided in discussions above, only references to other studies, letters, and documents which in turn provide no factual basis other than no evidence to the contrary can yet be found, although no evidence for the statements can also be provided. B5-862

[Summaries] Vertical migration

fracture the cap rock due to **inordinately** high injection pressures.

Plans are to limit the injection pressure to a maximum of 10% above the original reservoir,

Provides broad safety factor against **possibility** of operating pressures fracturing formation. (emphasis added)

Mn4-13 Comments: No definition of "inordinately" is provided and could only be based of the compressor specification which are not provided and the running times for injection 120 day of injection give a different field pressure than 90 days and thereby "high pressures" are only mitigated by operational requirements rather than maximum capabilities. B5-863

p.12 **Possible Avenues of Migration/Leakage**

[Summaries] ***Monitoring/tracking*** **[=instrumentation/technology]** growth/extent of gas bubble

Reservoir susceptibility of ***monitoring/tracking procedures*** B5-864

Florin reservoir with- ***Thick impervious cap rock***

No faulting

Uncomplicated structure

Dry gas reservoir (emphasis added)

Mn4-14 Comments: References to monitoring and tracking are appropriate to Mitigation section and these measures have NOT been included in the Mitigation and therefore distracts or biases the review of the relevant section, herein.

The Florin reservoir has not been documented to have an impervious cap rock and/or "no faulting", and interpretations have documented a complicated structure for confinement, lithological/stratigraphical changes, spill-points, and the barrier between the SE and Central-NW sections of the reservoir.

B5-864 (Cont.)

p.12 **Possible Avenues of Migration/Leakage**

[Summaries] ***Very little likelihood*** **[Not Nil]** of lateral migration

Lateral migration from dry gas reservoirs is ***extremely rare***

Never resulted in migration of gas to the surface (emphasis added)

Mn4-15 Comments: Statements are not based on facts and use of extreme terms, "never" appear to be attempts to influence the reviewer with words rather than facts.

B5-865

p.12 **Conclusions –**

1. ***Historic records - confirmed as suitable from the standpoint of safety***

2. ***Geologic and engineering characteristics - based on above Nil (=0) likelihood of migration and none for contamination of freshwater***

3. …will be ***possible to monitor and control the movement of fluids…***to prevent gas migration beyond the field limits [=beyond spill-point].

4. Investigation of well records indicates **proper steps** were taken…and …they are safe.

5. Consultations with those responsible for the design of the new wells indicate the ***application of appropriate design criteria*** and ***more than adequate redundancy*** to provide for safe operations. (emphasis added)

Mn4-16 Comments: Statements are not based on facts and use of extreme terms, "never" appear to be attempts to influence the reviewer with words rather than facts. Reference to monitor and controls relate to mitigation measures which have not been specifically included and assigned for responsibilities; operations would be defined by the maximum injection/withdrawal rates and pressure capacities of equipment and casings/screens, and not based on some speculative operational scenarios. No discussions of "adequate redundancy" has been provided and again would suggest that either additional capacity is available or that operational mitigation measure could be implemented BUT are NOT as yet required in the mitigation measures for physical plant or operations.

B5-866

14. ***[SERA=]*** R.K. WEATHERWAX AND M.R. WEATHERWAX: "California Natural Gas Storage Facilities: A Contemporary History of Incidents," ***SERA*** 07-1122, *Paper* (August 8, 2007).

B5-867

Mn4-17 Comments: Mis-/inconsistent reference for SERA and Weatherwax and no references to Ryder Scott Co., Golder, or Matthews. B5-867 (Cont.)

DEIR, Sec. D.6

p. D.6-23

Most documented leakage from gas storage reservoirs have occurred in shallow [depth = shallow, 2000, 3000, 4000ft, etc.] salt formations rather than in formations contained by a shale cap rock (***Mannon Associates***, 2008). However, leakage of stored gas has occurred in California…. The route of escape for stored gas leakage can include cap rock structure, existing or new cap rock fractures, faults, defective cement well seals, and/or substandard abandonment cementing of oil and gas wells. There have been ***no documented incidences of leakage of natural gas from the former Florin Gas Field operations [as gas and pressures were depleted; no one has ever said that Florin Field has leaked; only that it may in re-pressurized]***. (emphasis added)

[Mannon Associates. 2008. *Analysis of the Florin Gas Field for Gas Storage*. Sacramento,

California: Prepared by Mannon Associates for SNGS, LLC. July 3.]

Mn4-18 Comments: Referenced report does not include any such discussion of leakage from discovery (1977) to 2009 from the Florin Field. As indicated above, Mannon 2008b does attempt but fails to support that during future proposed operations that gas would not migrate laterally or vertically to the freshwater zone or to the surface. B5-868

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[redacted] (Reference to confidential SNGS 2118-2131)

J.F. Matthews, Jr. (as PetEngr. and as former State Supervisor), Nov. 26, 2007. Letter to SNGS,

> "Relative to the SNGS facility, the seven wells that were drilled for the extraction of natural gas from the Florin Field were all properly plugged and abandoned under the current stringent regulations. [p.3, par.2]"

JFM120106 Mt-1 Comment: Based on information provided in the above document, the following summary of "non-compliance" issues (below) clearly shows physical and procedural deficiencies of the abandonment and plugging of the historic wells. B5-869

Union Oil, Florin 1, completed 9/84

1. Clean out to below perforated interval **----------Not indicated--------------**
2. Fill with cement from base of perforations 3958 to 3677 WADI (WADI=Witnessed and Documented by Inspector)
   to 100 feet above upper perforations ***50ft below to 205ft above***

4.2 ***Perforate*** at base of fresh water sands and squeeze **----------Not indicated--------------**
cement and then leave 100 feet of cement inside ***1300ft = 36ft below / 122ft above*** of casing

5. Cut off casing a minimum of 5 feet below the surface **-6ft maybe**

B5-870

and weld steel plate ------Not indicated--------

Union Oil, Florin 2, completed 9/84

1. Clean out to below perforated interval — Cleaned to 4462ft ***200ft open below***
3. Fill hole with 75 pound drilling fluid — **74 pound WADI**
4.2 Perforate at base of fresh water sands and squeeze — ----------Not indicated----------
   cement and then leave 100 feet of cement inside of casing — Plugged 1520-1275ft Cement WADI ***1280ft = 5ft above to 240ft below***

Union Oil, Florin 4, (completed 9/84)

1. Clean out to below perforated interval — Cleaned to 5500ft Open ***66ft below***
3. Fill hole with 75 pound drilling fluid — ***9.4 pound drilling fluid***
4.2 Perforate at base of fresh water sands — Shot 1500-1498 ***2ft Shot, 198ft below fresh***
   and squeeze cement and then leave — Squeezed 21 sacks/no top, Cleaned to 1570ft
   100 feet of cement inside of casing — Squeezed 91 barrels cement – 1357-1232ft
   1300ft = 57ft below to 68ft above, 125ft plug

P&G Florin 1, completed 8/17/90

2. Fill with cement from base of perforations — 3810ft > 3580ft WADI
   to 100 feet above upper perforations — ***6ft below to 218ft above***
3. Fill hole with 75 pound drilling fluid — -------Not indicated----------
4.2 Perforate at base of fresh water — ----------Not indicated--------
   sands and squeeze cement and then leave — ***1190ft = 61ft above to 50ft below***
   100 feet of cement inside of casing
6. Place cement plug at top of surface casing — ***??? cement***

P&G Florin 2, 8/19/90

067-20231	Total	Cements	Perforated	Cement to	Fresh
SNGS00396	~~4693~~	472/3987	~~3876-3852~~	898	1190ft
SNGS00384	*4673*	*3846-52*	*3846-3852*	*cp3880-3675*	

2. Fill with cement from base of perforations — 3880ft to 3875 WADI
   to 100 feet above upper perforations — ***3876 = 1ft above***
3. Fill hole with 75 (70) pound drilling fluid — 70 pound

TXO Production Corp. Well Northgate Beneficial 1, 9/27/83

1. Clean out to below perforated interval — **Not completed – no perforated, end of string**
2. Fill with cement from base of perforations — ----------Not indicated---
   to 100 feet above upper perforations
3. Fill hole with 75 pound drilling fluid — **??? Drilling Fluid**

B5-870 (Cont.)

4.2 Perforate at base of fresh water	**----------Not indicated--------**
sands and squeeze cement and then leave	Plugged 592-442ft Cement
100 feet of cement inside of casing	***1570ft = 128ft above to 349ft above***
5. Cut off casing a minimum of 5 feet below the surface	-5ft
and weld steel plate	**---------Not Indicated-------------**

Venada Natl. Andersen 1, 10/21/81

1. Clean out to below perforated interval	***Cleaned to 3880ft (+120ft)***
2. Fill with cement from base of perforations	**--------Not Indicated------**
to 100 feet above upper perforations	
4.2 Perforate at base of fresh water	**-------- Not Indicated ------**
sands and squeeze cement and then leave	Plugged 593-375ft 90 sacks Cement WADI
100 feet of cement inside of casing	***1240ft = 30ft below to 211ft above***
7. Return surface to original conditions	**Final Letter (Not El) PPP**

Venada Natl. Lindsey 1, 1/7/93

1. Clean out to below perforated interval	**---------- Not Indicated ---------**
2. Fill with cement from base of perforations	**----------- Not Indicated --------**
to 100 feet above upper perforations	***Cement above 852ft 7028ft of open hole***
3. Fill hole with 75 pound drilling fluid	**9.3 pound QQQ**
4.2 Perforate at base of fresh water	**---------Not Indicated-------------**
sands and squeeze cement and then	Plugged 910-753ft, 53 sacks Cement WADI
leave 100 feet of cement inside of casing	***1330ft = 119ft below to 228ft above***

JFM120106 Mt-1 Comment: (contd.) Based on information provided above, the fundamental basis of the past and current pronouncements regarding the integrity of the wells is not verified or confirmed and appears to be refuted by the earlier information provided by Matthews.

B5-870 (Cont.)

Furthermore the evidence provided also indicates that many well holes are open above the "screened" zone or bottom of casings in/below/above the reservoir level through the formations up to some ill-defined, ill-determined "Base of Fresh Water".

B5-871

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J.F. Matthews, Jr., 11/26/07. Letter to SNGS:Review of Gas Migration, p.1-4, attach. p. 1-15.

p. 3, par. 2, Summary

"The current regulations are rigid, specific, and enforced by the Division (=DOGGR).

"Inspections are performed prior to the Division's sign-off on any P&A'd well."

"Relative to the SNGS facility, the seven wells that were drilled for the extraction of natural gas from the Florin Field were all properly plugged and abandoned under the current stringent regulations.

B5-872

JFM112607 Mt-2 Comment: The review of the earlier Matthews document clearly demonstrates that the DOGGR regulations and field requirements for abandonment and plugging are not specific, rigid, or fully and completely enforced and that the DOGGR inspections and documentation has not been adequately and sufficiently enforced in the field and preparation of formal records. B5-872 (Cont.)

As indicated by the continued repetitive nature of the statements by Matthews and others, the adequacy and completeness of plugging and abandonment of the existing wells is the fundamental basis of the past and current integrity of the proposed gas storage reservoir. B5-873

p. 3, par. 2, Summary

"I have recommended to SNGS that they have an on-site testing done at each of the original well sites, in conjunction with representatives from the DOGGR, to determine if any leakage of natural gas is found.

"SNGS has committed to have these inspections of the accessible old well sites performed within the next 30 days.

JFM120107 Mt-3 Comment: The Applicant has not elsewhere or in the DEIR committed formally to have onsite testing of the current conditions of existing wells and have these inspections of the accessible old well sites performed within the any period of time. B5-874

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Sacramento Area Gas Field Selection Criteria AFJ9586

Attachment 3, Sacramento Airport Gas Field Evaluation, John F. Matthews Jr., 02/05/08; PDF p.35-41, 4pg+title.

JFM020508 Mt-4 Comment: Although the consultant does not make prouncemets regarding the Florin Field in this site comparison, pronouncements regarding the conditions of the Sacramento Airport alternative to the Florin Field should be viewed based on the other comments in these comments above. B5-875

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RYDER SCOTT COMPANY L.P. (RSC), October 15, 2007; Bruce Palmer

The fact that the Florin field reservoir originally held dry gas and not oil gives us more confidence in the sealing ability of the cap rock with respect to gas than if the reservoir had initially held oil. Some researchers have reported that the cap rocks of oilfield reservoirs may not have enough

RS101507-1 Comment: The "fact" that the field was holding gas at the time that production commenced and may still hold gas provides no information regarding the origin and migration of the gas, the rate of gas migration into/out of the Florin Field, and the levels of water in/out flow and the physical containment of the Field. B5-876

The RSC developed model is the basis for all Project development and thereby the Project design and layouts must be consistent with the model requirements. B5-877

CNGS does not intend to operate the gas storage project in the Florin field above the original pressure found in the reservoir (1,668 psia at 3,493 feet sub-sea depth). This means that CNGS does not intend to inject more gas into the reservoir than what the reservoir initially held in-place over millions of years. If CNGS intended to inject significantly more gas than the reservoir originally held, this gas would most likely escape under the spill point. Limiting the total amount of gas injected does not

RS101507-2 Comment: Use of 1,668 psia at 3,493 feet sub-sea depth is not documented through any specific data sources (e.g., DOGGR, 198?) and appears to differ from those in the Project Description and other assessment of risk. However, RSC has not related the field pressure, the hydrostatic head pressure, the compressor-discharge pressure, top-of-wellhead pressures, and the heel/toe pressures within the reservoir at initial, injection, and withdrawal conditions. RSC does not present current field conditions but adjusts for some assumed current "cushion gas" level and in relation to the "spill point" and assumed formation water levels (and pressures). B5-878

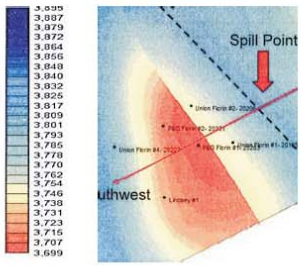
entirely preclude the possibility of any injected gas escaping under the field's spill point – this depends on the *rate* that this injection takes place. The faster that gas is injected into the reservoir, the higher the chance that this gas may be forced to bypass water in-place and possibly find its way to the field spill point. The slower the rate of injection, the more stable the collection of gas to the high points in the reservoir. CNGS plans to inject gas into the Florin field at a maximum rate of 100 MMscf/day, where average reservoir pressure during operation will never exceed the original reservoir pressure by more than 10%, and then only briefly. RSC used the simulation model previously described to model these conditions and found that under these operating conditions no gas was lost under the spill point.

RS101507-3 Comment: The filling dynamics appear to limit the filling rates to a maximum of 100MMscf/day and would "never exceed the original reservoir pressure by more than 10%, and then only briefly." RSC does not define the terms: "maximum", "average reservoir pressure", "never", "10%" of pressures or volumes, and "briefly". RSC does not formally commit the Applicant to these injection conditions who does not appear to have been included in the Compressor and Wellhead sites layouts and designs. The design and layout of the facility includes one additional injection/withdrawal well (for maximum fill rate of 120MMscf/d) and one additional compressor unit (for maximum fill rate of 150MMscf/d), and therefore the Project Description does not appear to be consistent with the RSC Model and its constraints, limits, and conditions. B5-879

simulation to model the production behavior of the field. RSC adjusted the properties of this simulation model so that the gas and water rates and pressures calculated by the simulation approximated the actual observed field historical rates and pressures when subjected to the same operating conditions. With this calibration or "history match" of observed behavior along with

RS101507-4 Comment: RSC has had to adjust conditions so as to be consistent with a hypothetical model without any current conditions to verify the model or the dynamics fo gas, water, and geology; the "field historical rates and pressures" are historical without any means of verification and the various conditions resulting from the drilling, casing, cementing, and mudding of eight wells. Therefore it is hypothetical and untested to claim that the "same operating conditions." have been applied compared to drilling wells and verifying existing gas, water, levels, pressures, and geologic conditions. B5-880

Oct 15, 2007 RSC



B5-881

RS101507-5 Comment: This section of the hypothetical RSC model illustrates several interpreted conditions which are yet to be documented by direct investigations:

- **Field floor is flat**
- **Field roof is convex-upward (partially dome-shaped)**
- **Field walls contain the reservoir to the west but a spill-point/corridor connect the reservoir compartment to the eastern extension of the Winters Sand**
- **NE Field wall partially separates the Field from the rest of the Winters Sandstone**
- **A significant vertical rise exist in the Ceiling but not the floor on top of the dome along its NW-SE axis**

These features have not been directly related and presented as to injection/withdrawal conditions, water-drives, water production/re-injection.

Oct 15, 2007 RSC p.1

B5-882

In order to model the dynamic behavior of the Florin field, RSC first built a geologic model to represent the structure of the field based on observed data, such as the depth and thickness of the reservoir as seen in the 5 produced wells. RSC then used this geologic model in a numerical reservoir simulation to model the production behavior of the field. RSC adjusted the properties of this simulation model so that the gas and water rates and pressures calculated by the simulation approximated the actual observed field historical rates and pressures when subjected to the same operating conditions. With this calibration or "history match" of observed behavior along with sound assumptions made during the model construction, it is valid to assume that the simulation model can generally predict future field performance within reasonable bounds. Furthermore, the model can also be used to help design and optimize the overall storage project. RSC therefore used this model for a quantitative study of possible gas migration.

RS101507-6 Comment: RSC has developed this hypothetical model and has adjusted lateral extent to balance the assumed pressures and gas volumes but then provided

warnings regarding the injection rates and total stored/recoverable volumes. The model is not verified based on existing reservoir, formation waters, and groundwaters conditions, geological structures and stratigraphy, and the existing "abandoned" wells. The hypothetical model cannot be considered as a "quantitative model" as it has not been verified by current information and cannot be considered for use to assess "possible gas migration".

B5-882 (Cont.)

The Florin field originally contained a stable accumulation of gas which was held entrapped over a period of millions of years. The gas would have accumulated sometime after the Winters formation was deposited over 65 million years ago, during the Cretaceous period. This demonstrates the competence of the cap rock in the field to seal in gas without any leakage (even a small leak would have allowed all the gas to escape over a period of millions of years). Gas was held in the reservoir down to its spill point on the northeast edge, which is the lowest point where gas will stay trapped in the anticline structure (see **Figures 1 through 3**).

RS101507-7 Comment: No information has ever been provided to support or verify the "stable accumulation (or entrapment)" for "millions of years" as there are no data for the source, migratory path to/from the Winters Sandstone member of the historic gases, where and when the gas accumulated, and whether the gas pressures/volumes ever changed over even 20 years, Even the presence of the historic "abandoned" wells cannot be confirmed as the available information regarding the plugging and abandonment is demonstrated to be contradictory, erroneous, and non-compliant with the then-current requirements of DOGGR.

B5-883

susceptible to leakage problems possibly for this reason. Consequently, the demonstrated ability of the cap rock in the Florin field to hold gas for millions of years indicates that the potential for migration of any detectable amount of gas through the cap rock is very low.

RS101507-8 Comment: No demonstration of the cap rock abilities have beend demonstrated or verified. A potential migration has not been demonstrated to "any detectable amount of gas", no detection system has been installed, monitored, or otherwise documented as to being "absence" or "present". Therefore, any migration potential cannot be established and should be assumed to exist until proven to be absent, but not by a hypothetical "model" which has been modified to meet some hypothetical gas pressure, gas volume, and water level calculated values.

B5-884

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Ryder Scott, Company, 2008. Letter to Mr. James Fossum, SNGS, LLC. Ryder Scott Company Petroleum Consultants. March 4, 2008.

B5-885

RS030408-9 Comment: This referenced document has not been provided and is not generally available. Any conclusions or derivations derived therefrom and used

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RYDER SCOTT Co., June 25, 2008 (RSC), SNGS0706, Letter RSC:SNGS, June 25, 2008 Florin Field Significant Faulting) **G.F. Dames, Managing Senior Vice President, Geoscience, Not Sealed**

B5-886

p. 1, par. 1 "Likely", "any significant faulting", and "there are no faults"

RS062508-10 Comment: The purpose of the 1.5 page letter report without reference to attachment is stated as to review available data regarding the "likely" presence of "any significant faults" and finds "there are no faults" all without provision of data, methods of analyses, and basis of declaration of "no faults".

The change from "significant" to "faults" can be important as the thickness of the deposit is 50-150ft and a 25ft displacement may be significant or trivial compared to the total thickness is 3800-4000ft. Although the lineations in the reservoir may not represent "active faults", which are well defined, they may represent pre-Quaternary faults not now "active" or they may represent minor faults or large fractures (<25ft of displacement). As such the lineations may still represent lines of weakness through which migration through the dome roof.

B5-887

p. 1, par. 4

> Correlation of individual well log markers is very good both within the Florin section and the overlying section. A fault within the reservoir should have been evident on the well logs through either missing section for a normal fault or repeated section for a reverse fault. No fault is observed on the logs.

B5-888

RS062508-11 Comment: No definition or documentation as to "very good" or "fault" (required displacement, e.g., 10ft, 100ft, 1000ft) is provided, especially when considered that the documents are not current and cannot resolve "small (<=20ft) ancient faults" (or fractures) which can fracture the cap rock. Lack of observation in historic logs depends on the as-yet-undefined resolution of the logs and the calibration of the survey logs with the borehole logs.

p. 1, par. 5

B5-889

The seismic data shows good, continuous reflectors above and below the interpreted Florin reservoir section. There are no breaks or sharp changes in these reflectors and therefore no apparent faults breaching the reservoir or potentially extending from the reservoir to the surface. The event that represents the reservoir is limited in extent and reflects the presence of gas in a stronger event that is non-conformable to the top of the reservoir as seen in the well logs and the probable further extent of the reservoir sand in a weaker event that continues out from the gas signature. The gas event is clearly not broken by faulting and the terminations of the event are consistent with the stratigraphic nature of the trap as seen in the well logs.

RS062508-12 Comment: Again no definition or documentation as to "good" (not "very good"), "continuous", "breaks", or "sharp" is provided. The "therefore" statement cannot be verified without current information and adequate resolutions of sufficient surveys specifically targeted on these issues. B5-889 (Cont.)

The document and later documents have not established the extent and presence of gas, the detailed character of the "reservoir" and its perimeters. B5-890

RSC (all references) have not defined or documented the SE barrier which separates the NW and Central sections from the SE section of the reservoir. The NW-SE Lineation which extents the full length of the dome and offsets the perimeter of the Winters Sandstone and dome reservoir. B5-891

p. 1, par. 6

Finally, the performance of the producing wells indicates that the wells are all in a single tank with no significant barriers. The Venada Lindsey well, which was drilled after the field depleted, also

RS062508-13 Comment: No definition or documentation as to "performance" or "significant barrier" is provided, especially when considered that the field documents are not current and the RSC has clearly separated the SE third of the Winters Sandstone reservoir because it did not conform with pressures and volumes required. Therefore the statement is contradicted and not supported by observations in historic logs, as-yet-undefined resolution of the logs, and the calibration of the survey logs with the borehole logs. B5-892

p.2, par. 1

shows a depleted gas signature on the sonic log; indicating that the area of the reservoir penetrated by that well was drained by the previous producers. Any significant faulting within the reservoir should have been observable in the performance of the wells.

RS062508-14 Comment: No definition or documentation as to "Any significant faulting" (required significant displacement, e.g., 10ft, 100ft, 1000ft) is provided. As there is no current historic documentation as to the source of the gas, rates of in/outflows, and formation water levels and pressure, the statement as to "observable in the performance" 20-plus years ago cannot be verified or supported. B5-893

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RYDER SCOTT COMPANY L.P. (RSC), June 30, 2008, Bruce Palmer and Dean C. Rietz; Pressures of Injection and Production Cycles, AFJ11159

p. 1, par. 1

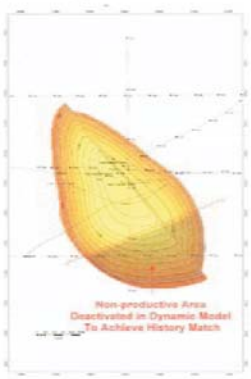
The purpose of this letter is to provide you with the pressure results of the latest prediction scenario of injection and production cycles for the Florin gas storage project which was run using Ryder Scott's numerical simulation model. For completeness, **Figure 1** provides an illustration of the

RS063008 RS-15 Comment: This Letter Report revises the 2007 RSC report and further develops various scenarios based on the original hypothetical RSC model of the Florin Reservoir. As the original model did not perform properly for the gas storage reservoir, the Applicant had RSC revise the model and development. The use of "latest prediction scenario" represents a contradiction as without any direct and current data and information regarding the "reservoir" and no way to verify initial or revised pressures on a hypothetical model, no "predictions" can be undertaken.

Any development of the Project based on the hypothetical model and various modification remains unsubstantiated, incomplete, and inadequate for the proposed activities, impacts, and risks generated from the proposed Project.

B5-894

p. 3, **Figure 1. Florin Field, Geological Model**



B5-895

and

p. 1, par. 1

geological model which the current dynamic numerical simulation model is based on. As mapped, the volume of the structure shown was too large to match historical production rates and pressures with the dynamic model. Therefore reservoir rock was assumed to be of poorer quality (low permeability and porosity) in the area of the structure with the highest uncertainty. **Figure 1** shows this area of low

RS063008 RS-16 Comment: This image provides a summary of of well routes (head-toe) survey lines, and hypothetical contouring of the entire "model" but then without explanation designates the SE third of the Field as "Non-Productive Area" [also as "low quality" "i.e., non-productive" and "deactivated [the area] in dynamic model to achieve history [of pressure] match". Because with this area included the hypothetical model, the previous pressures and volumes would not support the modeled volume. The lack of

any direct and current verification of the model, the separated SE Third, and pressures clearly does not support the requirements of the Project and does not provide an adequate, complete, and sufficient setting and analyses. B5-895 (Cont.)

RSC did not provide original geophysical documentation and original well logs and the methods of interpretations and analysis to develop such "high-resolution" hypothetical models of the physical setting, gas pressures/volumes (at wellheads and toe-heels), and water levels. B5-896

RSC did not establish nor provide parameters used for original and modified areas, structures, and certainty/"uncertainty". B5-897

RSC did not establish nor provide parameters used for "original" and modified gas and water level models: porosity, permeability, area, depths, water levels, and spill point and did not provide source data and information development of the "original" and modified models. B5-898

p. 1, par. 1

quality (i.e., non-productive) rock toward the south-east. This area is interpreted to not affect the reservoir performance either during primary production or storage operations. Since the area was not expected to impact reservoir performance, it was deactivated in the dynamic models to conserve computation time. All subsequent model runs and displays of model results show this area to be

RS063008 RS-17 Comment: RSC presumably apparently did "not expect" that deletion of the SE-third-area would impact reservoir performance and deactivated (excluded) the area from modeling. Similarly RSC delineated the remaining perimeter and the design a reservoir which would work with the gas storage requirements, rather than having the field data and information to verify their hypothetical model and its "real characteristics and conditions". B5-899

RSC did not establish nor provide parameters and interpretation as to the quality and inclusion/exclusion of the northwest-central and southeast area. B5-900

RSC did not establish nor provide basis for "expected" impact and again for basis for separating the northwest-central and southeast area. B5-901

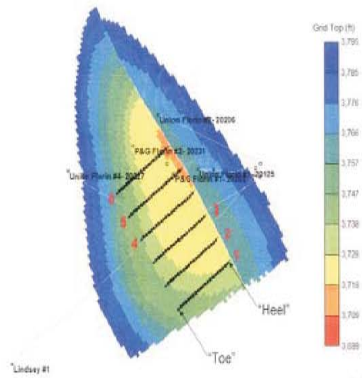
p. 1, par. 1 and list item 1

reservoir performance). The details of the prediction scenario are as follows:

1. Six injectors/producers of approximately 1,000 ft in length were placed in the model parallel to each other and running roughly from east to west. An areal view of the well completions in the simulation grid is shown in **Figure 2**.

and

p. 4, **Figure 2 Florin Field, Injector/Producer Well Locations** B5-902



B5-902 (Cont.)

<u>RS063008 RS-18 Comment: The Figure and accompanying text provide more information than the Project Description (Sec. B, DEIR) regarding the actual Field layouts of the well toe-heels of all six wells, but without layout of the produced water injection well. Although the image may appear credible and "reasonable", the image still only represents a hypothetical model which has had to modified to match the pressures required for "successful" operations of the Applicant and to determine the purchase of subsurface rights from the property owners overlying the Field.</u>

p. 2, par. 1

Flowing bottom hole pressure for the injectors and producers was also reported for comparison. **Table 3** shows the X, Y, and depth coordinates of the flowing bottom hole pressures in the simulation model coordinate system, which corresponds to the heel of each horizontal well. **Tables 4 through 9**

B5-903

<u>RS063008 RS-19 Comment: The Project Description (Sec. B, DEIR) and this Letter Report discuss the various pressures but are not consistent and neither provide complete and adequate tabulation of the pressures and flows throughout the Project. Insufficient information is provided to assure that the compressors, wellheads, and well-heel-toes are balanced for various pressures and volumes through the Project during injection and then withdrawal. No single compilations of flows and pressures have been provided by the Applicant or their consultants: Pipeline 2 feed to compressors, compressor discharges to Pipeline 1 to the Wellheads, Wellheads discharging to individual well-heels and well-toes as shown in this report.</u>

p. 6-40, Fig. 4-6, Tables 1-9 **Well and Field Pressures**

B5-904

<u>RS063008 RS-20 Comment: No single compilation has been provided for the Project injection and withdrawal flows, volumes, pressures, water levels, etc. by the Applicant or their consultants: Pipeline 2 feed to compressors, compressor discharges to Pipeline 1 to the Wellheads, Wellheads discharging to individual well-heels and well-toes as shown in this report.</u>

>>

DEIR referenced – SERA and WEATHERWAX (2007; W1), WEATHERWAX & WEATHERWAX (2007; WW2), and WEATHERWAX, WEATHERWAX, AND WEATHERWAX (2008; WWW3)

DEIR, References - Sec. B, D.6, D.7, and F

pdf pagination may not be the same as the report pagination.

Only two paragraphs are relevant in the DEIR and are included above for clarity

Text Selections from the entire DEIR

p. B-9 At the time of depletion, the eight wells and appurtenance facilities were plugged, capped, and abandoned in accordance with regulations set forth by DOGGR (WW2, 2007)…

WW2-1 Comments: WW2 does not make any reference as to the conditions of the eight wells previously drilled and abandoned. Therefore the DEIR statement is incorrect and appears to bias the reader into believing that WW2 confirmed and supported the contention that the wells were abandoned in accordance with regulations, when in fact they make no such statement and give no such support.

B5-905

p. B-19, **Associated Pipelines—Pipeline Connection to SMUD Line 700**

As shown in Figure B-3, in order to transport natural gas from the existing SMUD natural gas transmission lines to the proposed compressor station, ***from the compressor station to the wellhead site, and then back to the compressor station*** and to the SMUD pipeline, two short pipeline segments would be installed. This pipeline would convey natural gas delivered for storage from the compressor station to the wellhead site for injection into the gas field and gas withdrawn from storage to the compressor station where it will be measured prior to injection into the SMUD pipeline. The pipeline between the well site and the compressor station would be ***"pig-able,"*** which would allow an inspection tool to check the interior of the pipeline…

Pipeline Segment 1

As shown in Figure B-3, a ***16-inch-diameter pipeline*** would run from the compressor station to the wellhead site. This ***bidirectional pipeline*** would be approximately 1.5 miles long and would be installed at a minimum depth of 6 feet below grade. (emphasis added)

WW2-2 Comments: As indicated briefly and throughout the Project Description (2009), the Pipeline 1, between the Compressor Station and the Wellhead site, is not described as having any valves and is equipped for pigging the line to remove sludge and liquids and to conduct testing/inspection. Presence of a sectionizing valve in this section in addition to numerous turns may not allow the pigging for clearance and inspection of the pipeline.

B5-906

Sec. D, General Concerns

WW2-3 Weatherwax and Weatherwax, 2007, (WW2) do not refer to any interpretations or statement supporting the status of lineations being or not being "faults" or lithologic changes Did the original production and abandonment have any adverse effects on the reservoir

B5-907

p. D.6-2 After the wells were depleted, the field was abandoned in 1993 and all wells were plugged and capped, in accordance with Division of Oil, Gas, and Geothermal Resources (DOGGR) regulations Weatherwax and Weatherwax [=WW2] 2007). Because the gas field has been depressurized and the wells abandoned according to DOGGR standards, there is currently little potential for gas to migrate to the surface or leak through the abandoned wells (see discussion under Impact Haz-2a).

WW2-4 Comments: WW2 does not make any references as to –

- **conditions of the eight wells previously drilled and abandoned,** B5-908
- **whether the field has re-pressurized or not**
- **whether there is or is not migrate**
- **whether there is or is not leak(s) through the abandoned wells.**

Therefore the statements are incorrect and appear to bias the reader into believing that WW2 confirm and support the contention that the wells were abandoned in accordance with regulations, that the field has repressurized, and that there is no migrate nor leakage from the field, when in fact they make no such statements and give no such support to any of the statements on the DEIR.

>>

[In order to avoid confusion, Weatherwax and Weatherwax (WW2) is not the same citation as Weatherwax, herein WX1, or Weatherwax, Weatherwax, and Weatherwax, 2008 (WWW3)]

Wx1 p.D.6-32 The societal risk results ***presented herein*** are ***somewhat higher*** than those presented in the applicant's probabilistic risk assessment (Weatherwax 2008 [WX1]). However, the conclusions are the same; the project poses societal risks below the ***generally accepted significance level***. (emphasis added) B5-909

WX1 Apdx B p. 28/57 and references

WX1-1 Comment: Containment integrity has been approached only as if it is a new reservoir and without inclusion of what effect the production alterations may have created.

Weatherwax, Robert K., Weatherwax, Michael R., and Weatherwax, Christopher A., July 8 , 2008 [WWW3]. Probabilistic Risk Assessment, Sacramento Natural Gas Storage Project. Prepared for: Sacramento Natural Gas Storage, LLC.

p. B-22, Apdx B, **4.6.5 Well Site Incident Rate** The anticipated annual failure rate for the well site is 4.9E-04. ***(Weathermax [WWW3], 2008)*** B5-910

p. B-50, Apdx B The societal risk results presented herein are somewhat higher than those presented in the Applicant's probabilistic risk assessment (Weathermax [WWW3] 2008). However, the conclusions are the same; the project poses societal risks below the generally accepted significance level.

p. B-51, Apdx B **7.2 Applicant Proposed Measures** This section outlines the mitigation measures that will be incorporated into the project by the Applicant. (Weatherwax [WWW3] 2008; SNGS, LLC 2007):

p. B-66, Apdx B, Reference: Weatherwax, Robert K. ***et al [=WWW3].*** Sierra Energy and Risk Assessment, Inc. 2008. Probabilistic Risk Assessment, Sacramento Natural Gas Storage Project, July

WWW3-1 Comments: W 2007 and WW(2007 in DEIR Sec. A-H) may be easily confused with WWW 2008), but all Weatherwax authored reports and documents are not readily available and with such confusing references review by the Public and this review is made difficult; references and documents are incomplete, inadequate, and distractive to public review and comments. B5-910 (Cont.)

p. 2, WWW3, 2008

C. Siting and Design of the Sacramento Natural Gas Storage Project

Certainly the national and state level standards provide an excellent backdrop from which to design the facility; however, both the general and well deserved California regulatory skepticism of new energy facilities and concerns expressed by some in the neighborhood energized the Applicant to ***refine the design in ways thought to be unprecedented within the industry throughout the world to maximize public safety.*** Some the extensive actions that have been taken to enhance the overall safety of the project include:

- Designing and building to the Class 4 pipeline design factor of 0.4…
- Building all the equipment to a Class IV Seismic standard; *i.e.* a 0.4 g…
- Burying the pipeline under six foot of cover where three feet is all that's mandated…
- ***Sectionalizing the 7,600 foot pipeline*** from the wellfield to the compressor station [Pipeline Segment No. 1] and locating ***the valve [sectionalizing valve]*** to reduce the severity of consequences…nearer to the residential developments; and
- ***Planning*** for the ***sizing*** and ***control*** philosophy to permit ***ultra-fast closure of important safety valves*** [?=accelerated closing isolation valves] including those ***in the wellfield*** and in the ***pipeline between there and the compressor station*** [an additional valve on Pipeline No. 1]. (emphasis added)

WWW3-2 Comments: Referenced Class 4 pipeline design and Class IV seismic standard are not specifically incorporated into the Project Description, although the doubled wall thickness generally relates to the higher pressure required for the injection transmission pipeline (Segment 1). B5-911

Because of the wall thickness and high pressures and the numerous subsurface utilities and the Morrison Creek channel floor, the pipeline has to be more than 5-6ft below ground levels in order to pass under the utilities without numerous vertical bends and points of condensate accumulation in the pipeline as may occur in the depressed HDD section under Morrison Creek. B5-912

Referenced valves and project planning in 2008 have not been incorporated into the Project Description, Sec. B and G of the DEIR of 2009, and thereby either the Applicant has chosen to eliminate such valves or the Sec. B and G are incomplete, inadequate, and incorrect. B5-913

This report and the DEIR Sec. B do not include typical "Process Flow Diagram" (PFDs) and "Piping and Instrumentation Diagram" (P&IDs) drawings which are fundamental to both Project considerations which renders both incomplete and inadequate for typical gas transmission and storage systems development and risk analyses. B5-914

p.8 II. PRA Methodology and Application, A. Introduction to Probabilistic Risk Assessment Application for SNGS Facility (generally a repeat of the p. 2 statements and comments) During the course of this effort [during or before 2008] several ***changes were made to the overall project design to further enhance safety beyond even the conservative level*** integrated into the project as defined in earlier CPCN filings. These included:

1. Designing the wellhead site to Class IV seismic standards…;
2. Adding a sectionizing block valve…where the pipeline turns east from Power Inn Road to reduce the maximum amount of possible natural gas…running along Power Inn Road;
3. Changing the ***sizing of actuators and controls associated with the shutoff valves*** at the wellhead site and along the pipelines to minimize the releases…; and
4. Changing the shutoff valve philosophy…at both Fruitridge…to have them remain shut unless natural gas is flowing,…isolating both pipeline segments…during shut-in conditions. (emphasis added)

WWW3-3 Comments: Referenced design changes in 2008 have not been incorporated into the Project Description, Sec. B or G of the DEIR, and thereby either the Applicant has chosen to eliminate such valves, or the Sec. B and G are incomplete, inadequate, and incorrect. These stated changes are not consistent with those mentioned on p.2 and thereby even the proposed changes are not consistently stated and are not applied to Sec. B and G of the DEIR in either form. B5-915

This report and the DEIR Sec. B do not include typical "Process Flow Diagram" (PFDs) and "Piping and Instrumentation Diagram" (P&IDs) drawings which are fundamental to both Project considerations which renders both incomplete and inadequate for typical gas transmission and storage systems development and risk analyses. B5-916

p.33 III. Comprehensive PRA Results, B. Consequences Assessment of Pipeline Accidents Identified. Table III -7 presents the results for the pipeline connection between the compressor station and the ***sectionalizing valve near Power Inn Road*** [=northern portion of Pipeline No.1]. ***This segment is the source of the majority of risk for the project.*** The ***largest single risk source*** is case 41Plx which is the source term of a rupture of the line at maximum pressure of ***1,600 PSI*** and failing is such a way as to have a release angle of 5° **[from 6ft bgl]**…Overall, the total casualties from this segment are ***unsurprisingly,*** the highest since it has the largest volume of natural gas ***[highest pressure, largest diameter and cross-section, and longest length]*** and it has the largest pipeline run increasing the probability of a gas release **[primarily due to third-party encounters]**. (emphasis added) B5-917

WWW3-4 Comments: Referenced valve location in 2008 is not incorporated into the Project Description, Sec. B or G of the DEIR of 2009, and thereby either the Applicant has chosen to eliminate such valves and increase the impacts of realized risks from torch and cloud fires, or the Sec. B and G are incomplete, inadequate, and incorrect.

The maximum pressure of 1600psi (2008) is lower than that stated in the DEIR (more than 1800psi, and could be higher within the first 3500ft (northern half) of Segment No.1). The risk assessment appears to have been developed based on information that is different from both the PEA and the DEIR. Furthermore the discharge pressure at the compressor would be expected to be higher than that entering the top of a wellhead, 7500ft away and passing several valves and bends. WWW3 does not appear to have included proper Project characteristics in their analyses. B5-918

Assuming a release from the buried portions of the pipeline rather than the cellared portions at the valve stations, if present, the 5° angle appears difficult to realize at a depth of about 7ft and even more difficult to understand if the HDD depth reaches more than 40ft. Releases at these depths would generally cause soil "blow-outs" and the torch fire would be generally near vertical (90°)rather than 5° from the center line of the pipe; less than vertical may be assumed if the "blowout" passes outside of the compacted fill directly over the pipeline or on the outside of the concrete channel box for the Morrison Creek and railroad embankment HDD under-crossing. B5-919

p.34 B. Consequences Assessment of Pipeline Accidents Identified. The risk of the final segment is presented on Table III-8. It addresses the 16-inch pipeline segment **[southern portion of Pipeline No.1]** from the **sectionizing valve [sic; southward]** to the wellhead site in the area nearest to residential homes. The risk in this segment is ***intermediate [second highest risk of all]*** between the other 16-inch pipeline to the compressor station segment and the other pipeline segments [e.g., Pipeline No.2]. In total, expected risk for the two pipeline segments **[Pipeline No.1, a+b]** are essentially identical with this segment having less gas to release while the connecting segment has ***better siting*** [fewer potential fatality and lower impact]. It is clear from these results that the ***newly added sectionalizing valve*** and the ***accelerated closing isolation valves*** provide a significant reduction in risk for this segment **[Pipeline No.1]** and for the project as a whole. (emphasis added) B5-920

WWW3-5 Comments: Referenced sectionalizing valve (one only) and accelerated closing isolation valves (ACIVs; gas or motor-controlled block valves, MCVs) are not mentioned in the 2009 DEIR. The pipeline gas volumes for the northern and southern portions of Pipeline No.1 differ based on the lengths of the northern at more than 5000ft at somewhat higher pressures compared less than 2000ft for the southern portions with somewhat lower pressure (maybe 2-5%, 25-75psi difference only). No details are available either in the WWW3 report or the DEIR Sec. B and G so further review cannot be attempted.

WWW3 apparently is unaware of the associated utilities along the southern portion of the Pipeline No.1, with high voltage overhead powerlines and unprotected steel cantilevered towers within the high-temperature torch fire zones from the valve station (if there) to and into the Wellhead site and facilities. Although such risk are not reflected in the fatality calculations, the impact of property damages on these facilities could be substantial. B5-921

WWW3 does not consider the pigging and slug/water handling activities and the gases and perhaps condensates associated with these activities in risk analyses. Furthermore, the pigging and slug handling could be disturbed by presence of block or isolating valves within the pipeline between the pig launchers and catchers at either site. B5-922

Throughout - References in Footnotes in the DEIR, various pages compiled below: B5-923

Bruni, T.V., "The Causes and Prevention of Pipeline Failures", Metallurgical Consultants, Inc., *circa* 2000.

Federal regulations at 49 C.F.R. §192.179 subsections 1 and 2. Class 3 location piping requires sectionizing block valves

Federal regulations at 49 C.F.R. §192.181 regarding sectionalizing valves which allows an operator to stop gas flow in a section of pipeline during a pipeline failure or emergency.

International Gas Consultants, Inc, "U.S. Natural Gas Storage Facilities Incident History 1970 - 2006", Report Pg 3

NTSB/PAR-87/01 “Pipeline Accident Report” describing ruptures and fires at Beaumont Kentucky on April 27, 1985 and at Lancaster Kentucky on February 21, 1986.

PDHEngineering.com Course No. O-5001. ”Gas Pipeline Hydraulics”,

Raymundo Engineering Inc. [Raymundo Engineering Company. 2008. Pipeline Alignment Engineering Sheets Prepared for all Project Components. Sheets revised March 2008], P1000 Rev G, P1001 Rev D, P1002 Rev D, P1003 35 Rev C, P1100 Rev I, P1101 Rev C, P1102 Rev C, P1103 Rev C, P1104 Rev D, P1105 Rev D, P1106 Rev D,P1107 Rev C, and P1108 Rev C.

Terracon, Supplement to Geotechnical Engineering Report for Sacramento Natural Gas Compressor Facility and WellHead Sites, June 2008.

URS Corporation, Gas Transmission System Integrity Performance Indicators by Incident Data Analysis, GRI-00/0207 dated January 11, 2001.

Weatherwax, Robert and Kenneth, Preliminary Risk Evaluation of Cogeneration Pipeline Project, SERA Document No. 93-825, December 16, 1993.

Weatherwax, Robert & Michael, "California Natural Gas Storage Facilities: A Contemporary History of Incidents", SERA No. 07-1122, August 8, 2007

B5-923 (Cont.)

WWW3-6 Comments: As clearly indicated above, few if any of these documents (except for the federal regulations) are available to the Public or even most environmental specialists (exceptions being the CFRs) and thereby greatly restricts the completeness and adequacy of any review, either to confirm or reject their incorporation into this report and thus into the DEIR and the CEQA process.

Federal regulations at 49 C.F.R. §192.179 Subsections 1 and 2. Class 3 location piping requires sectionizing block valves

Federal regulations at 49 C.F.R. §192.181 regarding sectionalizing valves which allows an operator to stop gas flow in a section of pipeline during a pipeline failure or emergency.

B5-924

WWW3-7 Comments: Federal regulations at 49 C.F.R. §192 for high-pressure systems requires valves to be spaced "so as to reduce the time to shut down a section of main in an emergency," and states that the spacing shall be determined by operating pressure, pipe size, and LOCAL PHYSICAL CONDITIONS. In addition, the operator shall consider the VOLUME OF GAS that could be released to the atmosphere and the response time capabilities of the operator in addition to the Federal requirements. Authorities need to determine the needs to ensure the protection of:

people (AGENA Area),

property (Depot industries, high-voltage powerlines, mainline railroad tracks), and

the environment (Morrison Creek)

in the event of pipeline failure, pressure-flow soil erosion (soil blowouts), fires, explosions, or other emergency, especially in urbanized populated areas.

Draft

Easton 69-kV Subtransmission Line Relocation and Substation Project Initial Study and Mitigated Negative Declaration

Prepared for

Sacramento Municipal Utility District

P.O. Box 15830 MS B203
Sacramento, CA 95852-1830

May 2009

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B5-925

Draft

Easton 69-kV Subtransmission Line Relocation and Substation Project Initial Study and Mitigated Negative Declaration

B5-925 (Cont.)

Submitted to

Sacramento Municipal Utility District

May 2009

Draft Mitigated Negative Declaration

Sacramento Municipal Utility District
Easton 69-kV Subtransmission Line Relocation and Substation Project

Lead Agency:

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Introduction

This document has been prepared to evaluate Sacramento Municipal Utility District's (SMUD) proposed project for compliance under the California Environmental Quality Act (CEQA). SMUD is the lead agency responsible for complying with the provisions of CEQA.

SMUD proposes to construct and operate the Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project (also referred to as the "proposed project"). The proposed project would relocate 69-kV subtransmission lines that presently provide electrical service to Aerojet's Prairie City substation. In addition to the existing substations the subtransmission line relocation would provide electrical service to the new proposed Prairie City and Easton Valley-Birkmond substations. The new substations would step down 69-kV power to 12 kV for residential and commercial service to support the existing customer, Aerojet General Corporation (Aerojet), and the two new proposed Easton communities, Easton Place and Glenborough at Easton (The Easton Project), located within the Aerojet Special Planning Area in Sacramento County. Aerojet is paying for the cost of the 69-kV subtransmission line relocation.

B5-925 (Cont.)

Proposed Project Description

The Easton 69-kV Subtransmission Line Relocation and Substation Project is composed of several phases that include relocation and construction of about 6.6 miles of 69-kV subtransmission line, and construction of two new substations - the Prairie City and Easton Valley-Birkmond substations. The entire proposed project would be located on Aerojet property within a permanent easement/right-of-way. Generally, Phase 1 would consist of removal and relocation of the major portion of subtransmission line. Later phases would consist of constructing the two substations and connecting subtransmission lines.

Phase 1 would consist of the following actions: (1) removing about 3.7 miles of existing overhead 69-kV subtransmission line, located south of Folsom Boulevard, running west to east along Albany Avenue and Aerojet Road to Prairie City Road, and a section from the Alder Creek Substation to Prairie City Road; and (2) constructing a new 4.3-mile overhead 69-kV subtransmission line further south on the Aerojet property, running west to east starting east of Kenosha Road and ending at Prairie City Road.

Later phases would consist of the following actions: (1) constructing the Easton Valley-Birkmond Substation and new Prairie City Substation; (2) removing the existing Prairie City Substation and about 1.5 miles of connecting 69-kV subtransmission line; and (3) constructing about 2.3 miles of new 69-kV subtransmission line connecting the substations to subtransmission lines.

The approximately 0.5-acre substation sites would be covered in crushed gravel, except where permanent concrete foundations for transformers, oil containment, and metal clad switchgear would be built. The sites would be surrounded with a 10-foot-high concrete block wall or chain link fence that may be topped with three-pronged barbed wire. Substation project features typically include: two 25 Megavolt Ampere (MVA) 69-kV power transformers with a total capacity of up to 50 MVA; two metal clad "four feeder" switchgears, for a total of eight feeders; eight capacitor banks; two switch poles; two station battery banks; and secondary oil containment.

Each transformer would contain approximately 5,300 gallons of insulating oil. Project specifications would require that all transformer oils be essentially free from polychlorinated biphenyl compounds (< 2 parts per million [ppm]). The substation control system would have a battery back-up with sealed battery units that would contain diluted sulfuric acid. A single light may be placed at each new substation for security purposes. All substation equipment would be painted either a dull green or light gray finish.

B5-925 (Cont.)

Findings

As lead agency for compliance with CEQA requirements, SMUD finds that the proposed project would be implemented without causing a significant adverse impact on the environment. Mitigation measures for potential impacts associated with air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, and transportation/traffic would be implemented as part of SMUD's proposed project description.

Cumulative Impacts

CEQA requires that SMUD assess whether its proposed project's incremental effects are significant when viewed in connection with the effects of other projects. Based on the analysis presented in this Initial Study, the proposed project would not contribute incrementally to considerable environmental changes when considered in combination with other projects in the area. This is because: (1) the new subtransmission lines would traverse about 6.6 miles, disturbing only 7 to 49 square feet per pole of surface soil (depending on size), the new Easton Valley-Birkmond substation would disturb about 0.5 acre of soil, and the Prairie City substation would be relocated within the administration area; (2) the proposed project would, therefore, not interfere with or prevent the existing or future uses

of the Aerojet land or habitat; (3) potential environmental effects of the proposed project were determined to be less than significant; and (4) all identified potentially significant impacts to air, biological resources, cultural resources, hazards and hazardous materials, geology and soils, hydrology and water quality, noise, and transportation would be mitigated to a less-than-significant level.

Growth-Inducing Impacts

SMUD exists as a public agency to supply electricity. It has an obligation to serve all new development approved by the local agencies, Sacramento County, and City of Folsom and Rancho Cordova. SMUD does not designate where and what new development may occur. The relocation of the subtransmission line would not induce population growth in the project vicinity; it would accommodate the electrical service needs of Easton and Aerojet. Therefore, SMUD projects are not considered to be "growth inducing," as defined by CEQA. In addition, SMUD's proposed project would not cause increased demand on public infrastructure, public services, housing, circulation, or other resources.

Determination

On the basis of this evaluation, SMUD concludes:

a. The proposed project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered species, or eliminate important examples of the major periods of California history or prehistory.

b. The proposed project would not achieve short-term environmental goals to the disadvantage of long-term environmental goals.

c. The proposed project would not have impacts that are individually limited, but cumulatively considerable.

d. The proposed project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

e. No substantial evidence exists to demonstrate that the proposed project would have a substantive negative effect on the environment.

Once approved, this Mitigated Negative Declaration (MND) will be filed pursuant to CEQA Guidelines. Written comments should be submitted to SMUD at the address previously identified by 5:00 p.m. on June 26, 2009.

B5-925 (Cont.)

_____

(Signature)

Environmental Specialist III

(Title)

_____

(Date)

B5-925
(Cont.)

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Acronyms and Abbreviations

AB	Assembly Bill
Aerojet	Aerojet General Corporation
APN	Assessor's Parcel Number
bgs	below ground surface
BMP	Best Management Practice
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CAL-ARP	California Accidental Release Prevention Program
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH_4	methane
CLUP	Comprehensive Land Use Plan
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
CRHR	California Register of Historical Resources
DOD	Department of Defense
DTSC	Department of Toxic Substances Control
The Easton Project	Easton Place and Glenborough at Easton

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EH&S	Environmental Health and Safety
EIR	Environmental Impact Report
EMF	electric and magnetic fields
EOSP	Easton Open Space Preserve
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FAA	Federal Aviation Administration
GET	Groundwater Extraction and Treatment
GHG	Greenhouse Gas
HR	House of Representatives
IBD	Inhabited Building Distance
IRCS	Integrated Resources and Customer Service
IS	Initial Study
kV	kilovolt (1,000 volts)
lb/day	pounds per day
LEED	Leadership in Energy and Environmental Design
LOS	Level of Service
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
mg/kg	milligrams per kilogram
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
MT	metric tons
$MTCO_2e$	metric tons carbon dioxide equivalents
MVA	megavolt ampere
ng/L	nanograms per liter
NAAQS	National Ambient Air Quality Standards
NCIC	North Central Information Center
NDMA	N-Nitrosodimethylamine
NOI	Notice of Intent

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NO_x	oxides of nitrogen
N_2O	nitrous oxide
NPL	National Priorities List
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCB	polychlorinated biphenyl
PM	particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
PPM	parts per million
PRG	Preliminary Remediation Goal
Proposed project	Easton 69-kV Subtransmission Line Relocation and Substation Project
psi	pounds per square inch
RCMP	Easton Resource Conservation Management Plan
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
RPS	Renewable Portfolio Standard
RWQCB	Regional Water Quality Control Board
ROG	reactive organic gases
SARA	Superfund Amendments and Reauthorization Act
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SPA	Special Planning Area
SSHCP	South Sacramento Habitat Conservation Plan
TCE	trichloroethene
UPA	Urban Policy Area

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USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
yd^3	cubic yard

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(Cont.)

CHAPTER 1

Project Overview and Background

Project Overview

Sacramento Municipal Utility District (SMUD) proposes to construct the Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project (also referred to as the "proposed project"). The proposed project would relocate 69-kV subtransmission lines that presently provide electrical service to Aerojet's Prairie City substation. In addition to the existing substations the subtransmission line relocation would provide electrical service to the new proposed Prairie City and Easton Valley -Birkmond substations. The new substations would step down 69-kV power to 12 kV for residential and commercial service to support the existing customer, Aerojet General Corporation (Aerojet), and the two new proposed Easton communities, Easton Place and Glenborough at Easton (The Easton Project), located within the Aerojet Special Planning Area in Sacramento County. Aerojet is paying for the cost of the 69-kV subtransmission line relocation.

The proposed project is composed of several phases that include relocation and construction of about 6.6 miles of 69-kV subtransmission line, and construction of two new substations - the Prairie City and Easton Valley-Birkmond substations. The entire proposed project would be located on Aerojet property within a permanent easement/right-of-way. Generally, Phase 1 would consist of removal and relocation of the major portion of subtransmission line. Later phases would consist of constructing the two substations and connecting subtransmission lines.

B5-925 (Cont.)

Phase 1 would consist of the following actions: (1) removing about 3.7 miles of existing overhead 69-kV subtransmission line, located south of Folsom Boulevard, running west to east along Albany Avenue and Aerojet Road to Prairie City Road, and a section from the Alder Creek Substation to Prairie City Road; and (2) constructing a new 4.3-mile overhead 69-kV subtransmission line located further south on the Aerojet property, running west to east starting east of Kenosha Road and ending at Prairie City Road.

Later phases would consist of the following actions: (1) constructing the Easton Valley-Birkmond Substation and new Prairie City Substation; (2) removing the existing Prairie City Substation and about 1.5 miles of connecting 69-kV subtransmission line; and (3) constructing about 2.3 miles of new 69-kV subtransmission line connecting all the substations to existing lines.

The approximate 0.5-acre substation sites would be covered in crushed gravel, except where permanent concrete foundations for the transformers, oil containment, and metal clad switchgear would be built. The sites would be surrounded with a 10-foot-high concrete block wall or chain link fence that may be topped with three-pronged barbed wire. Substation project features typically include: two 25 Megavolt Ampere (MVA) 69-kV power transformers with a total capacity of up to 50 MVA; two metal clad "four feeder"

switchgear, for a total of eight feeders; eight capacitor banks; two switch poles; two station battery banks; and secondary oil containment.

Each transformer would contain approximately 5,300 gallons of insulating oil. Project specifications would require that all transformer oils be essentially free from polychlorinated biphenyl compounds (< 2 parts per million [ppm]). The substation control system would have a battery back-up with sealed battery units that would contain diluted sulfuric acid. A single light may be placed at each new substation for security purposes. All substation equipment would be painted either a dull green or light gray finish.

Purpose of this Document

The purpose of this Initial Study (IS)/Mitigated Negative Declaration (MND) is to disclose environmental impacts that may result from the proposed project. This IS/MND assesses the environmental effects of the proposed project, as required by the California Environmental Quality Act (CEQA), and is in compliance with State CEQA Guidelines (14 California Code of Regulations [CCR] 15000, et seq.), which requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority, before acting on those projects.

As CEQA lead agency for the project, SMUD has prepared the IS for public review in consultation with other relevant agencies to determine whether a MND is needed or an Environmental Impact Report (EIR) should be prepared. If the IS concludes that the impacts of the project are either less than significant or can be reduced to a less-than-significant level with mitigation that is either incorporated into the project or agreed to by the project sponsor (SMUD), the lead agency can prepare a MND. If the lead agency determines that substantial evidence exists that any aspect of the proposed project (either individually or cumulatively) may cause a significant effect on the environment, it must prepare an EIR.

B5-925 (Cont.)

SMUD has analyzed the potential environmental impacts created by this proposed project, determined that project impacts can be reduced to a less-than-significant level with mitigation, and has prepared a MND.

Organization of the Initial Study and Mitigated Negative Declaration

This IS/MND is organized into the following chapters:

Chapter 1 – Project Overview and Background: provides summary information about the proposed project, describes the public review process for the IS/MND, and includes the CEQA determination for the project.

Chapter 2 – Project Description: contains a detailed description of the proposed project.

Chapter 3 – Environmental Checklist: provides an assessment of project impacts by resource topic. The Environmental Checklist form, from Appendix G of the State CEQA Guidelines, is used to make one of the following conclusions for impacts of the proposed project:

- No Impact: identifies areas in which the proposed project would have no impact.
- Less-Than-Significant Impact: identifies impacts that are considered to be less than significant and do not require the implementation of mitigation measures.
- Less-Than-Significant Impact with Mitigation: identifies impacts that could be mitigated with incorporation of mitigation measures that SMUD has agreed to implement as part of the proposed project.
- Potentially Significant Impact: identifies impacts that need additional study and require analysis in an EIR.

The Environmental Checklist concludes with a determination as to whether additional environmental documentation is required.

Chapter 4 – List of Preparers: identifies the individuals who contributed to the environmental document.

Chapter 5 – References Cited: identifies the information sources used in preparing this environmental document.

Technical appendices are found at the end of this report.

B5-925 (Cont.)

General Project Information

This section gives a brief project description and general project information. A detailed project description is provided in Chapter 2.

Project Title: Easton 69-kV Subtransmission Line Relocation and Substation Project

Lead Agency: Sacramento Municipal Utility District
6201 S Street
Sacramento, CA 95817-1899 or
P.O. Box 15830 MS B203
Sacramento, CA 95852-1830

Contact Person: Ron Scott
Environmental Specialist III – Project Manager
916-732-5114 or rscott@smud.org

Project Location: Sacramento County, California

B5-925 (Cont.)

Project Description:

The proposed project would relocate 69-kV subtransmission lines that would provide electrical service to new proposed Prairie City and Easton Valley-Birkmond substations. The new substations would step down 69-kV power to 12 kV for residential and commercial service to support the existing customer, Aerojet General Corporation (Aerojet), and the two new proposed Easton communities, Easton Place and Glenborough at Easton (The Easton Project), located within the Aerojet Special Planning Area in Sacramento County.

The proposed project is composed of several phases that include relocation and construction of about 6.6 miles of 69-kV subtransmission line, and construction of two new substations - the Prairie City and Easton Valley-Birkmond substations. The entire proposed project would be located on Aerojet property within a permanent easement/right-of-way. Generally, Phase 1 would consist of removal and relocation of the major portion of subtransmission line. Aerojet is paying for the cost of the 69-kV subtransmission line relocation. Later phases would consist of constructing the two substations and connecting subtransmission lines.

Phase 1 would consist of the following actions: (1) removing about 3.7 miles of existing overhead 69-kV subtransmission line, located south of Folsom Boulevard, running west to east along Albany Avenue and Aerojet Road to Prairie City Road, and a section from the Alder Creek Substation to Prairie City Road; and (2) constructing a new 4.3-mile overhead 69-kV subtransmission line located further south on the Aerojet property, running west to east starting east of Kenosha Road and ending at Prairie City Road.

Later phases would consist of the following actions: (1) constructing the Easton Valley-Birkmond Substation and new Prairie City Substation; (2) removing the existing Prairie City Substation and about 1.5 miles of connecting 69-kV subtransmission line; and (3) constructing about 2.3 miles of new 69-kV subtransmission line connecting all the substations to subtransmission lines.

The main project features for the two new substations include two metal clad "four feeder" switchgears, eight capacitor banks, two station battery banks, two switch poles, secondary oil containment, and two 25-MVA 69-kV power transformers.

Public Review Process

This IS/MND is being circulated for a 30-day public review period to all individuals who have requested a copy, local libraries, City of Rancho Cordova, Sacramento County, and appropriate resource agencies. A Notice of Intent (NOI) is also being distributed to all property owners of record identified by GenCorp or the Sacramento County Assessor's office within 500 feet of the proposed project boundaries. The NOI identifies where the document is available for public review and invites interested parties to provide written comments for incorporation into the final IS/MND. The NOI also invites interested parties to attend a public meeting on the proposed project. A copy of the NOI is attached to this document.

A final IS/MND, including written responses to comments received on significant environmental issues, will be prepared. The final IS/MND will be circulated to all parties commenting on the IS/MND before a decision on the proposed project is made.

B5-925 (Cont.)

SMUD Board Approval Process

The SMUD Board of Directors must adopt the IS/MND and approve the mitigation monitoring plan before it can approve the proposed project. The project and environmental documentation pertaining thereto will be formally presented to the SMUD Board of Directors for information at an Integrated Resource and Customer Services (IRCS) Committee meeting. The SMUD Board of Directors will then consider adoption of the final IS/MND at the next Board of Directors' meeting. The IRCS Committee and Board of Directors meetings are held at SMUD's Headquarters (6201 S Street, Sacramento, CA , 95817-1899) and are open to the public. The public may comment at both meetings. Once the IS/MND has been adopted, the SMUD Board of Directors may render a decision on project approval or defer such a decision to a later date.

CEQA Determination

This section contains a checklist of environmental factors potentially affected by the proposed project and the Lead Agency's determination of the appropriate CEQA document for the project.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this proposed project, as indicated by the checklists on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology/Soils
☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials	☒ Hydrology/Water Quality
☒ Land Use/Planning	☒ Mineral Resources	☒ Noise
☒ Population/Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☐ Utilities/Service Systems	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the lead agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

K Crawford for Ron Scott — Signature

5/19/09 — Date

Ronald Scott — Printed Name

SMUD — For

B5-925 (Cont.)

CHAPTER 2

Project Description

This description of the proposed project includes mitigation measures designed to reduce environmental impacts resulting from project construction and/or operation to a less-than-significant level.

Project Objectives

The proposed project would provide dedicated, reliable electrical service to the new Prairie City and Easton Valley-Birkmond substations, and relocate the existing 69-kV subtransmission line outside the boundaries of the proposed Easton Park Project development, for aesthetic purposes. Aerojet is paying for the cost of the 69-kV subtransmission line relocation.

SMUD Power Line Route Selection Guidelines

SMUD guidelines for 69-kV power line routing require the following:

- Preference for most compatible adjacent land uses where multiple options exist between two endpoints
- Consideration of compatibility with potential future expansion
- Use of existing overhead circuit routes and other utility corridors that could include drainage corridors, parkways, open space, freeways, and railroad alignments
- Use of arterial streets
- Avoidance of freeway-controlled access areas and airport approach/departure flight zones
- Minimization of residential communities' visual impacts and electric and magnetic field (EMF) exposure
- Community input

Typically, 69-kV circuits that deliver power to distribution substations are built overhead in public utility right-of-ways that are 10 to 20 feet wide or in existing transmission line right-of-ways. The proposed project would utilize a 10-foot wide right-of-way on Aerojet property. Portions of the subtransmission lines at some locations in the administrative area and near the Easton Valley-Birkmond Substation may be constructed underground. Aerojet would pay for the additional cost of undergrounding the subtransmission lines.

B5-925 (Cont.)

Project Location

The proposed project is located on the 8,500-acre Aerojet property, in eastern Sacramento County, California, east of the City of Rancho Cordova and south of the City of Folsom. The proposed project is south of U.S. Highway 50 and Folsom Boulevard, west of Prairie City Road and north of White Rock Road (see Figure 1). The Aerojet site is composed of many assessor's parcel numbers (APN) within Township 9 North, Range 7 East of the Folsom, California, and Buffalo Creek, California 7.5 minute quadrangles (Sacramento County, 2008b).

The proposed 6.6 miles of new subtransmission line routes, located within permanent easements, would include the following segments (as shown on Figure 2):

Segment B (4.29 miles) – runs from Aerojet Road and follows the terrain southeast through Aerojet's industrial area, open space, and mine tailings and connects to the new Easton Valley-Birkmond Substation and the existing Alder Creek Substation.

Segment D (1.08 miles) – runs from the existing subtransmission line at Folsom Boulevard south to the relocated Prairie City Substation within the 70-acre Aerojet administrative area then south past Aerojet Road to connect to Segment B.

Segment F (0.61 mile) – runs from the west end of Segment B north for about 0.61 mile and ties into the existing subtransmission line that serves the Nimbus Substation.

Segment G (0.57 mile) – runs from the new Easton Valley-Birkmond Substation north for about 0.57 mile and connects to the existing subtransmission line at Highway 50.

The subtransmission lines to be removed (see Figure 2) include the following segments:

Segment A (3.66 miles) - runs along Albany Avenue (east of Kenosha Road) and Aerojet road to Prairie City Road, and connects to the existing Alder Creek Substation and Segment C.

Segment C (0.38 mile) – connects the existing Prairie City Substation to the west end of Segment A.

Segment E (1.12 miles) – runs south from the existing subtransmission line at Folsom Boulevard then east to connect to the existing Prairie City Substation.

The new Prairie City Substation will be located about 600 feet east of the existing Prairie City Substation. The new Easton Valley-Birkmond Substation will be near the eastern end of Segment B, west of Prairie City Road (Figure 2).

Project Area Land Use and Zoning

Surrounding Land Uses and Setting

The surrounding area includes office buildings associated with Aerojet's 70-acre administrative area and headquarters, a church temple, natural preserve, and Aerojet open

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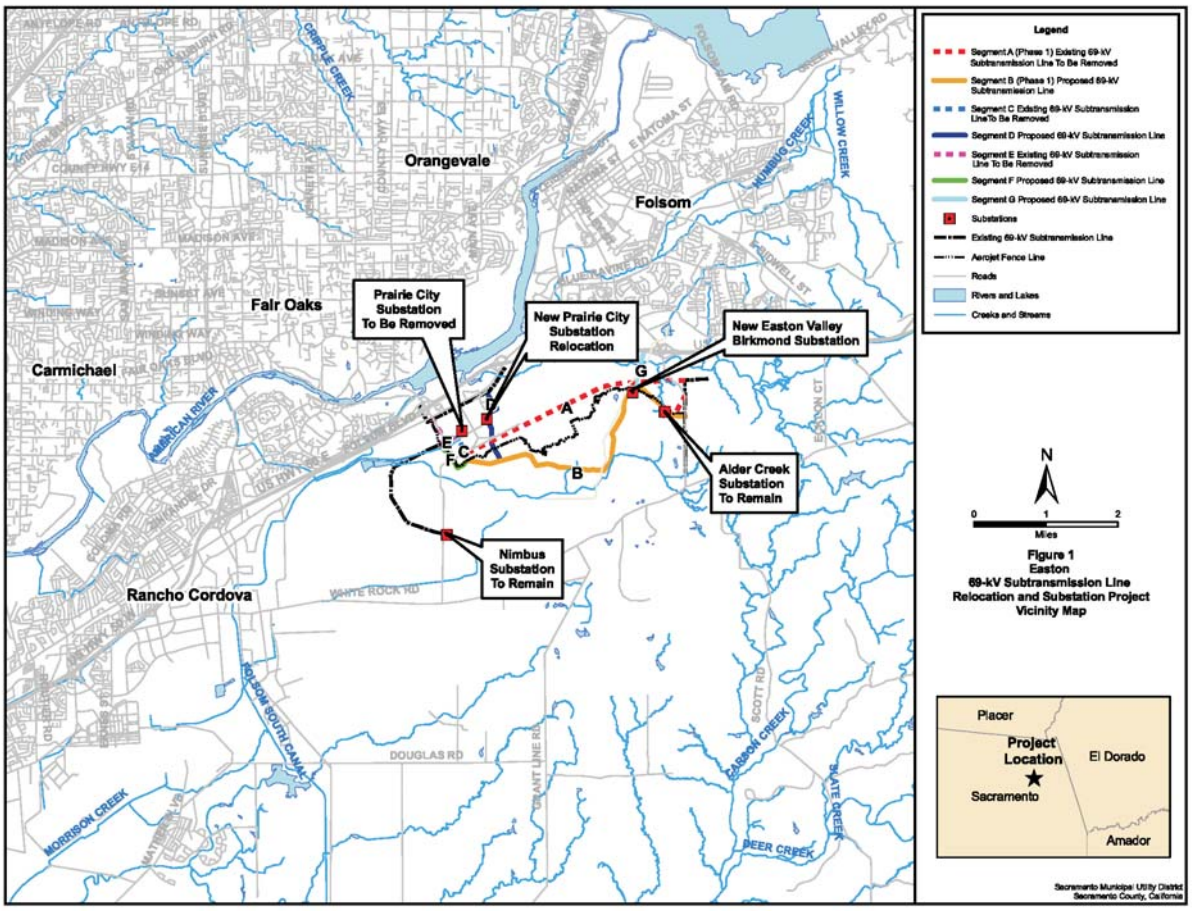

Figure 1
Easton
69-kV Subtransmission Line
Relocation and Substation Project
Vicinity Map

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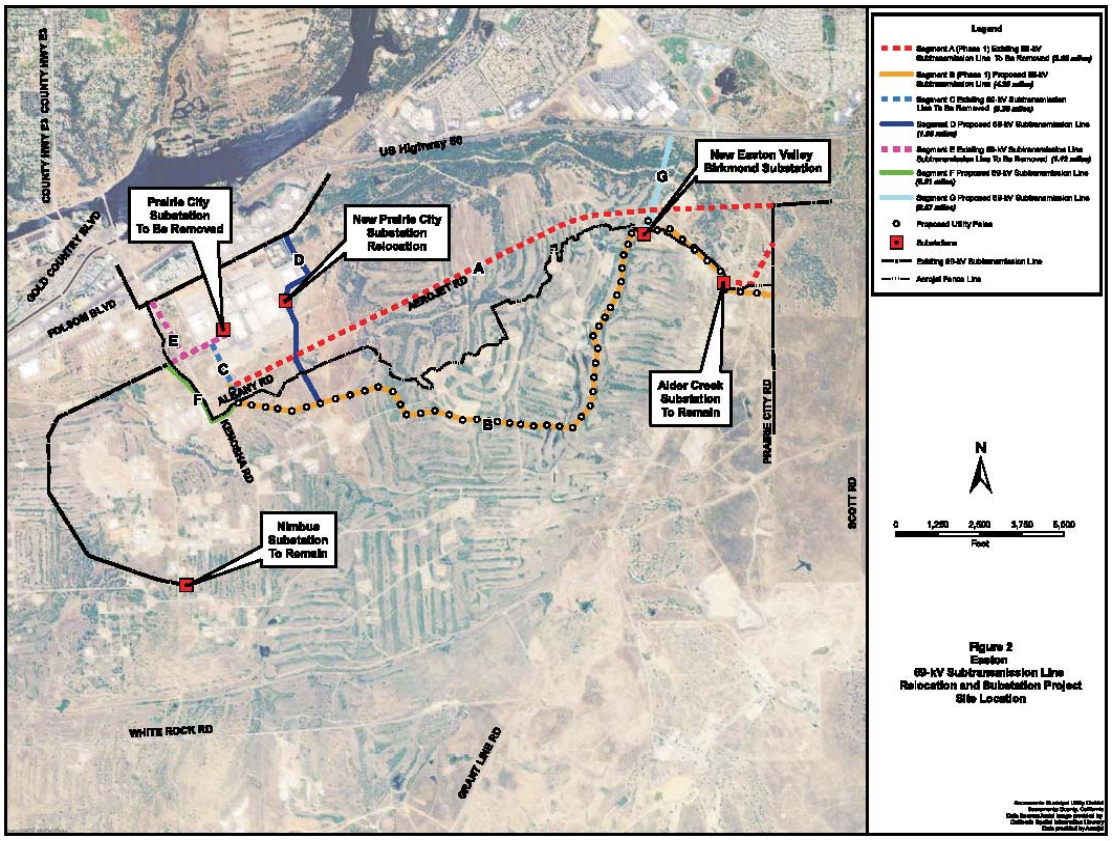

Figure 2
Easton
69-kV Subtransmission Line
Relocation and Substation Project
Site Location

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space with various Aerojet industrial buildings scattered throughout the property. The land is predominantly characterized by highly disturbed mine tailings, a closed landfill, natural stand of blue oak woodlands, and the Alder Creek corridor. The two new proposed mixed use community developments, Easton Place and Glenborough at Easton will be located north of Segment B and the Aerojet security fencing.

The proposed project area is within the Aerojet property, owned by GenCorp. GenCorp is the parent company of Aerojet-General, a major aerospace and defense contractor specializing in missile and space propulsion, defense, and armaments. The project area is a former abandoned goldfield, covered with mine or dredge tailings, and has been used as buffer land between nearby communities and Aerojet's rocket test stands. Aerojet has conducted research and development, testing, and manufacturing of rocket propulsion platforms for space and defense programs (Sacramento County, 2008b). Due to these activities, in 1989, a majority of Aerojet's property was identified as a Superfund Site by the United States Environmental Protection Agency (EPA), and subject to cleanup and remediation of contaminated soil and groundwater. In 2001, a carved out portion of the property (about 1,045 acres) was considered clean and free of soil contamination, and determined by the EPA to be eligible for development. Most of the transmission lines that will be removed are within the carved out area; however, the construction of the new subtransmission line and substations will be within an area designated as a Superfund site (Figure 3).

General Plan Designation

The proposed project is within land designated Industrial Intensive, Industrial Extensive, and Natural Preserve, as listed in the 1993 Sacramento County General Plan Land Use Map (Sacramento County, 1993a). Portions of the proposed project are also within the existing Urban Policy Area (UPA). Portions of the proposed project are within land uses described in the Special Planning Areas (SPA) - Glenborough Planning Area and Aerojet Planning Area. According to the EIR for the Easton Project, amendments to the Sacramento County General Plan would modify the land use designations for portions of the proposed project area; these amendments would enlarge the General Plan UPA southerly and easterly by 1,201.5 acres, amend the land use to Low Density Residential, Medium Density Residential, Commercial and Office, and Natural Preserve for 1,208.3 acres, and to Urban Transit and Commercial and Office for 183 acres (Sacramento County, 2008a). The proposed project is also within the City of Rancho Cordova General Plan planning areas and the City's Sphere of Influence, but outside the City of Rancho Cordova city limits (Rancho Cordova, 2006).

B5-925 (Cont.)

As part of the Easton Project, a Resource Conservation Management Plan has been prepared, which designates about 390 acres of Easton Open Space Preserve (EOSP), which includes riparian community, foothill pine-oak woodland and blue oak woodland (GenCorp Realty, 2007). SMUD's proposed 4.3-mile Segment B line (Phase 1) would bisect a portion of the EOSP.

Zoning

Parcels for the proposed project are within the Aerojet Special Planning Area (SPA) and are zoned SPA (Sacramento County, 1995). Areas within the Aerojet SPA are designated Administrative Area, Industrial Zone, and Industrial Border Zone (see Figure 4). Permitted

uses within these zones formerly included propulsion systems testing, routine manufacturing component testing, and office and industrial uses. According to the EIR for the Easton Project, adopted by Sacramento County on December 17, 2008, an amendment to the Aerojet SPA now incorporates Land Use Master Plans for the two Easton Project community developments (Sacramento County, 2008a and Sacramento County, 2008b).

Project Features

The proposed project would involve removing about 5.2 miles and constructing about 6.6 miles of 69-kV subtransmission line, and relocating one substation and constructing another substation. Construction would take place in several phases.

Project Construction

Substation Construction

Construction would consist of site preparation, foundation excavation and concrete pouring, equipment delivery and installation, wiring, and testing. Aerojet and GenCorp will be responsible for site grading. The new Easton Valley-Birkmond Substation would be accessed from Aerojet Road, and the Prairie City substation would be accessed from Atlanta Street and Alabama Avenue. A 10- by 20-foot construction zone surrounding each substation site would be used for erecting a perimeter masonry wall or chain link fence.

Typically, a 10-person crew would be used during construction, with up to 13 people working onsite during the peak of construction activities. Major construction equipment would include a line truck, crane, crew truck, dump truck, backhoe, and 18-wheel tractor-trailer.

B5-925 (Cont.)

Construction materials would be delivered to the site and stored in a designated location at the site. Deliveries would be made by concrete trucks, flatbed trucks, and tractor-trailer rigs. Hazardous materials, including paints, greases, epoxies, and oil, would be delivered to the site, and stored in either storage lockers or covered containers, in accordance with local, state, and federal requirements. Once the electrical equipment has been installed, transformer oil and sealed batteries would be delivered and stored in approved containers.

69-kV Subtransmission Line Construction and Removal

Access to the subtransmission line alignment for removal and new construction would be from Aerojet roads. In a few locations, new road segments will need to be constructed to create a continuous access road. Aerojet and GenCorp would be responsible for grading and constructing the new road segments along the subtransmission line route.

During Phase 1 about 4.3 miles of new subtransmission line would be constructed (Segment B) and about 3.7 miles of existing subtransmission line would be removed (Segment A).

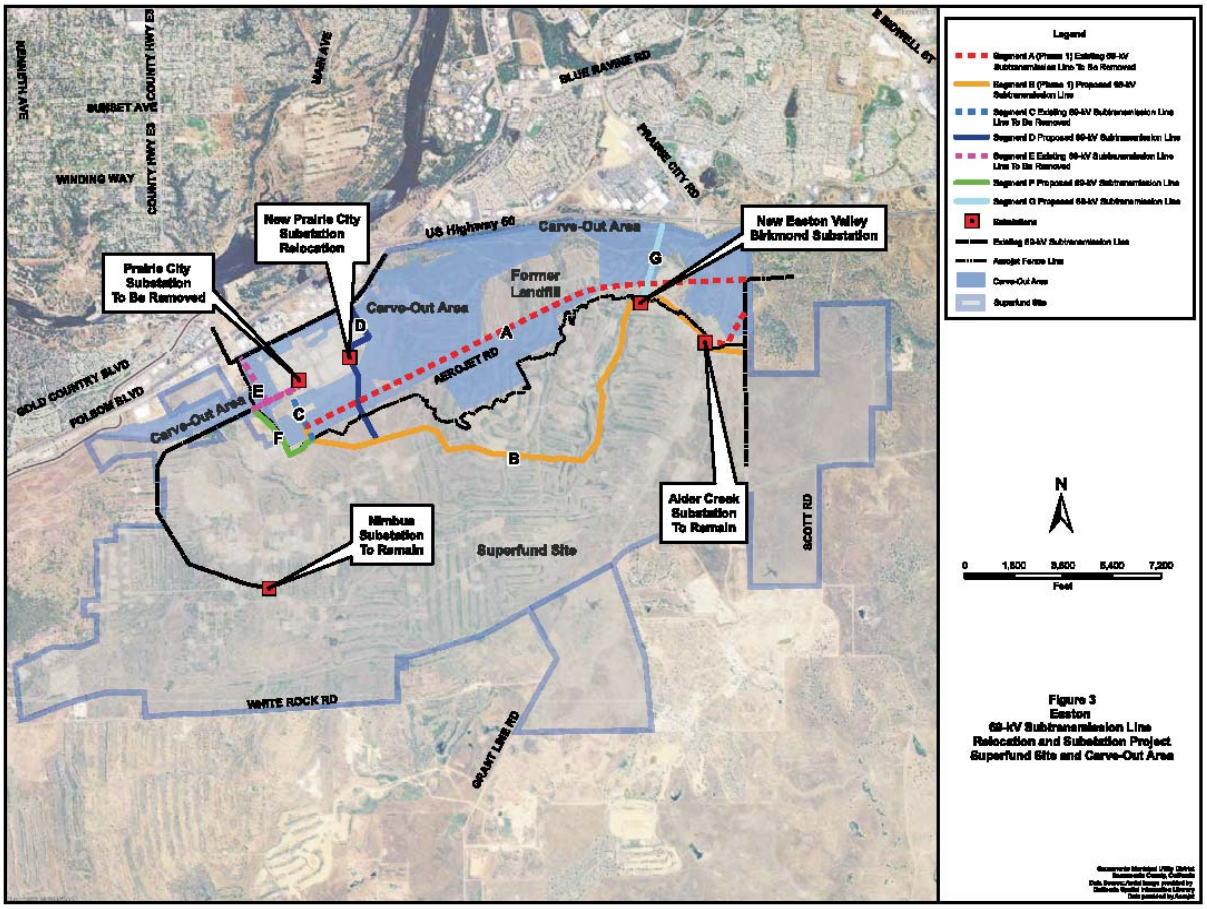

Figure 3
Easton
69-kV Subtransmission Line
Relocation and Substation Project
Superfund Site and Carve-Out Area

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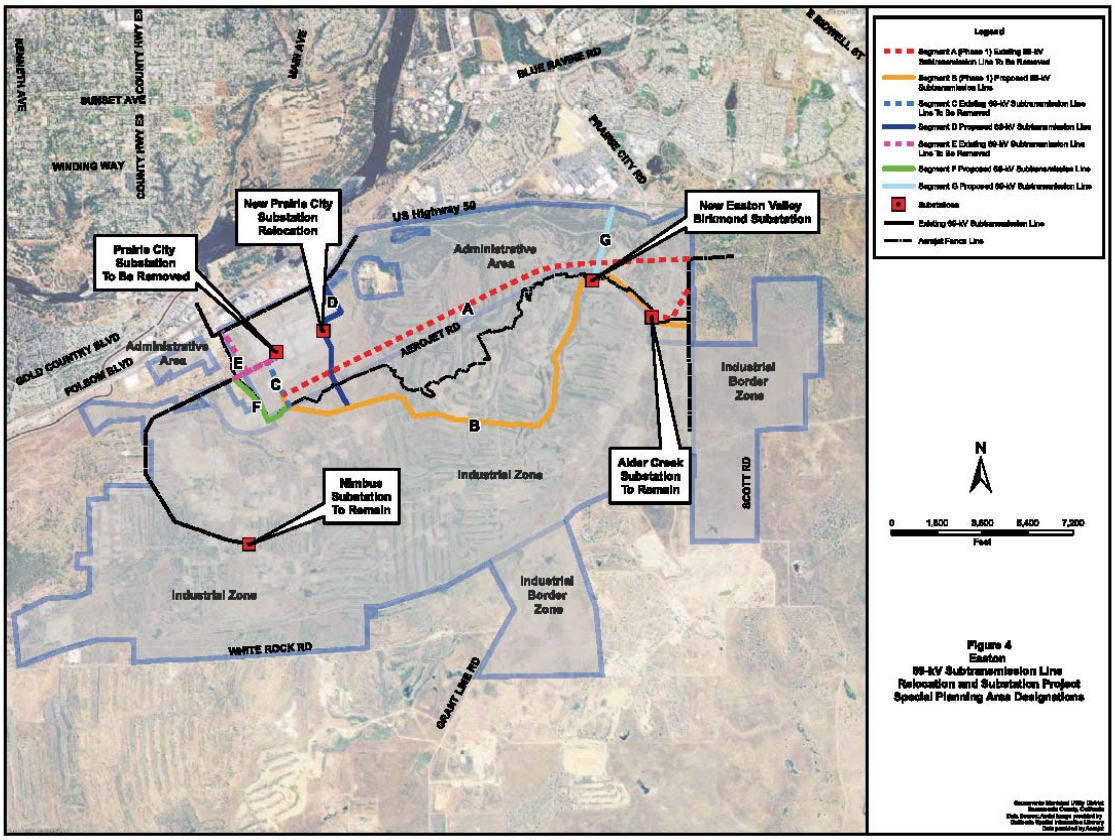

Figure 4
Easton
69-kV Subtransmission Line
Relocation and Substation Project
Special Planning Area Designations

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Constructing Segment B line would require about 58 steel poles that are 65-feet tall and about 9 steel poles that are 70- to 75-feet tall. These poles would be installed to a depth of 7 to 8 feet or onto a concrete base (5- by 5-feet or 7- by 7-feet) in areas where the subtransmission line is angled. Removing Segment A would require removing about 58 wood poles and associated conductors.

During later phases, about 2.3 miles of 69-kV subtransmission line would be installed and about 1.5 miles of 69-kV subtransmission line would be removed. The installation would require about 42 steel poles, 65 to 70 feet tall, or the lines would be installed underground. Aerojet or GenCorp would pay for the additional cost of undergrounding. About 19 poles, and associated conductors would be removed. Typically, a five-person crew would be used during construction, with up to three crews and a maximum of 15 employees being onsite on any one day.

Major construction equipment would include about 10 pieces of equipment on any given day and would include the following: a bucket truck, water truck, line truck, crane, crew truck, dump truck, backhoe, 18-wheel tractor-trailer, and a three-gang wire puller and tensioner dolly, which are pulled behind line and bucket trucks.

Construction materials would be delivered to the site and stored in a designated location. Deliveries would be made by concrete trucks, flatbed trucks, and tractor-trailer rigs. Access to construct the proposed project would be from existing private roads on the Aerojet property and at a few locations, Aerojet or GenCorp would construct additional sections of access road.

Project Operation

B5-925 (Cont.)

After project startup, the proposed subtransmission line and substations would be in continuous operation. Subtransmission line maintenance (including routine inspections) would occur about once a year. Substation maintenance would occur on a regular basis at two to four times per month for internal inspections and four times per year for perimeter maintenance. Major maintenance would occur about every 3 years. After the substation has been in operation for an extended period of time, the transformer oil would require filtering. Impurities in the filtrate would either be removed and recycled or disposed of in accordance with federal, state, and local requirements. Equipment damaged by vandals, weather, or vehicle accidents would be replaced and periodic tree trimming (if necessary) would be performed to prevent interference with the lines.

Project Schedule

Phase 1 construction of Segment B and removal of Segment A is planned to begin in the summer of 2009 and requires about 9 weeks to complete. Steel utility poles can be installed at the rate of about 2 poles per day. Wooden poles can be removed at the rate of about 5 poles per day. Later phases of construction of the Easton Valley-Birkmond Substation, Prairie City Substation, and remaining portions of 69-kV subtransmission lines are planned to begin in Fall 2010.

Mitigation Measures Incorporated into Project Design Features and Construction Plans

SMUD has included best management practices (BMP) and mitigation measures in the project description for potential impacts to air quality, biological resources, cultural resources, geology, hazards and hazardous materials, hydrology and water quality, noise, and transportation to reduce potential environmental impacts to less-than-significant levels.

The types of BMPs and mitigation included in the proposed project are listed below and are described in detail in Chapter 3.

- Air Quality: BMPs to reduce fugitive dust emissions during project construction.
- Biological Resources: mitigation for potential impacts to seasonal wetlands, vernal pools, and special-status plant species; mitigation for potential impacts to special-status species, including vernal pool shrimp, valley elderberry longhorn beetle, northwestern pond turtle, and western spadefoot toad; mitigation and pre-construction surveys for special-status or any nesting bird species, including burrowing owl, Swainson's hawk, and tri-colored blackbird; and mitigation for potential impacts from removal of landmark trees and native oak trees.
- Cultural Resources: mitigation if cultural resources, paleontologic resources, or human remains are discovered during project construction.
- Geology and Soils: mitigation for landslides, erosion, and expansive soils.
- Hazards and Hazardous Materials: mitigation for accidental spills, releases, and leaks of hazardous materials during construction and maintenance; mitigation if contaminated materials, soil, and groundwater are encountered during construction; and safety mitigation for construction within overpressure zones during periodic rocket propulsion and component testing.
- Hydrology and Water Quality: mitigation to minimize the potential impacts to water quality, wetlands, and storm drainage systems during construction and maintenance.
- Noise: mitigation for construction-related noise.
- Transportation/Traffic: mitigation for traffic congestion that could occur during project construction and operation to minimize interference with Aerojet operations.

B5-925 (Cont.)

Mitigation Monitoring Plan

SMUD intends to incorporate BMPs for air quality and implement mitigation for impacts that it has identified in this IS related to biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, and transportation/traffic. The mitigation measures, along with responsibility and timing for their implementation and monitoring, are presented in the Mitigation Monitoring Plan in Appendix A.

Related Projects

The Easton Project, Easton Place and Glenbourough at Easton, Environmental Impact Report was issued in April 2008 and adopted in December 2008 for the new residential development within the Aerojet property, which has initiated the need for SMUD's proposed project.

Existing SMUD substations in the project vicinity include the Prairie City Substation, Alder Creek Substation, and Nimbus Substation.

Required Permits and Approvals

The Aerojet property is restricted with a security fence. Due to Aerojet's manufacturing and testing activities, access to the site must be pre-arranged and approved in advance with Aerojet. An escort is also provided during site visits.

Portions of the proposed project, those areas within the Easton Project boundaries, are under the guidance and requirements in the Easton Resource Conservation Management Plan (RCMP), which includes goals and proposed mitigation to preserve open space, oak trees, wetlands, Valley Elderberry Longhorn Beetle, and cultural resources (Gen Corp, 2007). Where applicable, the Easton RCMP has been reviewed and evaluated for the relevant impacts and mitigation for SMUD's proposed project.

Due to SMUD's design flexibility in regards to placement of utility poles, SMUD would not place poles within aquatic features, fill wetlands, affect creeks and streams, or impact water quality in the project area; therefore, permits/certifications for these activities would not be required. However, biologically sensitive habitats have been identified within the proposed project site, including wetlands. Through collaboration with the U.S. Fish and Wildlife Service (USFWS), SMUD has developed a technical assistance letter and a technical assistance amendment letter, referred to as the No Take Letter (USFWS, 2007). The No Take Letter is an Endangered Species Act compliance tool, which allows SMUD to perform construction and operation and maintenance activities in the vicinity of biological resources without consulting the USFWS when impacts to these resources can be avoided by following avoidance measures specified in the No Take Letter. This is further discussed in Chapter 3, Section V, Biological Resources.

B5-925 (Cont.)

SMUD anticipates that the following permits may be required for the project as explained below:

Aerojet Safety Work Permit: A Safety Work Permit and Hot Work Permit are required prior to the start of a project on Aerojet property (Aerojet, 2007a). The permit must be approved by Aerojet's Environmental Health and Safety (EH & S) representative. Some of the activities would also require approval from the Aerojet Fire Marshall. All contractors are required to have the Safety Work Permit, and their own Injury and Illness Prevention Plan and Code of Safe Practices (reviewed by Aerojet EH & S) available at the job site. All contractors are also required to attend training that includes: Basic Safety and Environmental Orientation; Project Specific; and Special Work Rules.

Request for Excavation and Grading Authorization: A Request for Soil Excavation and Grading Authorization Permit must be completed and approved 30 days prior to excavation (Aerojet, 2007b). This permit would be applicable to SMUD's excavation for new utility

poles. This permit must be approved by the Environmental Remediation Department and the EH & S representative. This permit must be initiated and approved prior to the Safety Work Permit being issued. The permit and approval process protects workers from exposure to soil and groundwater in hazardous or restricted areas, and protects the monitoring and extraction wells, and underground lines. Aerojet will be responsible for staging and disposal of excess or contaminated soil.

Sacramento County Tree Permit (Sacramento County Code 480, Section 1, 1981) According to the Sacramento County Tree Preservation Ordinance, if landmark trees (and native oak trees) cannot be avoided during construction, a tree permit may be required prior to trenching, grading, or filling within the dripline of landmark trees (especially prominent or stately trees on any land in Sacramento County) of specified dimensions (if requested by the approving body) or to destroy, kill or remove any tree as a condition for approval of the project (Sacramento County, 2007a). The approving body shall have the authority to adopt mitigation measures as conditions of approval in order to protect other species of trees (in addition to oaks). The Oak Woodlands Conservation Act (Senate Bill 1334) requires mitigation for conversion of oak woodlands.

B5-925 (Cont.)

CHAPTER 3

Environmental Checklist

This chapter of the IS/MND incorporates the Environmental Checklist contained in Appendix G of the CEQA Guidelines. Each resource topic section includes a description of the environmental setting, provides an explanation to the checklist impact questions, and describes mitigation measures adopted by SMUD to reduce potential impacts to less-than-significant levels.

Evaluation of Environmental Impacts

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
I. AESTHETICS				
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

B5-925 (Cont.)

Environmental Setting

The proposed project is located on the 8,500-acre Aerojet property, in eastern Sacramento County, California, east of the City of Rancho Cordova and south of the City of Folsom. The proposed project is located on the south side of U.S. Highway 50 and Folsom Boulevard, west of Prairie City Road and north of White Rock Road (see Figure 1). Photographs of the site are included in Appendix C.

The immediate surrounding area includes office buildings associated with Aerojet's 70-acre administrative area and headquarters, a church temple, natural preserve, and further south is Aerojet's open space with various Aerojet industrial buildings scattered throughout the property. The open space land is predominantly characterized by highly disturbed mine tailings, closed landfills, natural stands of blue oak woodlands, grasslands, wetlands, and the Alder Creek corridor. The views include commercial and industrial facilities, office parks, homes, roads, utility lines, mine tailings, trees, fields, creeks and rivers, and view of the Sierra Nevada Foothills.

Segments A and B to be constructed in Phase 1, and the proposed Easton Valley-Birkmond Substation constructed in a later phase, are located within Aerojet's open space south and east of the administrative area. Segment A is proposed to be relocated to Segment B for aesthetic purposes, because the Segment A is along the route proposed for the new Easton Valley Parkway and would bisect and be visible to the proposed Easton Project housing communities. Aerojet or GenCorp will pay for the cost of the relocation of the 69-kV subtransmission line.

The proposed new location for the Prairie City Substation would be within Aerojet's administrative area and would be surrounded by industrial and office buildings.

Impacts

Answers to Checklist Questions

Question a: The administrative area includes commercial and industrial buildings. The area seen beyond the administrative area is characterized by hilly and highly disturbed open space land with additional Aerojet industrial buildings throughout the property. A natural preserve is located northeast of the administrative area on the northern portion of the Aerojet property. Subtransmission lines are present along Highway 50, within the administrative area, throughout the open space, and along Aerojet Road. No scenic highways or scenic resources (other than the natural preserve) are located at or near the project site. A scenic vista, the Sierra Nevada Foothills, is visible to the east. The proposed project includes relocating subtransmission lines and constructing substations in disturbed areas, which would not have a substantial adverse effect on the existing scenic vista; therefore, no impact would occur.

Question b: Scenic resources, including trees, would not be damaged during relocation of the subtransmission lines and substation construction. The Easton Valley-Birkmond Substation would be within a previously disturbed area that is lacking trees. The Prairie City Substation would be within the existing administrative area of Aerojet property. New subtransmission lines would be installed either within the administrative area or within the hilly and disturbed open space area containing dredge tailings and would not substantially damage scenic resources or historic buildings. Therefore, no impact would occur.

B5-925 (Cont.)

Question c: The presence of the proposed subtransmission lines and two substations would not substantially degrade the existing visual character of the site. To be out of character with the landscape, the project features must be notably dissimilar to existing features in other comparable communities. The Prairie City Substation will be relocated and expanded within the same administrative area among the industrial buildings and commercial office space. The new Easton Valley-Birkmond Substation will be located in a graded open space area and will add a new feature to this location; however, the Aerojet property is already characterized by open space with intermittently placed industrial buildings. Segment A is being relocated to meet the aesthetic requirements for the proposed Easton Park Project. The nearest proposed rural residences in the Easton Project would be located from 0.25 to 1 mile to the north of the new Segment B. Therefore, no impact would occur.

Question d: No nighttime project construction would occur. A single light may be placed at each new substation for security purposes. Routine operation and maintenance work would be performed during the day. The substation lights would be located within the administrative area or in the remote location for the new Easton Valley-Birkmond substation and would not be within site of the residences; therefore, no impact would occur.

Mitigation

No significant impacts have been identified, so no mitigation is required.

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
II. AGRICULTURE RESOURCES In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

B5-925 (Cont.)

Environmental Setting

The subtransmission line would be located within Aerojet property that does not include farmed areas. The property is within the Aerojet SPA, historically used for mining, followed by Aerojet's industrial uses. The Sacramento County General Plan land use designations have been amended to include low and medium density residential, commercial and office, in addition to the industrial intensive, industrial extensive, and natural preserve land uses. The natural preserve is a riparian valley oak woodland with permanent and seasonal marshes.

The parcels are not located on land designated as Prime or Unique Farmland (California Department of Conservation, 2004). The area is designated Urban Change 1984-2004 and Urban and Built-Up land. The surrounding vicinity is not designated as Farmland of Statewide Importance, according to the Sacramento County General Plan Open Space Element (Sacramento County, 1993b). Preservation of farmland in California is encouraged by the California Land Conservation Act, more commonly known as the "Williamson Act." The Aerojet parcels are not enrolled in Williamson Act Contracts (California Department of Conservation, 2006)

Impacts

Answers to Checklist Questions

Question a: The subtransmission line, associated utility poles, and two substations would not cause farmland to be converted to non-farm uses. No farmland would be removed from production. The proposed project site would not convert land designated either as Unique

Farmland or Farmland of Local Importance (California Department of Conservation, 2004). Therefore, no impact would occur.

Question b: The proposed project is not located on land zoned for agricultural use. Therefore, no impact would occur.

Question c: The proposed project would not involve significant changes to the environment that could result in the conversion of farmland to non-agricultural uses. Utility poles and subtransmission lines are present on the Aerojet property and would be moved south a distance of up to one mile at the farthest location, well within the Aerojet boundaries. Therefore, no impact would occur.

Mitigation

No significant impacts have been identified, so no mitigation is required.

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
III. AIR QUALITY Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

B5-925 (Cont.)

Environmental Setting

The U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have designated each county within California as either attainment or non-attainment for the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS). Pursuant to the federal Clean Air Act, EPA has designated Sacramento County as serious non-attainment for ozone (O_3), moderate non-attainment for particulate matter (PM) less than 10 microns in diameter (PM_{10}), attainment for PM less than 2.5 microns in diameter ($PM_{2.5}$), and a moderate maintenance area for carbon monoxide (CO) with respect to the NAAQS. CARB has designated Sacramento County as serious non-attainment for O_3, non-attainment for PM_{10}, non-attainment for $PM_{2.5}$, and attainment for CO with respect to the CAAQS (CARB, 2006 and 2007).

The Sacramento Metropolitan Air Quality Management District (SMAQMD) is the regional agency that establishes and administers air quality regulations in the proposed project area. SMAQMD regulates air pollution from stationary sources through rules, regulations, and permits. In 1994, SMAQMD established a Clean Air Plan or State Implementation Plan for attaining the federal 1-hour O_3 standard in the Sacramento Air Basin. This plan includes assumptions and allowances for growth and development in the region and details the control measures and BMPs that must be employed for the region to make progress toward attainment. The 1994 Clean Air Plan has been updated numerous times since its promulgation. The most recent update to the Clean Air Plan is the 8-hour Ozone Rate-of-Progress Plan. The Rate-of-

Progress Plan demonstrates how SMAQMD will meet O_3 emission reduction targets through the year 2008. Pursuant to CEQA, SMAQMD has adopted a series of significance thresholds applicable to this project.

Impacts

The air quality impacts of the proposed project were evaluated based on the SMAQMD CEQA Thresholds of Significance. SMAQMD has adopted the following three types of thresholds (SMAQMD, 2007):

- Mass Emission Thresholds
  - Construction (short-term): generate more than 85 pounds per day (lb/day) of oxides of nitrogen (NO_x)
  - Operation (long-term): generate more than 65 lb/day of either reactive organic gases (ROG) or NO_x
- Emission Concentration Threshold
  - CAAQS would be applied as significance criteria to all phases of a project
- Substantial Contribution Threshold
  - If the project would emit pollutants at a level equal to or greater than 5 percent of the CAAQS, it would be considered to contribute substantially to an existing or projected CAAQS violation.

B5-925 (Cont.)

For construction projects, the main pollutant of concern that could potentially exceed 5 percent of the CAAQS is PM_{10}. The CAAQS for 24-hour average PM_{10} is 50 micrograms per cubic meter ($\mu g/m^3$). Consequently, if a construction project increases PM_{10} concentrations by more than 2.5 $\mu g/m^3$, then the impact would be considered significant. Another potential pollutant of concern emitted during construction would be $PM_{2.5}$. The primary source of $PM_{2.5}$ from construction would be exhaust from construction equipment. The CAAQS for 24-hour average $PM_{2.5}$ is 35 $\mu g/m^3$. Consequently, if a construction project increases $PM_{2.5}$ concentrations by more than 1.75 $\mu g/m^3$, then the impact would be considered significant.

To determine whether construction emissions would exceed 2.5 $\mu g/m^3$ of PM_{10} or 1.75 $\mu g/m^3$ of $PM_{2.5}$ would require use of an ambient air quality dispersion model. Appendix B of the SMAQMD Guide to Air Quality Assessment contains guidelines to determine if the use of an ambient air quality dispersion model is required to demonstrate compliance (SMAQMD, 2004). If the proposed project does not exceed the recommended criteria, then the project is considered to have a less-than-significant impact. The criteria state that projects less than 5 acres in size are below the significance threshold for PM_{10} construction impacts and no mitigation measures are required. The proposed new subtransmission lines and substations would temporarily disturb less than one acre and would result in about 1,141 square feet (0.03 acre) of permanent disturbance for the 109 new poles (assuming 100 poles at 7 square feet per pole, and 9 poles at 49 square feet per pole), and about 0.6 acres for the two new substations; therefore, mitigation measures for PM_{10} would not be required. Removal of poles would not create new areas of disturbance. Because SMAQMD has not established thresholds for $PM_{2.5}$, it was assumed that the same criteria for PM_{10} would apply to $PM_{2.5}$.

SMAQMD has not established significance thresholds for construction-related emissions of ROG and EPA and CARB have not established NAAQS or CAAQS for this group of air pollutants. However, SMAQMD recommends including ROG emissions from construction as part of an air quality assessment because ROG and NO_x are precursors to O_3 formation.

Answers to Checklist Questions

Question a: The proposed project would result in short-term emissions from construction activities. For construction projects, mitigation measures are prescribed if the emissions of NO_x from the project exceed the SMAQMD significance thresholds. The proposed project would not conflict with, or obstruct implementation of, the Clean Air Plan because emissions of NO_x would not exceed the SMAQMD significance thresholds and the surface disturbance would be less than the 5-acre SMAQMD guideline for contribution to PM_{10} (see Question b). Therefore, the proposed project would have a less-than-significant impact.

Question b:

Construction Impacts. Short-term exhaust emissions would be generated by construction equipment. The proposed subtransmission line and substations would be built in several phases. Construction of the new subtransmission line and substations would require several pieces of heavy-duty construction equipment and may generate fugitive dust when the equipment operates on exposed soils. Therefore, construction would result in the temporary generation of ROG, NO_x, and PM_{10} emissions. The following discussion shows that the construction impacts would be less than significant. However, SMUD will incorporate Mitigation Measure Air-1 as part of its BMPs.

Modeling software URBEMIS2007 v. 9.2.4 was used to estimate the maximum emission rates associated with construction of the proposed subtransmission line. The URBEMIS model calculates emissions from equipment exhaust, worker trips, and land disturbance.

B5-925 (Cont.)

Table 1 presents the maximum potential emission rates for construction of each phase of the proposed project. The table shows the emission estimates with and without the mitigation measures that would be incorporated. These conservative estimates assume that the following types and number of equipment are used for 8 hours per day, running concurrently.

Subtransmission Line Construction (one of each): bucket truck, line truck, crane, crew truck, dump truck, backhoe, 18-wheel tractor-trailer, and a three-gang wire and tensioner dolly, which is pulled behind line and bucket trucks. If the subtransmission lines for later phases are installed underground there would be an increase in surface disturbance and an excavator would be added to the equipment list. Removal of poles would include fewer vehicles and time, use existing roads, and utilize a service truck with a boom, hydraulic pole jack, and backhoe; therefore, the removal of subtransmission lines would generate fewer emissions than the construction.

Substation Construction (one of each): line truck, crane, crew truck, dump truck, backhoe, and 18-wheel tractor-trailer.

TABLE 1
Emission Estimates for Each Project Construction Phase

Project Phases	ROG (lb/day)	NO_x (lb/day)	PM_{10} (lb/day) Without Mitigation	PM_{10} (lb/day) With Mitigation
Phase 1 – Segments A and B	5.2	48.7	12.1	4.7
Later Phase - Segments C, D and G, one substation (aboveground lines)	4.5	41.6	11.8	4.3
Later Phase - Segments C, D and G, one substation (underground lines)	5.2	45.5	22.1	7.3
Later Phase – Segments E, F, one substation (aboveground lines)	4.2	38.3	11.6	4.3
Later Phase – Segments E, F, one substation (underground lines)	4.8	41.9	22.0	7.3
SMAQMD Construction Threshold*	None	85.0	+2.5 $\mu g/m^3$	+2.5 $\mu g/m^3$

* Note that the significance criteria for PM_{10} is in $\mu g/m^3$ rather than lb/day.

NO_x and ROG. As shown in Table 1, the maximum construction-related emissions of NO_x would be less than 50 lb/day for each phase of construction. Emissions of NO_x would be less than the SMAQMD significance threshold of 85 lb/day. SMAQMD has not established construction emission thresholds for ROG and no NAAQS or CAAQS exist for ROG. SMAQMD recommends including ROG emissions in the construction emissions because ROG is a precursor to O_3. ROG emissions associated with the proposed project are minimal. Therefore, construction impacts would be considered less than significant.

PM. SMAQMD has not established a mass emission threshold for PM_{10}, but has a substantial contribution threshold to determine whether a project would violate or contribute to a projected violation of the CAAQS for PM_{10}. Appendix B, Table B-1, of the SMAQMD Guide to Air Quality Assessment outlines screening criteria for construction projects to determine if an ambient air quality assessment using a computer model is required. Appendix B of the SMAQMD Guide to Air Quality Assessment indicates that projects less than 5 acres are below the significance threshold for PM_{10} construction impacts and no mitigation measures are required. The subtransmission line construction would result in about 1,141 square feet of permanent disturbance. The substation construction would result in 0.6 acre of permanent disturbance for both substations. Maximum construction-related emissions of PM_{10} would be 22.1 lb/day during the later phase for Segments D and G if underground subtransmission lines are installed. As part of its BMPs to further reduce emissions, SMUD would implement Air-1 to reduce fugitive dust emissions and this impact is considered to be less than significant with mitigation incorporated.

Table 1 shows the reduction of PM_{10} emissions to about 7 lb/day for the underground construction that may occur with implementation of Air-1 mitigation measures. A similar reduction in PM_{10} emissions would occur at each phase with implementation of Air-1 mitigation measures. Therefore, project PM_{10} emissions are considered to be less than significant.

B5-925 (Cont.)

SMAQMD has not established a mass emission threshold or screening criteria for $PM_{2.5}$. Therefore, because PM_{10} emissions would be less than significant, it was assumed that $PM_{2.5}$ emissions from construction would also be less than significant.

Operational Impacts. No operational emissions are associated with the proposed project; therefore, no impact would occur.

Question c: During construction, the impact would be less than significant (as explained above in Question b). During operation, there would be no impact to air quality because no stationary emissions would result from operation of the subtransmission line or substations. Periodic maintenance would occur, which would require vehicle trips to the project site. These routine trips would require a single vehicle and would represent an additional stop on a multi-stop trip. Emissions from these vehicles would be minimal. Therefore, a cumulatively considerable net increase of any criteria pollutant would be less than significant.

Question d: Locations where the very young, elderly, and those suffering from certain illnesses or disabilities reside are considered to be "sensitive receptors" to air quality impacts. Examples of sensitive receptors include schools, daycare centers, parks, recreational areas, medical facilities, rest homes, convalescent care facilities, and residences. Land use conflicts can arise when sensitive receptors are located near major sources of air pollutant emissions. The proposed project is not located near an existing residential area, and as indicated in Question b, the proposed project would not generate substantial pollutant concentrations. Therefore, a less-than-significant impact would occur.

Question e: The proposed project is not anticipated to generate any objectionable odors and it would not affect a substantial number of people; therefore, no impact would occur.

B5-925 (Cont.)

Mitigation

No significant impacts have been identified, so no mitigation is required. However, as part of its BMPs, SMUD would implement the following measure, as relevant, to reduce fugitive dust:

- Air-1:
  - a) Apply water or suitable soil stabilizers to inactive or other areas that can give rise to airborne dust.
  - b) Water exposed surfaces up to three times daily to prevent fugitive dust from migrating beyond the proposed project's boundaries.
  - c) Cover all inactive stockpiles with tarps or water to prevent airborne dust.
  - d) Water all haul roads, as needed, to prevent airborne dust.
  - e) Limit speeds on any unpaved roads to less than 15 miles per hour.
  - f) Replace ground cover in disturbed areas as soon as construction in these areas is completed.
  - g) Maintain 2 feet of freeboard space on haul trucks.
  - h) Water soil piles three times daily.

i) Minimize the amount of disturbed area, material actively worked, and material stockpiled.

j) Sweep or wash paved streets adjacent to the proposed project construction site at least once a day to remove accumulated dust.

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
IV. GREENHOUSE GAS EMISSIONS				
Where available, the significance criteria established by the applicable air quality management or air pollution control district, or lead agency may be relied upon to make the following determinations. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significance impact on the environment?	☐	☐	☒	☐
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Environmental Setting

Some scientists have concluded that climate change ("global warming") is a regional as well as global concern that may be caused in large part by human activity. Many believe that it may have serious and potentially damaging effects in the decades ahead. Greenhouse gas (GHG) emissions, primarily carbon dioxide (CO_2), from cars, power plants, and other human activities, are believed to be the primary cause of contemporary global warming. Due largely to the combustion of fossil fuels, atmospheric concentrations of CO_2, the principal GHG, are at elevated levels. Nitrous oxide (N_2O) and free methane (CH_4) are also believed to be contributors in small amounts. GHGs from human activities are believed to trap more of the sun's heat in the earth's atmosphere, resulting in warming.

B5-925 (Cont.)

Currently there are no formally adopted quantitative CEQA thresholds of significance to address project-related GHGs. In 2008, the Office of the California Attorney General issued "The California Environmental Quality Act – Addressing Global Warming Impacts at the Local Agency Level" (Office of California Attorney General, 2008). This document provides information that may be helpful to local agencies in carrying out their duties under CEQA as they relate to global warming. Included in this document are various measures that may help to reduce the global warming-related impacts of a project. As appropriate, the measures can be included as design features of a project, required as changes to the project, or imposed as mitigation (whether undertaken directly by the project proponent or funded by mitigation fees). The list of measures is not exhaustive. Moreover, the measures cited may not be appropriate for every project. The decision of whether to approve a project—as proposed or with required changes or mitigation—is for the local agency, exercising its informed judgment in compliance with the law and balancing a variety of public objectives.

The Attorney General's document presents feasible mitigation measures for seven specific areas:

- Energy efficiency
- Renewable energy
- Water conservation and efficiency
- Solid waste measures

- Land use measures
- Transportation and motor vehicles
- Off-site mitigation

The suggested mitigation measures consist of a wide variety of methods, practices, and products to reduce thermal and electric energy use and thus reduce activities that contribute to the formation of GHG. A discussion of GHG studies and regulations follows.

Federal Framework

The U.S. Environmental Protection Administration (EPA) prepared a national GHG inventory report, which presents estimates of U.S. GHG emissions and sinks for the years 1990 through 2009 (USEPA, 2009). This report discusses the methods and data used to calculate the emission estimates. The purpose of the inventory is to track the national trend in emissions and removals since 1990. The national GHG inventory was submitted to the United Nations in accordance with the Framework Convention on Climate Change. On March 10, 2009, in response to the Consolidated Appropriations Act of 2008 (House of Representatives [H.R.] 2764; Public Law 110–161), USEPA proposed a rule (EPA Docket ID. No. EPA-HQ-OAR-2008-0508, 40 Code of Federal Register [CFR] Parts 86, 87, 89, *et al.*) that requires mandatory reporting of GHG emissions from large sources in the United States. The proposed rule would collect accurate and comprehensive emissions data to inform future policy decisions. The public comment period for this rule is open until June 9, 2009.

On April 17, 2009, USEPA began the process of creating a comprehensive regulatory program aimed at climate change by releasing a proposed finding that GHGs in the atmosphere endanger public health and welfare. The USEPA also proposed a finding that GHG emissions from new motor vehicles are contributing to these atmospheric GHG levels. If finalized, it is likely that regulations addressing GHG emissions from new motor vehicles will be forthcoming. Legislation is also in process that may take the form of a cap-and-trade program that would require emitters of CO_2 and other GHGs to buy emission permits.

B5-925 (Cont.)

State Framework

The California Global Warming Solutions Act of 2006 (California Assembly Bill [AB] 32) recognizes the serious threat to the "economic wellbeing, public health, natural resources, and the environment of California" resulting from global warming. To counter such effects, AB 32 requires the State to reduce its carbon emissions by approximately 25 percent by the year 2020 (Cyberregs, 2009). AB 32 requires the CARB to adopt a scoping plan and regulations to reduce emissions, establish a statewide GHG emissions cap, require monitoring and reporting protocols for GHG emission sources, and account for GHG emissions.

The CARB has issued a preliminary draft staff proposal for setting interim significance thresholds for GHGs for public review (CARB, 2008). CARB describes the document as a "first step toward developing recommended statewide interim thresholds of significance for GHGs that may be adopted by local agencies for their own use," and has solicited feedback, in the form of public comment.

CARB believes that different GHG thresholds of significance may apply to projects in different sectors. They are currently developing interim threshold concepts for sectors such as residential, commercial, transportation projects, large dairies, and electricity generation. CARB is in favor of a threshold that allows small projects to be considered insignificant. CARB used existing data for the industrial sector to derive a "proposed hybrid threshold" of 7,000 metric tons (MT) of CO_2 equivalent (CO_2e) per year ($MTCO_2e$/year) for operational emissions for a project, and performance standards for construction and transportation emissions.

California law (Senate Bill [SB] 97, Chapter 185, 2007) states GHG emissions and the effects of GHG emissions are subject to the California Environmental Quality Act (CEQA). Pursuant to this law, the Governor's Office of Planning and Research (OPR) has recently proposed amendments to Public Resources Code, Sections 21083.05 and 21097, the state CEQA Guidelines for GHG emissions "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" (OPR, 2009). Under the proposed amendments, a lead agency should make a good faith effort to determine the significance of GHG emissions based on available information and describe, calculate, or estimate the amount of GHG emissions. The lead agency would have the discretion to use a mode or methodology to quantify the GHG emissions or rely on a qualitative analysis or performance-based standards. The lead agency may consider the following:

1) The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
2) Whether the project emissions exceed a threshold of significance that the lead agency applies to the project;
3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

B5-925 (Cont.)

The proposed amendments state that lead agencies shall consider mitigation measures to reduce GHG emissions from an existing plan, implementation of project features and designs, off-site measures, including offsets, measures to sequester GHG, and under an adopted plan or ordinance identification of specific measures on a project-by-project basis. The Natural Resources Agency must certify and adopt the guidelines on or before January 1, 2010.

Local Framework

The SMAQMD is the regional agency that establishes and administers air quality regulations in the proposed project area. Currently there are no formally adopted quantitative thresholds of significance for project-related GHGs. However, the California Air Pollution Control Officers Association (CAPCOA) has issued a resource guide to addressing GHG emissions from projects subject to CEQA (CAPCOA, 2008). This guide provides guidance on the analysis and mitigation of GHG emissions for commercial and other projects.

Impacts

Answers to Checklist Questions

Question a: The proposed project would result in the generation of GHG emissions through the combustion of gasoline and diesel fuel by construction equipment and associated vehicles. The GHG impacts of the proposed project were evaluated considering the documents and policies discussed above.

Construction Impacts. Short-term exhaust emissions would be generated by construction equipment. The proposed subtransmission line and substations would be built in several phases. Several pieces of heavy-duty construction equipment would be used during construction. Construction GHG emissions were quantified using modeling software URBEMIS 2007, a CARB-approved emissions model for estimating exhaust emissions from vehicles and construction equipment associated with land use development projects.

Construction assumptions are presented in the air quality section. URBEMIS 2007 was used to estimate the total GHG emissions (as CO_2) which would result from construction. For the three construction phases for Segments A through G, (Segments C through G aboveground lines), the predicted increase in GHG emissions is a total of 192.1 tons of CO_2 (174.4 $MTCO_2e$). For the three construction phases for Segments A through G, (with Segments C through G underground lines), the predicted increase in GHG emissions is a total of 198.4 tons of CO_2 (180.1 $MTCO_2e$). Therefore, construction would result in the temporary generation of GHGs.

As discussed, neither SMAQMD nor any other governmental agency has established a mass emission significance threshold for construction or operational GHGs, but these emissions are of concern and will be under greater scrutiny in the future. However, in the interim, and based on their analysis of available data, CARB believes that the 7,000 $MTCO_2e$/year benchmark for a project may be a suitable significance threshold for GHG emissions. The construction GHG emissions for the Proposed Project are well below this proposed threshold; therefore, the GHG emissions would be considered to be a less-than-significant impact.

B5-925 (Cont.)

Operational Impacts. No operational emissions are associated with the proposed project; therefore, no impact would occur.

Question b: With the passage of Assembly Bill (AB) 32 in 2006, California has addressed the issue of climate change. SMUD supports long term carbon reduction goals that are consistent with minimizing climate impacts, specifically a reduction of GHGs from generation of electricity to 10 percent of its 1990 carbon dioxide emission levels by 2050 (i.e. - <350,000 MT/year), and a near-term reduction target to reduce emissions by 15 percent below today's levels by 2020. SMUD is also supporting the statewide Renewable Portfolio Standard (RPS) by taking steps to maintain one of the cleanest resource mixes in California by adopting a 33 percent RPS by 2020.

SMUD's RPS includes, but is not limited to photovoltaicsolar, wind, biomass development, and ongoing research into the use of distributed generation and related technologies. SMUD continues to work in engaging customers to reduce GHG emissions. These efforts include helping to develop and implement a customer carbon calculator and a local GHG offset program, launching our Solar Shares program, and replacing gas mowers with rechargeable mowers. In the near future, SMUD plans on installing smart-meters at area residence and businesses that will allow customers the opportunity to monitor the use of their electricity

consumption. Further, SMUD is working with the SMAQMD and the City of Sacramento to bring a broader group of local governments to the table on the climate change issue.

SMUD continues to participate in the California Climate Action Registry (CCAR) and is currently working toward SMUD's 7th year of certified emissions inventories. This participation has provided useful input to the CARB's development of mandatory reporting guidelines for the electric sector. SMUD's internal efforts to reduce GHG emissions include the adoption of Leadership in Energy and Environmental Design (LEED) building standards, improved sulfur hexafluoride (SF_6) gas reporting, and the ongoing development of an Environmental Sustainability Program that addresses SMUD's Clean Fleet, Environmental Procurement, Green Building, Information Technology Energy Efficiency, and Waste Management Programs. In addition, SMUD is evaluating carbon offset programs to reduce its fleet vehicle emissions.

The proposed project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. Therefore, no impact would occur.

Mitigation

No significant impacts have been identified, so no mitigation is required.

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
V. BIOLOGICAL RESOURCES				
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, *etc.*) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional habitat conservation plan?	☐	☒	☐	☐

B5-925 (Cont.)

Environmental Setting

Existing Conditions

The 8,500-acre Aerojet property is located in eastern Sacramento County, east of the City of Rancho Cordova and south of the City of Folsom. It is generally located on the south side of U.S. 50 and Folsom Boulevard, west of Prairie City Road, east of the City of Rancho Cordova, and north of White Rock Road. The Aerojet site is composed of multiple APNs within Township 9 North, Range 7 East of Folsom and Buffalo Creek, California, 7.5-minute quadrangles (Environmental Statistics Group, 2003).

Past dredge mining activities and development associated with Aerojet operations have disturbed portions of the various habitats and reduced their quality. With an exception of the Alder Creek corridor, dredge tailings and other disturbed areas dominate the project area,

providing low to medium quality habitat due to their generally disturbed nature. Since mining activities ceased in the 1940s, pockets of trees and brush have become established within the low-lying areas between the tailings. Scattered buildings and infrastructure associated with Aerojet operations occur primarily in the western portion of the Aerojet property. The remainder of the proposed project area is generally open space with grasslands and oak woodlands intermixed with dredge tailings. The Alder Creek corridor, a generally undisturbed riparian corridor along a perennial creek, follows U.S. 50 and Folsom Boulevard in the north of the proposed project area, providing high quality habitat due to its generally undisturbed nature.

ECORP Consulting Inc. (ECORP) botanists conducted comprehensive field surveys throughout much of GenCorp's Easton Project area on April 18, April 25, May 2, and July 1, 2005, and later on December 5, June 13, and August 22, 2008 along Segment B (ECORP, 2009a). Seasonal wetlands that occur within or adjacent to Segments D, F, and G and portions of Segment A have not received focused vegetation surveys. Therefore, for seasonally ponded areas with potential to support vernal pool plants within the proposed project vicinity, either USFWS sampling protocol surveys will be performed, or presence of vernal pool plants will be assumed.

Several vegetation communities occur in the proposed project area, including oak and mixed oak woodlands, riparian woodland and shrubland, annual grassland, wetlands and drainages, dredge tailings or bare rock, and ruderal or disturbed areas. Figure 5 shows the vegetation communities and wetland/elderberry locations within the vicinity of the proposed project area, based on ECORP's surveys. Biologically sensitive habitat (creeks and wetlands), identified within the proposed project vicinity using literature review, database searches, and site surveys, are also shown on Figure 5. Photographs taken during a June 19, 2008 site visit are included in Appendix C.

B5-925 (Cont.)

Natural drainages occur in the proposed project vicinity, including Alder Creek and Buffalo Creek, which are part of the American River watershed. This 1,900-square-mile watershed includes the entire area drained by the American River and all watersheds tributary to the river. The American River flows westward from the crest of the Sierra Nevada Mountains above Lake Tahoe to its confluence with the Sacramento River in the City of Sacramento. The Sacramento River joins the San Joaquin River about 40 miles south of Sacramento and drains into the San Francisco Bay.

The project area provides habitat for a diversity of plant and wildlife species. Aside from the Alder Creek corridor, dredge tailings and other disturbed areas dominate the project area, the generally disturbed nature provides low to medium quality habitat. Scattered buildings and infrastructure associated with Aerojet operations occur primarily in the western portion of the project area. The remainder of the project area is generally open space with grasslands and oak woodlands intermixed with dredge tailings.

The various communities in the project area provide nesting, foraging, roosting, and other important habitat for a variety of plant, wildlife, and fish species, including several special-status species.

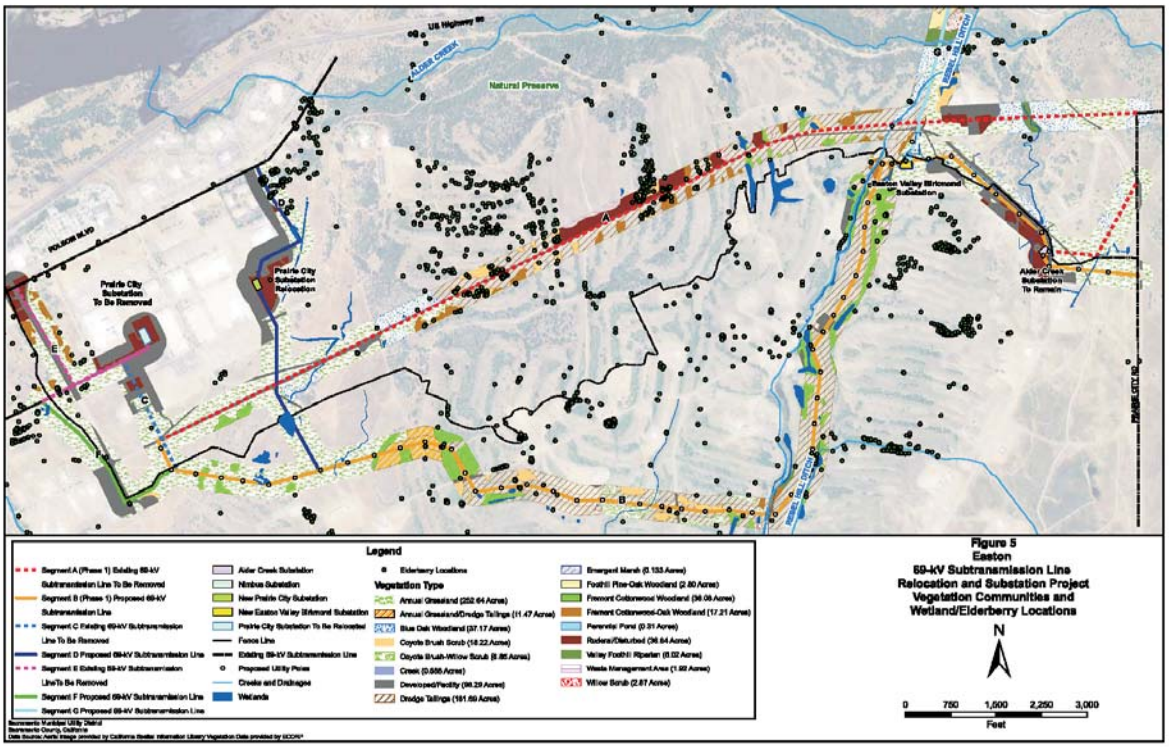

Figure 5
Easton
69-kV Subtransmission Line
Relocation and Substation Project
Vegetation Communities and
Wetland/Elderberry Locations

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General Plants

Plant communities are characterized by dominant vegetation. Dominant tree species include blue oak (*Quercus douglasii*), interior live oak (*Q. wislizenii*), valley oak (*Q. lobata*), black oak (*Q. kelloggii*), foothill pine (*Pinus sabiniana*), Fremont cottonwood (*Populus fremontii*), willow (*Salix* sp.), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), and elderberry shrubs (*Sambucus* sp.).

Herbaceous vegetation found in the understory includes tall flatsedge (*Cyperus eragrostis*), Baltic rush (*Juncus balticus*), California wild grape (*Vitis californica*), poison oak (*Toxicodendron diversilobum*), ripgut brome (*Bromus diandrus*), and soap plant (*Chlorogalum pomeridianum)*. Invasive plant species that occur in this community include Himalayan blackberry (*Rubus discolor*), yellow star-thistle (*Centaurea solstitialis*), milk thistle (*Silybum marinum*), medusa head (*Taeniatherum caput-medusae*), fennel (*Foeniculum vulgare*), and black locust (*Robinia pseudoacacia*).

Typical plants present in wetlands include cattails (*Typha* spp.), hard-stem bulrush (*Scirpus acutus*), tall flat sedge (*Cyperus eragrostis*), and soft rush (*Juncus effusus*). Plants in the seasonal wetlands include generalist plants, such as Mediterranean barley (*Hordeum marinum*), Baltic rush (*Juncus balticus*), and annual rabbit-foot grass (*Polypogon monspeliensis*).

Annual grasslands are dominated by non-native Mediterranean grasses with a variety of other herbaceous species, including soft brome (*Bromus horde*aceus), medusa-head (*Taeniatherum capt-medusae*), Italian ryegrass (*Lolium multiflorum*), little quaking grass (*Briza minor*), and other non-native species. A variety of weedy forbs occur, including yellow star-thistle (*Centaurea solstitialis*) and milk thistle (*Silybum marianum*). Yellow star-thistle is considered to be a noxious weed by the California Department of Food and Agriculture (California Exotic Pest Plant Control, 1999). Noxious weeds are subject to regulation or quarantine by county agricultural departments. Yellow star thistle is documented as an aggressive invader that displaces native plants and disrupts natural habitats. This noxious weed spreads easily through seed dispersal and can become a problem in a single growing season.

B5-925 (Cont.)

Through collaboration with the U.S. Fish and Wildlife Service (USFWS), SMUD has developed a technical assistance letter and a technical assistance amendment letter, referred to as the No Take Letter (USFWS, 2007). The No Take Letter is an Endangered Species Act compliance tool, which identifies avoidance and minimization measures for construction and operation and maintenance activities to avoid take of federally listed species and adverse modification of critical habitat. This agreement between SMUD and the USFWS allows SMUD to perform construction and operation and maintenance activities in the vicinity of sensitive biological resources without consulting the USFWS when impacts to these resources can be avoided by following avoidance measures. SMUD would follow the avoidance measures included in the No Take Letter and the mitigation measures included in this document and would consult with the USFWS if these measures are not feasible.

Special-Status Plant Species

Twenty-seven special-status plants were identified in the California Natural Diversity Database (CNDDB) and USFWS search for Folsom and Buffalo Creek and ten surrounding 7 ½ minute quadrangles (CDFG, 2009; USFWS, 2008). A spatial query of the CNDDB was conducted to produce a map of special-status species with known occurrences within 5 miles of the proposed project (Figure B-1). Six species are not likely to occur because of a lack of suitable habitat

(Table B-1). Nine of the special-status plants are vernal pool or wetland plants (California Native Plant Society, 2008) and have potential to occur within the intermittent creeks or seasonal wetland features. Six of the plants associated with wetlands have CNDDB occurrences within 5 miles of the proposed project area: Bogg's Lake hedge hyssop (*Gratiola heterosepala*), legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii* ssp. *myersii*), slender Orcutt grass (*Orcuttia tenuis*), Sacramento Orcutt grass (*Orcuttia viscida*), and Sanford's arrowhead (*Sagittaria sanfordii*). Other wetland associated plants that have potential to occur in the project area include hispid bird's-beak (*Cordylanthus mollis* ssp. *hispidus*), dwarf downingia (*Downingia pusilla*), and Tuolumne button-celery (*Eryngium pinnatisectum*).

Twelve of the 27 special-status plants recorded in the CNDDB have potential to occur in the chaparral and grassland habitats within the proposed project area. Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*) has CNDDB occurrences within 5 miles of the proposed project area. The other eleven plants that may occur because suitable habitat is present include: Ione manzanita (*Arctostaphylos myrtifolia*), big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*), Red Hill soaproot (*Chlorogalum grandiflorum*), Ione buckwheat (*Eriogonum apricum* var. *apricum*), stinkbells (*Fritillaria agrestis*), Bisbee Peak rush-rose (*Helianthemum suffrutescens*), Parry's horkelia (*Horkelia parryi*), Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*), Layne's ragwort (*Packera laynaea*), and Hartweg's golden sunburst (*Pseudobahia bahiiflolia*).

During the summer of 1981 and spring of 1982 a botanical inventory was conducted within the Aerojet property; no rare or endangered plant species were observed during the inventory (Bowcutt, 1982). Three occurrences of Boggs Lake hedge-hyssop have been documented during a vernal pool survey near the intersection of Prairie City Road and White Rock Road (Wymer, 1989). However, no other special-status plant species were observed during these surveys.

ECORP Consulting Inc. (ECORP) botanists conducted comprehensive field surveys on April 18, April 25, May 2, and July 1, 2005, which coincided with the optimum blooming period for each of the potentially occurring special-status plants. The survey effort was focused primarily within the wetland features present within the Easton Project area, as these represent potentially suitable habitat for the target species (see Figure 5). No special-status plant species were observed during the surveys (Sacramento County, 2008b). In addition, field surveys along Segment B conducted by ECORP on December 5, June 13, and August 22, 2008 did not detect special-status plant species (ECORP, 2009a).

B5-925 (Cont.)

General Wildlife

The proposed project site provides habitat for a number of wildlife species. However, mining activities and Aerojet operations have developed or disturbed just under half of the proposed project site providing low to medium quality habitat due to the generally disturbed nature.

Amphibians and reptiles are particularly sensitive to disturbances and pollutants. Pacific chorus frog (*Pseudacris regilla*) is the most common frog in the Sacramento area and may be present onsite. The grassland and woodlands onsite may support common reptiles, such as western fence lizards (*Sceloporus occidentalis*), gopher snakes (*Pituophis melanoleucus*), and alligator lizards (*Gerrhonotus multicarinatus*).

Raptor species and migratory birds may potentially nest or forage within, or in proximity to, the proposed project area. Bird species protected by the Migratory Bird Treaty Act that were

observed during the field survey include western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyancephalus*), mourning dove (*Zenaida macroura*), white-crowned sparrow (*Zonotrichia leucophrys*), American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*), cliff swallow (*Petrochelidon pyrrhonota*), American pipit (Anthus rubescens), killdeer (*Charadrius vociferus*), and savannah sparrow (*Passerculus sandwichensis*). Other bird species observed included the rock dove (*Columbia livia*).

A number of vertebrate wildlife species may be supported by the annual non-native grassland (Figure 5). A black-tailed jackrabbit (*Lepus californicus*) was observed during the site visit. Small rodents are common inhabitants of grasslands, including voles (*Microtus* sp.), pocket gopher (*Thomomys bottae*), and deer mice (*Peromyscus maniculatus*). These small rodents and others provide food for larger predatory mammals and predatory birds in the vicinity.

Special-Status Wildlife Species

Thirty-eight special-status wildlife species were identified in the CNDDB and USFWS searches (CDFG, 2009; USFWS, 2008). Ten of these are not likely to occur on the proposed project site because of a lack of suitable habitat, and 27 special-status wildlife species have a low to moderate likelihood to occur, and one has a high likelihood to occur (see Table B-1).

Ten of the special-status wildlife species with potential to occur are invertebrates (branchiopods and insects) that are found in vernal pools, wetlands, or riparian habitats. These species include: conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool fairy shrimp (*Branchinecto lynchi*), midvalley fairy shrimp (*Branchinecta mesovallenis*), vernal pool tadpole shrimp (*Lepidurus packardi*), California linderiella (*Linderiella occidentalis*), blennosperma vernal pool bee (*Andrena blennospermatis*), vernal pool andrenid bee (*Andrena subasta*), hairy water flea (*Dumontia oregonensis*), Ricksecker's water scavenging beetle (*Hydrochara ricksecker*i), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). The vernal pool shrimp may be present within the seasonal wetland areas. The andrenid bees (*Andrena blennospermatis*) and (*Andrena subasta*) nest in uplands and forage for pollen from plants growing in vernal pools, often specializing on a narrow range of flowering plants as pollen sources (Thorp and Leong, 1995). The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) is completely dependent on its host plant, elderberry, and has a high likelihood of occurrence within the proposed project area due to the large number of elderberry shrubs that are present within and near the proposed project site.

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Two special-status reptiles and amphibians have potential to occur (low) within the proposed project site. The western spadefoot toad (*Spea hammondii*) and northwestern pond turtle (*Actinemys marmorata marmorata*) have several CNDDB occurrences within 5 miles of the proposed project site. The western spadefoot toad utilizes ephemeral pools and drainages, which are typically absent of larger predatory fish and bullfrogs (*Rana catesbeiana*), for egg-laying and larval development. Upon metamorphoses, the adults are largely terrestrial in nature and will burrow underground. Northwestern pond turtles typically occur within perennial streams, creeks, ponds, marshes, and irrigation ditches with aquatic vegetation (CDFG, 2008). The availability of basking sites and suitable upland environments for egg laying (*e.g.,* sandy banks or grassy open fields) are important aspects of suitable habitat.

There are no special-status fish issues within Alder Creek, Buffalo Creek, or any of the other waterways that occur within the proposed project site. Anadromous species cannot migrate

above the Nimbus Dam and are not present in Lake Natoma, and barriers prevent migration of fish species from the American River through Buffalo Creek.

Thirteen special-status birds recorded in the CNDDB may potentially occur within the proposed project site. Protected bird species may use the riparian, wetland, and/or grassland habitats within the proposed project site for foraging and nesting. Nine special-status birds have CNDDB occurrences within 5 miles of the proposed project site: Cooper's hawk (*Accipiter cooperii*), tricolored blackbird (*Agelaius tricolor*), great blue heron (*Ardea herodias*), burrowing owl (*Athene cunicularia*) Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), merlin (*Falco columbarius*), double-crested cormorant (*Phalacrocorax auritus*), and bank swallow (*Riparia riparia*). The other four birds that may occur because suitable habitat is present include: grasshopper sparrow (*Ammodramus savannarum*), great egret (*Ardea alba*), ferruginous hawk (*Buteo regalis*), and purple martin (*Progne subis*).

The special-status silver-haired bat (*Lasionycteris noctivagans*) has been recorded within 5 miles of the proposed project site (CNDDB, 2009). The proposed project site may provide foraging and roosting habitat for the special-status pallid bat (*Antrozous pallidus*). Typical roost sites for these species include trees, snags, abandoned and occupied buildings, caves, mines, cliffs, and bridges. Many of these features occur on-site and may be used as roost sites. Potential foraging habitats, such as marshes, ponds, and riparian corridors, are present at several locations within the proposed project site (Figure 5).

The annual grasslands (Figure 5) on-site provide potential habitat for the American badger (*Taxidea taxus*). This species is an uncommon, permanent resident of suitable environments throughout most of the state (Zeiner et al., 1990).

Impacts

B5-925 (Cont.)

Answers to Checklist Questions

Question a: No records of special-status plant or animal species were identified within the proposed project alignment during the CNDDB and USFWS searches. The proposed project area provides suitable habitat for special-status plants, invertebrates, reptiles and amphibians, birds, and mammals. SMUD has included mitigation measures Bio-1 through Bio-15 to reduce the potential impact on special–status species.

Twenty-one special-status plants have potential to occur. Nine special status plants are associated with seasonal wetlands and were not observed during surveys conducted by ECORP in 2005 and 2008. Twelve special-status plants have potential to occur in the chaparral and grassland habitats within the proposed project area.

Ten of the special-status wildlife species with potential to occur are invertebrates (branchiopods and insects) that are found in vernal pools, wetlands, or riparian habitats. Vernal pool shrimp, hairy water flea, Ricksecker's water scavenging beetle, and vernal pool andrenid bees have potential to occur within the seasonal wetlands or uplands located within the proposed project area.

The valley elderberry longhorn beetle is completely dependent on its host plant, elderberry, and has the potential to occur within the proposed project area due to the large number of elderberry shrubs that are present within and near the proposed project site (see Figure 5).

SMUD has included Mitigation Measure Bio-15 to reduce the potential impact on valley elderberry longhorn beetle.

Two special-status reptiles and amphibians have potential to occur within the proposed project site. The northwestern pond turtle may occur within perennial waters, and western spadefoot toad breeds in seasonal wetlands, but is primarily associated with grasslands, and may occur within the proposed project area. SMUD has included Mitigation Measure Bio-14 to reduce impacts on these species.

Thirteen special-status birds recorded in the CNDDB may potentially occur within the proposed project site. Protected bird species may use the riparian, wetland, and/or grassland habitats within the proposed project site for foraging and nesting (see Figure 5)

Construction activities may cause wildlife to temporarily relocate or leave the area until the activities are complete. Construction during the breeding or nesting season could adversely affect the young or reproductive success of local species. SMUD has included Mitigation Measures Bio-8 through Bio-13 to reduce the potential impact on special-status wildlife species during the breeding and nesting season while construction of the proposed project is underway. The proposed project would not remove occupied habitat for special-status species.

Potential impacts on avian species include electrocution, collision with power lines, attracting predators with litter, harassment during construction activities, and nesting on utility poles. SMUD implements an Avian Protection Plan that formalizes and enhances past practices of avian protection and incorporates industry best practices for installations, as necessary (SMUD, 2007). SMUD has included mitigation measure Bio-7 to reduce the potential impact on avian species.

Three special status mammals have the potential to occur within the proposed project site. Typical roost sites for the pallid bat and silver-haired bat include trees, snags, abandoned and occupied buildings, caves, mines, cliffs, and bridges. Many of these features occur on-site and may be used as roost sites. Potential foraging habitats, such as marshes, ponds, and riparian corridors, are present at several locations within the proposed project site as well. The annual grasslands on-site provide potential habitat for the American badger.

B5-925 (Cont.)

Through collaboration with the USFWS, SMUD has developed a technical assistance letter and a technical assistance amendment letter, referred to as the No Take Letter (see Attachment B-1). The No Take Letter is an Endangered Species Act compliance tool, which identifies avoidance and minimization measures for construction and operation and maintenance activities to avoid take of federally listed species and adverse modification of critical habitat (USFWS, 2007). This agreement between SMUD and the USFWS allows SMUD to perform construction and operation and maintenance activities in the vicinity of sensitive biological resources without consulting with USFWS when impacts to these resources can be avoided by following avoidance measures. SMUD would follow the mitigation measures, avoidance and conservation measures in the No Take Letter, and would consult with USFWS, if appropriate, to avoid the take of special-status species. Therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Questions b and c: Creeks and seasonal wetlands are present within the proposed project site (Figure 5 and B-2 in Appendix B); however, these sensitive habitats can be avoided with the flexibility of pole placement and project design. Mitigation measures Bio-4 through Bio-6

would be implemented to protect wetlands, riparian habitat, and other sensitive natural communities. Therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Question d: The proposed project would not adversely affect wildlife migration corridors; the proposed project area does not occur within an identified migration corridor for any wildlife species. The proposed project would not extend into the flyway of any migratory bird species. In addition, the proposed subtransmission line would not affect fish habitat or impede the use of any wildlife nursery sites; therefore, no impact would occur.

Question e: The proposed project would be consistent with the Conservation Element of the Sacramento County General Plan. The proposed project would not prevent the establishment of any Resource Conservation Areas.

If trees within the proposed project area cannot be avoided because of engineering constraints, SMUD would comply with the Sacramento County Tree Preservation Ordinance (Sacramento County Code 480 Section 1, 1981), which protects native trees for the purpose of preserving and improving aesthetics, biological conditions, and historical culture (Sacramento County, 2007a). Mitigation Measure Bio-6 would be implemented to protect oak or landmark trees. Therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Question f: The Easton Resource Conservation Management Plan was developed for the Easton Place and Glenborough at Easton projects (GenCorp, 2007). This plan includes a 390-acre area designated as the Easton Open Space Preserve, of which 300 acres are contiguous to Alder Creek. As part of the Final EIR for the Easton Project, an Operations and Management Plan was prepared for the Easton Open Space Preserve (ECORP, 2007a). According to this plan, a portion of the Easton Open Space Preserve will be covered by a conservation easement, which is currently being negotiated with the USACE and the USFWS (ECORP, 2007a). In the meantime, the Operations and Management Plan covers management of the entire open space corridor and may be superseded in the future by a more explicit overall management plan that encompasses a conservation easement. GenCorp Reality Investments is currently responsible for the maintenance and management of the Open Space Preserve.

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Segment G of the proposed subtransmission line would be constructed through the eastern portion of the Open Space Preserve. According to the Operations and Management Plan, access to the Open Space Preserve for installation, maintenance, and replacement of existing and proposed utility lines and poles is allowed and will be restricted to the minimum areas needed to accomplish the task. Additional roads, trails, and utility lines not called out in the Operations and Management Plan will not be allowed in the Open Space Preserve without review and approval of the USACE and USFWS. Access to the Open Space Preserve for future utility maintenance is authorized (ECORP, 2007a). GenCorp has prepared a Preliminary Invasive Plant Management Plan for the Easton Open Space Preserve (ECORP, 2007b). SMUD has included mitigation measures to reduce impacts to special-status species and habitats in the Open Space Preserve portion of the proposed project.

Therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Mitigation

SMUD would implement the following measures:

- **Bio-1:** Before construction activities, all on-site construction personnel will receive instruction regarding the presence of listed species and the importance of avoiding impacts to these species and their habitat. Crews will be informed to stop work if any special-status species are encountered and contact the project manager.
- **Bio-2:** A work zone will be identified on construction drawings, and/or will be adequately flagged or fenced in the field to limit construction equipment and personnel to the minimum area necessary to perform the proposed work.
- **Bio-3:** To prevent the introduction or spread of noxious weeds, all equipment shall be washed before entering the Easton Open Space Preserve area for construction or maintenance.
- **Bio-4:** For special-status vernal pool shrimp species, to avoid impacts to seasonal wetland habitats, SMUD will follow the avoidance measures as stated in the No Take Letter. If a pole will be installed within 250 feet of wetland habitat, but not within wetland habitat, SMUD will implement the avoidance measures listed below (see Figure 5). No take would occur, and therefore no consultation with USFWS would be required.
    - Where present, existing paved and unpaved roads will be used to access the work area.
    - All work will be performed in the dry season (approximately April 15 through October 15). Should soil moisture be encountered, rubber matting, or similar equivalent, will be used to minimize disturbance.
    - A qualified biologist (biological monitor) will be present onsite and will inspect any construction-related activities to ensure that no unnecessary ground disturbance or take of species occurs. The biologist will have the authority to stop all activities that may result in such take or destruction until appropriate corrective measures have been completed. The biologist also will be required to report immediately any unauthorized take to USFWS.
    - In areas that have not been previously disturbed, heavy equipment use will be minimized.
    - For pole installations, the area between the pole and the pole hole will be backfilled with concrete. The upper portion will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil. Areas of disturbed soil will be reseeded with a native seed mix.
    - No pesticides or herbicides will be used within 250 feet of vernal pools.
- **Bio-5:** For federally listed vernal pool associated plants, SMUD will follow the avoidance measures as stated in the No Take Letter. Seasonally ponded areas, including, but not limited to, vernal pools and swales provide potential habitat for federal listed vernal pool associated plants. Where reconnaissance surveys determine that seasonally ponded areas with potential to support vernal pool plants are present, either surveys will be

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performed according to USFWS sampling protocol, or presence of vernal pool plants will be assumed.

If surveys conclude that vernal pool plants are present, or presence is assumed, and a direct impact will occur during the emergence and/or bloom period (Sacramento Orcutt grass [*Orcuttia viscida*], April though July; slender Orcutt grass [*Orcuttia tenuis*], May through September; and succulent owl's clover [*Castilleja campestris* ssp. *succulenta*], April through May), the USFWS will be consulted. Vegetation removal within 250 feet of a vernal pool is not authorized under the No Take determination, and requires consultation with the USFWS.

If protocol surveys conclude that vernal pool plants are present, or presence is assumed, and construction is within 250 feet of the habitat, but not within the emergence/bloom period, SMUD will implement the avoidance measures listed below to avoid impacts to these species and habitat. Consultation with the USFWS will be required.

SMUD Avoidance Measures for Activities in and/or within 250 feet of habitat for vernal pool plants include:

- Where present, existing paved and unpaved roads will be used to access the area.
- All work will be performed after the special-status plants or potential special-status plants have gone to seed. Should soil moisture be encountered in the seasonally ponded habitat, rubber matting, or similar equivalent, will be used to minimize disturbance.
- In areas that have not been previously disturbed, heavy equipment use will be minimized.
- For pole installations within 250 feet of seasonally inundated areas, the area between the pole and the pole hole will be backfilled with cement. The upper portion will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil.
- No pesticides or herbicides will be used within 250 feet of vernal pools.

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- **Bio-6:** SMUD will mitigate for removal of any oak or landmark tree following the current Sacramento County Tree Preservation Ordinance. This will include obtaining a tree permit from the Director of Public Works prior to trenching, grading, or filling within the dripline of a native oak tree of specified dimensions or other species of tree or to destroy, kill, or remove any tree as a condition of approval of the proposed project (see Figure 5). The mitigation fee is based on tree dimensions (Sacramento County, 2007a).
- **Bio-7:** New power lines, utility poles, and associated equipment shall be constructed to minimize the potential for bird-strikes and electrocution by using methods described in SMUD's Avian Protection Plan (SMUD, 2007).
- **Bio-8:** If vegetation will be removed by the proposed project and all necessary approvals have been obtained, substrate (*e.g.*, trees and shrubs) containing nests shall be removed between November 1 and February 28 to ensure that active (containing intact eggs, live chicks, or presence of an adult) nests are not destroyed or disturbed as a result of project

construction activities. If a nest may be destroyed during the nesting season, a qualified biologist shall survey the nest to determine if it is active.

- **Bio-9:** If construction activities would occur during the nesting season (estimated to be January through August), pre-construction surveys for the presence of special-status bird species or any nesting bird species shall be conducted by a qualified biologist within 500 feet of proposed construction areas. This survey shall be conducted no more than 14 days prior to the initiation of construction activities during the breeding season (raptors – January through August; burrowing owl – February 1 through August 31). During this survey, the biologist shall inspect all trees, grassland, and electrical towers in and immediately adjacent to the impact area for nests. Specific mitigation measures for burrowing owl, Swainson's hawk, and tri-colored black bird are included under Mitigation Measures Bio-10 through 13. If any other nest sites of bird species protected under the Migratory Bird Treaty Act (MBTA) are observed within the vicinity of the project site, then the project will be modified and/or delayed as necessary to avoid direct take of identified nest, eggs, and/or young.
- **Bio-10:** For the burrowing owl, a qualified biologist shall survey the proposed project site, including a 150-meter buffer zone around the proposed project boundary no more than 14 days prior to the initiation of construction activities. If an active burrowing owl nest is found within that area, the biologist, in consultation with CDFG, shall follow the Burrowing Owl Survey Protocol and Mitigation Guidelines (California Burrowing Owl Consortium, 1993). The Mitigation Guidelines state that if construction occurs during the non-breeding season (September 1 through January 31), then a 50-meter radius must be maintained around the occupied burrow. If construction occurs during the breeding season (February 1 through August 31), then a 75-meter radius must be maintained around the occupied burrow. Throughout the year, foraging habitat around occupied burrows must be maintained at a minimum of 6.5 acres.
- **Bio-11:** For the Swainson's hawk, a qualified biologist shall conduct a pre-construction survey for active Swainson's hawk nests if construction occurs between February and September (the breeding and nesting season). The survey shall be conducted within 0.5 mile of the project area. This survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the biologist shall inspect all trees and utility poles for raptor nests in and immediately adjacent to the impact areas. If a Swainson's hawk is found nesting within 0.25 mile of the project area, the degree of avoidance necessary to prevent nest failure shall be discussed with the CDFG. If exclusion zones cannot be implemented at these distances, the following measures may be implemented:
    - Construction may be postponed in that area until young are fledged, or
    - A qualified biological monitor shall be provided to monitor the birds on the nest and stop construction if it appears that the birds will abandon the nest and/or young, or
    - The CDFG shall be consulted if construction appears to jeopardize the nesting success and provide for the artificial rearing of eggs or young by qualified staff.
- **Bio-12:** For tricolored blackbird, if construction would occur during the breeding season (April through July), a preconstruction survey for their colonies shall be conducted by a

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qualified biologist to ensure that none are disturbed during project construction. This survey shall be conducted no more than 14 days prior to the initiation of construction activities during the early part of the breeding season or no more than 30 days prior to the initiation of construction during the late part of the breeding season (July). During this survey, the biologist shall inspect potential tricolored blackbird habitat in and within 500 feet of the project area.

- **Bio-13:** To minimize impacts on tricolored blackbird colonies, a 200-foot buffer shall be established around active tricolored blackbird nests. No project-related construction shall occur within this buffer until young have fledged or the species are no longer attempting to nest. No further mitigation measures are required once the young have fledged or after August 1.
- **Bio-14:** For western spadefoot toad and northwestern pond turtles, a qualified biologist shall survey the proposed project site within the ROW around aquatic and seasonally inundated habitat. If preconstruction surveys determine the presence of these species, SMUD will consult with CDFG to determine appropriate measures to avoid and minimize take of individuals.
- **Bio-15:** For Valley Elderberry Longhorn Beetle, habitat is present in the proposed project area; therefore, if a 100 foot buffer zone is established and maintained, then no additional avoidance measures are necessary (see Figure 5 locations). Construction activities within 20 feet of an elderberry shrub are not authorized under the "No Take" determination. SMUD will implement the following mitigation measures to avoid take when construction activity falls between 20 feet to 100 feet of an elderberry bush:
    - The presence of elderberry shrubs in the construction area will be documented on work orders and the SMUD Planning Supervisor will be notified. SMUD and outside agency contact will be made through the Planner Supervisor.
    - All on-site construction personnel will receive instruction regarding the presence of elderberry shrubs, beetle, the importance of avoiding impacts to the beetle and its habitat, and the possible penalties for not complying with these requirements.
    - Flag the 20-foot exclusion boundary around the elderberry shrub and post a sign with the following information: "This area is habitat for the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." This sign should be clearly readable and must be maintained for the duration of the construction.
    - A biological monitor will be required to supervise work falling between 20 feet and 100 feet of elderberry shrubs and stop work should personnel be out of compliance with the beetle avoidance measures, or if there is a risk that incidental take may occur.
    - Disturbance shall be minimized, and the site will be restored following construction.

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VI. CULTURAL RESOURCES				
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Environmental Setting

A cultural resources inventory, entitled Cultural Resources Inventory Glenborough at Easton (in Volume V, Appendix Q, of the April 2008 Draft EIR for Easton Project) was prepared in September 2007 and amended in November 2007 for portions of the proposed project area that fell within the Easton Project (ECORP, 2007c). An addendum to the cultural resources inventory was prepared in December 2008 for the area encompassing SMUD's Segment B line (ECORP, 2008). Pedestrian surveys for the 2007 cultural resources survey report were conducted between April and July 2004, September 2005, March, July, and August 2007, mostly covering 15- to 30-meter transect intervals (ECORP, 2007c). Pedestrian surveys for the 2008 cultural survey addendum were conducted on July 2, 2008 and August 20, 2008 using 15-meter transects.

A records search for the property was completed at the North Central Information Center (NCIC) at California State University, Sacramento, in February 2003, December 2004, August 2005, June 2006, and November 2006. The purpose was to determine whether previously documented prehistoric or historic archaeological sites, architectural resources, or traditional cultural properties exist within 0.5 mile of the proposed project and within the proposed project site. There were 37 previous cultural resource survey reports documented within ½ mile of the project area during these record searches.

The cultural resources within the vicinity of the proposed project that were identified in the 2007 survey records search and confirmed during the pedestrian survey include two historic archaeological districts, the Alder Creek Corridor Mining District and Natomas Dredge District (Natomas-Aerojet Dredge Fields), 12 buildings at least 45 years of age, and one isolated find (a black opaque flaked obsidian, biface fragment). The Alder Creek Corridor Mining District covers 653 acres of discontinuous mining remains along Alder Creek and provides an excellent example of placer mining techniques from 1849 to 1945 during the California Gold Rush. The

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places and features identified in the Alder Creek Corridor Mining District include underground mine shafts, tunnels, ditch networks, and refuse deposits. The Natomas-Aerojet Dredge Fields District includes 5,100 acres and is composed of windrows of dredge tailings created by dragline and bucket-line dredging operations from 1900 to 1946. However, the Natomas-Aerojet Dredge Fields District would not qualify as historic property or a historical resource because the information potential of the tailings is relatively small and it is not associated with significant historic events or persons and does not embody any distinctive characteristics (Sacramento County, 2008b). The 12 identified buildings also do not qualify as historical property because they do not retain sufficient integrity or physical setting to convey Aerojet's period of significance during the 1950s and 1960s (Sacramento County, 2008b).

The isolated find, an obsidian fragment, is the only prehistoric resource documented within the proposed project area, and is fully documented with no further potential to contribute to cultural heritage issues. The closest fossil locality identified for the proposed project area is 8 miles north near Roseville. A documented paleontological resources formation, the Laguna Formation, exists within the proposed project area and may underlie the mining tailings (Sacramento County, 2008b).

The record search conducted in 2008 for the addendum revealed that seven cultural resource investigations were conducted within 0.5 mile of Segment B. Several California Historical Landmarks and National Register of Historic Places (NRHP)- listed properties were in the vicinity of the project but none were located on the property.

The cultural resources within the vicinity of Segment B identified in the 2008 cultural resources addendum survey include ten artifacts within the Natomas-Aerojet Dredge Fields, which are listed as various segments of dredge cable, and a wood post. Two structures are near the proposed Segment B line, existing building, Building 46043, and the location of former Building 46104, near Building 46043. These buildings were later evaluated by an architectural historian using National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) eligibility criteria and were recommended as ineligible for the National Register and California Register (ECORP, 2009b).

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Based on this information, the proposed project area was determined to be highly sensitive for historical mining features, and moderately sensitive for subsurface prehistoric resources, long since buried by mining tailings.

The Native American Heritage Commission was contacted and conducted a record search in May 2003, September 2005, and later June 2008 of Native American cultural resources in the project vicinity. No cultural resources or Native American religious or sacred sites were identified in their sacred lands files. The Native American Heritage Commission recommended a list of individuals and organizations who were contacted by letter and by telephone for information or knowledge on cultural resources within the project vicinity (ECORP, 2007c and 2008).

Impacts

Discussion of Impact Checklist Questions

Question a: Historic resources, including the Alder Creek Corridor Mining District and isolated find, were identified in the immediate project vicinity. Segment G would cross through this area. Segment B and the new Easton Valley-Birkmond Substation are within the Natomas-Aerojet Dredge Fields District, and due to the sensitivity of the proposed project area, there remains the possibility that unrecorded cultural resources are present beneath the surface (ECORP, 2008).

Undocumented cultural resources could be impacted by the proposed project. According to the EIR for the Easton Project, a qualified archaeological monitor will be present on-site during earth-disturbing activities within the Alder Creek Corridor Mining District (Sacramento County, 2008b). SMUD has included Mitigation Measure Cul-1 and Cul-4 in its project description for the protection of cultural resources. Therefore, this impact is considered to be a less-than-significant impact with mitigation incorporated.

Question b: The project area was determined to be highly sensitive for historical mining features and moderately sensitive for subsurface prehistoric resources. SMUD has included Mitigation Measures Cul-1 and Cul-2 in its project description in the event that subsurface archaeological resources are discovered during project construction. Therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Question c: No paleontological resources were identified in the project vicinity. SMUD has included Mitigation Measure Cul-1 in its project description in the event that paleontological resources are discovered during project construction. Therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Question d: No human remains are known to be present in the project vicinity. SMUD has included Mitigation Measures Cul-1 and Cul-3 in its project description in the event that human remains are discovered during project construction. Therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

B5-925 (Cont.)

Mitigation

There is always the possibility that potentially significant unidentified prehistoric, historic, or paleontologic materials could be encountered on or below the surface during project construction activities. SMUD would implement the following mitigation measures:

- **Cul-1:** If any paleontologic or cultural resources, such as buildings, structures, or objects over 50 years old (excluding buildings that have been previously evaluated as ineligible for the National or California Register), including human remains, are encountered during any project development activities, work shall be suspended and the County of Sacramento, Aerojet, and other applicable agencies shall be immediately notified. At that time, the County and Aerojet will coordinate any necessary investigations of the site with appropriate specialists, as needed.
- **Cul-2:** When Native American archaeological, ethnographic, or spiritual resources are involved, all identification and treatment shall be conducted by qualified archaeologists who meet the federal standards, as stated in the Code of Federal Regulations (CFR) (36 CFR 61) and appurtenant (*i.e.*, pursuant to the National Historic Preservation Act, Senate

Bill 18), and Native American representatives who are approved by the local Native American community as keepers of their cultural traditions. In the event that no such Native American is available, persons who represent tribal governments and/or organizations in the locale in which resources could be affected shall be consulted.

- **Cul-3:** Pursuant to Section 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code, if human remains or bone of unknown origin is found during construction, all work shall stop in the vicinity of the find and the Sacramento County Coroner shall be contacted immediately. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission who shall notify the person it believes to be the most likely descendant. The most likely descendant shall work with the contractor to develop a program for reinterment of the human remains and any associated artifacts. No additional work shall take place within the immediate vicinity of the find until the identified appropriate actions have been implemented. If the Coroner determines that the remains are not related to a crime scene, then a qualified archaeologist who meets the federal standards, as stated in 36 CFR 61, shall be retained to assess the find and make further recommendations.
- **Cul-4:** An archaeological monitor will be present on-site during earth disturbing activities within the Alder Creek Corridor Mining District (Segment G).

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VII. GEOLOGY AND SOILS				
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☒	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

B5-925 (Cont.)

Environmental Setting

The proposed project is located on lands south of Folsom and east of Rancho Cordova within Sacramento County. This area is located within the Great Valley geomorphic province of California. The Great Valley is bounded on the north by the Klamath and Cascade mountain ranges, on the east by the Sierra Nevada Mountains, on the west by the Coast Ranges, and the Transverse Ranges to the south (Sacramento County, 2008b).

Geological maps indicate that the project area is generally underlain by Laguna Formation, Dredge Tailings, and unconsolidated alluvium associated with Alder Creek. The proposed project is within a geologic subsection referred to as Hardpan Terraces, and consists of gently

sloping terraces and small areas of floodplain and alluvial fans along streams that eventually reach the Sacramento and San Joaquin Rivers. The elevation range is from 100 to about 400 feet above mean sea level. The majority of the area has been topographically altered by the deposition of dredge tailings from gold mining activity that occurred through the 1940s. The tailings appear as linear ridges of boulders, gravel and sand up to approximately 20 feet high with intervening low areas of finer material (sand, silt and clay) known as slickens.

Seismic Hazards

No known active faults or Alquist-Priolo earthquake zones are present in Sacramento County (Hart and Bryant, 1999). Although the site lies within the Central Valley part of California that is considered to be seismically stable (Seismic Zone 3), earthquake activity in neighboring regions, namely the Sierra Nevada and the San Francisco Bay area, could affect the project site with ground shaking, liquefaction, and lateral spreading. However, given the project site's distance from active faults, the potential for significant damage is considered to be low.

Liquefaction, the loss of soil shear strength caused by a sudden increase in pore water pressure, is determined by a number of factors including soil type, depth to water, soil density, and the duration and intensity of ground shaking. Based on known soil, slope, groundwater, and ground shaking conditions in the project area, the potential for liquefaction, settlement, landslides, or lateral spreading in the project area is considered to be low (Sacramento County, 2008b).

Impacts

Answers to Checklist Questions

Question a: Because the proposed subtransmission line does not overlie any known faults and is not within or near an Alquist-Priolo special-studies zone, the likelihood of ground rupture is very low. Therefore, this is a less-than-significant impact.

B5-925 (Cont.)

Although the site lies within the Great Valley part of California that is considered to be seismically stable, earthquake activity in neighboring regions, namely the Sierra Nevada and the San Francisco Bay area, could affect the project site with ground shaking, liquefaction, and lateral spreading. However, given the distance to active faults, the likelihood of an impact is low; therefore, this is a less-than-significant impact.

The subtransmission line is located within an area of dredge tailings with slopes of up to 50 percent, and there is a potential for landslides to occur. Such landslides are expected to be confined to the local area of the tailings pile and be very shallow in their vertical extent. Therefore, any impacts are expected to be minor so long as subtransmission line supports are properly designed to extend several feet below the surface so that any landslide activity will not topple the support. SMUD will implement Mitigation Measure Geo-1 to prevent damage from landslides; therefore, this is a less-than-significant impact with mitigation incorporated.

Question b: The proposed project consists of removing wood poles and installing steel 1.5-foot diameter poles about every 300 feet, which would result in minimal temporary ground disturbance and vegetation removal of approximately 7 square feet per pole, except in angled locations (about 9) where the poles will be placed on a concrete base. In those instances, the dimensions of the concrete base would be about 5- by 5-foot or 7- by 7-foot. Segment B will require about 67 poles. For pole installations, the upper portion is backfilled with native soil

commensurate with the topography and stratigraphy of the surrounding soil and areas of disturbed soil are reseeded with a native seed mix, as necessary. Given that the project area is in an area of mine tailings with topographic relief of up to 20 feet (up to approximately 50 percent gradient), and encompasses a small area of disturbance per pole, the potential for loss of topsoil and erosion is minimal. SMUD will implement Mitigation Measure Geo-2 to reduce the impact of soil disturbance from construction. Therefore, this is considered a less-than-significant impact with mitigation.

SMUD will also implement WA-1 during construction (see Section IX, Hydrology and Water Quality) to restrict construction materials and excavated soil and debris from entering nearby aquatic features, and prevent erosion and loss of top soil.

Question c: The project site is not within a seismically active area and the potential for lateral spreading, landsliding (except as noted above), liquefaction, or earthquake-induced settlement is considered to be low. Therefore, a less-than-significant impact would occur.

Question d: Portions of the project would be located on soils that have a high shrink-swell potential; this characteristic will be addressed with engineering design that accommodates shrink-swell potential. SMUD will implement Mitigation Measure Geo-3 to ensure that construction of the project will not create a substantial risk to people or property; therefore, this is a less-than-significant impact with mitigation incorporated.

Question e: Implementation of the proposed project would not require the use of septic tanks or alternative wastewater disposal systems; therefore, no impact would occur.

Mitigation

SMUD would implement the following mitigation measures:

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- **Geo-1:** Pole foundations located on tailings will be constructed to extend several feet below the potential depth of material affected by landslides to prevent damage from local shallow landslides in the tailings.
- **Geo-2:** The upper portion of excavations for pole installations will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil and areas of disturbed soil will be reseeded with a native seed mix, as necessary.
- **Geo-3:** Pole foundations may be constructed with additional concrete thickness or other engineering refinements, such as reinforcement of foundations, to counteract the forces exerted by expansive soils.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

B5-925 (Cont.)

Environmental Setting

A hazardous materials review of the proposed project area was conducted to determine the existing conditions within the vicinity of the proposed project (substations and subtransmission lines). This review focused on possible locations of contamination by hazardous materials or waste and groundwater contamination.

The uses, storage, and release of hazardous materials and hazardous waste, including energetic chemicals, are regulated under many Federal, State, and Local laws and regulations. Aerojet

undertakes industrial operations that involve using and storing hazardous materials and generating and storing hazardous waste, including substances used for rocket testing that are categorized energetic, such as propellants. Aerojet's permitted uses of the property include periodic propulsion testing activities that generate significant levels of visible emissions, pressure and noise, and routine component testing activities. Aerojet is permitted to generate overpressures from testing up to specified limits at its borders. Aerojet's safety standards related to storage and manufacture of propellants and explosives are specifically derived from the Department of Defense's (DOD) operations manual and include quantity distance and overpressure standards for explosive testing and storage.

Under state and local laws, Aerojet prepares and submits a Hazardous Material Business Plan to Sacramento County Environmental Management Department. This plan includes an inventory of hazardous materials stored at the Aerojet property, an emergency response plan in case of a release, and documentation of training (Sacramento County, 2008b). Aerojet submits a yearly report under the Federal Emergency Planning and Community Right to Know Act (EPCRA) to EPA, listing the quantities of hazardous materials that are manufactured, used, or released on the property above specified threshold quantities. Aerojet complies with the Federal Risk Management Plan (RMP) program and California Accidental Release Prevention Program (CAL-ARP), developed to prevent accidental releases of regulated substances above specified threshold quantities. The programs include hazard assessments, prevention programs for safety, training requirements, and emergency response preparation.

Hazardous waste is stored on site at accumulation locations, regulated by the Resource Conservation and Recovery Act (RCRA) and California Code of Regulations Title 22. The waste is then shipped off-site to permitted treatment and disposal facilities. In addition, Aerojet's tenant, AMPAC Fine Chemicals, manufactures pharmaceutical chemicals regulated under the U.S. Food and Drug Administration. Both Aerojet and AMPAC Fine Chemicals are permitted as large quantity generators and must comply with RCRA and California Code of Regulations Title 22. Both Aerojet and AMPAC Fine Chemicals transport hazardous materials and hazardous waste under regulatory protocols within the Aerojet property and to off-site destinations (Sacramento County, 2008b).

B5-925 (Cont.)

At the Aerojet site, unknown quantities of hazardous waste have been released into the soil and groundwater from past industrial activities since 1953 by Aerojet and the Cordova Chemical Company, located on the Aerojet complex. Releases occurred from Aerojet's manufacturing and testing of liquid and solid propellant rocket engines, and formulation of rocket propellant agents, and agricultural and pharmaceutical chemicals (USEPA, 2008). Some of the wastes were disposed in surface impoundments, landfills, deep injection wells, leachate fields, and open burning. Groundwater and surface water contain volatile organic chemicals (VOC), such as trichloroethene (TCE), and other rocket propulsion waste products such as perchlorate and N-Nitrosodimethylamine (NDMA). At identified areas, soils are contaminated with VOCs, perchlorate, and metals. Potential health risks include: (1) drinking contaminated groundwater, (2) drinking contaminated surface water, and (3) coming into direct contact with or accidentally ingesting contaminated soils in specific areas of Aerojet (USEPA, 2008).

CERCLA provides federal authority for releases of hazardous substances that may endanger human health or the environment. CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA), which focuses on remedies at hazardous waste sites, and designated Superfund sites that have been placed on the National Priorities List (NPL). In 1979,

under the oversight of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) and the Central Valley Regional Water Quality Control Board (RWQCB), Aerojet began investigating the nature and extent of groundwater and soil contamination on the property. In 1979, VOCs were found in off-site private wells, and in 1983, VOCs were found in the American River (USEPA, 2008). Aerojet was designated as a Superfund Site in 1983 by the EPA and placed on the NPL.

Aerojet has installed monitoring wells to define the extent of groundwater contamination, and since 1983 has installed groundwater extraction and treatment (GET) facilities to prevent further movement of VOC-contaminated groundwater off the property. In 1997, perchlorate, a component of solid rocket fuel, was found in off-site drinking water wells, and wells impacted above response levels have been closed.

In 1989, a cleanup approach was designed that included dividing the Aerojet site into Operable Units (OU) to prioritize investigation and cleanup work (USEPA, 2008). The cleanup approach is to control groundwater contamination from moving across the facility boundary and remediate the soil and groundwater at the source areas or OUs. Aerojet currently operates five GET facilities. Groundwater treatment involves biological treatment or ion-exchange for perchlorate contamination, ultraviolet light treatment for NDMA, and air stripping and activated carbon treatment for VOCs. Figure 6 shows the extent of groundwater contamination plumes and the location of nearby extraction and monitoring wells to the proposed project.

In 1998, Aerojet began an investigation of about 3,500 acres of property, which includes property where the proposed project is located, to determine if previous industrial activities had resulted in chemical impacts to soils. As a result, in 2002, the EPA determined that about 1,045 acres of that land, mostly in the administrative area, would be carved out or removed from the Superfund site and be acceptable for other uses based on an evaluation against residential or commercial risk levels (see Figure 3). The carved out area does not include an area of about 190 acres located within the administrative area that was permitted in the mid 1960s as a non-hazardous waste landfill (Sacramento County, 2007c). This landfill was used for office waste, construction debris, and small amounts of asbestos waste. This landfill area remains within the designated Superfund site boundaries until the waste has been excavated and removed (Sacramento County, 2007c). Following removal of the waste material, and other CERCLA requirements, the landfill site would be removed from the Superfund site boundaries and added to the carved-out area. The portions of the proposed project located within this carved-out area would not have any restrictions on working with soil. Contaminated soil source areas are present adjacent to or in the vicinity of SMUD's proposed project, as shown on Figure 7.

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Groundwater is not part of the carved-out land; therefore, there are restrictions on use of groundwater in the carved-out area. The shallowest groundwater wells in the carved out area are at a depth of 100 feet below ground surface (bgs) (Aerojet, 2000; DTSC, 2000; and RWQCB, 2000). As part of the final site assessment for the carved-out area, Aerojet evaluated the potential migration of VOCs from groundwater into the soil and ambient air, by collecting soil vapor samples and analyzing them for VOCs. At most locations, the VOC concentrations detected in the soil vapor samples were below residential health risk. However, in the vicinity of Well 3523 near Segment C and a few other locations, the screening level risk assessment indicates that the migration of volatile gases from underlying groundwater into indoor air would only be acceptable for commercial development, and unacceptable for residential use.

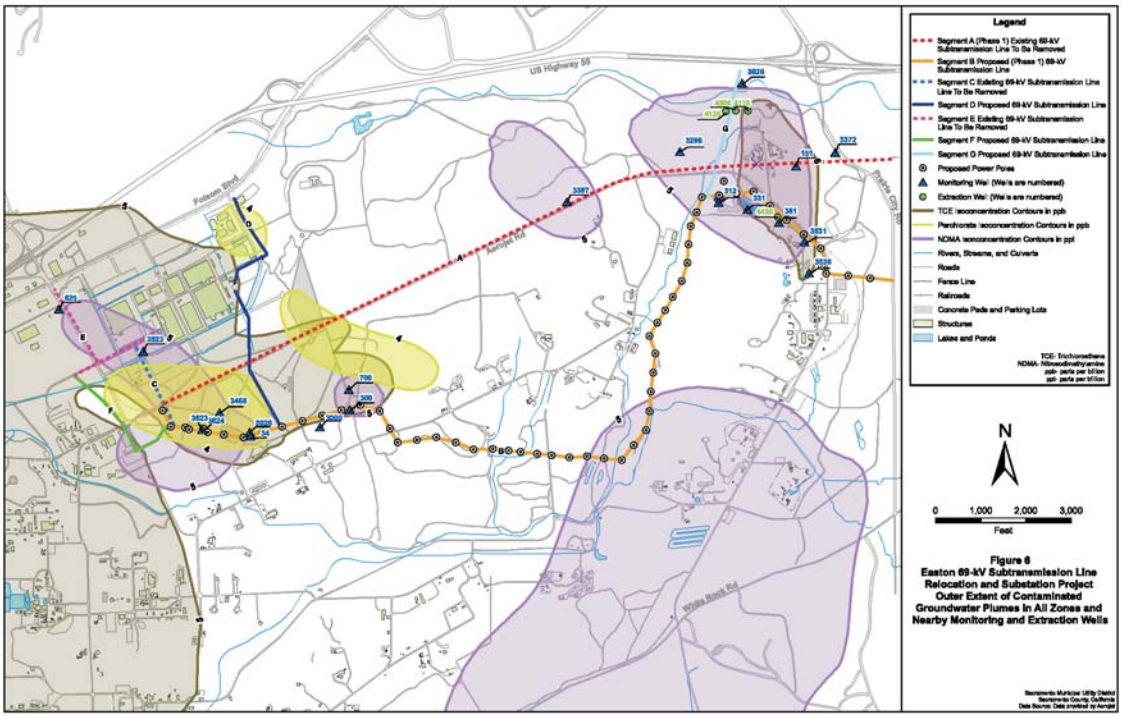

Figure 6
Easton 69-kV Subtransmission Line Relocation and Substation Project Outer Extent of Contaminated Groundwater Plumes in All Zones and Nearby Monitoring and Extraction Wells

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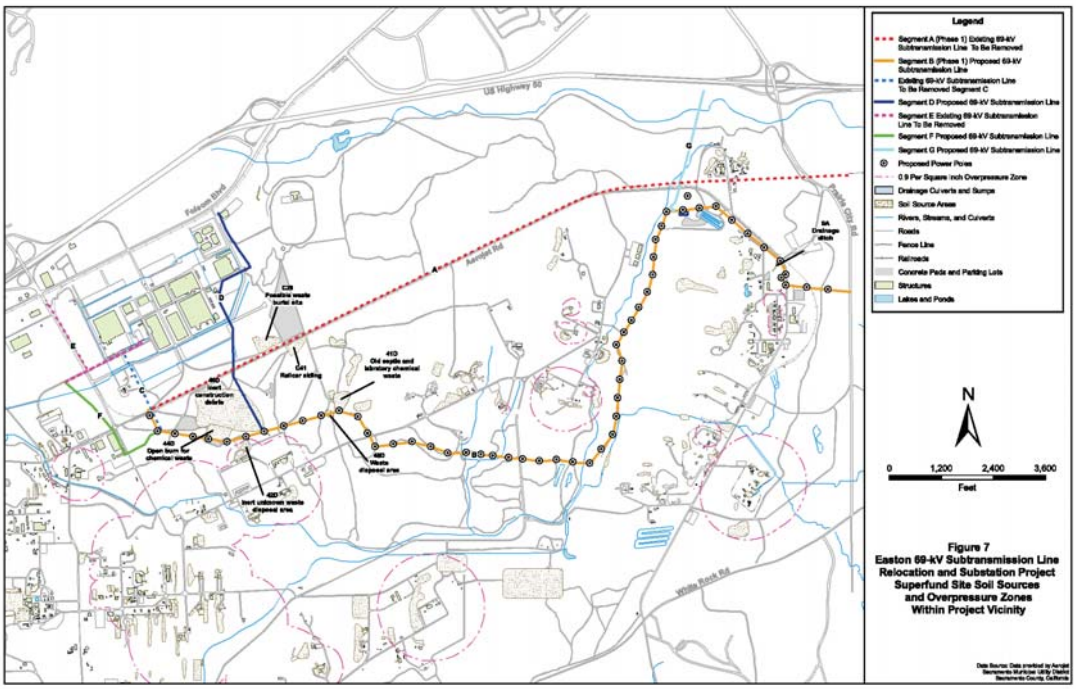

Figure 7
Easton 69-kV Subtransmission Line Relocation and Substation Project Superfund Site Soil Sources and Overpressure Zones Within Project Vicinity

Data Source: Data provided by Aerojet
Sacramento Municipal Utility District
Sacramento County, California

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Groundwater contaminant plumes are mapped in layers, with Layer A being the first continuous aquifer (water bearing zone) across most of the Aerojet property (Aerojet, 2008a). Layer B represents the middle aquifer, and Layer C is the deepest aquifer. However, in some locations, Layer C may actually be the first water bearing zone. The primary contaminants in groundwater are TCE, NDMA, and perchlorate. Extraction wells (used to extract and treat the groundwater) and monitoring wells are located within the contaminant plumes, as shown on Figure 6. Figure 6 depicts the outer footprint or extent of contamination of Layers A, B, and C and concentrations within each plume are higher than concentractions shown in Figure 6 at the edges. TCE concentrations range from 5 to 600 ppb (parts per billion or micrograms per liter [µg/L]), NDMA concentrations range from 1 to 1,000 ppt (parts per trillion or nanograms per liter [ng/L]), and perchlorate concentrations range from 4 to 40,000 ppb. The monitoring wells and groundwater treatment extraction wells are active; therefore, construction activities would not be allowed to interfere or disturb these wells. Within the vicinity of Segment B, based on the depth of monitoring wells and extraction wells, contaminated groundwater could be encountered in the western portion of Segment B at about 42 feet below ground surface (bgs) (Well # 700) to 75 feet bgs (Well # 34), and at 39 feet bgs (Well # 3530) to 169 feet bgs (Well # 3286) on the eastern portion of Segment B. Groundwater contaminated with perchlorate is in the vicinity of Segments D, C, and B. Groundwater contaminated with NDMA is in the vicinity of Segments B, E, and G. Groundwater contaminated with TCE is in the vicinity of all segments (see Figure 6).

The Aerojet property was historically part of a hydraulic gold mining operation. As part of the mining operation, mercury was used to enhance gold recovery and dredge tailings are present throughout the property. Segment B (Phase 1 construction) would be installed within the dredge tailings, an area of the property designated within the Superfund site boundaries (see Figure 3). Aerojet conducted soil and sediment sampling in 1994 and detected mercury in the fine-grained tailings, soil, and cobble-gravel at levels below the EPA's Preliminary Remediation Goal (PRG) for residential risk for direct soil contact, indicating the mercury concentrations would not cause a health hazard for this type of exposure (Sacramento County, 2008b).

B5-925 (Cont.)

Soil contaminant sources are located throughout the Aerojet property in the Central OU, Eastern OU, and Island OU. Figure 7 shows the location of contaminant sources within the vicinity of the proposed project. Site C29 was identified as a possible waste burial site and is located north of Segment A. Low concentrations of VOCs were detected in soil vapor samples at concentrations below residential risk screening levels (USEPA, 2000). Site C41 was identified as a railcar siding and associated structure, located south of Segment A. Low concentrations of VOCs were detected in soil vapor samples at concentrations below commercial use risk.

Sources along the western portion of Segment B include an open burn area for chemical waste (Site 44D), an area of inert construction debris (Site 46D), and an inert and unknown waste disposal area (Site 42D). The sources further east along Segment B include a waste disposal area (Site 48D) and an old septic waste (and laboratory chemical waste) area (Site 41D). Contaminants of concern at Site 44D include metals and dioxins/furans in surface soil, VOCs, metals, and perchlorate in subsurface soils, and VOCs in soil vapor samples above human health and ecological screening levels (Aerojet, 2007c). The debris area (Site 46D) was surveyed in 2003 and contains metallic and non-metallic slag, glass, and portions of barrels, lids, and 5-gallon containers.

Several of these sites in the vicinity of the proposed project were investigated under the Stage 1 Investigation (Aerojet, 1993). The Stage 1 Investigation report indicated that at Site 41D, VOCs had been detected in soil and soil vapor samples, and PCBs, metals, and semivolatile organic compounds had been detected in soil. At Site 42D, VOCs were detected in soil vapor, and dioxins and furans were detected in soil (Aerojet, 1993). The report also indicated that Site 48D was a waste disposal area for short-lived radioactive material; a radiation survey conducted during the Stage 1 investigation indicates the levels were low (Aerojet, 1993). VOCs were detected in soil vapor samples at Site 48D (Aerojet, 1993). Site 9A, a drainage ditch, is located near the eastern end of Segment B. VOCs were identified in soil vapor samples and further sampling is ongoing (Aerojet, 2008b).

Soil sampling, conducted on Aerojet property in 1994, revealed a mean concentration of mercury in fine-grained dredge tailings of 0.113 milligrams per kilogram (mg/kg), 0.025 mg/kg in soil, and 0.038 mg/kg in cobble-gravel. According to the Easton Project EIR, mercury concentrations within the Easton Project site do not pose a health hazard, based on comparison to the PRG of 23 mg/kg for residential soil for direct contact exposure. In addition, soil sampling conducted as part of the Site Assessment Report for the Candidate Carve-Out Lands (Aerojet, 2000), involved sampling for various metals and organic compounds. The RWQCB expressed concern regarding arsenic levels in soil. According to the Easton Project EIR, based on a background metals investigation, the ranges for the Aerojet soils were consistent with published ranges for naturally occurring arsenic levels in soil (Sacramento County, 2008b).

Aerojet's permitted uses of the property include periodic propulsion testing and routine component testing activities that generate significant levels of visible emissions, pressure, and noise. Aerojet manufacturing and testing generates overpressure or explosive force (shock waves) during detonation and the explosive force or overpressure is measured as psi. The release of energy from detonation causes an instantaneous air pressure increase or shock wave that travels out radially from the origin, with the pressure at the front of the shock wave gradually decreasing (Sacramento County, 2008b). Overpressure zones have been designated on the Aerojet property, where Aerojet is permitted to generate overpressures (shock waves or instantaneous increases in pressure radiating out from a source) from an explosive force from testing up to specified limits (1.0 pound per square inch [psi] at its borders) and voluntarily committed to the County of Sacramento to not exceed 0.5 psi at the property boundary (Sacramento County, 1995). Aerojet's operations require safe separation distances to power lines and are regulated by DOD Explosives Safety Standards. According to the DOD Contractor's Safety Manual for Ammunition and Explosives, electrical supply systems, including transmission lines greater than 69 kV, must be separated from explosive hazards by a specified distance, designated the "inhabited building distance" (DOD, 2008). The inhabited building distance (IBD) is the "separation distance between explosive sites and non-associated exposed sites requiring a high degree of protection from accidental explosion," where the pressure would not exceed 0.9 psi. The overpressure zone of 0.9 psi is shown on Figure 7. Project subtransmission line segments are outside of these zones, thus meeting the DOD safety requirements.

B5-925 (Cont.)

Designated areas of the property are used for storage of propellants and explosives. Aerojet uses reasonable best efforts to comply with the DOD quantity and distance criteria for storage of propellants and explosives (Sacramento County, 1995).

Impacts

Answers to Checklist Questions

Questions a and b:

Hazardous Materials Used Onsite during Construction

During construction, construction equipment and vehicles containing petroleum products would be onsite. Refueling would occur offsite at a SMUD facility. Mineral oil would be transported to the site in the sealed transformer equipment and, therefore, the risk of release is minimal.

The substation battery backup systems contain liquid sulfuric acid, and would be transported to the site in sealed cases; therefore, the potential for rupture of the battery is minimal. During construction activities, minor spills of fuel or oils/lubricants from ruptured fuel and/or hydraulic lines on the construction equipment may occur. SMUD has included Mitigation Measures Haz-1 and Haz-2 in its project description to address accidental spills during construction; therefore, this is considered a less-than-significant impact with mitigation incorporated.

Hazardous Materials Used Onsite during Substation Operation

During project operation, SMUD would cool the transformers with PCB-free mineral oil. Sulfuric acid would be contained within the battery backup system in sealed equipment, and therefore, the risk of its release is minimal. However, the potential for a leak or accidental release to occur at the substation site still exists. SMUD has included Mitigation Measures Haz-3 in its project description; therefore, this is considered a less-than-significant impact with mitigation incorporated.

Other Potential Public Hazards

No hazardous materials are required for the operation of the subtransmission lines.

Substation equipment operates at high voltages. Consequently, the potential exists for an electrocution to occur. To prevent public access to onsite electrical equipment, the proposed substations would be enclosed with a fence on all sides. Access would be restricted with a locked gate (Mitigation Measure Haz-4). Therefore, this is considered a less-than-significant impact with mitigation incorporated. Homeowners in neighborhoods adjacent to proposed substations and overhead power lines frequently express concerns regarding the potential for health effects from exposure to EMF.[1] The medical and scientific communities generally agree

B5-925 (Cont.)

[1] Electric and magnetic fields occur throughout nature. Electric fields are created between two objects that have a different voltage potential. Magnetic fields are created only when there is current flowing through a conductor or device. For example, when a lamp is plugged into a wall, an electric field is created around the cord to the lamp. A magnetic field is only present when the lamp is turned on and current flows through the light bulb. Typically, the main sources for electric and magnetic fields associated with a substation are the power lines that enter and exit the substation. Power frequency (60Hz [cycles per second]) EMF are invisible fields of force created by electric voltage (electric fields) and by electric current (magnetic fields). These fields are associated with all power lines, electric appliances, and with the wiring in buildings of homes, schools, and work structures. Voltage on any wire produces an electric field in the area surrounding the wire. Magnetic fields are produced from the flow of electricity (current) in a conductor (circuit) and can be calculated and measured. Widespread misunderstanding exists regarding EMF levels from different types of facilities and the rate at which these levels decline with distance from the source. There are four basic factors that affect the strength of EMF: distance, conductor spacing, load, and phase configuration. An alternating current power line typically consists of three energized phase wires. The nature of three-phase alternating power systems results in a partial cancellation effect of the magnetic fields if the

that the available research evidence has not demonstrated that EMF creates a health risk. However, they also agree that the evidence has not dismissed the possibility of such a risk. Finally, they agree that while this is an important issue that needs resolution, it is uncertain when such a resolution will occur. The present scientific uncertainty means that public health officials cannot establish any standard or level of exposure that is known to be either safe or harmful. No CEQA standards or any health-based standards exist that indicate that EMF should be considered a significant impact of this project. The closest homeowners in the future would be located in the Easton Project communities, at about 800 feet east of Segment D, and about 800 feet west of Segment G. Therefore, no impact would occur.

Portions of the proposed project will be constructed on Aerojet property within areas designated as a Superfund Site (see Figure 3). Aerojet and SMUD have reviewed the location of each utility pole and have positioned the poles to avoid digging and placing poles directly within the boundaries of known contaminated soil source locations. Segment B (Phase 1 construction) would be installed within the dredge tailings, an area of the property where mercury was detected, and within the Superfund Site boundaries. Risks to construction workers drilling utility pole holes and installing concrete foundations should be evaluated by a qualified health and safety official for this exposure pathway prior to working within the Superfund Site.

Contaminated groundwater within the vicinity of Segment B could be encountered at about 39 feet bgs. Utility poles would be installed to a maximum depth of 25 feet bgs and, therefore, it is unlikely that the contaminated groundwater plumes would be encountered during installation. Within the area of Well 3523, near Segment C, SMUD would be removing the existing 69-kV subtransmission lines and utility poles. Construction worker exposure to soil vapors or contaminated groundwater should be evaluated by a qualified health and safety officer prior to working in areas where there is a potential exposure pathway. Because of the potential to encounter contaminated soil, groundwater, or soil vapor, SMUD has included Mitigation Measures Haz-5 and Haz-6 as a precaution. This impact is considered to be a less-than-significant impact with mitigation incorporated.

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Aerojet's permitted uses of the property include periodic propulsion testing and routine component testing activities that generate significant levels of visible emissions, pressure, and noise. Aerojet's operations require safe separation distances to power lines and are regulated by the DOD Explosives Safety Standards. Therefore, according to the DOD Contractor's Safety Manual for Ammunition and Explosives, electrical supply systems, including transmission lines greater than 69-kV, must be separated from explosive hazards by the 0.9 psi IBD. Segment B is outside of this zone, thus meeting the DOD safety requirements (see Figure 7).

Due to the on-going propulsion testing activities within the project vicinity, SMUD has included Mitigation Measure Haz-5 to address the need for obtaining an Aerojet Safety Work permit and appropriate training according to the Aerojet Environmental, Health and Safety Manual,

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conductors are adjacent to each other. Magnetic fields are very difficult to shield; placing the line underground does not shield the magnetic field. Overhead electric power lines will also produce electric fields; however, a house will shield most of the electric field from outside sources. Other objects, such as trees, shrubs, walls, and fences will also provide electric field shielding. SMUD's Board of Director's adopted Resolution No. 91-04-18 on April 18, 1991, approving an EMF policy statement and authorizing the implementation of an EMF program.

coordinating the schedules and locations for installing the new poles and utility lines to avoid interference with Aerojet's operations, and to ensure safety to the construction workers (Aerojet, 2007b and 2007c). Therefore, this impact is considered to be a less-than-significant impact with mitigation incorporated.

Question c: The proposed project site is not located within 0.25 mile of an existing school. The nearest schools are Natoma Station Elementary School on 500 Turn Pike Drive, in Folsom, and Folsom High School, on 1655 Iron Point Road, in Folsom. Both schools are more than 1 mile from the proposed project site. Therefore, the proposed project would not involve the handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school and no impact would occur. Furthermore, the hazardous materials used would be completely enclosed in process equipment, so no emissions to the air or water are anticipated from this project. Temporary construction emissions from construction equipment are discussed in Chapter 3, Section III, Air Quality. Therefore, no impact would occur.

Question d: The proposed project is located on an EPA-designated Superfund site (Aerojet) and near sites and businesses where hazardous materials are used and hazardous wastes are generated (Sacramento County, 2008b). Aerojet is conducting groundwater extraction and treatment and continuing to investigate the nature and extent of soil and groundwater contamination throughout the site. A hazard to the public and SMUD construction crew may occur if contaminated soil, groundwater, or soil vapor is encountered during construction activities. In addition, rocket testing involves noise bursts lasting up to one minute that can be heard in the nearest residential areas. The proposed project is outside the 0.9 psi IBD, the distance considered safe for power lines.

B5-925 (Cont.)

Aerojet has safety procedures in place for overseeing any construction or excavation activity on its property because of the nature of explosive testing operations and the designation as a Superfund site. This includes obtaining a Safety Work Permit and Request for Soil Excavation and Grading Authorization, attending safety training, and having a written Injury and Illness Prevention Plan and Code of Safe Practices present at the job site. SMUD would work closely with Aerojet when working in areas identified as a potential health concern for contact with contaminated soil, groundwater, or soil vapor, and would take the necessary precautions. SMUD has included Mitigation Measures Haz-5 and Haz-6 as a precaution; therefore, this impact is considered less than significant with mitigation incorporated.

Question e: The proposed project is not located within 2 miles of a public airport. The proposed project site is about 5 miles east of Mather Airport in Sacramento County. The Mather Airport Comprehensive Land Use Plan (CLUP) provides land use compatibility standards for height restrictions, noise compatibility, and safety of persons on the ground (Airport Land Use Commission, 1997). Based on the CLUP, land use compatibility of a project to the Mather Airport is determined by comparing the proposed land use against the height, noise, and safety guidelines in the CLUP and to other requirements in the Public Utilities Code Section 21656 and 21658. According to the CLUP, there are three specific airport safety zones – Clear Zone, Approach-Departure Zone, and Overflight Zone. The proposed project is located outside all three of these zones. Even within the Overflight Zone, electrical utilities are an approved land use as long as they do not cause electrical interference that would be detrimental to the operation of the aircraft or aircraft instrumentation. A proposed project would also have to meet the height standards for construction discussed in the CLUP and Public Utilities Code

Sections 21656 and 21658 and obtain approval from the Federal Aviation Administration (FAA) prior to construction if the height is above specific criteria listed in the Federal Aviation Regulations Part 77. The proposed project is within the arrival flight path of aircraft using the airport but outside the three zones. The overflights would range from 1,800 to 2,500 feet above the proposed project at a distance of 5 miles from the airport. At this distance, the height of the utility poles (65 to 75 feet) for the new subtransmission lines would not penetrate the height notification surfaces and constitute a hazard to air navigation.

In addition, the subtransmission line and substations merely provide electricity to support SMUD's customers and would not be a contributing factor for exposing people to safety hazards associated with an airport or aircraft. Implementation of the proposed project would not result in a safety hazard for people who would work in the area; therefore, no impact would occur.

Question f: The proposed project is not located within 2 miles of a private airport. Subtransmission lines are already present on the Aerojet property and would merely be relocated further south within the Aerojet property for aesthetic purposes. The subtransmission lines and substations merely provide electricity to support SMUD's customers and would not be a contributing factor for exposing people to safety hazards associated with an airport or aircraft. Implementation of the proposed project would not result in a safety hazard for people who would work in the area; therefore, no impact would occur.

Question g: Implementation of the proposed project would have little effect on emergency evacuation plans, including Aerojet's own emergency response plans. Traffic associated with project construction and operation would not significantly affect emergency access to Aerojet's industrial area or the administrative area. The construction would take place in several phases within the administrative area and in the more remote industrial area and would not involve a large crew of people or trucks at the construction site (maximum 15 people at one time).

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The Sacramento Metropolitan Fire District provides fire protection services in Sacramento County. The closest public fire stations are Stations 63 and 33. Station 63 is located at 12395 Folsom Boulevard in Rancho Cordova, west of the project area. Station 33 is located at 5148 Main Avenue in Orangevale, northwest of the project area. Both stations serve as response teams and provide medical service. The closest fire station is located at Aerojet and is the Aerojet Fire Service at Highway 50 and Hazel Avenue, which provides private fire protection to Aerojet. City of Folsom Fire Department acts as a mutual aid responder for the proposed project area; the closest station is Station 37, located at 70 Clarksville Road, northeast of the proposed project. Therefore, no impact would occur.

Question h: Construction of the substations and subtransmission lines would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires; therefore, no impact would occur.

Mitigation

SMUD would implement the following measures to minimize the potential impacts from hazardous materials:

- **Haz-1:** If an accidental release occurs during transformer transport or a spill occurs during construction of the project, the release shall be cleaned up immediately and reported in accordance with applicable federal, state, and local requirements.

- **Haz-2:** Incorporate features in the substation design to contain the mineral oil if a cooling oil leak occurs. Install remote alarming monitoring equipment to alert the SMUD Energy Dispatch Operators in case of high temperatures or low oil levels. Construct the substation with secondary containment to contain spilled oil, and begin cleanup activities immediately after a release has occurred. In addition, implement Best Management Practices (BMPs) through a Spill Prevention Control and Countermeasure Plan to minimize the possibility of any spills or releases from the transformers.
- **Haz-3:** Inspect equipment containing hazardous materials periodically for signs of spills or leakage.
- **Haz-4:** Construct a 10-foot high chain-link fence or wall around the substations and lock the substation sites to prevent unauthorized access to the onsite electrical equipment.
- **Haz-5:** Permission will be obtained from Aerojet's security office and a designated on-site safety officer prior to conducting construction activities within the Superfund site and industrial zone of the Aerojet property. SMUD will obtain and follow the Aerojet Safety Work Permit process and fill out a request for Soil Excavation and Grading Authorization. Aerojet will work closely with SMUD to identify locations with a potential health concern and provide health and safety training, as applicable, to the risks, including notice on schedules for rocket testing. Aerojet will provide safety oversight during construction. SMUD will prepare Occupational Safety and Health Administration (OSHA) standard health and safety job hazard analyses, Injury and Illness Prevention Plan and Code of Safe Practices, and train all workers on proper procedures for working at a hazardous waste site. SMUD will install utility poles at locations least likely to encounter contaminated soil or groundwater, or interfere with the GET systems or monitoring wells, based on information provided by Aerojet.
- **Haz-6:** Any excess soil will be placed in an Aerojet-designated staging area, and will be the responsibility of Aerojet for any off-site transportation or disposal. If evidence of contaminated materials is encountered during construction, construction shall cease immediately and Aerojet's site remediation engineering department will be contacted for further instructions. Applicable requirements of the CERCLA and CCR Title 22 regarding the disposal of waste shall be implemented, as required.

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	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
IXI. HYDROLOGY AND WATER QUALITY				
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (*e.g.,* the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

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Environmental Setting

The project area is located in the northeast corner of Sacramento County within the American River watershed. The American River flows westward from the crest of the Sierra Nevada Mountains above Lake Tahoe to its confluence with the Sacramento River in the City of

Sacramento. The Sacramento River joins the San Joaquin River approximately 40 miles south of Sacramento and drains into the San Francisco Bay. Lake Natoma, created by the construction of Nimbus Dam, is located 2 miles downstream of Folsom Lake on the American River and is less than 1 mile north of the project area. Lake Natoma serves as a regulating afterbay to stabilize flow releases to the lower American River. Daily water surface elevations in Lake Natoma typically fluctuate between 4 and 7 feet. The lake is used for water quality and temperature control to protect spawning habitat for anadromous fish (live mainly in the sea, breed in fresh water) in the lower American River and the Nimbus Hatchery. The Alder Creek and Buffalo Creek watersheds encompass the project area and are tributary to the American River. Alder Creek drains to Lake Natoma, and Buffalo Creek drains to the American River. The Rebel Hill Ditch also crosses the project area and drains to Buffalo Creek (Sacramento County, 2008b).

Storm water runoff in Aerojet's administrative area is conveyed through a series of drain inlets, storm drains, road culverts, and unlined ditches to Buffalo Creek. Runoff from the drainage system discharges into a channel on the west side of Nimbus Road about 2,400 feet south of Folsom Boulevard. The runoff is conveyed about 3,000 feet to Buffalo Creek. The Buffalo Creek watershed, in the vicinity of the proposed project, has been leveled and graded and is mostly covered by impervious surfaces (i.e. parking lots, roadways, and buildings). New or expanded storm water drainage facilities would not be required as a result of construction of the subtransmission lines. The relocation of the Prairie City substation would be incorporated into the existing storm drain system in Aerojet's administrative area. The new Easton Valley-Birkmond station would be constructed within Aerojet's undeveloped area within the disturbed mine tailings and would not require new storm water drainage systems due to high permeability.

Alder Creek's 100-year floodplain extends 50 to 620 feet from the creek. The Alder Creek watershed is primarily undeveloped, and drainage facilities are minimal. Existing facilities consist of metal culvert road crossings, roadside ditches, and box culverts that convey Alder Creek under Folsom Road (see Figure 5). A closed and capped landfill in the central portion of the proposed project area east of the administrative area has an improved drainage system consisting of concrete lined ditches and culverts to direct runoff around the landfill to Alder Creek. Segment G from the proposed new Easton Valley-Birkmond Substation crosses Alder Creek approximately 1,476 feet west of Prairie City Road.

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The Rebel Hill Ditch is an unlined water conveyance that was constructed to supply water to the gold fields (EPA, 2008). Treated groundwater from Aerojet is discharged to the Rebel Hill Ditch to infiltrate to groundwater.

The project area is not located within a 100-year floodplain (Sacramento, 2008) with the exception of Segment G discussed above; however, it is located downstream of a major dam, Folsom Dam, which is 4 miles to the northeast. The western and northern portions of the project area would likely be inundated in the event Folsom Dam fails (Sacramento County, 2008b). Although Folsom Dam has a low probability of failing, Folsom Reservoir does not currently have storage or release capacity for flood occurrences at a greater interval than a 100-year recurrence level (a 200-year recurrence level is the goal of the USACE). Planning efforts are underway by the USACE to improve the flood capacity of Folsom Reservoir, and improvements have been made to security at Folsom Dam to minimize the threat of an intentional act of sabotage (Sacramento County, 2008b).

Groundwater is contaminated with VOCs, perchlorate, and NDMA and has been undergoing investigation and treatment, under the oversight of the EPA, DTSC, and RWQCB. In 1979, VOCs were found off-site in private wells, and in the American River in 1983. Perchlorate was found in off-site drinking water wells in January 1997. In 2003, NDMA was reported in groundwater north of the American River. In 2001, the contaminated groundwater was divided into different areas called OUs, and based on groundwater flow, the site was also divided into four zones to help speed up the cleanup process. Aerojet installed five groundwater extraction treatment (GET) facilities between 1983 and 1987. Groundwater treatment includes biological treatment or ion-exchange for perchlorate contamination, ultraviolet light treatment for NDMA, and air stripping and activated carbon treatment for VOCs. The cleanup approach is to control groundwater contamination from moving across the facility boundary within two OUs, Western Groundwater OU and Perimeter Groundwater OU (USEPA, 2008). Figure 6 shows the locations of the contaminated groundwater plumes and adjacent monitoring and extraction wells near the proposed project. These wells are active and construction activities should not disturb them.

The City of Folsom has been granted a conditional right to the treated groundwater from two Aerojet GET facilities for non-potable demands (Sacramento County, 2008b).

Impacts

Answers to Checklist Questions

Question a: Construction and operation of the proposed project would not violate any water quality standards or waste discharge requirements. Groundwater beneath the proposed project area is contaminated and active GET facilities are present on the Aerojet property. SMUD would work closely with Aerojet staff to ensure that monitoring wells and GET systems within the proposed project vicinity are not disturbed by SMUD's construction activities. SMUD has included Mitigation Measures Haz-1, Haz-2, and Haz-3 to minimize potential impacts associated with accidental spills or releases of hazardous materials along the subtransmission line route and substation sites, and Haz-5 to minimize impacts to the existing groundwater monitoring and treatment program.

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In addition, SMUD has included Mitigation Measure WA-1 to minimize the potential impact from erosion material entering aquatic features, such as Natomas Creek, Alder Creek, or Rebel Hill Ditch, during construction and maintenance. Therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Question b: Construction and operation of the proposed project would not involve the use of groundwater. Water necessary for construction purposes would be provided by SMUD's water trucks. The proposed project provides electricity to Aerojet and the Easton Project, a proposed new subdivision by Aerojet. Water will be supplied to the Easton Project by the City of Folsom from the City's surface water allotment (Sacramento, 2008). Therefore, no impact would occur.

Question c: Construction and operation of the proposed project would not alter the existing drainage pattern of the site or area and it would not alter the course of a stream or river in a manner that would result in substantial erosion or siltation on- or off-site. Therefore, no impact would occur.

Question d: Construction and operation of the proposed project would not substantially alter the existing drainage pattern or substantially increase the rate of surface runoff. Construction of the subtransmission lines would include placement of about 100 1.5-foot-diameter steel utility

poles with a permanent disturbance of about 7 square feet of soil per pole, and about 9 utility poles requiring 49 square feet for concrete foundations. The footprints for the two substations would be about 0.5 acre each with an additional 20-foot buffer zone surrounding the area for disturbance during construction. The new location for the Prairie City Substation would be within Aerojet's Administrative Area, and tie into the existing storm water drainage system. The new Easton Valley-Birkmond Substation construction would include new cement pads and grounding for the electrical equipment on an undeveloped rough graded portion of the Aerojet property. During construction, if discharge of excavated and stored material is possible during a rainfall event, then sediment containment devices would be installed (*e.g.,* silt fencing or straw wattles) to prevent sediment and materials from running off the site. Once constructed, storm water runoff would be directed to the storm drain system in the administrative area or surrounding open space area.

The small concrete area for the substation sites and the new utility poles would not substantially increase the rate of surface runoff that would result in flooding. The small area would not substantially alter the existing drainage pattern or increase the rate of surface runoff so that flooding would occur. Therefore, no impact would occur.

Question e: As indicated in Question d, the amount of surface runoff from the new subtransmission line and substation sites is not expected to increase substantially and exceed the capacity of the existing storm water drainage systems, or provide substantial additional sources of pollution. The new subtransmission lines would involve the placement of about 100 1.5–foot-diameter utility poles disturbing 7 square feet of soil each and about 9 poles requiring a 49 square foot concrete base, resulting in very little ground disturbance. Each substation site would be about 0.5 acre. During construction, if discharge of excavated and stored material is possible during a rainfall event, then sediment containment devices would be installed (*e.g.,* silt fencing or straw wattles) to prevent sediment and materials from running off the site. Therefore, no impact would occur.

Question f: Segment G line alignment would cross Alder Creek near its northern end, and is located near seasonal wetlands, and perennial ponds (Figure 5). Segment B would be constructed near wetlands. With implementation of mitigation measures Bio-1, Bio-2, Bio-4, Bio-5, Wa-1, Haz-1, Haz-2, and Haz-3, project construction and maintenance would not affect the water quality within Alder Creek or wetlands.

During construction, accidental spills of potentially harmful materials could wash into and pollute nearby surface waters. Materials that could potentially spill or leak or contaminate the construction area include oil, grease, gasoline, diesel, transmission fluid, and other fluids. These potential impacts, as a result of accidental spills, are discussed in Section VIII, Hazards and Hazardous Materials. Mitigation measure Haz-1 and Haz-2, which addresses the use of hazardous materials during construction, would be implemented. Therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Question g: The construction of housing is not a part of SMUD's proposed project. Therefore, no impact would occur.

Question h: The placement of the utility poles, and the substation equipment and chain-link style fences would not impede or redirect flood flows. The proposed project is not within a 100 year floodplain; except where Segment G crosses Alder Creek and would be within the Alder Creek 100-year floodplain. Segment G may be placed underground. If placed aboveground,

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about 6 to 10 1.5-foot diameter poles would be installed spaced about 300 to 500 feet apart; this small quantity of poles would not impede or significantly redirect flood flows. Therefore, this is considered a less-than-significant impact.

Question i: Project implementation would have no effect on levees or dams and it would not expose people or structures to a significant risk of loss, injury, or death involving flooding; therefore, no impact would occur.

Question j: People, structures, or land in the project vicinity would not be exposed to a seiche, tsunami, or mudflow. The project is located near Lake Natoma; however a seiche is not expected to occur in the project area because minimal potential exists for seismic activity in Sacramento County. A tsunami is not expected to occur in the project area because the project area is not near an ocean and minimal potential exists for seismic activity in Sacramento County. A mudflow is not expected to occur in the project area because steep slopes within the project area have very small watersheds minimizing the potential for landslides to occur. Therefore, no impact would occur.

Mitigation

SMUD would implement the following measures to minimize the potential impacts to water quality:

- **WA-1:** During project construction and maintenance, construction workers, construction equipment and vehicles, and construction materials and debris shall be restricted from entering Alder Creek, wetlands, and perennial ponds adjacent to the proposed subtransmission line and substation sites. Excavated and stored materials shall be stored offsite or staged in stable upland sites away from the drainage ditches, seasonal wetlands, and aquatic features. If discharge of excavated and stored material is possible during a rainfall event, then sediment containment devices shall be installed (*e.g.*, silt fencing or straw wattles).

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
X. LAND USE AND PLANNING				
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

Environmental Setting

The proposed project area is within the boundaries of Aerojet property, owned by GenCorp. Aerojet operates industrial facilities within the project area, including manufacturing and rocket testing. The surrounding area includes office buildings associated with Aerojet's 70-acre administrative area and headquarters, a church temple, natural preserve, and Aerojet undeveloped land and open space with various Aerojet industrial buildings scattered throughout the property. Aerojet leases a portion of its property to AMPAC Fine Chemicals, which engages in pharmaceutical manufacturing. Aerojet also leases office, warehouse, and light industrial space within the Aerojet campus.

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The undeveloped land is predominantly characterized by highly disturbed mine tailings, landfills, natural stands of blue oak woodlands, and the Alder Creek corridor. The undeveloped land is a former abandoned goldfield, covered with mine or dredge tailings, and has been used as buffer land between nearby communities and Aerojet's rocket test stands. Aerojet has conducted research and development, testing, and manufacturing of rocket propulsion platforms for space and defense programs (Sacramento County, 2008b). Due to these activities, in 1983, a majority of Aerojet's property was identified as a Superfund Site by the EPA, and subject to cleanup and remediation of contaminated soil and groundwater. In 2001, a carved out portion of the property, about 1,045 acres, was considered clean and free of soil contamination, and determined by the EPA to be eligible for development. A portion of the proposed project (Segments A, C, D, E, and G) is within the boundaries of the carved out area; the construction of the majority of new subtransmission line (Segments B and F) is within an area designated as a Superfund site (see Figure 3).

The proposed project is within land designated Industrial Intensive, Industrial Extensive, and Natural Preserve, as listed in the 1993 Sacramento County General Plan Land Use Map (Sacramento County, 1993a). Portions of the proposed project within the administrative area are also within the existing Urban Policy Area (UPA). According to the April 2008 Draft EIR for the Easton Project, amendments to the Sacramento County General Plan are being proposed to

modify the land use designations for portions of the proposed project area; these amendments would enlarge the General Plan UPA southerly and easterly area by 1,208.3 acres, reduce the Natural Preserve by 49.8 acres, and propose 1,091 acres for Urban Transit-Oriented Development, Commercial and Office, Medium Density Residential, and Low Density Residential uses. As part of the Easton Project, a Resource Conservation Management Plan has been prepared, which designates about 390 acres of Easton Open Space Preserve (EOSP), which includes riparian community, foothill pine-oak woodland and blue oak woodland (GenCorp Realty, 2007). The Resource Conservation Management Plan contains specific policies and goals for protecting areas of sensitive plant and wildlife habitat, and cultural resources, as well as mitigation measures to reduce impacts to these resources. SMUD's Segment G would bisect a portion of the EOSP.

All of the parcels for the proposed project are within the Aerojet Special Planning Area (SPA) and zoned SPA (Sacramento County, 1995). Areas within the Aerojet SPA are designated Administrative Area, Industrial Zone, and Industrial Border Zone (see Figure 4). Permitted uses within these zones include propulsion systems testing, routine manufacturing component testing, and office and industrial uses. According to the Draft EIR for the Easton Project, an amendment to the Aerojet SPA is being proposed to incorporate Land Use Master Plans for the two Easton Project community developments (Sacramento County, 2008b).

Impacts

Answers to Checklist Questions

Question a: Segment B would be located within a right-of-way on Aerojet undeveloped land south of Aerojet Road. Segments D and F and the relocated Prairie City Substation would be in the Aerojet Administrative Area. The new Easton Valley-Birkmond Substation (and Segment G) would be on undeveloped Aerojet property west of Prairie City Road. A carved out northern portion of Aerojet's property would be developed for commercial and residential uses as part of the proposed Easton Project; however, subtransmission lines and two new substations would not alter the uses of the property. The proposed project has been developed to accommodate the new Easton Communities and would not divide an established community; therefore, no impact would occur.

B5-925 (Cont.)

Question b: Project implementation would not conflict with the Sacramento County General Plan and Aerojet SPA. Therefore, no impact would occur.

Question c: The proposed project would adhere to the policies and relevant mitigation in the Easton Resource Conservation Management Plan, within the designated boundaries of the plan, Segment B is outside the boundaries defined for the Easton Resource Conservation Management Plan; however, SMUD has identified mitigation measures that would protect biological and cultural resources (see Sections V, Biological Resources, and Section VI, Cultural Resources); therefore, this impact is considered less than significant.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XI. MINERAL RESOURCES				
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Environmental Setting

Mineral resources in Sacramento County include natural gas, petroleum, sand, gravel, clay, gold, silver, peat, topsoil and lignite. The principal resources which are in production are aggregate (sand and gravel) and natural gas. Segment B is located on dredge tailings within Aerojet property. The dredge tailings are an available source of construction grade aggregate. The location of the proposed project is in a mineral resource zone which contains aggregate deposits, the significance of which cannot be evaluated from available data, based on Sacramento County General Plan Mineral Resource-Related General Plan Amendment (Sacramento County, 2007d). The Draft Conservation Element of the Sacramento County General Plan identifies the Aerojet property as an area for investigation of the extent and quality of aggregate resources for future extraction (Sacramento County, 2007e).

B5-925 (Cont.)

Impacts

Answers to Checklist Questions

Question a: Implementation of the proposed project would result in disturbing about 1,141 square feet of dredge tailings, a small percentage of the tailings on the property. This would be considered a less-than-significant impact on known mineral resources.

Question b: Implementation of the proposed project would have no effect on locally important mineral resource recovery sites; therefore, no impact would occur.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XII. NOISE				
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				
Construction noise?	☐	☒	☐	☐
Operation noise?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

B5-925 (Cont.)

Environmental Setting

The proposed project is within the boundaries of Aerojet property, owned by GenCorp. Aerojet operates industrial facilities within the project area, including manufacturing and rocket testing. The surrounding area includes office buildings associated with Aerojet's 70-acre administrative area and headquarters, a church temple, natural preserve, and Aerojet undeveloped land and open space with various Aerojet industrial buildings scattered throughout the property. Aerojet leases a portion of its property to AMPAC Fine Chemicals, which engages in pharmaceutical manufacturing. Aerojet also leases office, warehouse, and light industrial space within the Aerojet campus.

The undeveloped land is predominantly characterized by highly disturbed mine tailings, a landfill, natural stands of blue oak woodlands, and the Alder Creek corridor. There are no residences within the project vicinity. The nearest noise sensitive receptors would be the church, located about 0.3 mile east of Aerojet's administrative area. The existing noise level at and near the proposed subtransmission line and substations is influenced by surface

transportation noise emanating from vehicle traffic on U.S. Highway 50, Folsom Boulevard, Regional Transit light rail trains and their horn and bells, and ongoing Aerojet industrial activities, including rocket testing at Aerojet. Aerojet operational noise sources include industrial equipment such as compressors, fans, pumps, alarms, mechanical shop equipment, heating, ventilation and air conditioning systems, landscape maintenance, periodic construction and demolition, and operation of a wastewater treatment plant. Rocket testing involves noise bursts lasting up to one minute that can be heard in the nearest residential areas. Aerojet manufacturing and testing generates overpressure or explosive force (shock waves) during detonation and the explosive force or overpressure is measured as psi. The release of energy from detonation causes an instantaneous air pressure increase or shock wave that travels out radially from the origin, with the pressure at the front of the shock wave gradually decreasing (Sacramento County, 2008b). Overpressure zones have been designated on the Aerojet property.

The Draft Noise Element of the Sacramento County General Plan exempts construction activities from noise standards, provided they occur within designated hours, as explained below:

> NO-8: Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

The Sacramento County Code Noise Ordinance Section 6.68.090 states:

> The following activities shall be exempted from the provisions of this chapter:
>
> e. Noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of eight p.m. and six a.m. on weekdays and Friday commencing at eight p.m. through and including seven a.m. on Saturday; Saturdays commencing at eight p.m. through and including seven a.m. on the next following Sunday and on each Sunday after the hour of eight p.m. Provided, however, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after eight p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner.

B5-925 (Cont.)

Impacts

Answers to Checklist Questions

Question a: Construction activities shall be limited to occur from 6:00 a.m. to 8:00 p.m. Monday through Friday and from 7:00 a.m. to 8:00 p.m. on Saturday and Sunday, pursuant to Sacramento County noise policies/ordinances. To address construction-related noise, SMUD has incorporated Mitigation Measure Noi-1. The construction noise impact is considered to be less than significant with mitigation incorporated.

Audible power line noise, known as corona, occurs with high voltage lines of 230 kV or greater when the localized electric field near an energized conductor is sufficiently concentrated to produce a tiny electric discharge that can ionize air close to the conductors. Corona transforms the discharged energy into very small amounts of sound, which is characterized as a random crackling or hissing sound. Lower voltage (such as 69 kV) subtransmission lines, as proposed for this project, do not typically result in noticeable increases in ambient noise levels from corona discharge. Therefore, the operational noise impact is considered to be less than significant.

Question b: There are no state or county regulatory standards pertaining to groundborne vibration/noise. The architectural damage risk level typically suggested by most agencies is 0.2 inch per second (in/sec) for continuous vibration, which is one-tenth the maximum safe level for single events, such as blasting. Below this level, there is no risk of building damage (California Department of Transportation [Caltrans], 2002).

Construction of the proposed subtransmission line project would not involve the use of major equipment that would result in high levels of ground vibration, such as impact pile drivers. Construction equipment typically required for subtransmission line construction, including backhoes, cranes, and excavators, do not typically exceed vibration levels of 0.2 in/sec (Caltrans, 2002). Likewise, operational equipment and activities would not involve the use of any equipment anticipated to generate groundborne vibration of sufficient duration to result in an impact to nearby structures or sensitive receptors. Therefore, no impact would occur.

Question c: In addition to comparing operational noise levels with applicable noise standards (Question a), another consideration in assessing noise impacts is the degradation of the existing noise environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be. The nearest residences (apartments and mobile homes) are located about 0.3 mile north of the Aerojet administration area, and would already be affected by ambient noise from Aerojet's administrative area. There are existing subtransmission lines and substations within the administration area, which would be removed and replaced with similar lines. There would not be an increase in ambient noise levels from corona discharge. Therefore, no impact would occur.

B5-925 (Cont.)

Question d: Implementation of Mitigation Measure Noi-1 would reduce the short-term increase in ambient noise levels resulting from project construction activities; therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Question e: The proposed project is not located within 2 miles of a public airport. The proposed project site is about 5 miles east of Mather Airport in Sacramento County. The Mather Airport CLUP provides land use compatibility standards for height restrictions, noise compatibility, and safety of persons on the ground (Airport Land Use Commission, 1997). Based on the CLUP, land use compatibility of a project to the Mather Airport is determined by comparing the proposed land use against the height, noise, and safety guidelines in the CLUP and to other requirements in the Public Utilities Code Section 21656 and 21658. The proposed project is within the arrival flight path of aircraft using the airport. The overflights would range from 1,800 to 2,500 feet above the proposed project at a distance of 5 miles from the airport. At this distance, the height of the utility poles (65 to 75 feet) for the new subtransmission lines would not penetrate the height notification surfaces and constitute a hazard to air navigation. Therefore, no impact would occur.

Question f: The proposed project is not located within the vicinity of a private airstrip. The proposed new subtransmission lines merely provide electricity to support the Easton Project and Aerojet industrial activities. SMUD's project would not be the contributing factor for exposing people to aircraft noise. Therefore, no impact would occur.

Mitigation

SMUD would implement the following measure Noi-1:

- Noi-1:
  - a) Construction activities shall be limited to occur from 6:00 a.m. to 8:00 p.m. Monday through Friday, and from 7:00 a.m. to 8:00 p.m. on Saturday and Sunday, pursuant to Sacramento County noise policies/ordinances.
  - b) Construction activities shall be prohibited on federal- and state-recognized holidays.
  - c) Construction equipment powered by an internal combustion engine shall be equipped with suitable exhaust and intake silencers, in accordance with manufacturers' specifications, and shall be maintained in good working order.
  - d) Stationary construction equipment (*e.g.*, portable power generators and compressors) shall be located at the furthest distance possible from nearby residential units.

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIII. POPULATION AND HOUSING				
Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Environmental Setting

The 2005 population of Sacramento County was estimated to be 1,337,942 (U. S. Census Bureau, 2005). The proposed project would support the two new Easton Park communities, Easton Place and Glenborough at Easton, and continue to support Aerojet's electrical needs. The Easton Park communities would include an additional 4,883 dwelling units, and 4 million square feet of office and commercial uses.

Impacts

Answers to Checklist Questions

Question a: SMUD must serve new developments approved by the County of Sacramento and other agencies. SMUD does not designate where and what new development may occur. The presence of the proposed substations and subtransmission lines would not induce population growth. The proposed project would provide electric service to the new Easton Place communities and continue to provide electric service to Aerojet. Therefore, no impact would occur.

Question b: The proposed project would be constructed within a right-of-way on Aerojet property. Development of the proposed project would not displace any housing, so the construction of replacement housing would not be necessary; therefore, no impact would occur.

Question c: The proposed project would be constructed within a right-of-way on Aerojet property. Development of the proposed project would not displace any people, so the construction of replacement housing would not be necessary; therefore, no impact would occur.

Mitigation

No significant impacts have been identified, so no mitigation is required.

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XIV. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Environmental Setting

B5-925 (Cont.)

The Sacramento Metropolitan Fire District provides fire protection services in Sacramento County. The closest fire station is located at Aerojet and is the Aerojet Fire Service at Highway 50 and Hazel Avenue, which provides private fire protection to Aerojet. The closest public fire stations are Stations 63 and 33. Station 63 is located at 12395 Folsom Boulevard in Rancho Cordova, west of the project area. Station 33 is located at 5148 Main Avenue in Orangevale, northwest of the project area. Both stations serve as response teams and provide medical service. The City of Folsom Fire Department acts as a mutual aid responder for the proposed project area; the closest station is Station 37, located at 70 Clarksville Road, northeast of the proposed project.

The Sacramento County Sheriff's Department provides law enforcement services for unincorporated Sacramento County. Folsom uses a local Police Department and Rancho Cordova uses the Sacramento County Sheriff's Department. The closest police station to the proposed project is the Rockingham Station, East Division, which is located at 10361 Rockingham Drive at Mather Field Road, 9 miles southwest of the project area (Sacramento County, 2008b).

The proposed Easton Project is within the Folsom Cordova Unified School District. Based on attendance boundaries, the elementary school for this area would be Mather Heights Elementary School, located at 4370 School Street in Mather, California, 11 miles southwest of the project area. Mitchell Middle School, at 2100 Zinfandel Drive, and Cordova High School,

located at 2239 Chase Drive, both in Rancho Cordova, California would serve the proposed project area.

Lake Natomas, the American River Parkway, and Folsom Lake State Recreation Area provide recreation facilities for camping, hiking, boating, and biking. The Prairie City State Vehicular Recreation Area, located on White Rock Road, offers off-highway terrain and trails for motorcycles, and all terrain vehicles. The Cordova Recreation and Park District and the City of Folsom manage many community and neighborhood parks, and golf courses.

Impacts

Answers to Checklist Questions

Question a: SMUD would construct, operate, and maintain the proposed subtransmission line and substations. Construction and operation of the additional lines to the area would have no effect on other public services at Aerojet, in the new proposed Easton Park communities, or the adjacent cities. SMUD would be providing electricity to support the new and existing substations on the Aerojet property and would not require new governmental facilities for the surrounding housing area or interfere with the existing services. Therefore, no impact would occur.

Mitigation

No significant impacts have been identified, so no mitigation is required.

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XV. RECREATION				
Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Environmental Setting

Regional parks in unincorporated Sacramento County are under the jurisdiction of the Sacramento County Regional Parks Department. Lake Natoma, the American River Parkway, and Folsom Lake State Recreation Area also provide recreation facilities for camping, hiking, boating, and cycling. The Prairie City State Vehicular Recreation Area, located on White Rock Road, offers off-highway terrain and trails for motorcycles, and all terrain vehicles. The Cordova Recreation and Park District and the City of Folsom manage many community and neighborhood parks, and golf courses nearby.

Impacts

Answers to Checklist Questions

Questions a and b: SMUD facilities would not interfere with existing or proposed recreational facilities in the area. No increased use of existing neighborhood and regional parks or other recreational facilities would occur as a result of constructing and operating the proposed subtransmission line and substations. In addition, the proposed project does not include recreational facilities, nor does it require the construction or expansion of recreational facilities. Therefore, no impact would occur.

Mitigation

No significant impacts have been identified, so no mitigation is required.

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	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC				
Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (*i.e.*, result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☒	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (*e.g.*, farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Result in inadequate parking capacity?	☐	☐	☐	☒
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (*e.g.*, bus turnouts, bicycle racks)?	☐	☐	☐	☒

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Environmental Setting

Access to the subtransmission line alignment and the new substations would be from Folsom Boulevard, Prairie City Road, and Aerojet roads within the administration area and the industrial zone. In a few locations within the industrial zone, new segments of roads will need to be constructed to create a continuous access road for Segment B line installation. Aerojet and GenCorp would be responsible for grading and construction of the new road segments along Segment B.

Caltrans has established level-of-service (LOS) performance standards (LOS A through F). LOS A indicates free-flowing traffic with no delays. Existing average daily traffic volume on Prairie City Road and Folsom Boulevard near Aerojet Road is LOS A to C (Sacramento County, 2008b). Traffic improvements are planned for the area in conjunction with the Easton Project (Sacramento County, 2008b).

Impacts

Answers to Checklist Questions

Question a: Construction of the proposed 69-kV subtransmission power line would take place in several phases. Phase 1 would take about 2 months to complete. The construction crew would typically consist of 10 people. Equipment and materials would be delivered during the project construction period. For Phase 1, removal of Segment A line would be accessed from the adjacent road - Albany Avenue/Aerojet Road. The access route for construction of Segment B would be along existing Aerojet dirt roads throughout the industrial portion of the property. Later phases of the project would utilize the existing roads within the administrative area and Aerojet Road.

Vehicle trips associated with project construction would represent a minor and temporary increase in traffic volumes on the Aerojet property. After completion of the subtransmission line, SMUD estimates about one vehicle per month or less would visit the subtransmission line for repair or maintenance. Access to the poles and line will be from the same road used for construction. The project would not cause a substantial increase in traffic in relation to the existing traffic load or capacity of the street system. SMUD has included Mitigation Measure Trans-1 to minimize traffic impacts during SMUD's construction and maintenance; therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Question b: As indicated for Question a, traffic and temporary congestion generated by project construction and operation would be minor. The LOS for regional access roads, Folsom Boulevard, Prairie City Road, and Aerojet Road would not be affected by the minor increase in traffic LOS generated by arrival and departure of SMUD construction workers and material delivery; therefore, no impact would occur.

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Question c: The proposed project site is about 5 miles east of Mather Airport in Sacramento County. The proposed project is within the arrival flight path of aircraft using the airport. However, the overflights would range from 1,800 to 2,500 feet above the proposed project at a distance of 5 miles from the airport. At this distance, the height of the utility poles (65 to 75 feet) for the new subtransmission lines would not penetrate the height notification surfaces and constitute a hazard to air navigation. The proposed project would not result in a change to air traffic patterns. Therefore, no impact would occur.

Question d: Neither construction nor operation of the proposed project would have a significant impact on roadway design hazards or incompatible uses. During construction, Aerojet vehicles may encounter temporary inconveniences during construction in using the existing roads in the industrial zone due to their narrow and unpaved condition and the hilly terrain. SMUD has included Mitigation Measure Trans-1 to minimize traffic impacts during construction; therefore, this is considered to be a less-than-significant impact with mitigation incorporated.

Question e: Traffic associated with worker vehicle trips or material deliveries for project construction or operation would not significantly affect existing Aerojet traffic circulation patterns, and would have no impact on the residences in the vicinity north of Folsom Boulevard. Therefore, construction traffic would not affect emergency access to any of these residences or the Aerojet administrative area and industrial zone; therefore, no impact would occur.

Question f: Project implementation would not change the availability of existing parking in the area; therefore, no impact would occur.

Question g: The proposed project does not include elements that would conflict with adopted policies, plans, or programs supporting alternative transportation; therefore, no impact would occur.

Mitigation

SMUD would implement the following measure:

- Trans-1:
  - a) Use appropriate signage, coning, and flag persons to alert the public and Aerojet workers regarding ongoing construction.
  - b) Coordinate with Aerojet regarding the construction and maintenance schedule and access to the existing roads, to minimize interference with Aerojet operations and normal traffic.

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	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

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Environmental Setting

In general, the Sacramento Regional County Sanitation District provides wastewater collection and treatment services for its contributing agencies, including County Sanitation District 1, which services the unincorporated areas of Sacramento County. The Aerojet property along Folsom Boulevard between Alabama Avenue and Hazel Avenue, which is the administrative area, is within the service area and connected to sewers. The remainder of the Aerojet property is served by private septic tanks.

The City of Folsom provides potable water from the Folsom Water Treatment Plant to Aerojet property. The City also provides non-potable water to Aerojet from the Willow Hill Reservoir. Aerojet conducts ongoing groundwater treatment as part of the groundwater contamination cleanup program (Sacramento, 2008).

Sacramento Regional Solid Waste Authority provides a comprehensive waste management and recycling system for residents and businesses in the unincorporated areas of Sacramento County.

Storm water runoff in Aerojet's administrative area is conveyed through a series of drain inlets, storm drains, road culverts, and unlined ditches to Buffalo Creek.

Impacts

Answers to Checklist Questions

Questions a and b: Implementation (construction and operation) of the proposed subtransmission line would have no effect on wastewater or new wastewater treatment facilities. Little demand would be placed on non-SMUD utility and service systems during construction of the proposed subtransmission line and no demand on non-SMUD utility and service systems during project operation. No wastewater treatment requirements would be exceeded as a result of the project; therefore, no impact would occur.

Question c: New or expanded storm water drainage facilities would not be required as a result of construction of the subtransmission lines. The relocation of the Prairie City substation would be incorporated into the existing storm drain system in Aerojet's administrative area. The new Easton Valley-Birkmond station would be constructed within Aerojet's undeveloped area within the disturbed mine tailings and would not require new storm water drainage systems due to high permeability. Therefore, no impact would occur.

Question d: Water would only be required during construction of the substations for dust suppression purposes, or for mixing cement for constructing a utility pole base, or for filling the new utility pole holes. It is expected that water would be provided by water trucks. The amount of water used during the construction periods would be minimal. Therefore, no impact would occur.

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Question e: As indicated for Question b, no demand would be placed on non-SMUD utility and service systems as a result of implementing the project. Wastewater treatment capacity would not be affected and new or expanded water or wastewater treatment facilities would not be required as a result of project implementation. Therefore, no impact would occur.

Question f: Construction debris or excess materials would be properly disposed of at a licensed landfill. The 58 existing 65-feet poles along Segments A (and lesser amounts for later phases of pole removal) would be removed and disposed of at a Class II landfill. This would result in about 246 cubic yards (yd^3) of wood waste to dispose; assuming 58 poles each with a 65-foot height and a 1.5-foot diameter would be disposed.

In addition, all of the approximate 58 new poles would require an approximately 8-foot by 3-foot hole and would generate a total of approximately 121 yd^3 of soil, which would be graded into the surrounding area for each pole. However, due to the presence of potentially contaminated soil and groundwater in the proposed project area vicinity, Aerojet would direct SMUD on the appropriate location for staging or disposal of any soil. According to the EIR for the Easton Project, Kiefer Landfill would provide solid waste disposal service for the project area during construction (Sacramento County, 2008b).

SMUD's disposal activity would have a minimal impact on the capacity of existing landfills and would not require the development of new or expanded landfills. Therefore, no impact would occur.

Question g: Implementation (construction and operation) of the proposed project would not affect area landfills' ability to comply with federal, state, and local statutes and regulations pertaining to solid waste. Therefore, no impact would occur.

Mitigation

No significant impacts have been identified, so no mitigation is required.

B5-925 (Cont.)

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE:				
(a) A lead agency shall find that a project may have a significant effect on the environment and thereby require an EIR to be prepared for the project where there is substantial evidence, in light of the whole record, that any of the following conditions may occur:				
1) The project has the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate plant or animal community; substantially reduce the number or restrict the range of a rare or endangered species; or eliminate important examples of the major periods of California history or prehistory.	☐	☒	☐	☐
2) The project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.	☐	☒	☐	☐
3) The project has possible environmental effects that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.	☐	☐	☒	☐
4) The environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.	☐	☐	☐	☒
(b)(1) Where, prior to the commencement of preliminary review of an environmental document, a project proponent agrees to mitigation measures or project modifications that would avoid any significant effect on the environment specified by subsection (a) or would mitigate the significant effect to a point where clearly no significant effect on the environment would occur, a lead agency need not prepare an environmental impact report solely because, without, mitigation, the environmental effects at issue would have been significant.				
(b)(2) Furthermore, where a proposed project has the potential to substantially reduce the number or restrict the range of an endangered, rare, or threatened species, the lead agency need not				

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	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
prepare an EIR solely because of such an effect, if:				
(b)(2)(A) The project proponent is bound to implement mitigation requirements relating to such species and habitat pursuant to an approved habitat conservation plan or natural community conservation plan;				
(b)(2)(B) The state or federal agency approved the habitat conservation plan or natural community conservation plan in reliance on an environmental impact report or environmental impact statement; and				
(b)(2)(C)1. Such requirements avoid any net loss of habitat and net reduction in number of the affected species, or				
(b)(2)(C)2. Such requirements preserve, restore, or enhance sufficient habitat to mitigate the reduction in habitat and number of the affected species to below a level of significance.				
(c) Following the decision to prepare an EIR, if a lead agency determines that any of the conditions specified by subsection (a) will occur, such a determination shall apply to:				
(c)(1) The identification of effects to be analyzed in depth in the environmental impact report or the functional equivalent thereof,				
(c)(2) The requirement to make detailed findings on the feasibility of alternatives or mitigation measures to substantially lessen or avoid the significant effects on the environment,				
(c)(3) When found to be feasible, the making of changes in the project to substantially lessen or avoid the significant effects on the environment, and				
(c)(4) Where necessary, the requirement to adopt a statement of overriding considerations.				

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Discussion

The Environmental Checklist was completed to assess the potential significance of environmental impacts that could result from the proposed project. The following provides answers to the questions listed in the mandatory findings of significance section:

1. As noted in the checklist for Biological Resources and Cultural Resources, as well as Appendix B, the project could have potential impacts to sensitive species and resources, but SMUD has designed the project to include mitigation measures to reduce impacts to the sensitive resources to a less-than-significant level.

Due to SMUD's design flexibility in regards to placement of utility poles, SMUD would not place poles within aquatic features, fill wetlands, affect creeks and streams, or impact water quality in the project area. SMUD has developed a technical assistance letter and a technical assistance amendment letter, referred to as the No Take Letter through collaboration with the USFWS. The No Take Letter is an Endangered Species Act compliance tool, which identifies avoidance and minimization measures for construction and operation and maintenance activities to avoid take of federally listed species and adverse modification of critical habitat. SMUD would follow the avoidance measures included in the No Take Letter and the mitigation measures included in this document to avoid, minimize, or compensate for adverse impacts. Therefore, permits/certifications for these activities would not be required. Although as noted in the checklist for Hydrology and Water Quality, a mitigation measure has been included to restrict excavated and stored material from entering aquatic features in the project area and to reduce impacts to the sensitive resources to a less-than-significant level.

2. Implementation of the project would not result in achieving short-term environmental goals to the disadvantage of long-term environmental goals. The mitigation measures incorporated into the project for impacts to biological resources, cultural resources, geology, hazards and hazardous materials, hydrology and water quality would mitigate for both short- and long-term environmental impacts. All other impacts related to air, noise, and transportation/traffic would have mitigation measures for short-term environmental impacts and would be less than significant or have no impact to long-term environmental goals. Impacts to GHG, land use and population and housing are less than significant for short- and long-term goals.

   All of the potential short- and long-term environmental impacts within the project vicinity identified in this IS have been mitigated to a less-than-significant level. None of the impacts would interfere with SMUD's short- and long-term goals of providing electricity to the Aerojet and Easton Project substations. Therefore, this impact is considered less than significant with mitigation incorporated.

3. The proposed project would provide dedicated, reliable electrical service to Aerojet and the two new proposed Easton Project communities. Based on the analysis presented in this IS, the proposed project would not contribute incrementally to considerable environmental changes when considered in combination with other projects in the area. This is because: (1) the new subtransmission lines for all phases would encompass about 6.6 miles, permanently disturbing only 7 to 49 square feet per each utility pole, and the new Easton-Birkmond substation would encompass about 0.5 acre of permanent soil disturbance and the Prairie City substation would be a re-located within the administration area; (2) the proposed project would not interfere with or prevent the existing or future uses of the Aerojet land or habitat; (3) potential environmental effects of the proposed project were determined to be less than significant; and (4) all identified potentially significant impacts to air, biological resources, cultural resources, hazards and hazardous materials, geology and soils, hydrology and water quality, noise, and transportation and traffic would be mitigated to a less-than-significant level.

   All of the potential impacts within the project vicinity identified in this IS would be mitigated to a less-than-significant level. None of the impacts highlighted in the analyses of

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individual environmental factors are deemed to be cumulative or considerable for the project vicinity. Therefore, this impact is considered less than significant.

4. As indicated throughout this IS, substantial adverse effects on human beings are not expected to occur as a result of project construction or operation. The proposed project's impacts on the environment included those identified as having "no impact," "less-than-significant impact," and "less-than-significant impacts with mitigation incorporated." SMUD has included mitigation measures in its project description for all identified impacts. As a result, preparation of an EIR is not required.

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CHAPTER 4

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B5-925 (Cont.)

CHAPTER 5

References

Aerojet-General Corporation (Aerojet). 1993. Aerojet Site Stage 1 Report, Zone 1, Volume 1. Chapter 4. August.

Aerojet. 2000. Final Site Assessment Report for the Candidate Carve-Out Lands. Volume 1: Text, Figures, and Tables. July.

Aerojet. 2007a. Environmental, Health and Safety. Contractors Environmental, Health and Safety Standard. Document ID ES-S02-0002 Rev 6. July 2.

Aerojet. 2007b. Environmental, Health and Safety. Excavations and Trenches. Document ID ES-P02-0607 Rev 2. July 9.

Aerojet. 2007c. Final Supplemental Remedial Investigation/Feasibility Study Field Sampling Plan for Island Operable Unit (Operable Unit 7), Aerojet Superfund Site. Aerojet Document Control Number SR10122639. July 20.

Aerojet. 2008a. Transmittal Letter from Cindy Caulk, Aerojet Program Coordinator, to U.S. EPA., California Regional Water Quality Control Board, and Department of Toxic Substances Control, Plume Maps, January 2004 through December 2007. March 1.

Aerojet. 2008b. Draft Supplemental Remedial Investigation/Feasibility Study Field Sampling Plan for Eastern Operable Unit (Operable Unit 8), Aerojet Superfund Site. Aerojet Document Control Number SR10123181. February 28.

Airport Land Use Commission. 1997. Airport Land Use Commission for Sacramento, Sutter, Yolo, and Yuba Counties. Mather Airport Comprehensive Land Use Plan. May.

Bowcutt, F. 1982. Botanical Inventory and Vegetation Analysis of the Aerojet-General Sacramento Facility. Prepared for Aerojet, spring 1982.

California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. April. Available online: http://www.dfg.ca.gov/wildlife/species/docs/boconsortium.pdf. Accessed August, 2008.

California Air Pollution Control Officers Association (CAPCOA). 2008. CEQA & Climate Change. Sacramento, CA. January. Available at: http://www.capcoa.org/. Accessed May 4, 2009.

California Air Resources Board (CARB). 2006. CARB 2006 Area Designations. Available online: http://www.arb.ca.gov/desig/adm/adm.htm. Accessed August 2008.

CARB. 2007. CARB 2007 Ambient Air Quality Standards. Available online: http://www.arb.ca.gov/aqs/aaqs2.pdf. Accessed August 2008.

B5-925 (Cont.)

CARB. 2008. California Air Resources Board. "Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act." October 24. Available at: : http://www.arb.ca.gov/cc/localgov/ceqa/ceqa.htm. Accessed May 4, 2009.

California Department of Conservation. 2004. Division of Land Resource Protection. Sacramento Region Important Farmland. Available online: ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/urban_change/sacregion_urban_change1984_2004.pdf. Accessed October 2007.

California Department of Conservation. 2006. Division of Land Resource Protection. Land Enrolled in Williamson Act and Farmland Security Zone Contracts as of 1-1-2006. Accessed online: http://www.conservation.ca.gov/dlrp/lca/Pages/Index.aspx. Accessed October 2007.

California Department of Fish and Game. 2009. California Natural Diversity Database, Rare Find Version 3.0.5. Last updated December 30, 2008. Available online: http://www.dfg.ca.gov/bdb/html/cnddb.html. Accessed January 26, 2009.

California Department of Transportation (Caltrans). 2002. Division of Environmental Analysis, Office of Noise, Air Quality, and Hazardous Waste Management. Transportation Related Earthborne Vibrations (Caltrans Experiences). Technical Advisory, Vibration. TAV-02-01-R9601. February 20.

California Exotic Pest Plant Control (CalEPPC). 1999. CalEPPC List: Exotic Pest Plants of Greatest Ecological Concern in California. Updated regularly. Available online: http://www.cal-ipc.org/ip/inventory/pdf/Inventory1999.pdf. Accessed August 2008.

California Native Plant Society Electronic Inventory. 2008. The PLANTS Database. National Plant Data Center, Baton Rouge, LA 70874-4490 US. Available online: http://plants.usda.gov. Accessed August 2008.

California Regional Water Quality Control Board (RWQCB). 2000. Letter from RWQCB, Central Valley Region, to Cindy Caulk, Program Coordinator, Aerojet-General Corporation. Draft Final Site Assessment Report for the Candidate Carve-Out Lands, Aerojet-General Corporation. May 22.

Cyberregs. 2009. California State Proposed Regulations. 2007 Documents. Number Title 17 – Greenhouse Gas Emissions. Title 17 California Air Resources Board. Notice of Public Hearing. Re: AB 32; Stets. 2006, chapter 488. Global Warming Solutions Act. Available at http://cyberregs.com. Accessed May 4, 2009.

Department of Defense (DOD) Contractor's Safety Manual for Ammunition and Explosives. 2008. DOD 4145.26-M. March 13.

Department of Toxic Substances Control (DTSC). 2000. Letter sent from DTSC to Cindy Caulk, Program Coordinator, Aerojet Environmental Operations. Draft-Final Site Assessment Report for the Candidate Carve-Out Lands. June 14.

B5-925 (Cont.)

ECORP Consulting, Inc. (ECORP). 2007a. Operations and Management Plan for the Easton Open Space Preserve, Sacramento County, California. Prepared for GenCorp Realty Investments. October 10.

ECORP. 2007b. Preliminary Invasive Plant Management Plan for the Easton Open Space Preserve, Sacramento County, California. Prepared for GenCorp Realty Investments. October 10.

ECORP. 2007c. Cultural Resources Inventory. Glenborough at Easton. Revised November.

ECORP. 2008. Cultural Resources Survey 69-kV Alignment Addendum, Sacramento County, California. December.

ECORP. 2009a. Wetland Delineation for 69-kV Line, Sacramento County, California. January 22.

ECORP. 2009b. Addendum to Report, Buidlings 46043 and 46104, Evaluation of Structures Associated with the Aerojet Complex, Easton, California. March.

Environmental Statistics Group. 2003. Montana State University, Environmental Statistics Group Graphical Locator. Available online: http://www.esg.montana.edu/gl/index.html. Accessed November 05, 2007.

GenCorp Realty. 2007. Easton Resource Conservation Management Plan. October 26.

Hart, Earl W. and William A. Bryant. 1999. Special Publication 42 (Fault-Rupture Zones in

California). Table 4, 1997 edition, updated May 1999. Available online: http://www.consrv.ca.gov/CGS/rghm/ap/affected.htm. Accessed November 19, 2007.

Office of the California Attorney General. 2008. The California Environmental Quality Act - Addressing Global Warming Impacts at the Local Agency Level. Available at: http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf. Updated: 12/09/08. Accessed April 30, 2009.

Office of the Governor. 2009. Executive Order S-1-07, the Low Carbon Fuel Standard (LCFS). Signed January 18, 2007. Available at: http://gov.ca.gov/executive-order/5172/. Accessed May 4, 2009.

Office of Planning and Research (OPR). 2009. State Of California - Governor's Office of Planning And Research. Cover letter "Transmittal of the Governor's Office of Planning and Research's Proposed S897 CEQA Guidelines Amendments to the Natural Resources Agency," from Cynthia Bryant to Mike Chrisman, California Secretary for Natural Resources. April 13. Sacramento, CA. Letter available at http://www.opr.ca.gov/ceqa/pdfs/Transmittal_%20Letter.pdf
Proposed guidelines available at
http://www.opr.ca.gov/ceqa/pdfs/PA_CEQA_Guidelines.pdf. Accessed May 4, 2009.

B5-925 (Cont.)

Sacramento County. 1993a. Sacramento County Planning Department, Sacramento County General Plan. Available online: http://www.planning.saccounty.net/general-plan/index.html. Accessed August 2007.

Sacramento County. 1993b. Sacramento County Planning Department, Sacramento County General Plan. Open Space Element. Available online: http://www.planning.saccounty.net/general-plan/docs/pdf/GP-Maps/Open-Space-Diagram.pdfhttp://www.planning.saccounty.net/general-plan/index.html. Accessed August 2007.

Sacramento County. 1995. Zoning Code of Sacramento County. Chapter 8 Article 3. Aerojet Special Planning Area. May 8.

Sacramento County. 2005a. Draft South Sacramento Habitat Conservation Plan, County of Sacramento Planning Department. Available online: http://www.planning.saccounty.net/habitat-conservation/toc.html. Accessed August 2008.

Sacramento County. 2005. Department of Environmental Review and Assessment (DERA). Notice of Preparation of Draft Environmental Impact Report for Easton Project. Control No. 04-GPB-ZOB-SDP-AHS-0035. June 24.

Sacramento County. 2007a. Sacramento County Code. Title 19. Trees. Chapter 19.12 Tree Preservation and Protection. Available online: http://municipalcodes.lexisnexis.com/codes/sacramento_co/

Sacramento County. 2007b. Sacramento County Code. Title 16. Section 1. Chapter 16.130. Swainson's Hawk Impact Mitigation Program. Available online: http://www.planning.saccounty.net/swainsons-hawk-ordinance/index.html

Sacramento County. 2007c. Initial Study/Mitigated Negative Declaration Aerojet Landfill Closure Modification Plan. Control No. 04-PPE-0135. June 29.

Sacramento County. 2007d. County of Sacramento General Plan, Mineral Resource-Related General Plan Amendment. Available online: http://www.planning.saccounty.net/surface-mining/mineral-resource-amendments/index.html. Accessed November 6, 2007.

Sacramento County. 2007e. County of Sacramento General Plan, Draft Conservation Element. May 30.

Sacramento County. 2008a. Notice of Determination, Easton Project, Easton Place and Glenbourough at Easton General Plan Amendment, State Clearinghouse Number SCH2005062128. December 18.

Sacramento County. 2008b. Easton Project, Easton Place and Glenbourough at Easton, Draft Environmental Impact Report. Volumes 1 through V. State Clearinghouse Number SCH2005062128. Prepared by ECORP Consulting, Inc. April.

Sacramento Metropolitan Air Quality Management District (SMAQMD). 2004. CEQA Guide to Air Quality Assessment. Available online: http://www.airquality.org/ceqa/2004 AQMDCEQAGuidelines.pdf. Accessed August, 2008.

B5-925 (Cont.)

Sacramento Municipal Utility District. 2007. Sacramento Municipal Utility District Avian Protection Plan. Prepared by Estep Environmental Consulting. December.

SMAQMD. 2007. CEQA and Land Use Mitigation. Available online: http://www.airquality.org/ceqa/index.shtml#Thresholds. Accessed August, 2008.

Thorp, R.W. and J.M. Leong. 1995. Native Bee Pollinators of Vernal Pool Plants. Freemontia. 23(2): 3-7.

U.S. Army Corps of Engineers (USACE). 2006. USACE Sacramento District. Public Notice Number 200400515. Permit application to construct the Easton Project which would impact 3.82 waters of the U.S. August 17.

U.S. Census Bureau. 2005. 2005 American Community Survey. Data Profile Highlights. Sacramento County, California. Available online: http://factfinder.census.gov. Accessed November 2007.

U.S. Environmnetal Protection Agency (USEPA). 2000. Letter from USEPA Region IX to Cindy Caulk, Program Coordinator, Aerojet General Corporation. Draft-Final Site Assessment Report for Candidate Carve-Out Lands, Volumes 1-III. Excerpts sent from Aerojet to Burleson Consulting Inc. July 3, 2008. May 3.

USEPA. 2008. Region 9: Superfund. Aerojet General Corporation. http://Yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/viewby EPAID. Accessed June 6, 2008.

U.S. Fish and Wildlife Service (USFWS). 2007. Letter from Peter A. Cross, Deputy Assistant Field Supervisor to Ron Scott, Sacramento Municipal Utility District. Request for Technical Assistance for Sacramento Municipal Utility District's Routine Operation and Maintenance Project, Sacramento and Placer Counties, California with Amendment. June 19 and October 10.

USEPA. 2009. U.S. Environmental Protection Agency. U.S. Greenhouse Gas Inventory Report, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007. EPA 430-R-09-004. Washington, DC. April. Available at: http://www.epa.gov/climatechange/emissions/downloads09/InventoryUSGhG1990-2007.pdf. Accessed May 4, 2009.

USFWS. 2008. Sacramento office, Species list Database. Available online: http://www.fws.gov/sacramento/es/default.htm. Accessed October 14, 2008.

URBEMIS2007 for Windows Version 9.2. 2007. Emissions Estimation for Land Use Development Projects. Prepared for South Coast Air Quality Management District. November.

Wymer, N. 1989. Vernal Pool Survey for Rare, Endangered, Threatened, or Candidate Plant Species. Prepared for Aerojet by Nancy Wymer, Botanical Consultant, Citrus Heights, CA.

Zeiner, D. C., et al. 1990. California's Wildlife. Volume III: Mammals. State of California. The Resources Agency. Sacramento, California.

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APPENDIX A

Mitigation Monitoring Plan

Mitigation Monitoring Plan

Easton 69-kV Subtransmission Line Relocation and Substation Project Initial Study and Mitigated Negative Declaration

B5-925 (Cont.)

Prepared for

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May 2009

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Mitigation Monitoring Plan

Introduction

The Sacramento Municipal Utility District (SMUD) included a series of mitigation measures in its project description for the Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project (also referred to as the "proposed project") to minimize potential environmental impacts during project construction and operation. Those measures are incorporated into this Mitigation Monitoring Plan and are listed in Table A-1.

This mitigation monitoring plan will be used by SMUD to ensure that each mitigation measure, adopted as a condition of project approval, is implemented. This monitoring plan meets the requirements of the California Environmental Quality Act, Guidelines Section 14074(d), as amended, which mandates preparation of monitoring provisions for the implementation of mitigation assigned as part of project approval or adoption.

Mitigation Implementation and Monitoring

SMUD will be responsible for monitoring the implementation of mitigation measures designed to minimize impacts associated with the proposed project. While SMUD has ultimate responsibility for ensuring implementation, others have been assigned the responsibility of actually implementing the mitigation. SMUD will retain the primary responsibility for ensuring that the proposed project meets the requirements of this mitigation plan and other permit conditions imposed by participating regulatory agencies.

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SMUD will designate specific personnel who will be responsible for monitoring implementation of the mitigation that will occur during project construction. The designated personnel will be responsible for submitting all documentation and reports to SMUD on a timely basis and in a manner necessary for demonstrating compliance with mitigation requirements. SMUD will ensure that the designated personnel have authority to require implementation of mitigation requirements and will be capable of terminating project construction activities found to be inconsistent with mitigation objectives or project approval conditions.

SMUD will be responsible for demonstrating compliance with other agency permit conditions to the appropriate regulatory agency. SMUD will also be responsible for ensuring that its construction personnel understand their responsibilities for adhering to the performance requirements of the mitigation plan and other contractual requirements related to the implementation of mitigation as part of project construction.

In addition to the prescribed mitigation measures, Table A-1 lists each identified potential impact, the corresponding monitoring and reporting requirement, and the party responsible for ensuring implementation of the mitigation measure and monitoring effort.

Mitigation Enforcement

SMUD will be responsible for enforcing all mitigation measures. If alternative measures are identified that would be equally effective in mitigating the identified impacts, implementation of these alternative measures will not occur until agreed upon by SMUD.

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Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Air Quality								
Fugitive dust during construction	Air-1a	Apply water or suitable soil stabilizers to inactive or other areas that can give rise to airborne dust.		Throughout the project construction period		Throughout the project construction period	SMUD	SMUD
	Air-1b	Water exposed surfaces up to three times daily to prevent fugitive dust from migrating beyond the proposed project's boundaries.						
	Air-1c	Cover all inactive stockpiles with tarps or water to prevent airborne dust.						
	Air-1d	Water all haul roads, as needed, to prevent airborne dust.						
	Air-1e	Limit speeds on any unpaved roads to less than 15 miles per hour.						
	Air-1f	Replace ground cover in disturbed areas as soon as construction in these areas is completed.						
	Air-1g	Maintain 2 feet of freeboard space on haul trucks.						
	Air-1h	Water soil piles three times daily.						
	Air-1i	Minimize the amount of disturbed area, material actively worked, and material stockpiled.						
	Air-1j	Sweep or wash paved streets adjacent to the proposed project construction site at least once a day to remove accumulated dust.						
Biological Resources								
Construction crew awareness training	Bio-1	Before construction activities, all on-site construction personnel will receive instruction regarding the presence of listed species and the importance of avoiding impacts to these species and their habitat. Crews will be informed to stop work if any special-status species are encountered and contact the project manager.	Prior to the start of construction activities	Throughout the project construction period	Prior to the start of construction activities		SMUD and biologist	SMUD and biologist
Minimize impact area	Bio-2	A work zone will be identified on construction drawings, and/or will be adequately flagged or fenced in the field to limit construction equipment and personnel to the minimum area necessary to perform the proposed work.	Prior to the start of construction activities	Throughout the project construction period	Prior to the start of construction activities		SMUD and biologist	SMUD and biologist

B5-925 (Cont.)

Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Biological Resources (Continued)								
Prevent spread of noxious weeds	Bio-3	To prevent the introduction or spread of noxious weeds, all equipment shall be washed before entering the Easton Open Space Preserve for construction or maintenance. .		Throughout the project construction period		Throughout the project construction period	SMUD	SMUD
Effect on the drainage ditch, wetlands, and associated special-status species	Bio-4	For special-status vernal pool shrimp species, to avoid impacts to seasonal wetland habitats, SMUD will follow the avoidance measures as stated in the No Take Letter. If a pole will be installed within 250 feet of wetland habitat, but not within wetland habitat, SMUD will implement the avoidance measures listed below. No take would occur, and therefore no consultation with USFWS would be required. • Where present, existing paved and unpaved roads will be used to access the work area. • All work will be performed in the dry season (approximately April 15 through October 15). Should soil moisture be encountered, rubber matting, or similar equivalent, will be used to minimize disturbance. • A qualified biologist (biological monitor) will be present onsite and will inspect any construction-related activities to ensure that no unnecessary ground disturbance or take of species occurs. The biologist will have the authority to stop all activities that may result in such take or destruction until appropriate corrective measures have been completed. The biologist also will be required to report immediately any unauthorized take to USFWS. • In areas that have not been previously disturbed, heavy equipment use will be minimized. • For pole installations, the area between the pole and the pole hole will be backfilled with concrete. The upper portion will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil. Areas of disturbed soil will be reseeded with a native seed mix • No pesticides or herbicides will be used within 250 feet of vernal pools		Throughout the project construction period		Throughout the project construction period	SMUD and biologist	SMUD and biologist

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Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Biological Resources (Continued)								
Effect on the drainage ditch, wetlands, and associated special-status species	Bio-5	For federally-listed vernal pool associated plants, SMUD will follow the avoidance measures as stated in the No Take Letter. Seasonally ponded areas, including, but not limited to, vernal pools and swales provide potential habitat for federal listed vernal pool associated plants. Where reconnaissance surveys determine that seasonally ponded areas with potential to support vernal pool plants are present, either surveys will be performed according to USFWS sampling protocol, or presence of vernal pool plants will be assumed. If surveys conclude that vernal pool plants are present, or presence is assumed, and a direct impact will occur during the emergence and/or bloom period (Sacramento Orcutt grass [Orcuttia viscida], April though July; slender Orcutt grass [Orcuttia tenuis], May through September; and succulent owl's clover [Castilleja campestris ssp. succulenta], April through May), the USFWS will be consulted. Vegetation removal within 250 feet of a vernal pool is not authorized under the No Take determination, and requires consultation with the USFWS. If protocol surveys conclude that vernal pool plants are present, or presence is assumed, and construction is within 250 feet of the habitat, but not within the emergence/bloom period, SMUD will implement the avoidance measures listed below to avoid impacts to these species and habitat. Consultation with the USFWS will be required. SMUD Avoidance Measures for Activities in and/or within 250 feet of habitat for vernal pool plants include: • Where present, existing paved and unpaved roads will be used to access the work area. • All work will be performed after the special-status plants or potential special-status plants have gone to seed. Should soil moisture be encountered in the seasonally ponded habitat, rubber matting, or similar equivalent, will be used to minimize disturbance.	During project design and the construction period	Throughout the project construction period	During project design and the construction period	Throughout the project construction period	SMUD and biologist	SMUD and biologist

B5-925 (Cont.)

Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Biological Resources (Continued)								
Effect on the drainage ditch, wetlands, and associated special-status species	Bio-5 (Cont.)	• In areas that have not been previously disturbed, heavy equipment use will be minimized. • For pole installations within 250 feet of seasonally inundated areas, the area between the pole and the pole hole will be backfilled with cement. The upper portion will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil • No pesticides or herbicides will be used within 250 feet of vernal pools	During project design and the construction period	Throughout the project construction period	During project design and the construction period	Throughout the project construction period	SMUD and biologist	SMUD and biologist
Construction near Landmark trees	Bio-6	SMUD will mitigate for removal of any oak or landmark tree following the current Sacramento County Tree Preservation Ordinance. This will include obtaining a tree permit from the Director of Public Works prior to trenching, grading, or filling within the dripline of a native oak tree of specified dimensions or other species of tree or to destroy, kill, or remove any tree as a condition of approval of the proposed project. The mitigation fee is based on tree dimensions (Sacramento County, 2007b).	During project design and the construction period	Throughout the project construction period	During project design and the construction period	Throughout the project construction period	SMUD and biologist	SMUD and biologist
Bird-strikes	Bio-7	New power lines, utility poles, and associated equipment shall be constructed to minimize the potential for bird-strikes and electrocution by using methods described in SMUD's Avian Protection Plan (SMUD, 2007)	During project design and the construction period	Throughout the project construction period			SMUD	SMUD
Effect on nesting substrate	Bio-8	If vegetation will be removed by the proposed project and all necessary approvals have been obtained, substrate (e.g., trees and shrubs) containing nests shall be removed between November 1 and February 28 to ensure that active (containing intact eggs, live chicks, or presence of an adult) nests are not destroyed or disturbed as a result of project construction activities. If a nest may be destroyed during the nesting season, a qualified biologist shall survey the nest to determine if it is active	During project design and the construction period	Throughout the project construction period		Throughout the project construction period	SMUD	SMUD

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Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Biological Resources (Continued)								
Effect on sensitive species, wildlife movement, and nursery sites	Bio-9	If construction activities would occur during the nesting season (estimated to be January through August), pre-construction surveys for the presence of special-status bird species or any nesting bird species shall be conducted by a qualified biologist within 500 feet of proposed construction areas. This survey shall be conducted no more than 14 days prior to the initiation of construction activities during the breeding season (raptors – January through August; burrowing owl – February 1 through August 31). During this survey, the biologist shall inspect all trees, grassland, and electrical towers in and immediately adjacent to the impact area for nests. Specific mitigation measures for burrowing owl, Swainson's hawk, and tri-colored black bird are included under Mitigation Measures Bio-10 through 13. If any other nest sites of bird species protected under the Migratory Bird Treaty Act (MBTA) are observed within the vicinity of the project site, then the project will be modified and/or delayed as necessary to avoid direct take of identified nest, eggs, and/or young.	Prior to the start of construction activities	Until nesting species have left	Prior to the start of construction activities	Until nesting species have left	SMUD and biologist	SMUD and biologist
Effect on sensitive species, wildlife movement, and nursery sites	Bio-10	For the burrowing owl, a qualified biologist shall survey the proposed project site, including a 150-meter buffer zone around the proposed project boundary no more than 14 days prior to the initiation of construction activities. If an active burrowing owl nest is found within that area, the biologist, in consultation with CDFG, shall follow the Burrowing Owl Survey Protocol and Mitigation Guidelines (California Burrowing Owl Consortium, 1993). The Mitigation Guidelines state that if construction occurs during the non breeding season (September 1 through January 31), then a 50-meter radius must be maintained around the occupied burrow. If construction occurs during the breeding season (February 1 through August 31), then a 75-meter radius must be maintained around the occupied burrow. Throughout the year, foraging habitat around occupied burrows must be maintained at a minimum of 6.5 acres.	Prior to the start of construction activities	Until nesting species have left	Prior to the start of construction activities	Until nesting species have left	SMUD and biologist	SMUD and biologist

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Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Biological Resources (Continued)								
Effect on sensitive species, wildlife movement, and nursery sites	Bio-11	For the Swainson's hawk, a qualified biologist shall conduct a pre-construction survey for active Swainson's hawk nests if construction occurs between February and September (the breeding and nesting season). The survey shall be conducted within 0.5 mile of the project area. This survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the biologist shall inspect all trees and utility poles for raptor nests in and immediately adjacent to the impact areas. If a Swainson's hawk is found nesting within 0.25 mile of the project area, the degree of avoidance necessary to prevent nest failure shall be discussed with the CDFG. If exclusion zones cannot be implemented at these distances, the following measures may be implemented: • Construction may be postponed in that area until young are fledged, or • A qualified biological monitor shall be provided to monitor the birds on the nest and stop construction if it appears that the birds will abandon the nest and/or young, or • The CDFG shall be consulted if construction appears to jeopardize the nesting success and provide for the artificial rearing of eggs or young by qualified staff.	Prior to the start of construction activities	Until nesting species have left	Prior to the start of construction activities	Until nesting species have left	SMUD and biologist	SMUD and biologist

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Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Biological Resources (Continued)								
Effect on sensitive species, wildlife movement, and nursery sites	Bio-12	For tricolored blackbird, if construction would occur during the breeding season (April through July), a preconstruction survey for their colonies shall be conducted by a qualified biologist to ensure that none are disturbed during project construction. This survey shall be conducted no more than 14 days prior to the initiation of construction activities during the early part of the breeding season or no more than 30 days prior to the initiation of construction during the late part of the breeding season (July). During this survey, the biologist shall inspect potential tricolored blackbird habitat in and within 500 feet of the project area.	Prior to the start of construction activities		Prior to the start of construction activities		SMUD and biologist	SMUD and biologist
	Bio-13	To minimize impacts on tricolored blackbird colonies, a 200-foot buffer shall be established around active tricolored blackbird nests. No project-related construction shall occur within this buffer until young have fledged or the species are no longer attempting to nest. No further mitigation measures are required once the young have fledged or after August 1.	Prior to the start of construction activities			Until nesting species have left	SMUD and biologist	SMUD and biologist
	Bio-14	For western spadefoot toad and northwestern pond turtles, a qualified biologist shall survey the proposed project site within the ROW around aquatic and seasonally inundated habitat. If preconstruction surveys determine the presence of these species, SMUD will consult with CDFG to determine appropriate measures to avoid and minimize take of individuals.	Prior to the start of construction activities		Prior to the start of construction activities		SMUD and biologist	SMUD and biologist
	Bio-15	For Valley Elderberry Longhorn Beetle, habitat is present in the proposed project area; therefore, if a 100-foot buffer zone is established and maintained, then no additional avoidance measures are necessary. Construction activities within 20 feet of an elderberry shrub are not authorized under the "No Take" determination. SMUD will implement the following mitigation measures to avoid take when construction activity falls between 20 feet to100 feet of an elderberry bush: • The presence of elderberry shrubs in the construction area will be documented on work orders and the SMUD Planning Supervisor will be notified. SMUD and outside agency contact will be made through the Planner Supervisor.	Prior to the start of construction activities	Throughout the construction period	Prior to the start of construction activities	Throughout the construction period	SMUD and biologist	SMUD and biologist

B5-925 (Cont.)

Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Biological Resources (Continued)								
Effect on sensitive species, wildlife movement, and nursery sites	Bio-15 (Cont.)	• All on-site construction personnel will receive instruction regarding the presence of elderberry shrubs, beetle, the importance of avoiding impacts to the beetle and its habitat, and the possible penalties for not complying with these requirements. • Flag the 20-foot exclusion boundary around the elderberry shrub and post a sign with the following information: "This area is habitat for the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." This sign should be clearly readable and must be maintained for the duration of the construction. • A biological monitor will be required to supervise work falling between 20-feet and 100-feet of elderberry shrubs and stop work should personnel be out of compliance with the beetle avoidance measures, or if there is a risk that incidental take may occur. • Disturbance shall be minimized, and the site will be restored following construction.	Prior to the start of construction activities	Throughout the construction period	Prior to the start of construction activities	Throughout the construction period	SMUD and biologist	SMUD and biologist
Cultural Resources								
If unidentified prehistoric, historic, or paleontologic materials are encountered during construction	Cul-1	If any paleontologic or cultural resources, such as buildings, structures, or objects over 50 years old (excluding buildings that have been previously evaluated as ineligible for the National or California Registers), including human remains, are encountered during any project development activities, work shall be suspended and the County of Sacramento, Aerojet, and other applicable agencies shall be immediately notified. At that time, the County and Aerojet will coordinate any necessary investigations of the site with appropriate specialists, as needed.		Throughout the construction period		Throughout the construction period	Archaeologist and SMUD	SMUD

B5-925 (Cont.)

Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Cultural Resources (Continued)								
If unidentified prehistoric, historic, or paleontologic materials are encountered during construction	**Cul-2**	When Native American archaeological, ethnographic, or spiritual resources are involved, all identification and treatment shall be conducted by qualified archaeologists who meet the federal standards, as stated in the CFR (36 CFR 61) and appurtenant (i.e., pursuant to the National Historic Preservation Act, Senate Bill 18), and Native American representatives who are approved by the local Native American community as keepers of their cultural traditions. In the event that no such Native American is available, persons who represent tribal governments and/or organizations in the locale in which resources could be affected shall be consulted.		Throughout the construction period		Throughout the construction period	Archaeologist and SMUD	SMUD
	Cul-3	Pursuant to Section 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code, if human remains or bone of unknown origin is found during construction, all work shall stop in the vicinity of the find and the Sacramento County Coroner shall be contacted immediately. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission who shall notify the person it believes to be the most likely descendant. The most likely descendant shall work with the contractor to develop a program for reinterment of the human remains and any associated artifacts. No additional work shall take place within the immediate vicinity of the find until the identified appropriate actions have been implemented. If the Coroner determines that the remains are not related to a crime scene, then a qualified archaeologist who meets the federal standards, as stated in 36 CFR 61, shall be retained to assess the find and make further recommendations.		Throughout the construction period		Throughout the construction period	Archaeologist and SMUD	SMUD
	Cul-4	An archaeological monitor will be present on-site during earth disturbing activities within the Alder Creek Corridor Mining District (Segment G).		Throughout the construction period		Throughout the construction period	Archaeologist and SMUD	SMUD

B5-925 (Cont.)

Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Geology and Soils								
Minimize the potential of landslides	Geo-1	Pole foundations located on tailings will be constructed to extend several feet below the potential depth of material affected by landslides to prevent damage due to local shallow landslides in the tailings.	During project design and the construction period		During project design and the construction period		SMUD	SMUD
Reduce the impact of soil disturbance	Geo-2	The upper portion of excavations for pole installations will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil and areas of disturbed soil will be reseeded with a native seed mix, as necessary.	During project design and the construction period		During project design and the construction period		SMUD	SMUD
Minimize the effects of expansive soils	Geo-3	Pole foundations may be constructed with additional concrete thickness or other engineering refinements, such as reinforcement of foundations, to counteract the forces exerted by expansive soils	During project design and the construction period		During project design and the construction period		SMUD	SMUD
Hazards and Hazardous Materials								
Accidental spills during construction and maintenance	Haz-1	If an accidental release occurs during refueling or a spill occurs during construction and maintenance of the project, the release shall be cleaned up immediately and reported in accordance with applicable federal, state, and local requirements.		Throughout the construction period and during maintenance		Throughout the construction period and during maintenance	SMUD	SMUD
Hazardous materials encountered onsite during construction	Haz-2	Incorporate features in the substation design to contain the mineral oil if a cooling oil leak occurs. Install remote alarming monitoring equipment to alert the SMUD Energy Dispatch Operators in case of high temperatures or low oil levels. Construct the substation with secondary containment to contain spilled oil, and begin cleanup activities immediately after a release has occurred. In addition, implement Best Management Practices (BMPs) through a Spill Prevention Control and Countermeasure Plan to minimize the possibility of any spills or releases from the transformers.	During project design and the construction period	Throughout the construction period	During project design and the construction period	Throughout the construction period	SMUD	SMUD
Hazardous materials spills or leakage	Haz-3	Inspect equipment containing hazardous materials periodically for signs of spills or leakage.		Throughout the construction period		Throughout the construction period	SMUD	SMUD

B5-925 (Cont.)

Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Hazards and Hazardous Materials (Continued)								
Unauthorized access to electrical equipment	**Haz-4**	Construct a 10-foot high chain-link fence or wall around the substation and lock the substation site to prevent unauthorized access to the onsite electrical equipment.	During project design and the construction period		During project design and the construction period		SMUD	SMUD
Hazardous materials encountered onsite during construction	**Haz-5**	Permission will be obtained from Aerojet's security office and a designated on-site safety officer prior to conducting construction activities within the Superfund site and industrial zone of the Aerojet property. SMUD will follow the Aerojet Safety Work permit process and fill out a request for Soil Excavation and Grading Authorization. Aerojet will work closely with SMUD to identify locations with a potential health concern and provide health and safety training as applicable to the risks, including notice on schedules for rocket testing. Aerojet will provide safety oversight during construction. SMUD will prepare Occupational Safety and Health Administration (OSHA) standard health and safety job hazard analyses, Injury and Illness Prevention Plan and Code of Safe Practices, and train all workers on proper procedures for working at a hazardous waste site. SMUD will install utility poles at locations least likely to encounter contaminated soil or groundwater, based on information provided by Aerojet.	During project design and the construction period		During project design and the construction period	Throughout the construction period	SMUD	SMUD
	Haz-6	Any excess soil will be placed in an Aerojet designated staging area, and will be the responsibility of Aerojet for any off-site transportation or disposal. If evidence of contaminated materials is encountered during construction, construction shall cease immediately and Aerojet's site remediation engineering department will be contacted for further instructions. Applicable requirements of the CERCLA and CCR Title 22 regarding the disposal of waste shall be implemented, as required.	During project design and the construction period	Throughout the construction period	During project design and the construction period	Throughout the construction period	SMUD	SMUD

B5-925 (Cont.)

Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Hydrology and Water Quality								
Protection of aquatic features, ditches, and wetlands during construction and maintenance	**Wa-1**	During project construction and maintenance, construction workers, construction equipment and vehicles, and construction materials and debris shall be restricted from entering Alder Creek, seasonal ponds, and perennial ponds adjacent to the proposed subtransmission line and substation sites. Excavated and stored materials shall be staged in stable upland sites away from the drainage ditches, seasonal wetlands, and aquatic features. If discharge of excavated and stored material is possible during a rainfall event, then sediment containment devices shall be installed (e.g., silt fencing or straw wattles).		Throughout the construction period	During project design and the construction period	Throughout the construction period	SMUD	SMUD
Noise								
Construction noise and operational noise to nearby residents	**Noi-1a**	Construction activities shall be limited to occur from 6:00 a.m. to 8:00 p.m. Monday through Friday, and from 7:00 a.m. to 8:00 p.m. on Saturday and Sunday, pursuant to Sacramento County noise policies/ordinances.		Throughout the construction period		Throughout the construction period	SMUD	SMUD
	Noi-1b	Construction activities shall be prohibited on federal- and state-recognized holidays.		Throughout the construction period		Throughout the construction period	SMUD	SMUD
	Noi-1c	Construction equipment powered by an internal combustion engine shall be equipped with suitable exhaust and intake silencers, in accordance with manufacturers' specifications, and shall be maintained in good working order.	During project design and the construction period	Throughout the construction period	During project design and the construction period	Throughout the construction period	SMUD	SMUD
	Noi-1d	Stationary construction equipment (*e.g.*, portable power generators and compressors) shall be located at the furthest distance possible from nearby residential units.	During project design and the construction period	Throughout the construction period	During project design and the construction period	Throughout the construction period	SMUD	SMUD

B5-925 (Cont.)

Table A-1 Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project Mitigation and Monitoring Summary

Impact		Mitigation	Implementation Duration		Monitoring Duration		Responsibility	
			One-time	Ongoing	One-time	Ongoing	Implementation	Monitoring
Transportation/Traffic								
Increase traffic and safety hazards on local roads during construction and maintenance	**Trans-1a**	Use appropriate signage, coning, and flag persons to alert the public regarding ongoing construction.	Prior to the start of construction activities	Throughout the construction period	Prior to the start of construction activities	Throughout the construction period	SMUD	SMUD
	Trans-1b	Coordinate with Aerojet regarding the construction and maintenance schedule and access to the existing roads, to minimize interference with Aerojet operations and emergency access	Prior to the start of construction activities		Prior to the start of construction activities		SMUD	SMUD

Notes:

Caltrans = California Department of Transportation

CDFG = California Department of Fish and Game

CFR = Code of Federal Regulations

kV = kilovolt

SMUD = Sacramento Municipal Utility District

USFWS= U.S. Fish and Wildlife Service

References:

Burrowing Owl Survey Protocol and Mitigation Guidelines. 1993. California Burrowing Owl Consortium. April. Available online: http://www.dfg.ca.gov/wildlife/species/docs/boconsortium.pdf. Accessed August 2008.

California Code of Regulations (CCR). Title 22 Social Security. Division 4.5 Environmental Health Standards for the Management of Hazardous Waste. Available online:http://government.westlaw.com. Accessed August 2008.

Code of Federal Regulations (CFR). 36 CFR 61. CFR Title 36. Parks, Forests, and Public Property Chapter 1. National Park Service Depart of the Interior Part 61. Procedures for State, Tribal, and local government historic preservation programs. Available online: http://www.access.gpo.gov/nara/cfr/waisidx_07/36cfrv1_07.html. Accessed August 2008.

Sacramento County. 2007. Sacramento County Code. Title 16. Section 1. Chapter 16.130. Swainson's Hawk Impact Mitigation Program. Available online:. http://www.planning.saccounty.net/swainsons-hawk-ordinance/index.html

Sacramento Municipal Utility District. 2007. Sacramento Municipal Utility District Avian Protection Plan. Prepared by Estep Environmental Consulting. December.

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APPENDIX B

Biological Resources

APPENDIX B

Biological Resources

Introduction

The Sacramento Municipal Utility District (SMUD) proposes, as the Easton 69-kilovolt (kV) Subtransmission Line Relocation and Substation Project (also referred to as the "proposed project"), to relocate and operate a 69-kV subtransmission line that would be added to the SMUD electrical system. The Easton 69-kV Subtransmission Line Relocation and Substation Project is composed of several phases that include relocation and construction of 6.8 miles of 69-kV subtransmission line, and construction of two new substations - the Prairie City and Easton Valley-Birkmond substations. The entire proposed project would be located on Aerojet property within a permanent easement/right-of-way. Generally, Phase 1 would consist of removal and relocation of the major portion of subtransmission line. Later phases would consist of construction of the two substations and connecting subtransmission lines.

Phase 1 would consist of the following actions: (1) removal of about 3.7 miles of existing overhead 69-kV subtransmission line, located south of Folsom Boulevard, running west to east along Albany Avenue and Aerojet Road to Prairie City Road, and a section from the Alder Creek Substation to Prairie City Road (Segment A); and (2) construction of a new 4.3-mile overhead 69-kV subtransmission line relocated further south on the Aerojet property, running west to east starting east of Kenosha Road and ending at Prairie City Road (Segment B).

B5-925 (Cont.)

Later phases would consist of the following actions: (1) construction of the Easton Valley-Birkmond Substation and new Prairie City Substation; (2) removal of the existing Prairie City Substation and about 1.5 miles of connecting 69-kV subtransmission line (Segments C and E); and (3) construction of about 2.3 miles of new 69-kV subtransmission line connecting the substations to existing lines (Segments D, F, and G).

The 0.5-acre substation sites would be covered in crushed gravel, except where permanent concrete foundations for the transformers, oil containment, and metal clad switchgear would be built. The sites would be surrounded with a 10-foot-high concrete block wall or chain link fence that may be topped with three-pronged barbed wire.

Each transformer would contain approximately 5,300 gallons of insulating oil. Project specifications would require that all transformer oils be essentially free from polychlorinated biphenyl compounds (< 2 parts per million [ppm]). The substation control system would have a battery back-up with sealed battery units that would contain diluted sulfuric acid. Lighting is planned at the proposed substations. All substation equipment would be painted either a dull green or light gray finish.

The objectives of this appendix are to describe the biological resources that occur in the proposed project area, including threatened and endangered species and their habitats, and to describe the potential impacts that may result from implementing the proposed project. The following sections include: a description of the affected setting and site conditions; the methods that were used to evaluate the potential presence of threatened and endangered species; the laws, ordinances, and regulations that apply to biological

resource protection; and the potential adverse impacts that could occur to biological resources as a result of implementing the proposed project. This appendix also includes a discussion of the feasibility of potential mitigation measures that would avoid, minimize, or compensate for adverse impacts.

Existing Environmental Conditions

General Location and Setting

The 8,500-acre Aerojet property is located in eastern Sacramento County, east of the City of Rancho Cordova and south of the City of Folsom. It is generally located on the south side of U.S. 50 and Folsom Boulevard, west of Prairie City Road, east of the City of Rancho Cordova, and north of White Rock Road. The Aerojet site is composed of 22 assessor's parcel numbers and is within Township 9 North, Range 7 East of Folsom and Buffalo Creek, California, 7.5-minute quadrangles (Environmental Statistics Group, 2003).

Past dredge mining activities and development associated with Aerojet operations have disturbed portions of the various habitats and reduced their quality. With an exception of the Alder Creek corridor, dredge tailings and other disturbed areas dominate the project area, providing low to medium quality habitat due to their generally disturbed nature. Since mining activities ceased in the 1940s, pockets of trees and brush have become established within the low-lying areas between the tailings. Scattered buildings and infrastructure associated with Aerojet operations occur primarily in the western portion of the Aerojet property. The remainder of the proposed project area is generally open space with grasslands and oak woodlands intermixed with dredge tailings. The Alder Creek corridor, a generally undisturbed riparian corridor along a perennial creek, follows U.S. 50 and Folsom Boulevard in the north of the proposed project area, providing high quality habitat due to its generally undisturbed nature.

B5-925 (Cont.)

Several vegetation communities occur in the proposed project area, including oak and mixed oak woodlands, riparian woodland and shrubland, annual grassland, wetlands and drainages, dredge tailings or bare rock, and ruderal or disturbed areas. The various communities in the project area provide nesting, foraging, roosting, and other important habitat for a variety of plant, wildlife, and fish species, including several special-status species.

Photographs of the site are included in Appendix C.

Biological Setting

The following text describes the methods, biological conditions in the proposed project area, including vegetation near the site, local wildlife species, and special-status species with potential to occur in the general vicinity.

Methods

The biological setting characterization is based on information gathered from a database search and a reconnaissance-level field survey. A list of federal and state special-status plant and wildlife species was developed for the proposed project based on a database

search, which included a query of the California Natural Diversity Database (CNDDB) for the Buffalo Creek, Carbondale, Carmichael, Citrus Heights, Clarksville, Elk Grove, Folsom, Folsom SE, Pilot Hill, Rocklin, Roseville, and Sloughhouse USGS 7½ Minute Quadrangles. A list of federally endangered or threatened species was generated by the U.S. Fish and Wildlife Service (USFWS). A spatial query of the CNDDB was conducted to produce a map of special-status species with known occurrences within 5 miles of the proposed project (Figure B-1). The special-status species list is summarized in Table B-1 at the end of the text; the table also includes suitable habitat typically associated with each species, potential for the species to occur on or near the proposed project site, and general comments.

There are no CNDDB occurrences of special-status species within the proposed project (CDFG, 2009). However, the CNDDB contains occurrence records within 1 mile of the proposed project for the following species: Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*), Sanford's arrowhead (*Sagittaria sanfordii*), northwestern pond turtle (*Actinemys marmorata marmorata*), double-crested cormorant (*Phalacrocorax auritus*), white-tailed kite (*Elanus leucurus*), and Cooper's hawk (*Accipiter cooperii*). The locations of these species occurrences, as well as those that have been documented within a five-mile radius of the proposed project are depicted on Figure B-1.

For the purpose of this evaluation, special-status species include plants and wildlife that are listed as threatened or endangered (or candidates for listing) under the Federal and/or State Endangered Species Act, California Department of Fish and Game (CDFG) fully protected species, and California species of special concern. In addition, plant species that are not formally listed but are considered to be rare, threatened or endangered in California by the California Native Plant Society are also considered to be special-status species.

B5-925 (Cont.)

Reconnaissance-level surveys of the site were conducted June 19, 2008, which included pedestrian surveys along the length of the proposed subtransmission lines to be removed, the relocated subtransmission lines, and substations and a 500-foot buffer. These surveys were sufficient to describe the site's suitability for supporting special-status species.

Results of Habitat Assessment

General Habitat. Biologically sensitive habitat (creeks and wetlands) were identified within the proposed project vicinity using literature review, database searches, and a site visit conducted on June 19, 2008.

Natural drainages occur in the proposed project vicinity, including Alder Creek and Buffalo Creek, which are part of the American River watershed. This 1,900-square-mile watershed includes the entire area drained by the American River and all watersheds tributary to the river. The American River flows westward from the crest of the Sierra Nevada Mountains above Lake Tahoe to its confluence with the Sacramento River in the City of Sacramento. The Sacramento River joins the San Joaquin River about 40 miles south of Sacramento and drains into the San Francisco Bay.

The project area provides habitat for a diversity of plant and wildlife species; however, past dredge mining activities and development associated with Aerojet operations have

disturbed portions of the various habitats and reduced their quality. Aside from the Alder Creek corridor, dredge tailings and other disturbed areas dominate the project area, the generally disturbed nature provides low to medium quality habitat. Dredge tailings were created during dredge mining. Pockets of trees and brush have become established within the low-lying areas between the tailings since mining activities ceased in the 1940s. Scattered buildings and infrastructure associated with Aerojet operations occur primarily in the western portion of the project area. The remainder of the project area is generally open space with grasslands and oak woodlands intermixed with dredge tailings. Biologically sensitive habitat (creeks and wetlands) were identified within the proposed project vicinity using literature review, database searches, and site surveys. Seasonal wetlands within or adjacent to the proposed project are depicted on Figure B-2. The Alder Creek corridor is a generally undisturbed riparian corridor that provides high quality habitat. This corridor follows U.S. 50 and Folsom Boulevard in the northern portion of the project area.

The proposed 69-kV subtransmission line would be located within open grassland and woodland landscape and has the potential for impacts on avian species. Potential impacts on avian species include electrocution, collision with power lines, attracting predators with litter, harassment during construction activities, and nesting on utility poles. SMUD produced an Avian Protection Plan that formalizes and enhances past practices of avian protection and incorporates industry best practices for installations as necessary (SMUD, 2007). In addition to following the Avian Protection Plan, SMUD has included mitigation measures to reduce the potential impact on avian species.

B5-925 (Cont.)

ECORP Consulting Inc. (ECORP) botanists conducted comprehensive field surveys throughout much of the Easton Aerojet Project Area on April 18, April 25, May 2, and July 1, 2005, which coincided with the optimum blooming period for each of the potentially occurring special-status plants. The survey effort was focused primarily within the wetland features present within the Easton Aerojet Project Area, as these represented potentially suitable habitat for the target species. No special-status plant species were observed during the surveys (Sacramento County, 2008). In addition, field surveys were conducted by ECORP on December 5, June 13, and August 22, 2008 along the proposed 69-kV subtransmission line segment B (ECORP, 2009). No special-status plant species were observed during these surveys. Seasonal wetlands that occur within or adjacent to Segments D, F, and G have not received focused vegetation surveys. For seasonally ponded areas with potential to support vernal pool plants, either surveys will be performed according to USFWS sampling protocol, or presence of vernal pool plants will be assumed.

The approximate acreage of each vegetation community within the project area is provided in Table B-2 below. The various vegetation communities in the project area provide nesting, foraging, roosting, and other important habitat for a variety of plant, wildlife, and fish species, including several special-status species. Descriptions of each community are provided below.

Table B-2. Vegetation Communities within Proposed Project Area

Vegetation Communities	Acres	Vegetation Communities	Acres	Disturbed/Developed Communities	Acres
Annual Grassland	252.6	Coyote Brush Scrub	18.2	Developed/Facility	96.3
Oak Woodland	37.2	Coyote Brush-Willow Scrub	6.9	Ruderal/Disturbed	36.6
Fremont Cottonwood-Oak Woodland	17.2	Emergent Marsh	0.1	Dredge Tailings	161.7
Fremont Cottonwood Woodland	36.1	Perennial Pond	0.3	Annual Grassland/Dredge Tailings	11.5
Foothill Pine-Oak Woodland	2.8	Creek	0.6	Waste Management Area	1.9
Valley Foothill Riparian	6.0				
Willow Scrub	2.9				

General Plants. During the site visit, plant communities were characterized by dominant vegetation. Dominant tree species include blue oak (*Quercus douglasii*), interior live oak (*Q. wislizenii*), valley oak (*Q. lobata*), black oak (*Q. kelloggii*), foothill pine (*Pinus sabiniana*), Fremont cottonwood (*Populus fremontii*), willow (*Salix* sp.), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), and elderberry shrubs (*Sambucus* sp.).

Herbaceous vegetation found in the understory includes tall flatsedge (*Cyperus eragrostis*), Baltic rush (*Juncus balticus*), California wild grape (*Vitis californica*), poison oak (*Toxicodendron diversilobum*), ripgut brome (*Bromus diandrus*), and soap plant (*Chlorogalum pomeridianum*). Invasive plant species that occur in this community include Himalayan blackberry (*Rubus discolor*), yellow star-thistle (*Centaurea solstitialis*), milk thistle (*Silybum marinum*), medusa head (*Taeniatherum caput-medusae*), fennel (*Foeniculum vulgare*), and black locust (*Robinia pseudoacacia*).

B5-925 (Cont.)

Typical plants present in wetlands include cattails (*Typha* sp.), hard-stem bulrush (*Scirpus acutus*), tall flat sedge (*Cyperus eragrostis*), and soft rush (*Juncus effusus*). Plants in the seasonal wetlands include generalist plants, such as Mediterranean barley (*Hordeum marinum*), Baltic rush (*Juncus balticus*), and annual rabbit-foot grass (*Polypogon monspeliensis*).

Annual grasslands are dominated by non-native Mediterranean grasses with a variety of other herbaceous species, including soft brome (*Bromus hordeaceus*), medusa-head (*Taeniatherum capt-medusae*), Italian ryegrass (*Lolium multiflorum*), little quaking grass (*Briza minor*), and other non-native species. A variety of weedy forbs occur, including yellow star thistle (*Centaurea solstitialis*) and milk thistle (*Silybum marianum*). Yellow star thistle is considered to be a noxious weed by the California Department of Food and Agriculture (California Exotic Pest Plant Control, 1999). Noxious weeds are subject to regulation or quarantine by county agricultural departments. Yellow star thistle is documented as an aggressive invader that displaces native plants and disrupts natural habitats. This noxious weed spreads easily through seed dispersal and can become a problem in a single growing season.

Special-Status Plant Species. Twenty-seven special-status plants were identified in the CNDDB and USFWS search for Folsom and Buffalo Creek and ten surrounding 7 ½ minute quadrangles (CDFG, 2009; USFWS, 2008) (Table B-1). Six of the special-status plant species are not likely to occur because of a lack of suitable habitat (Table B-1).

Nine of the special-status plants are vernal pool or wetland plants (California Native Plant Society, 2008) and have potential to occur within the intermittent creeks or seasonal wetland features. Six of the plants associated with wetlands have CNDDB occurrences within 5 miles of the proposed project area: Bogg's Lake hedge hyssop (*Gratiola heterosepala)*, legenere (*Legenere limosa*), pincushion navarretia (*Navarretia myersii* ssp. *myersii*), slender Orcutt grass (*Orcuttia tenuis*), Sacramento Orcutt grass (*Orcuttia viscida)*, and Sanford's arrowhead (*Sagittaria sanfordii*). Other wetland associated plants that have potential to occur in the project area include hispid bird's-beak (*Cordylanthus mollis* ssp. *hispidus*), dwarf downingia (*Downingia pusilla*), and Tuolumne button-celery (*Eryngium pinnatisectum*).

Twelve of the 27 special-status plants have potential to occur in the chaparral and grassland habitats within the proposed project area. Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*) has CNDDB occurrences within 5 miles of the proposed project area. The other eleven plants that may occur because suitable habitat is present include: Ione manzanita (*Arctostaphylos myrtifolia*), big-scale balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*), Red Hill soaproot (*Chlorogalum grandiflorum*), Ione buckwheat (*Eriogonum apricum* var. *apricum*), stinkbells (*Fritillaria agrestis*), Bisbee Peak rush-rose (*Helianthemum suffrutescens*), Parry's horkelia (*Horkelia parryi*), Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*), Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus),* Layne's ragwort (*Packera laynaea*), and Hartweg's golden sunburst (*Pseudobahia bahiiflolia*).

During the summer of 1981 and spring of 1982 a botanical inventory was conducted within the Aerojet property; no rare or endangered plant species were observed during the inventory (Bowcutt 1982). Three occurrences of Boggs Lake hedge-hyssop have been documented during a vernal pool survey near the intersection of Prairie City Road and White Rock Road (Wymer 1989). However, no other special-status plant species were observed during these surveys.

B5-925 (Cont.)

General Wildlife. The proposed project site provides habitat for a number of wildlife species. However, mining activities and Aerojet operations have developed or disturbed just under half of the proposed project site providing low to medium quality habitat due to the generally disturbed nature.

Amphibians and reptiles are particularly sensitive to disturbances and pollutants. Pacific chorus frog (*Pseudacris regilla*) is the most common frog in the Sacramento area and may be present onsite. The grassland and woodlands onsite may support common reptiles, such as western fence lizards (*Sceloporus occidentalis*), gopher snakes (*Pituophis melanoleucus*), and alligator lizards (*Gerrhonotus multicarinatus*).

Raptor species and migratory birds may potentially nest or forage within, or in proximity to, the proposed project area. Bird species protected by the Migratory Bird Treaty Act that were observed during the field survey include western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyancephalus*), mourning dove (*Zenaida macroura*), white-crowned sparrow (*Zonotrichia leucophrys*), American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*), cliff swallow (*Petrochelidon pyrrhonota*), American pipit (*Anthus rubescens*), killdeer (*Charadrius vociferus*), and savannah sparrow (*Passerculus sandwichensis*). Other bird species observed included the rock dove (*Columbia livia*).

A number of vertebrate wildlife species may be supported by the annual non-native grassland. A black-tailed jackrabbit (*Lepus californicus*) was observed during the site visit. Small rodents are common inhabitants of grasslands, including voles (*Microtus* sp.), pocket gopher (*Thomomys bottae*), and deer mice (*Peromyscus maniculatus*). These small rodents and others provide food for larger predatory mammals and predatory birds in the vicinity.

Special-Status Wildlife Species. Thirty-eight special-status wildlife species were identified in the CNDDB and USFWS searches (CDFG, 2009; USFWS, 2008). Ten of these are not likely to occur on the proposed project site because of a lack of suitable habitat, 27 special-status wildlife species have a low to moderate likelihood to occur, and one has a high likelihood to occur (see Table B-1).

Ten of the special-status wildlife species with potential to occur are invertebrates (branchiopods and insects) that are found in vernal pools, wetlands, or riparian habitats. These species include: conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool fairy shrimp (*Branchinecto lynchi*), midvalley fairy shrimp (*Branchinecta mesovallenis*), vernal pool tadpole shrimp (*Lepidurus packardi*), California linderiella (*Linderiella occidentalis*), blennosperma vernal pool bee (*Andrena blennospermatis*), vernal pool andrenid bee (*Andrena subasta*), hairy water flea (*Dumontia oregonensis*), Ricksecker's water scavenging beetle (*Hydrochara ricksecker*i), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). The vernal pool shrimp may be present within the seasonal wetland areas. The andrenid bees (*Andrena blennospermatis*) and (*Andrena subasta*) nest in uplands and forage for pollen from plants growing in vernal pools, often specializing on a narrow range of flowering plants as pollen sources (Thorp and Leong, 1995). The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) is completely dependent on its host plant, elderberry, and has a high likelihood of occurrence within the proposed project area due to the large number of elderberry shrubs that are present within and near the proposed project site.

B5-925 (Cont.)

Two special-status reptiles and amphibians have potential to occur (low) within the proposed project site. The western spadefoot toad (*Spea hammondii*) and northwestern pond turtle (*Actinemys marmorata marmorata*) have several CNDDB occurrences within 5 miles of the proposed project site. The western spadefoot toad utilizes ephemeral pools and drainages, which are typically absent of larger predatory fish and bullfrogs (*Rana catesbeiana*), for egg-laying and larval development. Upon metamorphoses, the adults are largely terrestrial in nature and will burrow underground. Northwestern pond turtles typically occur within perennial streams, creeks, ponds, marshes, and irrigation ditches with aquatic vegetation (Jennings and Hayes 1994). The availability of basking sites and suitable upland environments for egg laying (e.g., sandy banks or grassy open fields) are important aspects of suitable habitat.

There are no special-status fish issues within Alder Creek, Buffalo Creek, or any of the other waterways that occur within the proposed project site. Anadromous species cannot migrate above the Nimbus Dam and are not present in Lake Natoma, and barriers prevent migration of fish species from the American River through Buffalo Creek.

Thirteen special-status birds recorded in the CNDDB may potentially occur within the proposed project site. Protected bird species may use the riparian, wetland, and/or grassland habitats within the proposed project site for foraging and nesting. Nine special-status birds have CNDDB occurrences within 5 miles of the proposed project site: Cooper's hawk (*Accipiter cooperii*), tricolored blackbird (*Agelaius tricolor*), great blue heron (*Ardea herodias*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), merlin (*Falco columbarius*), double-crested cormorant (*Phalacrocorax auritus*), and bank swallow (*Riparia riparia*). The other four birds that may occur because suitable habitat is present include: grasshopper sparrow (*Ammodramus savannarum*), great egret (*Ardea alba*), ferruginous hawk (*Buteo regalis*), and purple martin (*Progne subis*).

The special-status silver-haired bat (*Lasionycteris noctivagans*) has been recorded within 5 miles of the proposed project site (CNDDB, 2009). The proposed project site may provide foraging and roosting habitat for the special-status pallid bat (*Antrozous pallidus*). Typical roost sites for these species include trees, snags, abandoned and occupied buildings, caves, mines, cliffs, and bridges. Many of these features occur on-site and may be used as roost sites. Potential foraging habitats, such as marshes, ponds, and riparian corridors, are present at several locations within the proposed project site.

The annual grasslands onsite provide potential habitat for the American badger (*Taxidea taxus*). This species is an uncommon, permanent resident of suitable environments throughout most of the state (Zeiner et al., 1990).

Regulatory Setting

B5-925 (Cont.)

The proposed project is not expected to require permits in compliance with the Federal and State Endangered Species Acts or the Clean Water Act. Brief descriptions of these regulations, as well as other biological regulations, are provided below.

Federal and State Endangered Species Act

USFWS and CDFG are the federal and state agencies, respectively, responsible for protecting endangered and threatened fish and wildlife and for regulating activities that may affect those species. The regulations that protect sensitive species, Federal Endangered Species Act and California Endangered Species Act are administered by these two agencies.

Section 7 of the Federal Endangered Species Act provides a means for authorizing incidental take of federally endangered or threatened species that result from federally conducted, permitted, or funded projects. Similarly, Section 10 authorizes take of federally endangered or threatened species by non-federal agencies.

U.S. Fish and Wildlife Service Technical Assistance Letter and Technical Assistance Amendment Letter

Through collaboration with the USFWS, SMUD has developed a technical assistance letter and a technical assistance amendment letter, referred to as the No Take Letter (see Attachment B-1). The No Take Letter is an Endangered Species Act compliance tool, which identifies avoidance and minimization measures for construction and operation

and maintenance activities to avoid take of federally listed species and adverse modification of critical habitat (USFWS, 2007). This agreement between SMUD and the USFWS allows SMUD to perform construction and operation and maintenance activities in the vicinity of sensitive biological resources without consulting with USFWS when impacts to these resources can be avoided by following avoidance measures. SMUD would follow the avoidance measures included in the No Take Letter and the mitigation measures included in this document to avoid, minimize, or compensate for adverse impacts.

Clean Water Act Sections 404 and 401

Section 404 of the Clean Water Act protects waters of the United States that include wetlands and drainages, by requiring projects that would discharge fill material into them to obtain a permit or authorization from the U.S. Army Corps of Engineers (USACE). The permitting program is designed to minimize the fill of Waters of the United States, hereinafter referred to as "wetlands," and when impacts cannot be avoided, require compensatory mitigation.

Section 401 of the Clean Water Act requires any applicant for a federal license or permit that could result in any discharge into a navigable water (*i.e.*, USACE permit to fill wetlands) to obtain certification from the California Regional Water Quality Control Boards.

California Endangered Species Act (Fish and Game Code Section 208, 1 et seq.)

Species listed pursuant to this act cannot be "taken" or harmed, except under specific permits. At present, "take" means to do or attempt to do the following: hunt, pursue, catch, capture, or kill.

B5-925 (Cont.)

California Fish and Game Codes

Fish and Game Code Sections 1600-1607 involves the issue of a Lake or Streambed Alteration Agreement authorization from CDFG if a project would divert, obstruct, or change the natural flow of the bed, channel, or bank of any river, stream, or lake. A Streambed Alteration Agreement must also be issued if the project would use material from the streambeds designated by CDFG in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit.

Fish and Game Code Section 3511 describes bird species, primarily raptors that are "fully protected." Fully protected birds may not be taken or possessed, except under specific permit requirements.

Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.

Fish and Game Code Section 3503.5 protects all birds of prey and their eggs and nests.

Fish and Game Code Section 3513 makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

Fish and Game Code Sections 4700, 5050, and 5515 lists mammal, amphibian, and reptile species that are fully protected in California.

Fish and Game Code Sections 1900, *et seq.*, the Native Plant Protection Act, lists threatened, endangered, and rare plants protected by the state.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (Title 16, United States Code, § 703-712) was implemented through various treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. The law was enacted in 1918 and was last amended in 1989. Pursuant to the Act, taking, killing, or possessing migratory birds is unlawful. The Act is administered by USFWS, which establishes seasons for hunting and permitted actions (*e.g.*, licensed hunting or research activities). Project proponents of actions that have potential to negatively affect migratory birds, their nests, or their eggs are required to enter into a Memorandum of Understanding with USFWS to ensure that impacts to migratory birds are minimized and that suitable habitats are restored and/or enhanced, where possible and practicable.

Sacramento County General Plan

The Conservation Element of the Sacramento County General Plan (Sacramento County, 1993) contains specific goals, objectives, and policies for protecting marsh and riparian areas, vernal pools and wetlands, urban streams, special-status species, and fisheries and to establish Resource Conservation Areas.

B5-925 (Cont.)

South Sacramento Habitat Conservation Plan

The Draft South Sacramento Habitat Conservation Plan (SSHCP) is currently being prepared (Sacramento County, 2005). It will contain specific policies and goals for protecting areas of sensitive plant and wildlife habitat and "streamline the permitting activities process for projects that engage in development activities" when completed. The Plan emphasizes protecting wetlands, particularly vernal pool communities. The geographic scope of the SSHCP includes area bounded by Highway 50 to the north, the County line to the east and south; excluding the Delta, Interstate 5 to the west, and the Sacramento City limits to the northwest. This Plan has not yet been completed.

Easton Resource Conservation Management Plan

The Easton Resource Conservation Management Plan was developed for the Easton Place and Glenborough at Easton projects (GenCorp, 2007). The proposed subtransmission line would be constructed through the eastern portion of the open space preserve. SMUD has included mitigation measures to reduce impacts to special-status species and habitats in the open space preserve.

Sacramento County Tree Preservation Ordinance

The Sacramento County Tree Preservation Ordinance (Sacramento County Code 480 Section 1, 1981) protects native trees for the purpose of preserving and improving aesthetics, biological conditions, and historical culture. This ordinance applies to

discretionary projects in the unincorporated areas of Sacramento County. The County also has a tree ordinance (Ordinance 915, Section 1, 1966) that protects public trees, which are trees within a designated easement, street, County park, or public premise.

Potential Impacts to Biological Resources

SMUD proposes the Easton Aerojet 69-kV Subtransmission Line Project, which includes the construction and operation of new 69-kV subtransmission line and substations. Biologically sensitive habitats (grassland, oak woodlands, and seasonal wetlands) have been identified within the proposed project site. These areas provide suitable habitat for special-status species. SMUD has included Mitigation Measures Bio-1 through Bio-15 to reduce the potential impact on special-status species and biological resources.

Discussion of Impacts

Effect on Special-Status Species

Suitable habitat for special-status plants, invertebrates, reptiles, amphibians, birds, and mammals is present within the proposed project site. There are no records of special-status plant or animal species that were identified within the proposed project corridor during the CNDDB search, although several special-status species have potential to occur onsite or in the site vicinity. Several vernal pools were identified within the proposed project site. No special-status plants were observed in the intermittent creeks, seasonal wetlands, or upland areas during surveys conducted by ECORP in 2005 and 2008 or the Burleson site visit conducted June 19, 2008. SMUD has included Mitigation Measures Bio-1 through Bio-15 to reduce the potential impact on special-status species during the proposed project construction activities.

B5-925 (Cont.)

Through collaboration with the USFWS, SMUD has developed a No Take Letter (see Attachment B-1). This agreement between SMUD and the USFWS allows SMUD to perform construction and operation and maintenance activities in the vicinity of sensitive biological resources without consulting with the USFWS when impacts to these resources can be avoided by following avoidance measures. SMUD would follow the avoidance measures included in the No Take Letter and the mitigation measures in this document and would consult with the USFWS if these measures are not feasible.

Twenty-one special-status plants have low or moderate potential to occur. Seasonally ponded areas, including, but not restricted to, vernal pools and swales provide potential habitat for listed vernal pool associated plants. However, no special-status plants were observed in the intermittent creeks, seasonal wetlands, or upland areas during surveys conducted by ECORP in 2005 and 2008 or the Burleson site visit conducted June 19, 2008. SMUD would follow mitigation measure Bio-5 to avoid potential impact to listed plant species.

Twenty-six special-status wildlife species have low or moderate potential to occur within the proposed project area. One special status species, the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), has a high potential of occurrence due the larger number of Elderberry shrubs present within and surrounding the

proposed project site. SMUD would follow mitigation measure Bio-16 to avoid potential impact to the valley elderberry longhorn beetle.

Two special-status reptiles and amphibians have potential to occur within the proposed project site. The northwestern pond turtle may occur within perennial waters, and western spadefoot toad breeds in seasonal wetlands, but is primarily associated with grasslands, and may occur within the proposed project area. SMUD has included Mitigation Measure Bio-14 to reduce impacts on these species.

Construction activities may cause wildlife to temporarily relocate or leave the area until the activities are complete. Construction during the breeding or nesting season could adversely affect the young or reproductive success of species. SMUD has included Mitigation Measures Bio-8 through Bio-13 to reduce the potential impact on special-status species during the breeding or nesting season.

Effects on Riparian and Wetland Habitat

The proposed project would not directly affect riparian or wetland habitat. SMUD has included Mitigation Measures Bio-4 through Bio-6 to reduce the potential impact on riparian or wetland habitat, or other sensitive natural communities that occurs within the proposed subtransmission line corridor.

Effects on Wildlife Migration Corridors and Avian Protection Plan

The proposed project would not adversely affect wildlife migration corridors; the proposed project site does not occur within an identified migration corridor for any wildlife species. The proposed project would not extend into the flyway of any migratory bird species.

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The proposed 69-kV subtransmission line is located within open grassland and woodland landscape and has the potential for impacts on avian species. Potential impacts on avian species include electrocution, collision with power lines, nesting on utility poles, and disturbance during construction activities. SMUD produced an Avian Protection Plan that formalizes and enhances past practices of avian protection and incorporates industry best practices for installations as necessary (SMUD, 2007). In addition to following the Avian Protection Plan, SMUD has included mitigation measures Bio-7 through Bio-13 to reduce the potential impact on avian species.

Conflict with Local Policies

The proposed project would be consistent with local policies. The proposed project would not conflict with any local biological resources policies or ordinances such as those stated in the conservation goals in the County General Plan (Sacramento County, 1993). The proposed project would not affect sensitive habitats, such as riparian and wetland habitats.

Conflict with Adopted Conservation Plans

The proposed project would not conflict with the Easton Resource Conservation Management Plan developed for the Easton Place and Glenborough at Easton projects. The proposed subtransmission line would be constructed through the eastern portion of

the open space preserve. SMUD has included mitigation measures to reduce impacts to special-status species and habitats in the open space preserve.

Mitigation Measures Incorporated into Project Construction Plans and Design Features

- **Bio-1:** Before construction activities, all on-site construction personnel will receive instruction regarding the presence of listed species and the importance of avoiding impacts to these species and their habitat. Crews will be informed to stop work if any special-status species are encountered and contact the project manager.
- **Bio-2:** A work zone will be identified on construction drawings, and/or will be adequately flagged or fenced in the field to limit construction equipment and personnel to the minimum area necessary to perform the proposed work.
- **Bio-3:** To prevent the introduction or spread of noxious weeds, all equipment shall be washed before leaving the site. Equipment rinse water shall be disposed of in a sanitary sewer.
- **Bio-4:** For special-status vernal pool shrimp species, to avoid impacts to seasonal wetland habitats, SMUD will follow the avoidance measures as stated in the No Take Letter. If a pole will be installed within 250 feet of wetland habitat, but not within wetland habitat, SMUD will implement the avoidance measures listed below. No take would occur, and therefore no consultation with USFWS would be required.
    - Where present, existing paved and unpaved roads will be used to access the work area.
    - All work will be performed in the dry season (approximately April 15 through October 15). Should soil moisture be encountered, rubber matting, or similar equivalent, will be used to minimize disturbance.
    - A qualified biologist (biological monitor) will be present onsite and will inspect any construction-related activities to ensure that no unnecessary ground disturbance or take of species occurs. The biologist will have the authority to stop all activities that may result in such take or destruction until appropriate corrective measures have been completed. The biologist also will be required to report immediately any unauthorized take to USFWS.
    - In areas that have not been previously disturbed, heavy equipment use will be minimized.
    - For pole installations, the area between the pole and the pole hole will be backfilled with concrete. The upper portion will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil. Areas of disturbed soil will be reseeded with a native seed mix.

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- No pesticides or herbicides will be used within 250 feet of vernal pools.

- **Bio-5**: For federally-listed vernal pool associated plants, SMUD will follow the avoidance measures as stated in the No Take Letter. Seasonally ponded areas, including, but not limited to, vernal pools and swales provide potential habitat for federal listed vernal pool associated plants. Where reconnaissance surveys determine that seasonally ponded areas with potential to support vernal pool plants are present, either surveys will be performed according to USFWS sampling protocol, or presence of vernal pool plants will be assumed.

  If surveys conclude that vernal pool plants are present, or presence is assumed, and a direct impact will occur during the emergence and/or bloom period (Sacramento Orcutt grass [*Orcuttia viscida*], April though July; slender Orcutt grass [*Orcuttia tenuis*], May through September; and succulent owl's clover [*Castilleja campestris* ssp. *succulenta*], April through May), the USFWS will be consulted. Insulator washing, pipeline construction, and vegetation removal within 250 feet of a vernal pool is not authorized under the No Take determination, and requires consultation with the USFWS.

  If protocol surveys conclude that vernal pool plants are present, or presence is assumed, and construction is within 250 feet of the habitat, but not within the emergence/bloom period, SMUD will implement the avoidance measures listed below to avoid impacts to these species and habitat. Consultation with the USFWS will be required.

  SMUD Avoidance Measures for Activities in and/or within 250 feet of habitat for vernal pool plants include:

  - Where present, existing paved and unpaved roads will be used to access the area.
  - All work will be performed after the special-status plants or potential special-status plants have gone to seed. Should soil moisture be encountered in the seasonally ponded habitat, rubber matting, or similar equivalent, will be used to minimize disturbance.
  - In areas that have not been previously disturbed, heavy equipment use will be minimized.
  - For pole installations within 250 feet of seasonally inundated areas, the area between the pole and the pole hole will be backfilled with cement. The upper portion will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil.
  - No pesticides or herbicides will be used within 250 feet of vernal pools.

- **Bio-6:** SMUD will mitigate for removal of any landmark tree following the current Sacramento County Tree Preservation Ordinance. This will include obtaining a tree permit from the Director of Public Works prior to trenching, grading, or filling within the dripline of a native oak tree of specified dimensions or other species of tree or to destroy, kill, or remove any tree as a condition of

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approval of the proposed project. The mitigation fee is based on tree dimensions.

- **Bio-7:** New power lines, utility poles, and associated equipment shall be constructed to minimize the potential for bird-strikes and electrocution by using methods described in SMUD's Avian Protection Plan (SMUD, 2007).
- **Bio-8:** If vegetation will be removed by the proposed project and all necessary approvals have been obtained, substrate (*e.g.*, trees and shrubs) containing nests shall be removed between November 1 and February 28 to ensure that active (containing intact eggs, live chicks, or presence of an adult) nests are not destroyed or disturbed as a result of project construction activities. If a nest may be destroyed during the nesting season, a qualified biologist shall survey the nest to determine if it is active.
- **Bio-9:** If construction activities would occur during the nesting season (estimated to be January through August), pre-construction surveys for the presence of special-status bird species or any nesting bird species shall be conducted by a qualified biologist within 500 feet of proposed construction areas. This survey shall be conducted no more than 14 days prior to the initiation of construction activities during the breeding season (raptors – January through August; burrowing owl – February 1 through August 31). During this survey, the biologist shall inspect all trees, grassland, and electrical towers in and immediately adjacent to the impact area for nests. Specific mitigation measures for burrowing owl, Swainson's hawk, and tri-colored black bird are included under Mitigation Measures Bio-10 through 13. If any other nest sites of bird species protected under the MBTA are observed within the vicinity of the project site, then the project will be modified and/or delayed as necessary to avoid direct take of identified nest, eggs, and/or young.
- **Bio-10:** For the burrowing owl, a qualified biologist shall survey the proposed project site, including a 150-meter buffer zone around the proposed project boundary no more than 14 days prior to the initiation of construction activities. If an active burrowing owl nest is found within that area, the biologist, in consultation with CDFG, shall follow the Burrowing Owl Survey Protocol and Mitigation Guidelines (California Burrowing Owl Consortium, 1993). The Mitigation Guidelines state that if construction occurs during the non-breeding season (September 1 through January 31), then a 50-meter radius must be maintained around the occupied burrow. If construction occurs during the breeding season (February 1 through August 31), then a 75-meter radius must be maintained around the occupied burrow. Throughout the year, foraging habitat around occupied burrows must be maintained at a minimum of 6.5 acres.
- **Bio-11:** For the Swainson's hawk, a qualified biologist shall conduct a pre-construction survey for active Swainson's hawk nests if construction occurs between February and September (the breeding and nesting season). The survey shall be conducted within 0.5 mile of the project area. This survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the biologist shall inspect all trees and utility poles for raptor

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nests in and immediately adjacent to the impact areas. If a Swainson's hawk is found nesting within 0.25 mile of the project area, the degree of avoidance necessary to prevent nest failure shall be discussed with the CDFG. If exclusion zones cannot be implemented at these distances, the following measures may be implemented:

- Construction may be postponed in that area until young are fledged, or
- A qualified biological monitor shall be provided to monitor the birds on the nest and stop construction if it appears that the birds will abandon the nest and/or young, or
- The CDFG shall be consulted if construction appears to jeopardize the nesting success and provide for the artificial rearing of eggs or young by qualified staff.

- **Bio-12:** For tricolored blackbird, if construction would occur during the breeding season (April through July), a preconstruction survey for their colonies shall be conducted by a qualified biologist to ensure that none are disturbed during project construction. This survey shall be conducted no more than 14 days prior to the initiation of construction activities during the early part of the breeding season or no more than 30 days prior to the initiation of construction during the late part of the breeding season (July). During this survey, the biologist shall inspect potential tricolored blackbird habitat in and within 500 feet of the project area.
- **Bio-13:** To minimize impacts on tricolored blackbird colonies, a 200-foot buffer shall be established around active tricolored blackbird nests. No project-related construction shall occur within this buffer until young have fledged or the species are no longer attempting to nest. No further mitigation measures are required once the young have fledged or after August 1.
- **Bio-14:** For western spadefoot toad and northwestern pond turtles, a qualified biologist shall survey the proposed project site within the ROW around aquatic and seasonally inundated habitat. If preconstruction surveys determine the presence of these species, SMUD will consult with CDFG to determine appropriate measures to avoid and minimize take of individuals.
- **Bio-15:** Valley Elderberry Longhorn Beetle habitat is present in the proposed project area; therefore, if a 100 foot buffer zone is established and maintained, then no additional avoidance measures are necessary. Construction activities within 20 feet of an elderberry shrub are not authorized under the "No Take" determination. SMUD will implement the following mitigation measures to avoid take when construction activity falls between 20-feet to 100-feet of an elderberry bush:
  - The presence of elderberry shrubs in the construction area will be documented on work orders and the SMUD Planning Supervisor will be notified. SMUD and outside agency contact will be made through the Planner Supervisor.

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- All on-site construction personnel will receive instruction regarding the presence of elderberry shrubs, beetle, the importance of avoiding impacts to the beetle and its habitat, and the possible penalties for not complying with these requirements.
- Flag the 20-foot exclusion boundary around the elderberry shrub and post a sign with the following information: "This area is habitat for the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." This sign should be clearly readable and must be maintained for the duration of the construction.
- A biological monitor will be required to supervise work falling between 20-feet and 100-feet of elderberry shrubs and stop work should personnel be out of compliance with the beetle avoidance measures, or if there is a risk that incidental take may occur.
- Disturbance shall be minimized, and the site will be restored following construction.

B5-925 (Cont.)

References

Bowcutt, F. 1982. Botanical Inventory and Vegetation Analysis of the Aerojet-General Sacramento Facility. Prepared for Aerojet, spring 1982.

California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. April. Available online: http://www.dfg.ca.gov/wildlife/species/docs/boconsortium.pdf. Accessed November 06, 2007.

California Department of Fish and Game. 2009. California Natural Diversity Database, Rare Find Version 3.0.5. Last updated December 30, 2008. Available online: http://www.dfg.ca.gov/bdb/html/cnddb.html. Accessed January 26, 2009.

California Exotic Pest Plant Control (CalEPPC). 1999. CalEPPC List: Exotic Pest Plants of Greatest Ecological Concern in California. Updated regularly. Available online: http://www.cal-ipc.org/ip/inventory/pdf/Inventory1999.pdf. Accessed November 2007.

California Native Plant Society Electronic Inventory. 2008. The PLANTS Database. National Plant Data Center, Baton Rouge, LA 70874-4490 US. Available online: http://plants.usda.gov. Accessed August 2008.

ECORP. 2009. Wetland Delineation for 69 -kV Line, Sacramento County, California. January 22.

Environmental Statistics Group. 2003. Montana State University, Environmental Statistics Group Graphical Locator. Available online: http://www.esg.montana.edu/gl/index.html. Accessed August 2008.

GenCorp Realty. 2007. Easton Resource Conservation Management Plan. October 26.

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. Rancho Cordova, CA: California Department of Fish and Game.

Sacramento County. 1993. Conservation Element of the County of Sacramento General Plan. Includes revisions as of May 2, 1997.

Sacramento County. 2005. Draft South Sacramento Habitat Conservation Plan, County of Sacramento Planning Department. Available online: http://www.planning.saccounty.net/habitat-conservation/toc.html. Accessed August 2008.

Sacramento County. 2008. Easton Project, Easton Place and Glenbourough at Easton, Draft Environmental Impact Report. Volumes 1 through V. State Clearinghouse Number SCH2005062128. Prepared by ECORP Consulting, Inc. April.

B5-925 (Cont.)

Sacramento Municipal Utility District (SMUD). 2007. Sacramento Municipal Utility District Avian Protection Plan.

Thorp, R.W. and J.M. Leong. 1995. Native Bee Pollinators of Vernal Pool Plants. Freemontia. 23(2): 3-7.

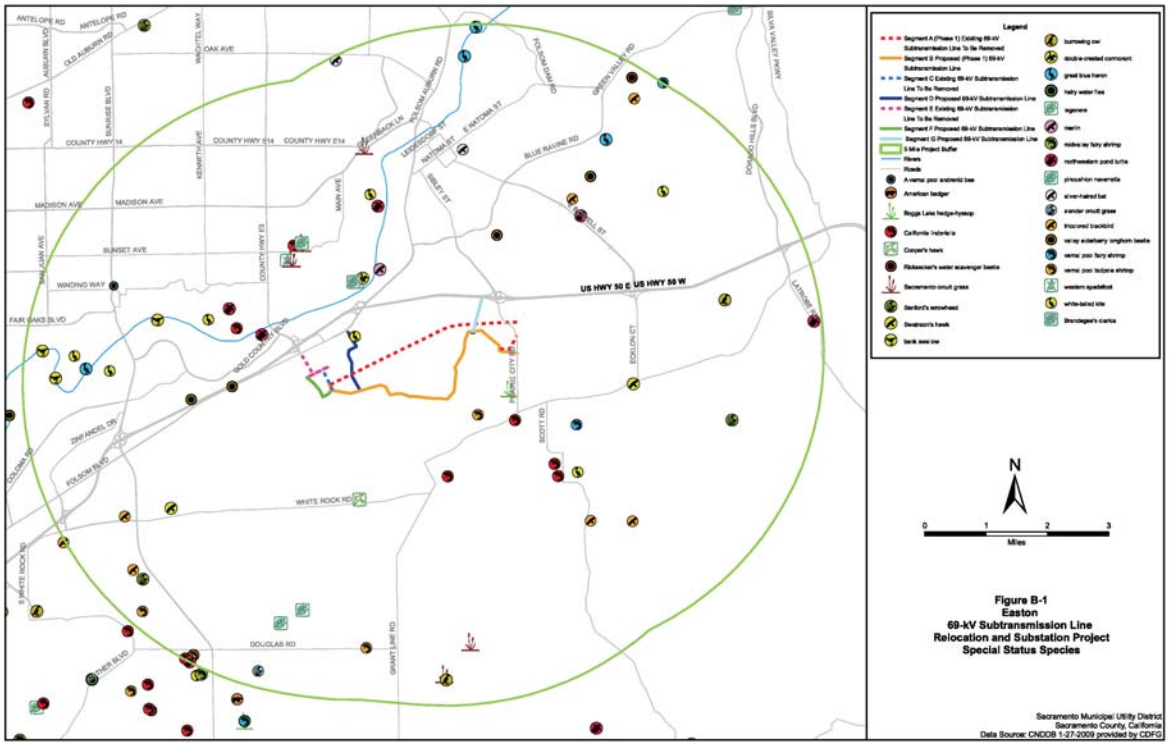
USFWS. 2007. Letter from Peter A. Cross, Deputy Assistant Field Supervisor to Ron Scott, Sacramento Municipal Utility District. Request for Technical Assistance for Sacramento Municipal Utility District's Routine Operation and Maintenance Project, Sacramento and Placer Counties, California with Amendment. June 19 and October 10.

USFWS. 2008. Sacramento office, Species List Database. Last updated September 11, 2008.

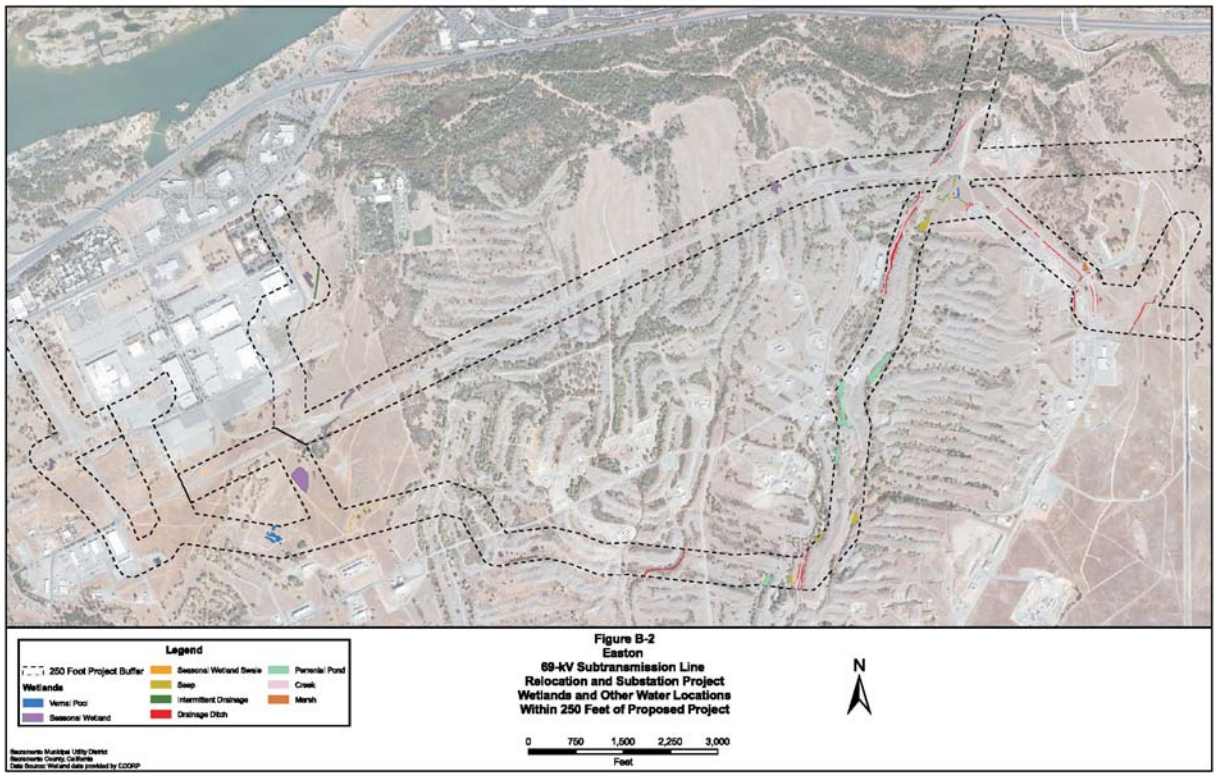
Wymer, N. 1989. Vernal Pool Survey for Rare, Endangered, Threatened, or Candidate Plant Species. Prepared for Aerojet by Nancy Wymer, Botanical Consultant, Citrus Heights, CA.

Zeiner, D. C., et al. 1990. California's Wildlife. Volume III: Mammals. State of California. The Resources Agency. Sacramento, California.

B5-925 (Cont.)


Legend
Segment A (Phase 1) Existing 69-kV Subtransmission Line To Be Removed
Segment B Proposed (Phase 1) 69-kV Subtransmission Line
Segment C Existing 69-kV Subtransmission Line To Be Removed
Segment D Proposed 69-kV Subtransmission Line
Segment E Existing 69-kV Subtransmission Line To Be Removed
Segment F Proposed 69-kV Subtransmission Line
Segment G Proposed 69-kV Subtransmission Line
5 Mile Project Buffer
Rivers
Roads
A vernal pool andrenid bee
American badger
Boggs Lake hedge-hyssop
California Indeterla
Cooper's hawk
Rickseckar's water scavenger beetle
Sacramento onion grass
Sanford's arrowhead
Swainson's hawk
bank swallow
burrowing owl
double-crested cormorant
great blue heron
hairy water flea
legenere
merlin
midway fairy shrimp
northwestern pond turtle
pincushion navarretia
silver-haired bat
slender snout grass
tricolored blackbird
valley elderberry longhorn beetle
vernal pool fairy shrimp
vernal pool tadpole shrimp
western spadefoot
white-tailed kite
Brandegee's clarkia
N
0
1
2
3
Miles
Figure B-1
Easton
69-kV Subtransmission Line
Relocation and Substation Project
Special Status Species
Sacramento Municipal Utility District
Sacramento County, California
Data Source: CNDDB 1-27-2009 provided by CDFG
US HWY 50 E
US HWY 50 W
ANTELOPE RD
OLD AUBURN RD
OAK AVE
COUNTY HWY 14
COUNTY HWY E14
MADISON AVE
SUNSET AVE
WINDING WAY
FAIR OAKS BLVD
FOLSOM BLVD
WHITE ROCK RD
DOUGLAS RD
GRANT LINE RD
SCOTT RD
EDKLON CT
BLUE RAVINE RD
GREEN VALLEY RD
FOLSOM DAM RD
MAIN AVE
COUNTY HWY E3
KENNETH AVE
SUNRISE BLVD
SYLVAN RD
SAN JUAN AVE
S WHITE ROCK RD
ZINFANDEL DR
COLOMA RD
SOLD COUNTRY BLVD
FRANKLIN CITY RD
LATROBE RD
SILVA VALLEY PKWY
DONALD HILLS RD

B5-925
(Cont.)


Legend
250 Foot Project Buffer
Wetlands
Vernal Pool
Seasonal Wetland
Seasonal Wetland Swale
Seep
Intermittent Drainage
Drainage Ditch
Perennial Pond
Creek
Marsh
Figure B-2
Easton
69-kV Subtransmission Line
Relocation and Substation Project
Wetlands and Other Water Locations
Within 250 Feet of Proposed Project
N
0 750 1,500 2,250 3,000
Feet
Sacramento Municipal Utility District
Sacramento County, California
Data Source: Wetland data provided by EDORP

B5-925
(Cont.)

TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Plants				
Ione manzanita	*Arctostaphylos myrtifolia*	T/—/1B	An evergreen shrub. Attaining a height of generally less than 4 feet, plants appear low and spreading. The bark is red, smooth, and waxy. White or pinkish urn-shaped flowers appear from January to February. This species is the dominant and characteristic species of Ione chaparral.	**Low.** No occurrences documented in the proposed project vicinity. Suitable habitat (Ione chaparral) present in the proposed project site.
Big-scale balsamroot	*Balsamorhiza macrolepis var. macrolepis*	—/—/1B	Big-scale balsamroot occurs in various land cover types, including purple needlegrass grassland, serpentine bunchgrass grassland, mixed serpentine chaparral, mixed oak woodland and forest, and ponderosa pine woodland and forest, between 150 and 4,500 feet elevation.	**Low.** No occurrences documented in the proposed project vicinity. Suitable habitat (grasslands, charparral, oak and pine woodland) present in the proposed project site.
Stebbins' morning-glory	*Calystegia stebbinsii*	E/E/1B	Perennial herb. Grows in two localized areas near Pine Hill in the Sierra Nevada foothills of western El Dorado County. Associated with chaparral on gabbro-derived soils.	**Not Likely.** No occurrences documented in the proposed project vicinity. Species range is limited to two localized areas in El Dorado and Nevada counties.
Pine Hill ceanothus	*Ceanothus roderiickii*	T/R/1B	An evergreen shrub. Grows only on gabbro soils in western El Dorado County, scattered throughout areas of chaparral. Blooms April to June.	**Not Likely**. No occurrences documented in the project vicinity. Species range islimited to localized areas in El Dorado county.
Red Hill soaproot	*Chlorogalum grandiflorum*	—/—/1B	Perennial herb. Occurs almost entirely on gabbro and serpentine soils in western El Dorado County, and the Red Hills in Tuolumne County, but it has been found at several locations in other soils as well. It is typically found growing in rocky soils in open areas in the midst of chaparral. Blooms May to June.	**Low.** No occurrences documented in the proposed project vicinity. Chaparral habitat present at the proposed project site may provide suitable habitat.

B5-925 (Cont.)

TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Brandegee's clarkia	*Clarkia biloba* ssp. *brandegeeae*	—/—/1B	Annual herb. Associated with chaparral and Cismontane woodland habitats. Blooms May to July.	**Low.** Occurrence documented less than one mile north of the proposed project area. Chaparral habitat present at the proposed project site may provide suitable habitat
Hispid bird's-beak	*Cordylanthus mollis* ssp. *hispidus*	—/—/1B	Annual herb. Native and endemic to California. Associated with wetlands in alkaline meadows and playas.	**Low.** No occurrences documented in the proposed project vicinity. Seasonal wetland habitat present at the proposed project site may provide suitable habitat
Dwarf downingia	*Downingia pusilla*	—/—/2	Annual herb. Native to California. Associated with vernal pools in valley and foothill grassland (mesic sites). Blooms March to May.	**Low.** No occurrences documented in the proposed project vicinity. Seasonal wetlands and open grasslands present at the proposed project site may provide suitable habitat.
Ione buckwheat	*Eriogonum apricum* var. *apricum*	E/E/1B	Perennial herb. Occurs within openings of Ione chaparral on gravelly red clay soils and grows upright to 3-8 inches in height. Its leaves are basal, round to oval. This variety flowers from July to October.	**Low.** No occurrences documented in the proposed project vicinity. Suitable habitat (Ione chaparral) present at the proposed project site.
Irish Hill buckwheat	*Eriogonum apricum* var. *prostratum*	E/E/1B	Perennial herb. Occurs within openings of Ione chaparral on gravelly red clay soils. Prostrate inflorescences (flower clusters) and an earlier flowering time. This variety flowers from June to July.	**Not Likely.** No occurrences documented in the proposed project vicinity. Species range is limited to only two occurrences in Amador county.
Tuolumne button-celery	*Eryngium pinnatisectum*	—/—/1B	Occurs in mesic sites within cismontane woodland, lower montane coniferous forest, and vernal pools. Blooms June to August.	**Low.** No occurrences documented in the proposed project vicinity. Seasonal wetland habitat present at the proposed project site may provide suitable habitat.

B5-925 (Cont.)

TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Pine Hill flannelbush	*Fremontodendron decumbens*	E/R/1B	Evergreen shrub. This plant is entirely confined to Pine Hill and the immediate vicinity of Pine Hill. A low-growing, often sprawling shrub, with many branches from the base. The leaves are fairly round to egg-shaped, roughly an inch long, and shallowly to deeply lobed. Blooms April to July.	**Not Likely.** No occurrences documented in the proposed project vicinity. Species is limited to Pine Hill and the immediate vicinity of Pine Hill, El Dorado and Nevada counties.
Stinkbells	*Fritillaria agrestis*	—/—/4	Occurs in Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland/clay, and sometimes serpentinite soils. Blooms March to June.	**Low.** No occurrences documented in the proposed project vicinity. Chaparral habitat present at the proposed project site may provide suitable habitat
El Dorado bedstraw	*Galium californicum ssp. sierra*	E/R/1B	Perennial herb. Grows in oak woodland areas, including sites with ponderosa pine and gray pine, on gabbro soils. Blooms May to June.	**Not Likely.** No occurrences documented in the proposed project vicinity. Species restricted to one localized area in Pine Hill, El Dorado County.
Boggs Lake hedge-hyssop	*Gratiola heterosepala*	—/E/1B	Annual herb. Occurs in marshes, swamps, and vernal pools. Blooms April to August.	**Low.** Occurrence documented within one mile east of the proposed project area. Seasonal wetland habitat present at the proposed project site may provide suitable habitat.
Bisbee Peak rush-rose	*Helianthemum suffrutescens*	—/—/3	An evergreen shrub. Occurs in ultramafic soils within chaparral. Blooms April to June.	**Low.** No occurrences documented in the proposed project vicinity. Chaparral habitat present at the proposed project site may provide suitable habitat.
Parry's horkelia	*Horkelia parryi*	—/—/1B	Occurs in lone formation soils within chaparral and cismontane woodland. Blooms April to September.	**Low.** No occurrences documented in the proposed project vicinity. Chaparral habitat present at the proposed project site may provide suitable habitat.

B5-925 (Cont.)

TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Ahart's dwarf rush	*Juncus leiospermus var. ahartii*	—/—/1B	Annual herb. Occurs in valley and foothill grasslands. Blooms March to May.	**Low.** No occurrences documented in the proposed project vicinity. Grasslands throughout the proposed project area may provide suitable habitat.
Red Bluff dwarf rush	*Juncus leiospermus var. leiospermus*	—/—/1B	Annual herb occurring in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and in vernally mesic vernal pools. Found at 35-1020 m elevation. Blooms March to May.	**Low.** No occurrences documented in the proposed project vicinity. Suitable habitat (chaparral, grasslands, seasonal wetlands) present in the proposed project site.
Legenere	*Legenere limosa*	—/—/1B	Annual herb. Endemic to California. Associated with vernal pools. Blooms May to June.	**Low.** Occurrence documented about three and a half miles south of the proposed project area. Seasonal wetlands at the proposed project site may provide suitable habitat.
Pincushion navarretia	*Navarretia myersii* ssp. *myersii*	—/—/1B	Occurs in vernal pools, swales, and other ephemeral wetlands and depressions. Blooms in May.	**Low.** Occurrence documented about one and a half miles north of the eastern edge of the proposed project area. Seasonal wetland, lowland, and shallow water depression areas at the proposed project site may provide suitable habitat.
Slender Orcutt grass	*Orcuttia tenuis*	T/E/1B	Annual grass. Associated with vernal pools. Blooms May through September.	**Low.** Occurrence documented about four and a half miles south of the proposed project area. Open areas and seasonal wetlands at the proposed project site may provide suitable habitat.

B5-925 (Cont.)

TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Sacramento Orcutt grass	*Orcuttia viscida*	E/E/1B	Annual grass. Associated with vernal pools. Blooms April through July.	**Low.** Occurrence documented about three miles north of the proposed project area. Open grassland areas and seasonal wetlands at the proposed project site may provide suitable habitat.
Layne's ragwort	*Packera laynaea*	T/R/1B	Perennial herb. Found in open, rocky areas within the chaparral and woodland habitats on gabbro and serpentine soils in western El Dorado County, in the Red Hills in Tuolumne County, and in Yuba County near Brownsville. The stems are slender, erect, with a few leaves, and are about 10 to 18 inches tall. Blooms April to August.	**Low.** No occurrences documented in the proposed project vicinity. Chaparral and woodlands areas at the proposed project site may provide suitable habitat.
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	E/E/1B	Annual shrub. Occurs in valley and foothill grasslands. Blooms March to April.	**Low.** No occurrences documented in the proposed project vicinity. Grassland areas may provide suitable habitat.
Sanford's arrowhead	*Sagittaria sanfordii*	—/—/1B	Rhizomatous emergent herb. Endemic to California. Associated with shallow freshwater marsh and swamp communities. Blooms May to October.	**Low.** Occurrence documented about 3 and a half miles east of the proposed project area. Seasonal, freshwater marsh at the proposed project site may provide suitable habitat.
El Dorado County mule ears	*Wyethia reticulata*	—/—/1B	Occurs in chaparral, cismontane woodland, lower montane coniferous forest/clay or gabbroic solis. Blooms April to August.	**Not Likely.** No occurrences documented in the proposed project vicinity. This plant has very limited distribution and has only been recorded in El Dorado County between 600 and 2000 feet elevation.

B5-925 (Cont.)

TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Invertebrates				
Blennosperma vernal pool andrenid bee	*Andrena blennospermatis*	•	Solitary, ground-nesting bees that occur in upland areas near vernal pools. The bees forage during the middle of the day. The flight period for females range from late February to late April, male flight period is unknown.	**Low.** No occurrences documented in the proposed project vicinity. Upland areas throughout the proposed project site may provide suitable habitat.
Subasta vernal pool andrenid bee	*Andrena subasta*	•	Solitary, ground-nesting bees that occur in upland areas near vernal pools. The bees forage during the middle of the day. The flight period for females range from late February to late April, male flight period is unknown.	**Low.** Occurrence documented about three and a quarter miles northwest of the proposed project area. Upland areas throughout the proposed project site may provide suitable habitat.
Albaster cave harvestman	*Banksula californica*	•	Alabaster Cave, the type locality of *Banksula californica*, has been partially destroyed by mining and the species may be extinct; the cave has been sealed by concrete so it is impossible to survey for the species and the species is possibly extirpated.	**Not Likely.** No occurrences documented in the proposed project vicinity. No suitable habitat within the proposed project site.
Conservancy fairy shrimp	*Branchinecta conservatio*	E/—/—	Inhabit highly turbid water in vernal pools. Cysts hatch and shrimp become active when pools fill during the winter rainy season.	**Low.** No occurrences documented in the proposed project vicinity. Seasonal wetlands within the proposed project site may provide suitable habitat.
Vernal pool fairy shrimp	*Branchinecta lynchi*	T/—/—	Local resident. Associated with ephemeral swales and vernal pools in grassland communities. Cysts hatch and shrimp become active when pools fill during the winter rainy season.	**Low.** Occurrences documented about one and a half miles southeast of the proposed project area. Seasonal wetlands within the proposed project area may provide suitable habitat.

B5-925 (Cont.)

TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Midvalley fairy shrimp	*Branchinecta mesovallensis*	—/SC/—	Endemic but distribution poorly understood. Associated with vernal pools, vernal swales, and other ephemeral water features. Habitat requirements similar to other local fairy shrimp species but tend to be in more shallow pools.	**Low.** Occurrence documented about four and a half miles southwest of the proposed project area. Seasonal wetlands within the proposed project area may provide suitable habitat.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T/—/—	Endemic with patchy distribution. Valley elderberry longhorn beetles are completely dependent on their host plant, the elderberry shrub. Adult active period is from March to June.	**High.** Suitable habitat (elderberry shrub) are abundant at the proposed project site and surrounding area.
Hairy water flea	*Dumontia oregonensis*	*	First described in 2003. The species was collected from one vernal pool in The Nature Conservancy's Agate Desert Preserve in January 1998. Because of the recent discovery, very little information exists regarding the species' habitat or life history requirements.	**Low**. Occurrence documented about six miles southwest of the proposed project site. Seasonal wetlands within the proposed project area may provide suitable habitat
Ricksecker's water scavenging beetle	*Hydrochara ricksecker*i	—/SC/—	Aquatic beetle. Prefers weedy, shallow, open water associated with fresh seeps, springs, farm ponds, vernal pools, and slow moving stream habitats. Very little is known of its life history.	**Low.** No occurrences documented within 5 miles of the proposed project area. Suitable habitat (freshwater environments) present. Assumed present.
Vernal pool tadpole shrimp	*Lepidurus packardi*	E/—/—	Local resident. Associated with a variety of artificial and natural vernal pools in grassland communities. Cysts hatch and shrimp become active when pools fill during the winter rainy season.	**Low.** Occurrences documented about within one mile southeast of the proposed project area. Seasonal wetlands within the proposed project area may provide suitable habitat.
California linderiella	*Linderiella occidentalis*	—/SC/—	Local resident. Associated with vernal pools in grassland communities. These pools are often formed in rock depressions. Cysts hatch and shrimp become active when pools fill during the winter rainy season.	**Low.** Occurrence documented about one mile east of the proposed project area. Seasonal wetlands within the proposed project area may provide suitable habitat.

B5-925 (Cont.)

TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Reptiles and Amphibians				
Northwestern pond turtle	*Actinemys marmorata marmorata*	—/SC/—	The only native freshwater turtle in the Pacific Coast states. Highly aquatic and associated with riparian habitat, including streams, rivers, sloughs, ponds, and artificial water bodies with deep pools, basking sites, and aquatic vegetation. Adults hibernate in the winter by burying themselves in muddy bottoms underwater or in upland soil and vegetative litter.	**Low.** Occurrences documented less than one mile northwest of the proposed project area. Streams or ponds in the proposed project vicinity may provide suitable habitat.
California tiger salamander	*Ambystoma californiense*	T/SC/—	Terrestrial salamander. Restricted to grasslands and low foothill regions with aquatic sites for breeding that may include valley needle grassland, valley wild rye grassland, non-native grassland and wildflower fields with vernal pools or other temporary ponds. Other habitats include valley-oak woodland.	**Not likely.** No occurrences documented in the proposed project vicinity. Seasonal wetland features within the proposed project area do not retain water for periods adequate to provide suitable habitat.
California red-legged frog	*Rana aurora draytonii*	T/SC/—	Largest native frog in the Western United States. Requires dense, shrubby or emergent vegetation associated with deep still or slow-moving water. Breeds from November through March.	**Not Likely.** No occurrences documented in the proposed project vicinity. No suitable habitat within the proposed project site.
Western spadefoot toad	*Spea hammondii*	—/SC/—	Range is throughout the Central Valley and adjacent foothills. Usually quite common where it occurs. Associated primarily with grasslands and occasionally valley-foothill hardwood woodlands. Breeding and egg laying occur almost exclusively in shallow, temporary pools formed by heavy winter rains. Egg masses are attached to plant material or the upper surfaces of small submerged rocks.	**Low.** Occurrences documented about one and a half miles north of the proposed project area. Grasslands in the proposed project area may provide suitable habitat.
Giant garter snake	*Thamnophis gigas*	T/T/—	Aquatic snake. Prefers freshwater marsh and low-gradient streams. Has adapted to drainage canals and irrigation ditches. Uses burrows and soil crevices in uplands during winter dormant period. Breeding period March through April.	**Not Likely.** No occurrences documented in the proposed project vicinity. No suitable habitat present within the proposed project area.

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TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Birds				
Cooper's hawk	*Accipiter cooperii*	—/SC/—	Typically associated with riparian forest and other wooded areas. Preys on medium-sized birds as well as small mammals and reptiles. Breeding typically occurs from April to June. Nest in mid- to large-sized trees.	**Moderate.** Occurrences documented about one and three quarter miles south of the proposed project area. The proposed project site contains grasslands for foraging and nesting habitats (riparian forest or wooded areas) are present.
Tricolored blackbird	*Agelaius tricolor*	—/SC/—	Summer migrant to area. Found throughout the Central Valley, where it is associated with wetland areas with dense vegetation such as cattails, tule, and bulrush. Forage in grassland and agricultural fields. Nest in large colonies. Breeding season is April-July. However, has also been reported breeding in October and November.	**Moderate** Occurrence documented about two and a quarter miles northeast of the proposed project area. The proposed project site contains grasslands for foraging within and adjacent to the proposed project site.
Grasshopper sparrow	*Ammodramus savannarum*	*	An uncommon and local summer resident and breeder in foothills and lowlands west of the Cascade-Sierra Nevada crest. Occurs in open grassy and weedy meadows, pastures, and plains. Builds nest of grasses and forbs in a slight depression in ground, hidden at base of overhanging clumps of grasses or forbs.	**Low.** No occurrences documented in the proposed project vicinity. The proposed project site contains weedy meadows, plains, or grasslands that may provide suitable habitat.
Great egret	*Ardea alba*	—/SA/—	Typically nest in large breeding colonies or rookeries. Breeding season generally February to August. Rookeries typically found in large trees, emergent wetlands, along the margins of estuaries, lakes, and slow-moving streams, on mudflats and salt ponds, irrigated croplands and pastures, and riparian habitat.	**Low.** No occurrences documented within the proposed project vicinity. May occur in creeks, emergent wetlands, ponds, or riparian habitat throughout the proposed project area.

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TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Great blue heron	*Ardea herodias*	—/SA/—	Typically nest in large breeding colonies or rookeries. Breeding season generally February to August. Rookeries typically found in large trees in riparian habitat. Feeds and rests in shallow estuaries and fresh and saline emergent wetlands.	**Moderate.** Occurrence documented about three and a half miles west of the proposed project area. May occur in creeks, emergent wetlands, ponds, or riparian habitat throughout the proposed project area.
Burrowing owl	*Athene cunicularia*	—/SC/—	Primarily a summer migrant to the area. Habitat includes open grassland with fossorial mammal burrows, often associated with ground squirrels. Use small mammal burrows for cover and natal dens. Breeding season is typically from February through August.	**Moderate.** Occurrences documented about three and a half miles east of the proposed project area. Grasslands for foraging, and burrows for nesting within the proposed project site may provide suitable habitat.
Ferruginous hawk	*Buteo regalis*	—/SC/—	Migratory hawk. Generally arrives in California in September and leaves by mid-April. Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats.	**Low.** No occurrences documented in the proposed project vicinity. Grasslands may provide suitable foraging habitat but no nesting trees were observed within the proposed project site.
Swainson's hawk	*Buteo swainsoni*	—/T/—	Primarily spring/summer migrant to the Central Valley. Generally nests in riparian trees adjacent to grassland and agricultural areas with scattered trees. Associated with the Central Valley during the breeding season, migrating to Central and South America in the fall/winter.	**Moderate.** Occurrences documented about two miles east of the proposed project area. Grasslands may provide suitable foraging habitat, and trees for nesting were observed within the proposed project site.
White-tailed kite	*Elanus leucurus*	—/SFP/—	Small raptor that nests in isolated trees in dry grass savannahs, meadows, and oak woodlands or trees along marsh edges. Breeds from February to October.	**Moderate.** Occurrences documented less than one mile east of the proposed project area. Grasslands for foraging and several potential nesting trees in or near the proposed project site may provide suitable habitat.

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TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Merlin	*Falco columbarius*	—/SC/—	Uncommon winter migrant from September to May. Frequents open grasslands, savannahs, woodlands, lakes, wetlands, edges, and early successional stages. Ranges from annual grasslands to ponderosa pine and montane hardwood-conifer habitats.	**Moderate.** Occurrence documented about one mile north of the proposed project area. Grasslands may provide suitable foraging habitat.
Bald eagle	*Haliaeetus leucocephalus*	—/E/—	Range from Alaska to Northern Mexico. Habitat includes estuaries, rivers, large lakes, reservoirs, and some seacoasts. Nests in large trees, but may nest on cliffs or on the ground when trees are not present. Breed from November to January.	**Not Likely.** No occurrences documented in the proposed project vicinity. No suitable habitat (large bodies of water) present.
California black rail	*Laterallus jamaicensis coturniculus*	—/T/—	Range limited to the estuaries of San Francisco Bay and in the lower reaches of the Colorado River, but have been found in the Sierra Foothills. Habitat includes coastal salt marshes and inland freshwater marshes.	**Not Likely**. No occurrences documented in the proposed project vicinity. No suitable habitat (coastal salt marshes and inland freshwater marshes) present.
Double-crested cormorant	*Phalacrocorax auritus*	—/SC/—	Found in a variety of marine and inland aquatic habitats. Most common along the coast, may occur in the central valley in the winter. They require water for feeding and nearby perches, such as rocks, sandbars, pilings, shipwrecks, wires, trees or docks for resting on and drying out during the day. Breed April to August.	**Low.** Occurrence documented within one mile north of the proposed project area. Year long resident of the coast, may migrate into the central valley in the winter.
Purple martin	*Progne subis*	—/SC/—	Spring migrant to the area. Largest North American swallow. Colonial nester in woodlands; mostly wood¬pecker cavities or human-made struc¬tures. Nests are often located in a tall isolated tree. Breeds from late March through July.	**Low.** No occurrences documented in the proposed project vicinity. The project site contains grassland for foraging and may nest in adjacent residential areas.
Bank swallow	*Riparia riparia*	—/T/—	Spring and summer migrant to the Central Valley. Smallest North American swallow. Colonial nester in bluffs or bands, usually adjacent to water, where the soil consists of sand or sandy loam to allow digging. Breeds from May through mid-July.	**Low.** Occurrences documented about two and a half miles west of the proposed project area; the proposed project site is outside of the species range.

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TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Fish				
Delta smelt	*Hypomesus transpacificus*	T/T/—	Salt-tolerant. Endemic to the Sacramento–San Joaquin estuary, where it spends most of its adult life. Spawn in shallow, fresh or slightly brackish water upriver from the mixing zone, including the Sacramento River, Mokelumne River system, Cache Slough region, San Francisco Bay Delta, and Montezuma Slough area. Spawning occurs in fresh water between January and July.	**Not Likely.** May spawn in the Mokelumne River System between January and July (USFWS, 1995). However, the Folsom South Canal creates a barrier preventing the fish from reaching the proposed project site.
Central valley steelhead	*Oncorhynchus mykiss*	T/SC/—	Anadromous. Associated with fresh, brackish, and marine riverine habitats. Spawns in main stems of the Sacramento and San Joaquin Rivers. Spawning occurs between December and June.	**Not Likely.** Current range of Central Valley steelhead has been limited to the Stanislaus, Tuolumne, and Merced Rivers (tributaries) and the mainstem San Joaquin River to its confluence with the Merced River (50 CFR Part 227).
Central Valley chinook, Spring-run	*Oncorhynchus tshawytscha*	T/T/—	Anadromous. Associated with fresh, brackish, and marine riverine habitats. Spawns in main stems and tributaries of the Sacramento River. Principal holding and spawning areas were in the middle and headwater reaches, including the San Joaquin, Feather, and upper Sacramento and San Joaquin Rivers. Spawning occurs from late August through October.	**Not Likely.** Spawning occurs in the Sacramento and San Joaquin River Systems. They are fairly faithful to home streams in which they were spawned. However, some may stray, especially during highwater years, and ascend other streams (USFWS, 1995).
Central Valley chinook, winter-run	*Oncorhynchus tshawytscha*	E/E/—	Anadromous. Associated with fresh, brackish, and marine riverine habitats. Spawns in main stems and tributaries of the Sacramento and San Joaquin Rivers. Principal holding and spawning areas were in the middle and headwater reaches including the San Joaquin, Feather, and upper Sacramento Rivers. Spawning occurs from April to mid August.	**Not Likely.** Spawning occurs in the Sacramento River and San Joaquin Systems. They are fairly faithful to home streams in which they were spawned. However, some may stray, especially during highwater years, and ascend other streams (NMFS, 1996).

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TABLE B-1
Special-Status Species List

Common Name	Scientific Name	Status Federal/State/ CNPS	Primary Habitat and Critical Seasonal Periods	Likelihood for Occurrence in Project Site and Comments
Mammals				
Pallid bat	*Antrozous pallidus*	—/SC/—	The pallid bat is a locally common species of low elevations in California. Occupies grasslands, shrublands, and woodlands. Needs drinking water.	**Low.** Woodlands and abandoned buildings may provide roost sites. Suitable foraging habitat (marshes, ponds, and riparian corridors) is present in the project area.
Silver-haired bat	*Lasionycteris noctivagans*	—/—/—	Summer habitats include coniferous forests, woodlands, and riparian habitats. Roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark. Needs drinking water.	**Low.** Woodlands and abandoned buildings may provide roost sites. Suitable foraging habitat (marshes, ponds, and riparian corridors) is present in the project area.
American badger	*Taxidea taxus*	—/SC/—	Stout-bodied, primarily solitary species that hunts for ground squirrels and other small mammal prey in open grassland, cropland, deserts, savanna, and shrubland communities. Badgers have large home ranges and spend inactive periods in underground burrows. Badgers typically mate in mid- to late summer and give birth between March and April.	**Low.** May occur in the grasslands within the project area. An individual was documented near the Aerojet property in the early 1980s (Matus 1981).

Sources:

50 CFR Part 227. Endangered and Threatened Species: Threatened Status for Two ESUs of Steelhead in Washington, Oregon, and California. Title 50 *Code of Federal Regulations*, Washington D.C.

National Marine Fisheries Service (NMFS). 1996. Biological Assessment for the Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California as it affects the Sacramento River Winter Chinook Salmon.

USFWS. 1995. Sacramento-San Joaquin Delta Native Fishes Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon.

Matus, M.J. 1981. Vertebrate Inventory and Species Diversity of the Aerojet-General Sacramento Facility. September 4, 1981.

Key to Status Codes:

Federal Status:
C: Candidate for listing
E: Endangered
T: Threatened

State Status:
E: Endangered
T: Threatened
SC: California species of special concern
SFP: State fully protected
SA: Special animal

CNPS- California Native Plant Society Status:
1B = Rare, threatened or endangered in California and elsewhere and are rare throughout their range. According to CNPS, all of the plants constituting List 1B meet the definitions of Sec. 1901.
2 = Rare in California, but not elsewhere.

* Watch List or Species of Local Concern

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Attachment B-1

B5-925
(Cont.)

United States Department of the Interior

FISH AND WILDLIFE Service
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
1-1-07-TA-1041

JUN 1 9 2007

Mr. Ron Scott
Sacramento Municipal Utility District
PO Box 1583
Sacramento, CA 95852

Subject: Request for Technical Assistance for Sacramento Municipal Utility District's Routine Operation and Maintenance Project, Sacramento and Placer Counties, California

Dear Mr. Scott:

This is in response to your May 14, 2007, letter requesting that the U.S. Fish and Wildlife Service (Service) review the Sacramento Municipal Utility District's (SMUD) Routine Operation and Maintenance (O&M) Project, Sacramento County, California (proposed project) for potential effects to the federally-listed species. We received your request on May 16, 2007. Our primary concern and mandate is the protection of federally-listed species pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

At issue are the potential effects of the proposed project on the federally threatened vernal pool fairy shrimp (*Branchinecta lynchi*), the endangered vernal pool tadpole shrimp (*Lepidurus packardi*); the threatened succulent owl's clover (*Castilleja campestris* ssp. *succulenta*); the endangered Sacramento Orcutt grass (*Orcuttia viscida*); the threatened slender Orcutt grass (*Orcuttia tenuis*); the threatened giant garter snake (*Thamnophis gigas*); the threatened California tiger salamander (*Ambystoma californiense*); and the threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). The proposed project has the potential to impact critical habitat for the following species: Sacramento Orcutt grass; Slender Orcutt grass; vernal pool fairy shrimp; vernal pool tadpole shrimp; California tiger salamander; and valley elderberry longhorn beetle.

The following are Federal endangered and threatened species that are reported on the Service's Species list as those that may be affected by projects in SMUD's Service Area (defined below); however, the Service concurs with SMUD's determination that these species are unlikely to occur within their Service Area: the threatened Delta green ground beetle (*Elaphrus viridis*); the endangered Antioch Dunes evening-primrose (*Oenothera deltoids* ssp. *howellii*); the threatened

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California red-legged frog (*Rana aurora draytonii*); and the endangered Conservancy fairy shrimp (*Branchinecta conservatio*) and would therefore not be affected by the proposed project The Service also concurs with SMUD's determination that the the proposed project would not result in take of the threatened bald eagle (*Haliaeetus leucocephalus*) or the threatened delta smelt (*Hypomesus transpacificus*) or result in adverse modification of delta smelt critical habitat or succulent owl's clover critical habitat.

Bald eagle breeding records maintained by the California Department of Fish and Game (CDFG) from 1959 through 1997 show no eagle nesting territories in Sacramento County (CDFG 2007a). A search of published and unpublished literature did not uncover more recent breeding survey data for Sacramento County. Based on CDFG's records, the nesting territories near Sacramento County are in Alameda, El Dorado, and Yuba counties (CDFG 2007a). The bald eagle is primarily a seasonal resident to Sacramento County, and the potential for SMUD's activities, covered under this technical assistance letter, to result in take of this species is negligible because of the species' seasonality and lack of breeding territories in the county and the nature of the proposed project.

No take of Delta smelt or adverse modification of its critical habitat will occur from the proposed project as SMUD's Service Area does not extend into the riparian zone of the Sacramento River or across the Sacramento River.

No adverse modification of succulent owl's clover critical habitat will occur as a result of the proposed project because the critical habitat delineation ends at the northern boundary of San Joaquin County on the south bank of Dry Creek which is outside of SMUD's Service Area.

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The findings and recommendations of this technical assistance are based upon: 1) meetings between Service staff, SMUD, and SMUD's consultant team (CH2M HILL and Area West Environmental) on August 30, 2006; December 12, 2006; February 14, 2007 and May 24, 2007; 2) various electronic mail (email) messages between the Service, SMUD, and SMUD's consultant team between August 2006 and June 2007; 3) SMUD's May 14, 2007, letter and accompanying materials referenced in the subject line as "*Request for Concurrence on [SMUD's] Approach for Take Avoidance*" (Biological Assessment); and 4) other information available to the Service.

Action Area

The Action Area for the proposed project is the SMUD Service Area and incorporates the majority of Sacramento County; except the area south of highway 160 and Walnut Grove. It also includes a small portion of Placer County that is generally defined as the area north of the Sacramento County line between Watt Avenue to the west, the city of Roseville to the east, and Vineyard Road to the North. This boundary is specifically depicted in the Biological Assessment and other maps in the administrative record. Sacramento and Placer Counties, which comprise SMUD's Service Area, supports a diversity of wildlife sustained by a variety of habitats, including vernal pools, freshwater emergent wetlands, riparian areas, watercourses, and

agricultural areas. A general description of these habitats is provided in the Biological Assessment.

Species Present within the Action Area
In SMUD's Service Area, the vernal pool fairy shrimp and vernal pool tadpole shrimp (vernal pool crustaceans) have been found in seasonally inundated basins including, but not limited to vernal pools, swales, and seasonal wetlands throughout Sacramento and Placer Counties. However, within SMUD's Service Area, the vernal pool tadpole shrimp is more commonly found south of U.S. Highway 50.

The nearest documented occurrence of succulent owl's clover to SMUD's Service Area is in San Joaquin County on the south bank of Dry Creek (CNDDB 2007). Dry Creek serves as the boundary line between Sacramento County to the north and San Joaquin County to the south. The species has been included because of its potential for occurrence within SMUD's Service Area.

Sacramento Orcutt grass is restricted to a region of approximately 135 square miles in eastern Sacramento County, within SMUD's Service Area. No historical locations are known outside this area.

Within SMUD's Service Area, Slender Orcutt grass occurs southeast of Mather Airport and from the Sacramento Regional Park to the Consumes River (CNDDB 2007).

In SMUD's Service Area, the giant garter snake is primarily found in the northern end of Sacramento County, comprising the area known as the Natomas Basin (CNDDB 2007). It is also present along the eastern fringes of the Sacramento–San Joaquin River Delta from the Laguna Creek–Elk Grove region of central Sacramento County southward to the Stockton area of San Joaquin County.

In SMUD's Service Area, the California tiger salamander is restricted to the vernal pool grasslands in the southeastern portion of Sacramento County.

In SMUD's Service Area, the beetle is concentrated in the riparian corridor associated with the American River, but the species can potentially occur throughout Sacramento and Placer Counties.

Critical Habitat Present within the Action Area
The Biological Assessment contains maps derived using Geographic Information System (GIS) overlays and metadata illustrating the critical habitat boundary of each species in relation to SMUD's existing transmission infrastructure in Sacramento County. The critical habitat data layers and metadata for each species were obtained from the Service in February 2007. The transmission infrastructure data layers and metadata were obtained from SMUD in February 2007. For each species, the acreage of critical habitat within SMUD's Service Area that falls within 30 feet of existing transmission corridors was calculated to assess the percent of that species' critical habitat within the corridors.

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All three of the Sacramento Orcutt grass critical habitat units occur in SMUD's Service Area; Unit 1 (Phoenix Field and Phoenix Park) is located in the City of Fair Oaks; Unit 2 (Southeast Sacramento Valley) is located south and east of Mather Airport and Regional Park bounded by the Cosumnes River on the south; and Unit 3 (Rancho Seco) is located south of Laguna Creek and north of the Sacramento–San Joaquin County boundary. Approximately 168 acres (equaling 0.5 percent) of the species' critical habitat within SMUD's Service Area is located within 30 feet of existing transmission lines.

One critical habitat unit (Unit 6: Southeast Sacramento Valley Unit) for Slender orcutt grass occurs in SMUD's Service Area. This Unit extends southeast of Mather Airport and Regional Park to the Cosumnes River. Approximately 19 acres (equaling 1.6 percent) of the species' critical habitat within SMUD's Service Area is located within 30 feet of SMUD's existing transmission lines.

Two critical habitat units (Units 13 and 14) for vernal pool fairy shrimp occur in SMUD's Service Area. Unit 13 (Mather Unit) is located southeast of the City of Sacramento and is generally bounded by Bradshaw Road, Grant Line Road, Scott Road, and Mather Field, and Unit 14 (Cosumnes Unit) occurs south of the Cosumnes River to the Sacramento–San Joaquin County line. Approximately 238 acres (equaling 0.6 percent) of the species' critical habitat within SMUD's Service Area is located within 30 feet of SMUD's existing transmission lines.

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Two critical habitat units (Units 8 and 9) for the vernal pool tadpole shrimp occur in SMUD's Service Area. Unit 8 (Mather Unit) is the same as Unit 13 for the vernal pool fairy shrimp. Unit 9 (Cosumnes Unit) is the same as Unit 14 for the vernal pool fairy shrimp. Approximately 237 acres (equaling 0.6 percent) of the species critical habitat within SMUD's Service Area is located within 30 feet of SMUD's existing transmission lines. This critical habitat acreage overlaps that of the vernal pool fairy shrimp.

One critical habitat unit, Unit 3 (Southeastern Sacramento), for the California tiger salamander occurs within SMUD's Service Area. Unit 3 is composed of 9,966 acres of privately held land, bordered on the south by the Sacramento–San Joaquin County line, on the north by Laguna Creek, on the east by the Sacramento and Amador county border, and on the west by Alta Mesa Road. Approximately 110 acres (equaling 1.1 percent) of the species' critical habitat within SMUD's Service Area is located within 30 feet of SMUD's existing transmission lines.

Two critical habitat zones for the valley elderberry longhorn beetle occur in SMUD's Service Area: (1) Sacramento Zone, in the city of Sacramento enclosed on the north by Route 160, on the west and southwest by the Western Pacific railroad, and on the east by Commerce Circle and its extension southward to the railroad tracks; and (2) American River Parkway Zone, in the American River Parkway on the south bank of the American River, bounded on the north by latitude 38°37'30" N, and on the south and east by Ambassador Drive and its extension north to latitude 38°37'30" N, Goethe Park, and the portion of the American River Parkway northeast of Goethe Park, west of the Jedediah Smith Memorial Bicycle Trail, and north to a line extended eastward from Palm Drive. Approximately 2 acres (equaling 0.4 percent) of the species' critical

habitat within SMUD's Service Area is located within 30 feet of SMUD's existing transmission lines.

Project Description

Activities conducted by SMUD within its Service Area are associated with either O&M or new construction. SMUD constructs new utility infrastructure to maintain uniform, adequate, safe, and reliable electric service. SMUD also conducts O&M activities on existing facilities. Most of SMUD's new substation facilities are graded and have already undergone environmental review and permitting as part of a larger project. This is less often the case with new overhead power lines.

A list of general activities SMUD conducts within its Service Area is included as Attachment 1. Activities are characterized as thoroughly as possible given the variation in scope and site-specific issues present within the Service Area. Information on each type of activity includes: (1) duration; (2) frequency; (3) disturbance area per event (permanent and temporary); (4) total disturbance annually (permanent and temporary); (5) description of equipment used; and (6) explanation of the basis from which the impacts were derived.

The following activities conducted by SMUD within its Service Area are described in Attachment 1:

- Installation of new distribution and subtransmission poles
- Installation of new transmission steel poles
- Removal of existing poles
- Pole replacement
- Powerline stringing
- Maintenance of towers
- Substation insulator washing
- Utility pole insulator washing
- Elderberry trimming
- Gas pipeline operation and maintenance activities
- Gas pipeline emergency repair
- Gas pipeline realignment activities

Avoidance and Conservation Measures

"Take" is defined by section 9 of the Act as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harass" is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. "Harm" is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering (50 CFR § 17.3).

For SMUD's take avoidance approach, a suite of species-specific measures have been developed that, when implemented, will avoid take of listed species and their habitats (Attachment 2). This

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approach also provides a mechanism to facilitate communication among SMUD environmental staff and departments involved in new facility planning, construction, and O&M activities. Measures were developed in collaboration with Service staff and include such categories as worker environmental awareness training, oversight of activities by a biological monitor, seasonal work restrictions, standardized operational protocols, and best management practices.

Service and SMUD had extensive discussions regarding the development of measures to adequately protect vernal pool crustaceans and reviewed the Hathaway et al. 1996 study reporting the weight at which crustacean cysts are crushed. Service and SMUD agreed that equipment operation through a vernal pool in the wet season would constitute take and is, therefore, not covered under the take avoidance approach. It was discussed that operation during the dry season may be allowable if the weight of the equipment used to perform SMUD activities is within the crush weight tolerance of cysts. SMUD obtained specifications on the equipment used for activities listed in Attachment 1, (e.g., bucket and line trucks, utility trailer, crane, backhoe, etc.), and conducted an analysis to assess whether they met the crush weight tolerance of crustacean cysts. A technical memorandum describing the approach, methodology, and results of this analysis is included in the Biological Assessment. The analysis concluded that all of the equipment used to perform the activities listed in Attachment 1 does not exceed the crush weight tolerance for cysts of vernal pool crustaceans. Based on this analysis, dry-season operation of equipment in and around vernal pools is allowable under the no take approach, with implementation of the vernal pool crustacean avoidance measures described in Attachment 2.

Reporting Requirements

SMUD will update the species list and critical habitat designations annually and submit a summary letter of projects covered under this technical assistance letter to determine if additional avoidance measures are needed to ensure that there will be no take of listed species or modifications to critical habitat. The summary letter will include an attachment with checklist for each project that documents: (1) location; (2) type of project; (3) date occurred; (4) species encountered; (5) post-project assessment of SMUD's success in adhering to avoidance measures; (6) an explanation of failure to meet these measures, if any; (7) documentation that areas of disturbance were restored to pre-project conditions; and (8) any other pertinent information. SMUD will verbally report any unauthorized deviation from the description of proposed avoidance measures to the Deputy Assistant Field Supervisor or Sacramento Valley Branch Chief of the Sacramento Fish and Wildlife Office within 1 working day of the incident. Written notification must be made within 3 calendar days and include the date, time, and precise location of the event indicated on a U.S. Geological Survey 7.5 minute topographic map, and any other pertinent information. Additionally, color photographs should be taken of the specific site and provided with the notification. SMUD will also report any special status species sightings during pre-construction surveys to the California Natural Diversity Database (CNDDB).

The Service has determined that due to the avoidance and conservation measures in Attachment 2 that the specific activities listed in Attachment 1 will not result in the take of the vernal pool fairy shrimp, vernal pool tadpole shrimp, succulent owl's clover, Sacramento Orcutt grass, slender Orcutt grass, giant garter snake, California tiger salamander, or valley elderberry longhorn beetle. The Service also determined that due to the avoidance and conservation

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measures in Attachment 2 that the specific activities listed in Attachment 1 will not adversely modify or destroy critical habitat for the Sacramento Orcutt grass; Slender Orcutt grass; vernal pool fairy shrimp; vernal pool tadpole shrimp; California tiger salamander; or valley elderberry longhorn beetle.

Other than the annual reports SMUD will submit as described above, no further action pursuant to the Act is necessary unless new information reveals effects of the proposed action that may affect a listed species in a manner or to an extent not considered; the action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this determination; or a new species or critical habitat is designated that may be affected by the proposed action. Projects or activities not able to meet all of the applicable take avoidance criteria do not qualify for coverage under SMUD's no take approach and must obtain incidental take authorization through another permitting mechanism (e.g., Section 7 or Section 10 of the Act).

Please contact the acting Sacramento Valley Branch Chief, at (916) 414-6600 if you have any questions regarding the proposed Sacramento Municipal Utility District's Routine Operation and Maintenance Project, Sacramento and Placer Counties, California.

Sincerely,

Peter A. Cross

Peter A. Cross
Deputy Assistant Field Supervisor

cc:
Meri Miles

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References Cited

CDFG and U.S. Fish and Wildlife Service (Service). 2003. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander. October. Obtained from: http://www.dfg.ca.gov/hcpb/species/stds_gdl/amp_sp/CTSFinalGuide10.03.pdf.

Santa Rosa Plain Conservation Strategy Team (SRPCST). 2005. Santa Rosa Plain Conservation Strategy. 1 December. Obtained from: http://www.fws.gov/sacramento/es/santa_rosa_conservation.html.

U.S. Fish and Wildlife Service (Service). 1996. Programmatic formal Endangered Species Act consultation on issuance of 404 permits for projects with relatively small effects listed vernal pool crustaceans within the jurisdiction of the Sacramento Field Office, California. 28 February. Obtained from: http://www.fws.gov/sacramento/es/documents/vp_prog_text.htm.

Service. 1997. Programmatic formal consultation for the U.S. Army Corps of Engineers 404 permitted projects with relatively small effects on the giant garter snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo counties, California. November. Obtained from: http://www.fws.gov/sacramento/es/documents/garter_snake_prog_text.htm.

Service. 1999. Conservation Guidelines for the Valley Elderberry Longhorn Beetle. Revised 9 July. Obtained from: http://www.fws.gov/sacramento/es/documents/velb_conservation.htm

Service. 2007. Guidelines for Information Needed to Request Concurrence from the United States Fish and Wildlife Service with a Finding that a Federal Action is 'Not Likely To Adversely Affect' the Threatened Giant Garter Snake (*Thamnophis gigas*). February 12, 2007.

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ATTACHMENT 1

Characterization of SMUD Activities in the SMUD Service Area.

			Disturbance per Event			Total Disturbance Annually				
Activity	**Duration**	**Frequency**	**Permanent**	**Temporary**	**Other Temporary ***	**Permanent**	**Temporary**	**Other Temporary ***	**Equipment Needed**	**Basis of Estimate**
Installation of New Distribution and Subtransmission Poles	Installation of a new pole can be completed in about 4 hours; two poles can be installed in an average working day.	About 300 (±60) new poles are installed annually.	0.00016 acre (About 7 square feet is required)	0.0023 acre (equipment setup)	0.0043 acre (laydown area for poles)	About 0.5 (±0.1) acre	About 0.85 (±0.17) acre	About 1.3 (±0.26) acres	Bucket truck with mounted auger and utility trailer, hydraulic pole jack, cable dolly, and flatbed material delivery vehicle or pole dolly.	Distribution and subtransmission are considered 12kV and 69kV voltage, respectively. Each pole requires an approximatley 8-foot deep by 36-inch diameter hole. Area of disturbance assumes a permanent loss of a 7.07 square feet for each hole. Temporary loss assumes vegetation removal approxiamtely 100 square feet per pole. Assumes truck remains on existing paved or dirt roads, or previously disturbed areas. Other disturbance assumes disturbance area of 25 feet by 75 feet where access is off of existing roads or previously disturbed areas.
Installation of New Transmission Steel Poles	Installation of a new steel pole can be completed in about 5 to 6 hours.	About 3 new steel poles are installed annually.	0.00036 acre (About 16 square feet is required)	0.0092 to 0.0115 acre (equipment setup)	Up to 0.6 acre for temporary access roads, and up to 0.5 acre for a temporary material yard	About 0.001 (±0.0002) acre	About 0.0345 (±0.0069) acre	About 3.3 (±0.66) acres	Line trucks with utility trailers, pickup trucks, crane, cable (reel) dolly, flatbed material delivery vehicle, water truck, drill rig (a 10-wheel / 3-axle), 8-yard concrete truck,and small backhoe.	Transmission poles assumes 115kV or 230kV voltage. Each new steel transmission pole will require a 3 to 6-foot diameter round concrete footing that is installed approximately 15 to 25 feet deep. Temporary disturbed area assumes 20' X 20' area for steel poles. Material lay down yard is usually fenced with temporary fencing, confining disturbed area to a set boundary . Access roads are sometimes permanent, existing access roads are used where available. Line construction equipment requirements can vary considerably, depending on the job.

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Removal of Existing Poles	Removal of an existing pole can be completed in 2 hours. Five poles can be removed in one and one-half days.	See "Pole replacement" below. Typically, poles are removed with new replacements.	None. Hole is filled with surrounding native soil and area disturbed is reseeded as needed.	0.0023 acre (equipment setup)	0.0043 acre (laydown area for poles)	None	Included in "Pole replacement"	Included in "Pole replacement"	Service truck with boom, hydraulic pole jack, rubber-tired backhoe.	Two holes no larger than 4 feet by 3 feet and 6 feet deep are dug on opposite sides of the pole. Assumes truck remains on existing paved or dirt road. Other disturbance assumes disturbance area of 25 feet by 75 feet where access is off of existing roads.
Pole Replacement (assumes similar effort as removal of existing and installation of new poles)	Removal of an existing pole and replacing it with a new pole can be completed in about 4 hours	About 450 (±90) poles are replaced annually.	None. Pole replacement generally uses the same hole.	0.0023 acre (equipment setup)	0.0043 acre (laydown area for poles)	None	About 1.04 (±0.20) acres	About 1.9 (±0.38) acres	Bucket truck with mounted auger and utility trailer, hydraulic pole jack, rubber-tired backhoe, and flatbed material delivery vehicle or pole dolly.	Two holes no larger than 4 feet by 3 feet and 6 feet deep are dug on opposite sides of the pole. Assumes truck remains on existing paved or dirt road. Other disturbance assumes disturbance area of 25 feet by 75 feet where access is off of existing roads.
Powerline Stringing	About 8,000 feet of cable can be installed each day in rural areas with new construction. About 4,000 feet can be installed each day in urban areas.	This activity occurs about 3 days per week (150 days per year).	None. Powerline stringing requires no permanent disturbance.	None, except for truck access to area and use of outriggers.	0.0143 acre (about 25 square feet) are used for laydown for reels	None	None	Not significant	A line truck, bucket truck, three-gang puller truck and three-gang tensioner truck are used for powerline stringing.	The three-gang puller truck and three-gang tensioner truck are positioned on each end of the poles to be strung across. Outriggers are used to stabilize the trucks.
Maintenance of Towers (linear and corner)	About 2,000 hours per year are spent inspecting lines within the service area.	A two-man crew inspects lines 3 days per week.	None. Established roads are used.	None. Established roads are used.	None	None	None	None	Service truck and ATV	Two line inspectors work 3 days per week year round inspecting poles and lines within the service area. Established roads are accessed for the inspections, which are generally granted by the landowner. Truck and sometimes ATVs are used.

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Substation Insulator Washing	The duration of substation insulator washing is dependent on the size and condition of the insulators, and the scope of work.	Substation insulators are washed every 2 to 5 years on an as needed basis.	None. Work is conducted in existing substations, and established roads are used.	None. Work is conducted in existing substations, and established roads are used.	None	None	None	None	Service truck and a 600-gallon truck-mounted pressure washer	When substations are energized ground pumice or corn cobs are sprayed onto the insulators by SMUD contractors. When substations are deenergized, deionized water (DI) is used to clean the insulators. The DI water is sprayed at approximately 600 pounds per square inch (psi), no soap or solvents are used during the cleaning process, the volume of DI water is dependent on the condition of the insulators, and the wash water runoff is not captured, contained, recycled or treated after use.
Utility Pole Insulator Washing	A two-man crew can cover two miles of line per day.	Utility pole-mounted insulators are washed on an as needed basis.	None. Established roads are used.	None. Established roads are used.	None	None	None	None	Bucket truck and truck-mounted pressure washer	Typically dirty insulators are wiped down with a cloth rag or changed out with a new insulator on an as needed basis. Utility pole-mounted insulators are washed with a pressure washer every 5 years or more on an as needed basis. Water usage was described above for substation insulator washing.
Elderberry Trimming	The duration of elderberry trimming is dependent on the size of the shrub and the scope of work.	Elderberry shrubs in proximity to conductors are trimmed on a 18 month or 3 year trim-cycle.	Elderberry shrubs are pruned back to the same point as the previous cycle. This results in the removal of only new growth on limbs 1-inch or less in diameter.	None	None	Approximately 24 shrubs are trimmed on a 18-month trim-cycle, and approximately 25 shrubs are trimmed on a 3-year trim-cycle; therefore, approximately 24 shrubs are trimmed annually.	None	None	Service Truck with bucket and hand saw	The frequency of the pruning for any vegetation is driven by the voltage of the conductors, its proximity to the conductors and growing conditions as much as, if not more than species characteristics. There are 49 elderberry shrubs trimmed in the service area. These shrubs are spread throughout 23 locations.

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Gas Pipeline Operation and Maintenance	The duration of gas pipeline maintenance is dependent on the scope of work.	Maintenance work in valve stations may occur daily. Inspection patrols in the gas pipeline easements occur quarterly.	None	Most maintenance work is confined to the valve and metering stations, or inspecting the easements, resulting in no environmental disturbance.	None	None	None	None	The equipment needed for gas pipeline operation and maintenance is dependent on the scope of work. Typically involves hand tools and a work truck.	Gas pipeline maintenance may include the following activities: pigging, painting above ground signs and/or block valves, cathodic protection surveys, potholing, and emergency operation and maintenance activities. Gas pipeline operation and maintenance activities primarily take place in existing facilities, existing right-of-ways, and/or near roadways for convenient pipeline operations and maintenance.
Gas Pipeline Emergency Repair	The duration of gas pipeline emergency repair activity is dependant upon the scope of work, perhaps hours or several days.	This activity is avoided by a proactive pipeline safety and maintenance program. In the past 12 years, no emergency repair activities have occurred	None	An emergency repair, such as digging up and replacing a section of pipe would be confined to a short section and typically within the varying 15 to 40 foot permanent easement.	Temporary locations for laydown and storage vary by project. Emergency declaration would be made and appropriate rules followed.	None	None	None	The equipment needed for gas pipeline emergency repair activities would depend on the scope of work. May require bucket excavator, work trucks, dump truck, pipe transport truck and trailer, plus miscellaneous hand tools.	Gas pipeline emergency repairs may include removal or replacement of a valve or section within a graveled metering station. It may also include replacement or repair of buried pipe, which would require more equipment.

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Gas Pipeline Realignment	The duration of gas pipeline realignment activities is dependent on the scope of work. A typical relocation may take several weeks to a few months.	One gas pipeline realignment activity has occurred in the past 12 years. In the Spring of 2001, approximately 4,900 feet of gas pipeline was realigned between the Campbell Soup cogeneration facility and Fruitridge Road. In addition a realignment request was recently received from the City of Sacramento, this realignment is currently being reviewed by the California Energy Commission (CEC) and is expected to be about 5,000 feet.	None. Most realignment activity related disturbances are temporary and vegetative or concrete/ asphalt cover is restored to original.	During the 2001 realignment project, approximately 2 acres was temporary disturbed.	During the 2001 realignment project, a 0.25 acre area was used as a temporary material yard. Temporary locations for laydown and storage vary by project, and are reviewed in the license amendment document reviewed by the CEC and other consulting agencies.	None	In the past 12 years, temporary disturbances have only occurred once as result of pipeline realignment. During the 2001 realignment project, approximately 2 acres was temporary disturbed (or 0.166 acre per year over the past 12 years).	In the past 12 years, other temporary disturbances have only occurred once as result of pipeline realignment. During the 2001 realignment project, a 0.25 acre area was used as a temporary material yard (or 0.0208 acre per year over the past 12 years).	The equipment needed for gas pipeline realignment activities is dependent of the scope of work. Usually requires bucket excavators, work trucks, weld trucks, dump trucks, pipe transport trucks and trailers, horizontal directional drilling equipment or jack and bore rigs, plus miscellaneous hand tools.	Request for pipeline realignment has occurred twice in 12 years of operation. Gas pipeline realignments typically come at the request of another public agency installing a conflicting linear facility. Once a realignment request is received, SMUD prepares a detailed license amendment document for review by the California Energy Commission (CEC). If other agency consultations are required, then these are undertaken during the amendment preparation and review phases. The CEC issues a determination and lists the mitigation, if any, that is required. Typical mitigation requires the presence of environmental monitors during excavation, work hour restrictions, traffic and transportation requirements, and noise restrictions.

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ATTACHMENT 2

Avoidance Measures by Species for O&M and New Construction Activities in the SMUD Service Area.

Species/Assemblage	Avoidance Measures	Reference Document(s)
Federally Listed Vernal Pool Crustaceans • Vernal pool tadpole shrimp • Vernal pool fairy shrimp	Seasonally ponded areas, including, but not restricted to, vernal pools and swales provide potential habitat for federal listed vernal pool crustaceans. Where reconnaissance surveys determine that seasonally ponded areas with potential to support vernal pool crustaceans are present, either surveys will be performed according to Service sampling protocol, or presence of vernal pool tadpole shrimp and vernal pool fairy shrimp will be assumed. If protocol surveys conclude that vernal pool crustaceans are present, or presence is assumed, and a direct impact will occur (i.e., a pole will be placed within the habitat), the project will not qualify under a 'No Take' determination and the Service will be consulted. Insulator washing, pipeline construction, and vegetation removal within 250-feet of a vernal pool is not authorized under the 'No Take' determination, and requires consultation with the Service. If protocol surveys conclude that vernal pool crustaceans are present, or presence is assumed, and a beneficial impact will occur (i.e., a pole will be removed from within the habitat or will be removed from within 250 feet of the habitat), SMUD will implement the avoidance measures listed below to avoid impacts to these species and habitat. No take will occur, and therefore no consultation with the Service will be required. If protocol surveys conclude that vernal pool crustaceans are present, or presence is assumed, and potential for an indirect impact exists (i.e., a pole will be installed within 250 feet of the habitat, but not within the habitat), SMUD will implement the avoidance measures listed below to avoid impacts to these species and habitat. No take will occur, and therefore no consultation with the Service will be required. SMUD's Avoidance Measures for Activities in and/or within 250 feet of Habitat for Vernal Pool Crustaceans include:	U.S. Fish and Wildlife Service (Service). 1996. Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects to Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, California. 28 February.

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Species/Assemblage	Avoidance Measures	Reference Document(s)
	1. Where present, existing paved and unpaved roads will be used to access the work area. 2. All work will be performed in the dry season (approximately April 15 through October 15). Should soil moisture be encountered, rubber matting, or similar equivalent, will be used to minimize disturbance. 3. A qualified biologist (biological monitor) will be present onsite and will inspect any construction-related activities to ensure that no unnecessary ground disturbance or take of species occurs. The biologist will have the authority to stop all activities that may result in such take or destruction until appropriate corrective measures have been completed. The biologist also will be required to report immediately any unauthorized take to the Service. 4. A work zone will be identified on construction drawings and/or will be adequately flagged or fenced in the field to limit construction equipment and personnel to the minimum area necessary to perform the proposed work. 5. All on-site construction personnel will receive instruction regarding the presence of listed species and the importance of avoiding impacts to these species and their habitat. 6. In areas that have not been previously disturbed, heavy equipment use will be minimized. 7. For pole installations, the area between the pole and the pole hole will be backfilled with cement. The upper portion will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil. Areas of disturbed soil will be reseeded with a native seed mix. 8. For pole removal, clay (native or bentonite) will be used to fill the pole hole. 9. No pesticides or herbicides will be applied within 250 feet of vernal pools.	

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Species/Assemblage	Avoidance Measures	Reference Document(s)
Federally Listed Vernal Pool Plants • Sacramento Orcutt grass • Slender Orcutt grass • Succulent owl's clover	Seasonally ponded areas, including, but not restricted to, vernal pools and swales provide potential habitat for federal listed vernal pool associated plants. Where reconnaissance surveys determine that seasonally ponded areas with potential to support vernal pool plants are present, either surveys will be performed according to Service sampling protocol, or presence of vernal pool plants will be assumed. If surveys conclude that vernal pool plants are present, or presence is assumed, and a direct impact will occur during the emergence and/or bloom period, the Service will be consulted. Insulator washing, pipeline construction, and vegetation removal within 250-feet of a vernal pool is not authorized under the 'No Take' determination, and requires consultation with the Service. If protocol surveys conclude that vernal pool plants are present, or presence is assumed, and construction is within 250 feet of the habitat, but not within the emergence/bloom period, SMUD will implement the avoidance measures listed below to avoid impacts to these species and habitat. Consultation with the Service will be required. SMUD Avoidance Measures for Activities in and/or within 250 feet of habitat for vernal pool plants include: 1. Where present, existing paved and unpaved roads will be used to access the area. 2. All work will be performed after the special-status plants or potential special-status plants have gone to seed. Should soil moisture be encountered in the seasonally ponded habitat, rubber matting, or similar equivalent, will be used to minimize disturbance. 3. A work zone will be identified on construction drawings and/or will be adequately flagged or fenced in the field to limit construction equipment and personnel to the minimum area necessary to perform the proposed work.	Service. 1996. Programmatic Formal Endangered Species Act Consultation on Issuance of 404 permits for Projects with Relatively Small Effects to Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, California. 28 February.

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Species/Assemblage	Avoidance Measures	Reference Document(s)
	4. All on-site construction personnel will receive instruction regarding the presence of listed species and the importance of avoiding impacts to these species and their habitat. 5. In areas that have not been previously disturbed, heavy equipment use will be minimized. 6. For pole installations within seasonally inundated areas, the area between the pole and the pole hole will be backfilled with cement. The upper portion will be backfilled with native soil commensurate with the topography and stratigraphy of the surrounding soil. 7. For pole removal, clay (native or bentonite) will be used to fill the pole hole. 8. No pesticides or herbicides will be used within 250 feet of vernal pools.	
Valley Elderberry Longhorn Beetle	Elderberry shrubs provide potential habitat for the Valley Elderberry Longhorn Beetle (beetle). Where reconnaissance surveys determine that elderberry shrubs are present, surveys shall be performed according to Service guidelines (1999), or SMUD will assume species presence. For trimming and pruning activities, if elderberry shrub branches greater than 1-inch in diameter must be trimmed, the activity will not qualify under a 'No Take' determination and the Service will be consulted. For construction activities, if construction must occur within 20 feet of an elderberry shrub, the activity will not qualify under a 'No Take' determination and the Service must be consulted. SMUD's avoidance for allowable trimming and construction activities include: Periodic Trimming/Pruning SMUD's vegetation management program trims elderberry shrubs that grow in close proximity to existing distribution, subtransmission, and transmission lines to protect the shrubs and the existing electrical circuits. These bushes are trimmed on an 18 or 36- month trim cycle; therefore only new growth is cut,	Service. 1999. Conservation Guidelines for the Valley Elderberry Longhorn Beetle. Revised 9 July.

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Species/Assemblage	Avoidance Measures	Reference Document(s)
	and shrubs are pruned back to the same point as the previous cycle. Monitoring will occur for elderberry shrubs, not already in a trim cycle, that will need >50% growth removed during the first year. SMUD will assess survival and characterize plant condition in the summer when the shrub is most subject to weather stress. If no adverse conditions are noted, then subsequent monitoring would not be necessary. If adverse conditions are noted, then the FWS must be consulted regarding the potential need for incidental take authorization and development of minimization measures. Avoidance measures include: 1. SMUD vegetation management personnel and contractors will receive instruction on the identification of elderberry shrubs and beetle, the importance of avoiding impacts to beetle and its habitat, and the possible penalties for not complying with these requirements. Personnel will be trained in proper arboriculture methods, including those necessary to avoid collateral damage to nearby braches and foliage. 2. Elderberry shrubs in need of pruning will be documented on work orders and the SMUD Planner Supervisor will be informed. SMUD and outside agency contacts will be made through the Planner Supervisor. 3. Elderberry shrubs located in the work zone shall be flagged. 4. A biological monitor will be required to supervise trimming of elderberry shrubs and stop work if personnel are out of compliance with the avoidance measures, or if there is a risk that incidental take of beetle may occur. 5. If use of a bucket truck is necessary to trim an elderberry bush, the tires of the vehicle must stay outside the dripline of the tree to avoid root damage. 6. No herbicides or pesticides will be used on elderberry shrubs. Herbicides/pesticides used on nearby vegetation will be topically applied to avoid mist or overspray on elderberry shrubs.	

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Species/Assemblage	Avoidance Measures	Reference Document(s)
	Construction Activity If beetle habitat is found at the project site and a 100 foot buffer zone is established and maintained around the habitat, then no additional avoidance measures are necessary. Firebreaks may not be constructed within 100 feet of an elderberry bush. Construction activities within 20-feet of an elderberry shrub are not authorized under the 'No Take' determination. Construction activities falling between 20-feet and 100-feet of an elderberry bush will adhere to the following Avoidance Measures: 1. The presence of elderberry shrubs in the construction area will be documented on work orders and the SMUD Planner Supervisor will be informed. SMUD and outside agency contacts will be made through the Planner Supervisor. 2. All on-site construction personnel will receive instruction regarding the presence of elderberry shrubs, beetle, the importance of avoiding impacts to beetle and its habitat, and the possible penalties for not complying with these requirements. 3. Flag the 20-foot exclusion boundary around the elderberry shrub and post a sign with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable and must be maintained for the duration of construction. 4. A biological monitor will be required to supervise construction activities falling between 20-feet and 100-feet of elderberry shrubs and stop work should personnel be out of compliance with the beetle avoidance measures, or if there is a risk that incidental take may occur.	

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Species/Assemblage	Avoidance Measures	Reference Document(s)
	5. Disturbance shall be minimized, and the site will be restored following construction.	
California Tiger Salamander	The Santa Rosa Plain Conservation Strategy Team determined that impacts to California tiger salamander (salamander) are not likely on lands beyond 1.3 miles from breeding sites, or on lands within 1.3 miles from breeding sites that are surrounded by significant barriers or are otherwise unsuitable salamander habitat, and that neither surveys nor mitigation would be required for projects on these properties (SRPCST, 2005). The team also concluded that no salamander mitigation or surveys will be required for projects outside of the potential salamander range. SMUD's assessment and determination of potential salamander habitat will be based on this guidance. Where reconnaissance surveys determine that salamander could be present, protocol surveys shall be performed using methodology detailed by CDFG and Service (2003), or SMUD will assume species presence. If the proposed SMUD activity has the potential to take salamander or adversely affect its habitat, the project will not qualify under a 'No Take' determination and the Service will be consulted. For projects in which no take will occur, the following avoidance measures will be implemented: 1. SMUD will develop a map illustrating salamander occurrences in Sacramento County using California Natural Diversity Data Base (CNDDB) records, and other publicly accessible information sources. This range map will be updated annually to assure that SMUD is using current information when assessing the potential presence of the species on a proposed project site. 2. All work will be performed in the dry season (approximately April 15 through October 15). 3. 24-hours prior to construction activities, the project area will be surveyed for salamander by a qualified biologist. Survey of the project area will be	CA Department of Fish and Game (CDFG) and Service. 2003. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander. October. Santa Rosa Plain Conservation Strategy Team (SRPCST). 2005. Santa Rosa Plain Conservation Strategy. 1 December.

B5-925 (Cont.)

Species/Assemblage	Avoidance Measures	Reference Document(s)
	repeated if a lapse in construction activity of two weeks or greater has occurred. If a salamander is encountered during construction, activities shall cease until incidental take authorization is received and appropriate corrective measures have been completed, or it has been determined that the salamander will not be harmed. Handling of the animal is not permitted without prior Service authorization. Sightings will be reported to the Service immediately by telephone at (916) 414-6600.	
	4. A qualified biologist will be present during construction and will have authority to stop project activities if any of the avoidance measures are not being fulfilled. If the biologist has requested a stop work due to take of any of the listed species, the Service and the CDFG will be notified within (1) working day via email or telephone.	
	5. All on-site construction personnel will receive instruction regarding the presence of listed species and the importance of avoiding impacts to this species and its habitat.	
	6. Cross country access routes will be identified on construction drawings or clearly marked in the field with appropriate flagging and signs.	
	7. All vehicle parking will be restricted to previously determined areas or existing roads. Necessary vehicles belonging to the biological monitors and construction supervisors will be parked at the nearest point on existing access roads.	
	8. All vehicles will be brought in cleaned and free of weeds.	
	9. Because dusk and dawn are often the times when salamander are most actively foraging and dispersing, all construction activities should cease one half hour before sunset and should not begin prior to one half hour before sunrise.	
	10. A litter control program shall be instituted at the entire project site. All	

B5-925 (Cont.)

Species/Assemblage	Avoidance Measures	Reference Document(s)
	workers ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers shall be removed from the project area at the end of each working day.	
Giant Garter Snake	Prior to construction activities, the project area will be surveyed by a qualified biologist to determine if potential giant garter snake habitat exists within 200 feet of the project. Habitat suitability will be assessed using the habitat assessment guidelines described in the Service ' "Guidelines for Information Needed to Request Concurrence from the United States Fish and Wildlife Service with a Finding that a Federal Action is 'Not Likely To Adversely Affect' the Threatened Giant Garter Snake (*Thamnophis gigas*)." Projects scheduled between October 2 and April 30 within 200 feet of potential giant garter snake aquatic habitat will undergo consultation with the Service and do not qualify under a 'No Take' determination. For projects scheduled between May 1 and October 1 within 200 feet of aquatic habitat that are not anticipated to result in the loss or degradation of potential giant garter snake habitat (such as pole removal or replacement, line stringing, and tower maintenance), no take will occur, therefore no consultation with the Service will be required. For these projects, SMUD will implement the following avoidance measures: 1. 24-hours prior to construction activities, the project area will be surveyed for giant garter snakes by a qualified biologist. Survey of the project area will be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until incidental take authorization is received and appropriate corrective measures have been completed, or it has been determined that the snake will not be harmed. Sightings will be reported immediately to the Service immediately by telephone at (916) 414-6600.	Service. 1997. Programmatic Formal Consultation for the U.S. Army Corps of Engineers 404 Permitted Projects With Relatively Small Effects on the Giant Garter Snake Within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo Counties, California. November. Service. 2007. Guidelines for Information Needed to Request Concurrence from the United States Fish and Wildlife Service with a Finding that a Federal Action is "Not Likely To Adversely Affect" the Threatened Giant Garter Snake (*Thamnophis gigas*). February.

B5-925 (Cont.)

Species/Assemblage	Avoidance Measures	Reference Document(s)
	2. Survey of the project area will be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until incidental take authorization is received and appropriate corrective measures have been completed, or it has been determined that the snake will not be harmed. Sightings will be reported immediately to the Service immediately by telephone at (916) 414-6600.	
	3. When possible, avoid construction activities within 200 feet from the banks of giant garter snake aquatic habitat.	
	4. Construction activity within 200 feet of giant garter snake habitat will be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is not anticipated because snakes are expected to actively move and avoid danger.	
	5. Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as Environmentally Sensitive Areas. This area will be avoided by all construction personnel. For work in or around canals, hand clearing of canals is preferred for removal of excessive vegetation or debris. Any equipment should be operated from the bank top. Excavate from only one side of the canal during a given year. Avoid excavating the banks above the high water level. Preferably, one side of the canal should be left undisturbed indefinitely, (the preferred side would be the west or north side), so that emergent vegetation and bank side cover is left in place.	
	6. SMUD construction personnel will receive USFWS-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s), and the importance of avoiding impacts to giant garter snakes and their habitat(s).	

B5-925 (Cont.)

Species/Assemblage	Avoidance Measures	Reference Document(s)
	7. Any dewatered habitat will remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat 8. After completion of construction activities, SMUD will remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. 9. Movement of heavy equipment to and from the project site shall be restricted to established roadways to minimize habitat disturbance. Projects that occur within 200 feet of aquatic habitat that are anticipated to result in the loss or degradation of potential giant garter snake habitat (such as new utility pole, subtransmission line, and transmission line placement) will not qualify under a 'No Take' determination and the Service will be consulted.	

CC Addresses:

Meri Miles
CH2MHill
2485 Natomas Park Drive, Suite 600
Sacramento, California 95833

B5-925
(Cont.)

TAKE PRIDE IN AMERICA

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In reply refer to:
1-1-07-TA-1712

OCT 10 2007

Mr. Ron Scott
Sacramento Municipal Utility District
PO Box 1583
Sacramento, CA 95852

Subject: Amendment to Request for Technical Assistance for Sacramento Municipal Utility District's Construction and Routine Operation & Maintenance Project, Sacramento and Placer Counties, California

Dear Mr. Scott:

This letter is in response to your July 7, 2007, e-mail requesting the U.S. Fish and Wildlife Service (Service) amend our June 19, 2007, technical assistance letter (Service File #1-1-07-TA-1041) for the Sacramento Municipal Utility District's (SMUD) Routine Operation and Maintenance (O&M) Project, in Sacramento County, California (proposed project).

Our primary concern and mandate is the protection of federally-listed species pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act). The findings and recommendations in this technical assistance are based on our June 19, 2007, letter (Service File # 1-1-07-TA-1041) and your July 7, 2007, e-mail.

We have reviewed your requests and are unable to grant the third amendment because the proposed project is within 250-feet and may result in take and/or jeopardy of listed plants. Therefore, three of your four requests are amended as follows:

Page 1: Subject

From: "Request for Technical Assistance for Sacramento Municipal Utility District's Routine Operation and Maintenance Project, Sacramento and Placer Counties, California."

To: "Request for Technical Assistance for Sacramento Municipal Utility District's **Construction and** Routine Operation and Maintenance Project, Sacramento and Placer Counties, California."

B5-925 (Cont.)

TAKE PRIDE IN AMERICA

Page 1: First Paragraph, First Sentence

From: "This is in response to your May 14, 2007, letter requesting that the U.S. Fish and Wildlife Service (Service) review the Sacramento Municipal Utility District's (SMUD) Routine Operation and Maintenance (O&M) Project, Sacramento County, California (proposed project) for potential effects to the federally-listed species."

To: "This is in response to your May 14, 2007, letter requesting that the U.S. Fish and Wildlife Service (Service) review the Sacramento Municipal Utility District's (SMUD) **Construction and** Routine Operation and Maintenance (O&M) Project, Sacramento **and Placer Counties**, California (proposed project) for potential effects to the federally-listed species."

Page 21: Addition to "Avoidance Measures" Column

Add: **"11. Tightly woven fiber netting or similar material shall be used for erosion control or other purposes at the project site to ensure that the tiger salamander does not get trapped. Coconut coir matting is an acceptable erosion control material. No plastic mono-filament matting shall be used for erosion control."**

B5-925 (Cont.)

Please contact the acting Sacramento Valley Branch Chief, at (916) 414-6600 if you have any questions regarding the proposed Sacramento Municipal Utility District's Routine Operation and Maintenance Project, Sacramento and Placer Counties, California.

Sincerely,

Peter A. Cross

Peter A. Cross
Deputy Assistant Field Supervisor

cc:
Meri Miles, CH2MHill, Sacramento, California

B5-925
(Cont.)

APPENDIX C

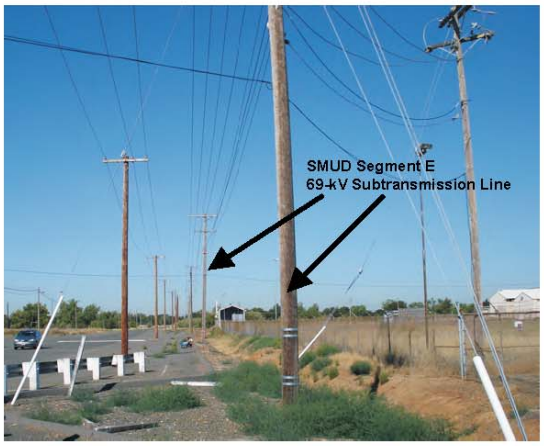
Site Photographs

Appendix C
Easton 69-kV Subtransmission Line Relocation and Substation Project
Site Photographs
June 19, 2008

Viewing Direction	Photo Description	Photo
↖	Existing Prairie City Substation proposed to be removed; facing northwest.	
←	Approximate location for proposed new Prairie City Substation site; facing west.	

B5-925 (Cont.)

Appendix C
Easton 69-kV Subtransmission Line Relocation and Substation Project
Site Photographs
June 19, 2008

Viewing Direction	Photo Description	Photo
↓	View of location for proposed new 69-kV subtransmission line Segment D from the new Prairie City Substation site; facing south.	
←	Existing 69-kV SMUD subtransmission line Segment E, from existing Prairie City Substation site and proposed to be removed; facing west. Aerojet 12-kV transmission lines are also shown adjacent to the SMUD Segment E line.	

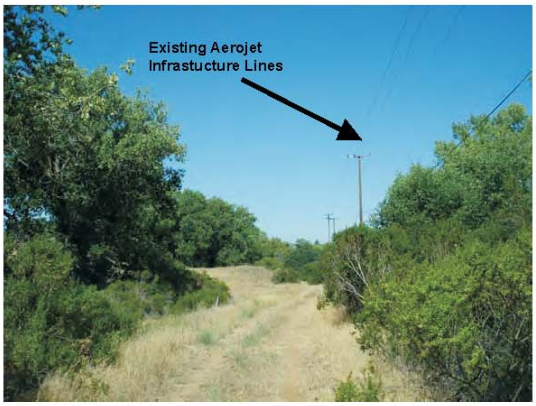
B5-925 (Cont.)

Appendix C
Easton 69-kV Subtransmission Line Relocation and Substation Project
Site Photographs
June 19, 2008

Viewing Direction	Photo Description	Photo
➔	Proposed Easton Valley Parkway location and adjacent 69-kV subtransmission line Segment A (in distance) to be removed; facing east. Aerojet utility lines are visible in foreground, adjacent to the road.	
➔	Existing Alder Creek Substation that would remain; facing east.	

B5-925 (Cont.)

Appendix C
Easton 69-kV Subtransmission Line Relocation and Substation Project
Site Photographs
June 19, 2008

Viewing Direction	Photo Description	Photo
↓	Proposed subtransmission line Segment B route on eastern side of Aerojet property through mixed oak woodland; facing south. Existing Aerojet infrastructure utility lines are visible.	
↓	Proposed subtransmission line Segment B route along dredge tailings; facing south.	

B5-925 (Cont.)

Appendix C
Easton 69-kV Subtransmission Line Relocation and Substation Project
Site Photographs
June 19, 2008

Viewing Direction	Photo Description	Photo
↓	Proposed subtransmission line Segment B route along dredge tailings at the eastern side of Aerojet property; facing south	
↓	Proposed subtransmission line Segment B route along dredge tailings at the eastern side of Aerojet property; facing south	

B5-925 (Cont.)

Appendix C
Easton 69-kV Subtransmission Line Relocation and Substation Project
Site Photographs
June 19, 2008

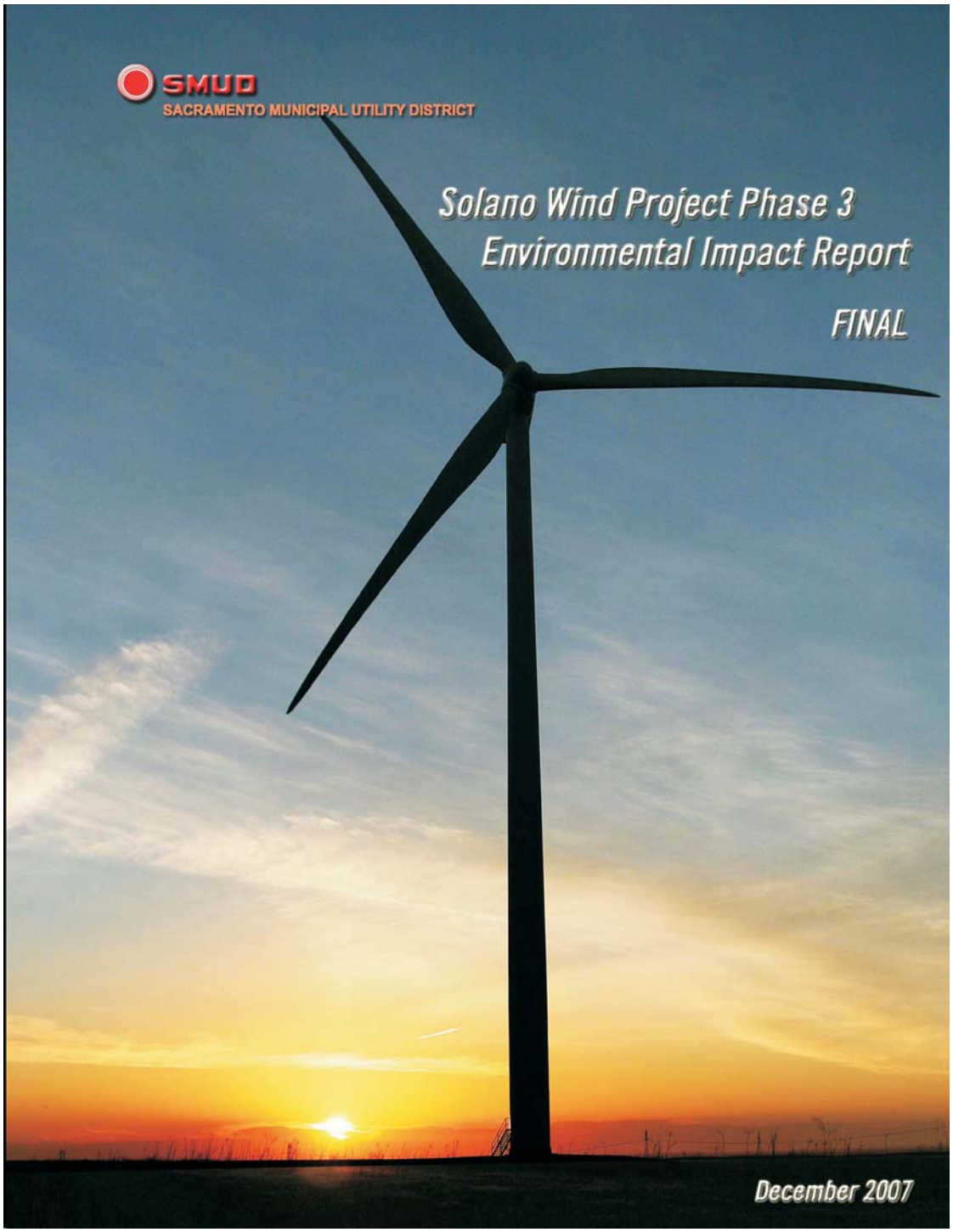
Viewing Direction	Photo Description	Photo
↘	Proposed location for subtransmission line Segment B route along dredge tailings where the subtransmission line would cross Louisiana Road; facing southeast. Existing Aerojet utility lines are visible.	
↖	Vernal pool (in foreground) adjacent to location for proposed subtransmission line Segment B route; facing northwest.	

B5-925 (Cont.)

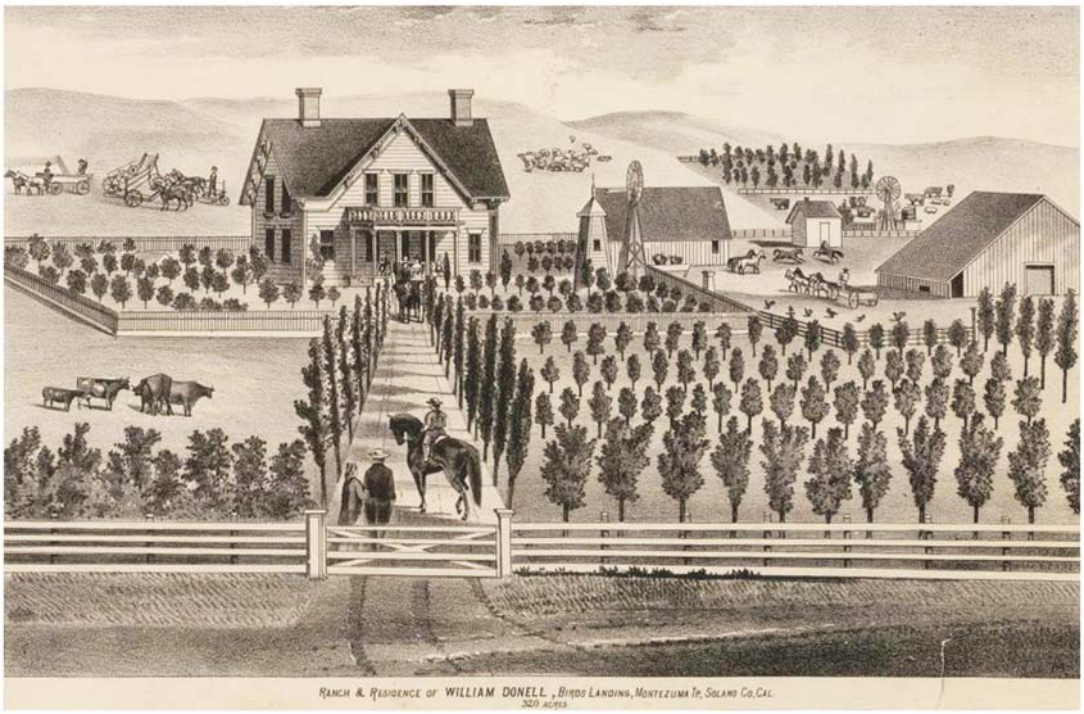
Appendix C
Easton 69-kV Subtransmission Line Relocation and Substation Project
Site Photographs
June 19, 2008

Viewing Direction	Photo Description	Photo
↖	Location for proposed new Easton Valley Birkmond Substation; looking northwest.	
↖	Approximate location for new 69-kV subtransmission line through Alder Creek Area (Segment G) to be installed aboveground or underground; facing northwest. Existing Aerojet infrastructure lines are shown.	

B5-925 (Cont.)


SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
Solano Wind Project Phase 3
Environmental Impact Report
FINAL
December 2007

B5-925
(Cont.)



William Donnell Ranch at Birds Landing, 1878. Courtesy of David Rumsey Cartography Associates Map Collection © 2000
(http://www.davidrumsey.com/maps2152.html)

B5-925
(Cont.)

Final Environmental Impact Report for the

SMUD Solano Wind Project Phase 3

SCH Number 2006012017

Prepared for:
Sacramento Municipal Utility District
P.O. Box 15830, MS0203
Sacramento, California 95852

Contact Person:
Lonn Maier, Environmental Project Manager
916-732-6566

Prepared by:
URS Corporation
2870 Gateway Oaks Drive, Suite 150
Sacramento, California 95833

Contact Person:
EJ Koford, Project Manager
916-679-2270

December 2007

B5-925 (Cont.)

CHAPTER 1
INTRODUCTION

B5-925
(Cont.)

The Final Environmental Impact Report (FEIR), as required pursuant to CEQA Guidelines Sections 15089 and 15132, must include the Draft Environmental Impact Report (DEIR) or a revision thereof, comments and recommendations received on the DEIR, a list of persons, organizations and public agencies commenting on the DEIR and the responses of the Lead Agency to significant environmental points raised in the review and consultation process. A Mitigation Monitoring Program (MMP) must also be prepared and approved to ensure compliance during project implementation (Public Resources Code Section 21081.6, CEQA Guidelines Section 15097).

Relationship to the DEIR

The FEIR, together with the September 2007 DEIR (as annotated herein), the MMP and the Findings constitute the environmental disclosure record that will serve as the basis for approval of the proposed project.

Public Review Summary

The EIR process typically consists of three parts: the Notice of Preparation, DEIR, and FEIR. The Notice of Preparation (NOP) for the proposed project was circulated in January of 2006. The NOP was sent to 104 public agencies, property owners, and interested parties. The NOP was delivered to the State Clearinghouse on January 6, 2006 for a 30-day comment period. Copies of the NOP, the NOP distribution list, and comments received on the NOP are presented in Appendix A of the Draft EIR for the Project.

A Scoping meeting was held on November 1, 2007 in Rio Vista, California. The Scoping meeting was advertised in the Sacramento Bee and River News-Herald October 3, 2007 as recommended in Section 15083 of the CEQA Guidelines to which all NOP and DEIR recipients were invited.

B5-925 (Cont.)

The Sacramento Municipal Utility District (SMUD), as the Lead Agency, circulated a DEIR for the Solano Wind Project September 28 through November 13, 2007. Notices of Availability for the DEIR were distributed directly to responsible agencies, trustee agencies, other interested parties, and local libraries. The DEIR was also made available on CD or by downloading from the SMUD website.

General public Notice of Availability (NOA) of the DEIR was given by publication on October 3, 2007 in the Sacramento Bee and River News-Herald. Copies of the published notice are presented in Section 4.0. As required by Public Resources Code Section 21091(d), SMUD accepted written comments through November 13, 2007. Eight letters were received during the comment period from the agencies and individuals listed in Table 1-1. Subsequent to the close of the public review period, an additional comment letter was received from the California Department of Fish and Game. The letters and responses are included in Section 3.0 of this FEIR.

In accordance with the provisions of Public Resources Code Section 21092.5, SMUD has provided written responses to each commenting public agency no less than 10 days prior to the proposed date for consideration of certification of the FEIR.

TABLE 1-1 LIST OF PERSONS, ORGANIZATIONS AND PUBLIC AGENCIES THAT COMMENTED ON DRAFT EIR

	Agency	Commenter	Title
A	Department of Transportation	Timothy C. Sable	District Branch Chief
B	Department of Water Resources	Christopher Huitt	Staff Environmental Scientist
C	State Lands Commission	Marina R. Brand	Assistant Chief Division of Environmental Planning
D	U.S. Air Force Headquarters 60th Air Mobility Wing (Travis)	Colonel Giovanni K. Tuck	Commander
E	Solano County Department of Resource Management	Mike Yankovich	Program Manager
F	Property Owner	Rich and Gail Zavala	
G	Department of Fish and Game	Charles Armor	Regional Manager, Bay-Delta Region
H	Solano County Airport Land Use Commission	Karen Avery	Senior Planner
I	One Vision Park, Inc.	David Papera	Chief Executive Officer

B5-925 (Cont.)

CHAPTER 2
PROJECT DESCRIPTION CHANGES FROM DRAFT TO FINAL EIR

B5-925
(Cont.)

Corrections, errata and changes from the DEIR to FEIR represent additional information, clarifications or corrections that do not change the project impacts and/or mitigation measures such that new or more severe environmental impacts result from the project. Such items are sometimes added as a result of comments received from responsible agencies, changes in the existing conditions at the site, revised public policies since the DEIR was written, and minor errors or clarifications. The following summary presents types of additions, changes or corrections made in the FEIR since the DEIR was published. Section 7.0 presents the changes explicitly.

The changes in the FEIR can be summarized as follows:

1. SMUD determined that the project collection lines could be constructed underground, rather than above-ground and underground options described in the DEIR. Also, 230 kV lines cannot be reasonably placed underground. Therefore, the collection options have been revised in the text and in the figures to remove references to above-ground collection lines, and to remove the potential for 230 kV collection lines. All figures in the DEIR have been revised to remove references to 230 kV lines above ground, and step-up transformer options 1, 2, and 4 associated with them.

2. A hydrological analysis described in Mitigation WQ-3 to determine the local flood zone has been completed. To avoid placing the operations and maintenance (O&M) building within a potential floodplain, the O&M building is now proposed for one of two locations at higher elevations. The new locations are within the area described in the DEIR. The change is shown on the revised figures of the project.

3. California Department of Fish and Game (CDFG) and Solano County indicated that the location of land proposed as mitigation for potential impacts to raptors (Mitigation BIO-5b) was undesirable because of the adjacency to existing and proposed wind power projects. These agencies believe that the benefits of mitigation would be counteracted by the presence of wind turbines that cause raptor mortality. In the Phase 2B EIR, SMUD proposed to collaborate with the Technical Advisory Committee (TAC) to participate in a comprehensive plan for mitigation that would combine funds from multiple wind projects to acquire, enhance and manage a common area to promote the populations of local raptors.

   SMUD continues to believe that the area adjacent to the sizable land dedicated to the Solano Open Lands Trust is an appropriate location to mitigate for the impacts to raptors, and the site has a high degree of biodiversity and other factors that may make it valuable to the Trust. However, SMUD is willing to work with the TAC to modify the location of this mitigation in accordance with, and consistent with, a regional planning effort to preserve raptors. In the responses to comments, SMUD references working with the TAC to confirm the location for mitigation or to participate in an alternate location.

   The maximum potential rotor swept area has also been recalculated, which has the effect of potentially increasing the required area for mitigation to 214 acres. Therefore, references to the area in Mitigation 5b will be modified to 214 acres. the proposal as recorded in the DEIR remains a viable means of mitigating impacts and addresses the concern adequately, therefore no change was made to the FEIR regarding this issue.

B5-925 (Cont.)

4. The DEIR incorrectly stated that the project lay within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (SFRWQCB). The project lies within both the San Francisco and Central Valley RWQCB. SMUD contacted the SFRWQCB to determine the correct jurisdiction. The staff opined that most of the project was within CVRWQCB and that they would refer the project to that agency. The change is described in Section 7.0.

B5-925 (Cont.)

CHAPTER 3
RESPONSE TO COMMENTS

B5-925
(Cont.)

Pursuant to CEQA Guidelines Section 15088, the responses to comments presented in this section address specific, relevant comments on environmental issues raised in the submitted comment letters. Copies of the original letters, including all attachments, are presented in this section in order received, and with the responses to all commenting entities.

Comments are bracketed for identification by letter and comment number (A-1, A-2, etc.) except where the commenter has provided comment numbers.

B5-925 (Cont.)

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B5-925
(Cont.)

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Comment

A

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5900
FAX (510) 286-5903
TTY 711

Flex your power!
Be energy efficient!

October 11, 2007

SOL012210
SOL-12-Various
SCH2006012017

Mr. Lonn Maier
Sacramento Municipal Utility District
P.O. Box 15830 MS B203
Sacramento, CA 95852

Dear Mr. Maier:

Solano Wind Project Phase 3 – Draft Environmental Impact Report

Thank you for including the California Department of Transportation (Department) in the environmental review process for the Solano Wind Project Phase 3. The following comments are based on the Draft Environmental Impact Report (DEIR):

As lead agency, Sacramento Municipal Utility District (SMUD) is responsible for all project mitigation, including improvements to State Highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. Any required roadway improvements should be completed prior to issuance of the project's building permit. While an encroachment permit is only required when the project involves work or traffic control in the State Right of Way, the Department will not issue an encroachment permit until our concerns are adequately addressed.

Encroachment Permit

Any work or traffic control within the State ROW requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW See the following website link for more information: http://www.dot.ca.gov/hq/traffops/developserv/permits/ 1

Michael Condie, Office of Permits
California DOT, District 4
P.O. Box 23660
Oakland, CA 94623-0660

"Caltrans improves mobility across California"

Response

A-1 SMUD appreciates the assistance of the Department of Transportation in identifying the project's potential impacts. At this time, SMUD does not anticipate making or requiring any improvements to State Highways as referred to in the comment. SMUD does not anticipate requesting an encroachment permit. If the final design requires an encroachment to State Highways, SMUD will provide additional details before applying for an encroachment permit.

The commenter does not identify impacts that were not disclosed in the DEIR and no change in the EIR is required.

B5-925 (Cont.)

Comment	Response
Mr. Lonn Maier October 11, 2007 Page 2 ***Transportation Management Plan*** The Department requires a Transportation Management Plan (TMP) and contingency plans for all construction, maintenance, encroachment permit, planned emergency restoration, locally or specially funded, or other activities on the State Highway System. Where a project or activities within a region or corridor create a cumulative need for a TMP, the Department coordinates individual TMPs. } 2 A Transportation Management Plan (TMP) is a method for minimizing construction activity-related traffic delay and accidents by the effective application of traditional traffic handling practices and an innovative combination of public and motorist information, traffic demand management, incident management, system management, construction strategies, alternate routes and other strategies. It is the Department's standard practice to prepare the TMP separately from the environmental document because it relies on construction details that are generally not included in the environmental document. In addition, we recommend coordinating with both the California Highway Patrol and the Department's Project Management for State facilities construction and maintenance activities. Please forward a copy of the traffic management plan, including technical appendices to the address below as soon as they are available. } 3 Christian Bushong Office of Transit and Community Planning, Mail Station 10D California DOT, District 4 111 Grand Avenue Oakland, CA 94612-3717 Should you have any questions regarding this letter, please call Christian Bushong of my staff at (510) 286-5606. Sincerely, TIMOTHY C. SABLE District Branch Chief IGR/CEQA c: State Clearinghouse *"Caltrans improves mobility across California"*	A-2 As noted on page 4.13-9, the EIR recommends preparation of a Traffic Control Plan (TCP) under Mitigation TRA-1 that addresses the use of pilot cars, safety measures, warning signs, construction traffic scheduling that avoid peak traffic hours and safety personnel to direct traffic as needed. Mitigation TRA-2 will be modified as follows to include measures to minimize lane closures and evaluate alternate routes for access. We believe that the TCP will meet the needs of the TMP as described by the commenter. The following change will be made to page 4.13-9, paragraph 5: A Traffic Control Plan will be prepared and implemented during construction. Typical traffic control plan measures will include use of pilot cars for oversize loads, traffic safety measures, such as warning signs, construction traffic schedules that avoid peak traffic hours, coordination with local jurisdictions, providing safety personnel to direct traffic as needed, and applying BMPs to reduce traffic impacts. <u>The TCP will include measures to minimize lane closures and to evaluate alternate routes of access to minimize construction-related traffic delay and accidents.</u> With implementation of this mitigation measure, short-term impacts to traffic caused by construction will be less than significant. No further mitigation measures are required. The need for traffic management, either through a TMP or CCP, was disclosed in the DEIR and no change in the EIR is required. A-3 At your request, SMUD will forward a copy of the Traffic Control Plan, including technical appendices, to Mr. Bushong at the Office of Transit and Community Planning, California DOT to coordinate with other projects.

SMUD Solano Phase 3 Draft EIR
Response to Comments

Comment

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

B

October 17, 2007

Lonr Maier
Sacramento Municipal Utility District
Post Office Box 15830 MS B203
Sacramento, California 95852

SMUD – Solano Wind Project Phase 3
State Clearinghouse (SCH) Number: 2006012017

The project corresponding to the subject SCH identification number has come to our attention. The limited project description suggests your project may be an encroachment on the State Adopted Plan of Flood Control. You may refer to the California Code of Regulations, Title 23 and Designated Floodway maps at http://recbd.ca.gov/. Please be advised that your county office also has copies of the Board's designated floodways for your review. If indeed your project encroaches on an adopted food control plan, you will need to obtain an encroachment permit from the Reclamation Board prior to initiating any activities. The attached Fact Sheet explains the permitting process. Please note that the permitting process may take as much as 45 to 60 days to process. Also note that a condition of the permit requires the securing all of the appropriate additional permits before initiating work. This information is provided so that you may plan accordingly. } 1

If after careful evaluation, it is your assessment that your project is not within the authority of the Reclamation Board, you may disregard this notice. For further information, please contact me at (916) 574-1249.

Sincerely,

Christopher Huitt
Staff Environmental Scientist
Floodway Protection Section

Enclosure

cc: Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, CA 95814

Response

B-1 SMUD appreciates the assistance of the Department of Water Resources in identifying potential impacts of the project. According to the referenced Reclamation Board website (www.recbd.com), Solano County does not have any designated floodways that require Encroachment Permits. This was confirmed with a personal communication with Christopher Huitt of the Department of Water Resources on October 29, 2007.

The commenter does not identify impacts that were not disclosed in the DEIR and no change in the EIR is required.

B5-925 (Cont.)

Comment

STATE OF CALIFORNIA — ARNOLD SCHWARZENEGGER, Governor

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

PAUL D. THAYER, Executive Officer
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October 25, 2007

File Ref: SCH# 2006012017

SMUD
P.O. Box 15830 MS B203
Sacramento, CA 95852

Subject: Solano Wind Project Phase 3; Draft EIR

Dear Lorri Maier,

The State acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all the people of the State for statewide Public Trust purposes which include waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. The landward boundaries of the State's sovereign interests in areas that are subject to tidal action are generally based upon the ordinary high water marks of these waterways as they last naturally existed. In non-tidal navigable waterways, the State holds a fee ownership in the bed of the waterways between the two ordinary low water marks as they last naturally existed. The entire non-tidal navigable waterway between the ordinary high water marks is subject to the Public Trust Easement. Both the easement and fee-owned lands are under the jurisdiction of the State Lands Commission. The locations of the ordinary high and low water marks are often related to the last natural conditions of the river, and may not be apparent from a present day site inspection.

To the extent the proposed project involves the historic bed of the Sacramento River, which is State-owned sovereign land, a lease will be required. Should this situation arise, additional environmental review under CEQA may be required. Please contact Mary Hays, Public Land Manager, at 916-574-1812, for information about our leasing requirements.

1

Sincerely,

Marina R. Brand

Marina R. Brand, Assistant Chief
Division of Environmental Planning
and Management

Response

C-1 SMUD appreciates the assistance of the California State Lands Commission (CSLC) in identifying potential project impacts. As shown on Figure 4.5-1 of the DEIR, the project area is primarily constructed near the tops of hills, with only access roads at lower elevations. The non-tidal navigable waterway between the ordinary high-water marks under CSLC jurisdiction is adjacent to the Sacramento River and outside the area that would be developed for the project. Therefore the project does not anticipate any development in the area subject to CSLC jurisdiction. If the project is modified to include any features in these areas, SMUD will advise the CSLC before applying for a lease agreement.

The commenter does not identify impacts that were not disclosed in the DEIR and no change in the EIR is required.

B5-925 (Cont.)

Comment	Response
Lonn Maier 2 October 24, 2007 cc: Office of Planning and Research State Clearinghouse P.O. Box 3044 Sacramento, CA 95812-3044 Mary Hays, CSLC File - DEPM	

B5-925 (Cont.)

SMUD Solano Phase 3 Draft EIR
Response to Comments

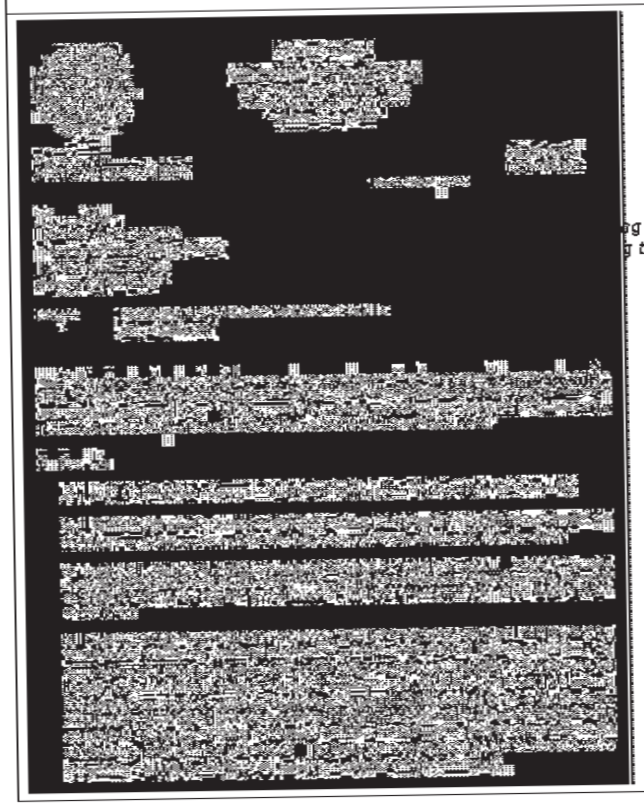
Comment	Response
D DEPARTMENT OF THE AIR FORCE HEADQUARTERS 60TH AIR MOBILITY WING (AMC) 0 6 NOV 2007 Colonel Giovanni K. Tuck Commander 400 Brennan Circle Travis AFB CA 94535-5049 Mr. Dennis Dudzik Program Manager URS Corporation 2870 Gateway Oaks Drive, Suite 150 Sacramento CA 95833 Dear Mr. Dudzik, We appreciate your inclusion of Travis AFB in the coordination process for the SMUD Solano Wind Project Phase 3 Draft EIR. We very much value our relationship with the local community and welcome any opportunity we have to work with you to ensure the compatibility of local development and Travis AFB. In late 2006, we added an additional radar feed into our existing Standard Terminal Automation Replacement System (STARS). At that time, we discovered that the existing wind turbines in the Solano County Wind Resource Area (WRA) caused serious flight safety hazards in terms of planes dropping off radar. Additional wind turbines in the WRA may increase that safety hazard. We have begun construction on a new digital radar system, the ASR-11, to be operational by October 2008 and are currently unable to accurately determine the effects of existing and new wind turbines on that radar. } 1 Ultimately, these safety concerns affect not only Air Force aircraft and crews but the general flying public as well, as 75%-85% of the air traffic in the Travis AFB coverage area is civilian, and smaller planes are more susceptible than large military aircraft to some of the radar issues that result from the wind turbines. Therefore, our preference is that construction of any additional wind turbines in the WRA be delayed until the new ASR-11 system is installed and in operation. At that time the Air Force will be able to determine whether operationally acceptable radar is available over the WRA and what the effect of additional wind turbines would be. } 2	D-1 SMUD appreciates the assistance of the Department of the Air Force in identifying potential impacts of the project. SMUD recognizes that Travis AFB is in the process of constructing a new digital radar system (ASR-11) to be operational in October 2008 and is unable to determine the effects of existing and new wind turbines on this new radar system. This issue is addressed on pages 4.8-9 and 4.8-10 of the DEIR. The commenter does not identify impacts that were not disclosed in the DEIR and no change in the EIR is required.

B5-925 (Cont.)

Comment	Response
Thank you for considering our comments on the proposed SMUD Solano Wind Project Phase 3 Draft EIR. If you have any questions, please contact our Base Community Planner, Sara Underwood, at (707) 424-0872. Once again, thank you involving Travis AFB in the ongoing process to ensure the safety of civilian and military aircraft in the area. Sincerely, GIOVANNI K. TUCK, Colonel, USAF Commander	D-2 SMUD recognizes that it is the preference of Travis AFB that project construction be delayed until the new ASR-11 system is installed, in operation and tested. Construction of the Phase 3 project is scheduled to start November 2008, one month after the new ASR-11 system is scheduled to be installed and operational. SMUD has met with and will continue to meet with the staff at Travis AFB to ensure that the issues relative to radar and aviation safety are fully addressed. While the total effect of WTG radar signals is not completely known, the project will be constructed well after the new ASR-11 system is in use. It is anticipated that significant progress will be made by Travis AFB by that time to accommodate construction of SMUD's and wind turbine projects. Radar is addressed on DEIR pages 4.8-9 and 4.8-10. The commenter does not identify impacts that were not disclosed in the DEIR and no change in the EIR is required.

B5-925 (Cont.)

SMUD Solano Phase 3 Draft EIR
Response to Comments

Comment	Response
 E g system is g to comment	E-1a The reference will be corrected in the FEIR. E-1b The reference will be corrected in the FEIR. E-1c The table will be corrected in the FEIR. E-1d Additional text is added at the end of Section 1.3 as follows: One Vision Park has options to purchase portions of approximately 2,800 acres of SMUD land. Currently, One Vision Park has not exercised its options, and any future development potential is speculative. The commenter does not identify impacts that were not disclosed in the DEIR and no further change in the EIR is required.

B5-925 (Cont.)

Comment	Response
[illegible]	E-2 SMUD understands that AFB staff is not convinced that a resolution of the radar deficiencies is possible at the present time. Radar is addressed on DEIR pages 4.8-9 and 4.8-10. SMUD's comments to the Travis AFB letter dated September 11, 2007, are provided under response to letter D. SMUD notes that the Solano County Airport Land Use Commission (ALUC) determined that the Final EIR for Shiloh II Wind Plant Project and Final EIR are not currently consistent with the Travis Air Force Base Land Use Compatibility Plan of 2002, with respect to base digital radar. ALUC has provided a comment letter to SMUD regarding the DEIR on November 7, 2007. Responses to the ALUC comments are provided under the response to letter H. The commenter does not identify impacts that were not disclosed in the DEIR, and no change in the EIR is required. E-3a For clarity, Table 2-1 listing the assessors parcel numbers within the project area is inserted after paragraph number 2 on page 2-1.

Table 2-1. Assessors Parcel Numbers Included In The Solano Wind Project Phase 3

0090-100-080	0090-180-060	0090-190-220
0090-100-280	0090-180-070	0090-210-010
0090-100-290	0090-180-120	0090-220-160
0090-100-300	0090-180-130	0090-220-170
0090-100-310	0090-180-150	0090-220-180
0090-180-030	0090-180-170	0090-220-200
0090-180-040	0090-180-200	0090-220-270
0090-180-050	0090-190-210	

B5-925 (Cont.)

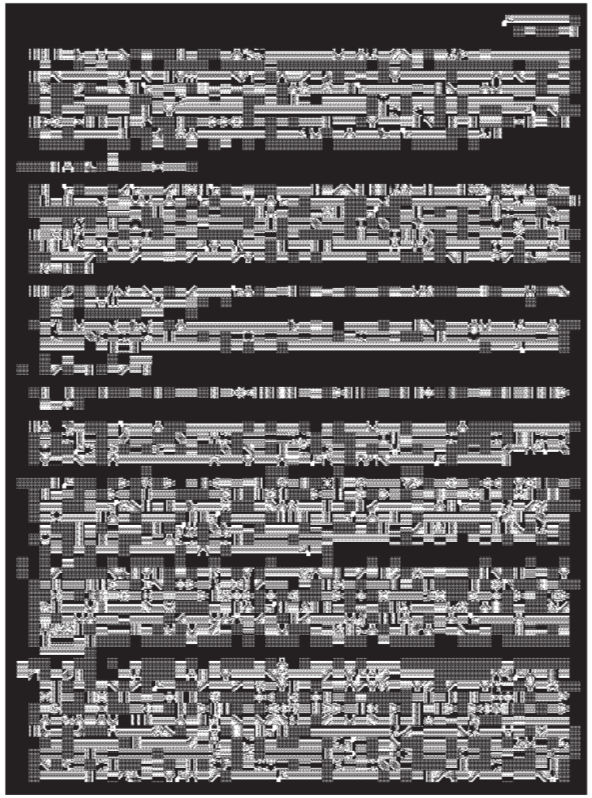
Comment	Response
	The commenter does not identify impacts that were not disclosed in the DEIR, and no further change in the EIR is required.
	E-3b As indicated by the commenter, the project area had increased from the 3,700 acres shown in the Notice of Preparation (NOP) released in January 2006 due to additional land, acquired for the project by SMUD, and unused land from SMUD's Phase 2 project. Similarly, the maximum project size increased from the 76 WTGs and 114 MW shown in the NOP released in January 2006 due to additional land, acquired for the project by SMUD, unused land from SMUD's Phase 2 project, and SMUD's assessment of the property's wind energy potential. The commenter does not identify impacts that were not disclosed in the DEIR, and no change in the EIR is required.
	E-4 The largest WTG model under consideration is 492 feet (150 meters) tall[1]. The maximum turbine height of 492 feet (150 meters) is correctly depicted on Figure 2.3. All references in the EIR to the maximum turbine height of 495 feet are replaced with 492 feet. The commenter does not identify impacts that were not disclosed in the DEIR, and no further change in the EIR is required.
	E-5a To clarify existing conditions in the project area the following text replaces the first sentence of paragraph 2 in Section 2.4.3 page 2-9: The majority of the project area is owned in fee title by SMUD. Of the project area, 411 acres are currently part of the enXco V project and contain 62 Kenetech 56-100 WTGs. SMUD is in the process of acquiring these portions of the enXco V project area. The existing turbines will be removed at the time the turbines in this area are constructed during construction of the SMUD-Solano Wind Project

[1] Both Vestas and GE WTGs are 492 feet

B5-925 (Cont.)

Comment	Response
	Phase 3. ~~The property is owned in fee title by SMUD.~~ To maintain current land use to the extent practicable, land is leased to farmers for dry-land farming and grazing. The commenter does not identify impacts that were not disclosed in the DEIR, and no further change in the EIR is required.

B5-925 (Cont.)

Comment	Response
	E-5b The comment is addressed in response to Comment Number 5a. E-6a SMUD acknowledges that the Solano County Wind Turbine Siting Plan (1987) supersedes lesser standards from the County's Zoning Regulations. SMUD intends to determine appropriate WTG setbacks using standards and methodologies consistent with Solano County's Wind Turbine Siting Plan (including the three times turbine height setback). For selected WTG sites where a three times turbine height setback would be appropriate, but a lesser setback is desirable for full project site build-out, a turbine-specific safety analysis, consistent with that referenced by commenter, will be conducted and the safety setback incorporated into the final design. This approach is consistent with siting guidelines established for previous projects (e.g., Shiloh I). Also, see the response to Comment 4. The commenter does not identify impacts that were not disclosed in the DEIR, and no further change in the EIR is required. E-6b The following modification will be made on page 2-10: **Distances from property boundaries.** The Wind Turbine Siting Plan (Solano County 1987) and Solano County zoning regulations pertaining to WTG permitting state that WTG noise must not exceed a community noise equivalent level (CNEL) value of 50 decibels A-scale (dBA) at any property line abutting a residential zone, or 60 dBA at any other property line. There are no residences in the project area. The closest residence is 4,000 ~~3,600~~ feet from the project boundary.

B5-925 (Cont.)

Comment	Response
	E-6c As noted by the commenter, the text on page 2-10 under the fifth bulleted item is incorrect. Visual impacts are discussed in detail in Section 4.2. The text is replaced as follows: • **Visual impacts**. The *Wind Turbine Siting Plan* (Solano County, 1987) ~~states that no siting restrictions apply relative to visual impacts.~~ identifies several mitigation measures to reduce visual impacts. WTGs, access roads, and associated buildings are to be located in areas not visible from scenic roadways and residences and new transmission lines are to be placed below ground. The WTGs are to be painted in neutral, non-reflective tones to reduce contrast with the surroundings. The WTGs are to be lighted in accordance with FAA requirements and are not to be lighted for any other reason. The commenter does not identify impacts that were not disclosed in the EIR, and no further change in the EIR is required. E-7a Additional information is added to Table 2-3 on page 2-11 as follows: **Table 2-3. Specifications of Potential Project WTGs** Type[a] | Approximate Kilowatts (per turbine) | Blade Diameter (meters/feet) | Windswept Area (meter^2/feet^2)[b] | Tower Height (meters/feet)[c] | Maximum Blade Tip Height (meters/feet) Clipper IIa | 2,500 | 93/305 | 6,793/73,119 | 80–100/263–328 | 147/458 Gamesa | 2,000 | 90/295 | 6,362/68,500 | 100/328 | 145/476 GE 1.5 sle | 1,500 | 77/253 | 4,670/50,272 | 61–100/200–328 | 139/455 GE 2.5 xl | 2,500 | 100/328 | 7,854/84,540 | 75–100/246–328 | 150/492 Mitsubishi 95/2.4 | 2,400 | 95/312 | 7,088/76,295 | 80/263 | 128/419 RePower MM92 | 2,000 | 93/305 | 6,720/72,333 | 78.5–100/258–328 | 147/481 Siemens SWT-3.6-107 | 3,600 | 107/351 | 9,000/96,900 | 90/295 | 154/471 Vestas V90-3.0 | 3,000 | 90/295 | 6,362/68,500 | 80–105/263–345 | 150/492 [a] Unless otherwise specified, WTGs from any other manufacturer that generally meet the specifications presented in this table also are covered by this EIR. [b] Windswept area may vary because of rounding. [c] Top of the foundation to the center of the hub. The commenter does not identify impacts that were not disclosed in

B5-925 (Cont.)

Comment	Response
	the DEIR, and no further change in the EIR is required. E-7b The comment is addressed in response to Comment 7a. E-8 If Shiloh is denied and Cal ISO requires SMUD to fund system upgrades, SMUD will proceed with a supplemental EIR or appropriate CEQA document. E-9 A study of potential microwave and other radio transmission facility interference was completed concurrent with the Draft EIR. The operators of any potentially affected facilities will be notified as suggested by the commenter. E-10 To avoid aesthetic and avian mortality issues, no new above-ground power collection lines will be constructed for the project. Aesthetic and biological impacts are addressed in detail in Section 4.2 and Section 4.5, respectively. The commenter does not identify impacts that were not disclosed in the DEIR, and no change in the EIR is required.

B5-925 (Cont.)

Comment	Response
	E-11 Generation Step-up Option 1, Option 2, and Option 4 are eliminated in the Final EIR. The commenter does not identify impacts that were not disclosed in the DEIR and no further change in the EIR is required. E-12 As described in response to Comments E-10, E-17 and E-23, no new above-ground collection lines will be constructed as part of this project. The Final EIR will remove references to alternatives that include new above-ground lines. The commenter does not identify impacts that were not disclosed in the DEIR, and no further change in the EIR is required. E-13 The FEIR will include the temporary air quality impacts in the list referenced under "findings of overriding considerations," as suggested. E-14a As noted above, step up transformer Options 1, 2 and 4 are eliminated in the FEIR. E-14b SMUD will seek a local permit for non-SMUD-owned facility improvements. E-15 The Cordelia Hills WRA will be added to the FEIR as follows: SMUD has considered a wind energy project at other locations. Specifically, the California Energy Commission (CEC) has identified five WRAs in California (CEC, 2003): Altamont Pass, Pacheco Pass, San Gorgonio Pass, Collinsville-Montezuma Hills[1], and Tehachapi Pass. The Collinsville-Montezuma Hills WRA was found to be the only one of these WRAs wherein future wind energy development was not already limited by existing and planned (committed) resource developments. Further limiting development

B5-925 (Cont.)

Comment	Response
	in Altamont Pass are recent agreements and litigation that require removal of existing WTGs before an equivalent capacity of new WTGs can be permitted (Center for Biological Diversity, 2004). 1 Solano County technically has two WRAs: Collinsville-Montezuma Hills and Cordelia Hills WRAs. However, the Solano County wind turbine siting plan places restrictions on the development of the Cordelia Hills WRA and local land use is not agriculture. Residents in the area expressed strong opposition to the aesthetic impacts of a proposed wind project there in the 1990s. E-16 The Solano County Wind Turbine Siting Plan includes development criteria regarding scenic resources. The criteria require a 0.25 mile setback from any scenic roadway and establish a scenic resource zone in the Cordelia Hills wind resource area. Both criteria closely mirror the criteria referenced and analyzed in this section. As stated in Section 4.2.1.3 of the DEIR, the project area is more than 3 miles from the nearest scenic roadway, SR 12, and more than 15 miles from the Cordelia Hills WRA. The project will not conflict with these criteria. Additional setbacks required by the Solano County Wind Turbine Siting Plan are discussed in detail in Section 4.10. The commenter does not identify impacts that were not disclosed in the DEIR, and no further change in the EIR is required. E-17 Regarding potential visual impacts of modifications to the Russell sub-station, SMUD notes that the extent of modifications will be small(less than 20 percent) compared to the substantial development that exists at that site. The Russell Substation Step up transformer is approximately 0.2 acres, consisting of multiple transformers, breakers, switches and busses that serve the regional renewable energy resources. The substation is not visible from Highway 12 or 113. It is located approximately 1,000 feet north of Montezuma Hills Road, within site of the much larger PG&E Birds Landing

B5-925 (Cont.)

Comment	Response
	Switchyard. The area was evaluated for potential visual and aesthetic impact in the Shiloh II EIR (Solano County 2007b). That analysis defined the sensitive receptors as residents of Rio Vista, Collinsville and Bird's Landing that drive Montezuma Hills Road and visitors to the Shiloh II Wind Power project. The analysis noted that the visual effects of the electrical facilities would be less than the effects of the proposed turbines. The analysis notes that when a new facility is proposed and sited adjacent to other similar facilities (such as Russell Step Up Transformer) that the visual contrast is weaker and than that which would result from new feature. The analysis concluded that the impact of the substation for Shiloh II was considered less than significant and no mitigation would be required. The comment does not identify any new impact or mitigation for the project, and no change to the DEIR is required. E-18 As stated in Response 5a, existing WTGs within the project area will be removed at the time the turbines in this area as constructed. The commenter does not identify impacts that were not disclosed in the DEIR, and no change in the EIR is required. E-19 To clarify the existing zoning and General Plan designations for the project area, paragraph 3 of Section 4.3.2 on page 4.3-3 is replaced with the following: The project area is predominately zoned Extensive Agriculture (A160) with 411 acres zoned Water-Dependent Industrial (I-WD). The General Plan designates 3,110 acres of the project area as I-WD and 1,227 acres as Water-Dependent Industrial Reserve (I-WD Reserve). The project area consists primarily of rolling hillsides that are used for dry-land farming and grazing. The project area does not include any Prime Farmland, Farmland of Statewide Importance, or Unique Farmland (Solano County, 2006). The I-WD and I-WD

B5-925 (Cont.)

Comment	Response
	Reserve designations for the project area allows interim agricultural use, but is primarily intended to allow water-dependent industries. SMUD will not seek to change the zoning designation at this time for the project area since WTGs are allowed under current zoning. The project area is currently leased and being used for grazing of cattle and goats as well as dry-land farming. ~~The General Plan designates the project area as Extensive Agriculture (180 acres) and Water-Dependent Industrial (4,475 acres). The project area consists primarily of rolling hillsides that are used for dry-land farming and grazing.~~ The project area does not include any Prime Farmland, Farmland of Statewide Importance, or Unique Farmland (Solano County, 2006). ~~The I-WD District designation for the remainder of the project area allows interim agricultural use, but it is primarily intended to allow water-dependent industries. The project area is currently leased and being used for grazing of cattle and goats as well as dry-land farming~~ The commenter does not identify impacts that were not disclosed in the DEIR and no further change in the EIR is required.
	E-20 This comment is addressed in responses to Comments 10, 12, and 23.
	E-21 With respect to removing trees on the project site, as described in the DEIR, the habitat is open grasslands. The only trees are around old homesteads, particularly some large eucalyptus near Toland Landing. There are no plans to remove any trees during construction. In the event trees need to be removed, SMUD will mitigate at the 3:1 ratio at a location or method agreeable to CDFG, and of a size agreeable to CDFG.

B5-925 (Cont.)

Comment	Response
	E-22 Recent studies from the Montezuma Hills Project reported the following (Estep and Jones and Stokes, 2006). Post-construction avian monitoring in the Collinsville-Montezuma Hills WRA (Kerlinger, et al., 2006) suggests that mortality at the High Winds Project is slightly higher than initially expected (0.6 birds/MW/year and 0.28 raptors/MW/year), although it is substantially less than in the Altamont WRA (3.0-8.1 birds/MW/year and 1.5-2.2 raptors/MW/year) (Smallwood and Thelander, 2004). The SMUD Phase 3 project, located in the vicinity of the High Winds Project, would expect similar mortality rates. The FEIR will include this information in Chapter 4.5. E-23 The reviewer correctly notes that most of the collection lines are identified as underground, although some overhead collection lines are also identified. The collection system routing from the WTGs to the Russell Step-Up Transformer location are described in Section 2, Project Description, paragraph 2.6.3.1. Figure 4.5-1 and Figures in Section 2 identify overhead collection lines as part of three Alternatives to route Phase 3 power to the Russell transformer. The new overhead collection line routes identified as part of Alternatives 2 and 3 (at either 34.5 or 230 kV) have been re-evaluated. After further technical and cost comparisons, and in accordance with the County's Wind Turbine Siting Plan, SMUD has decided that for the Final EIR, Alternatives 2 and 3 will no longer include overhead collection options. Alternative routes 2 and 3 will only use underground collection lines. Therefore, no new overhead transmission line routes will be included in the final EIR. The commenter does not identify impacts that were not disclosed in the DEIR, and no further change in the EIR is required.

B5-925 (Cont.)

Comment	Response
	E-24a The contention that bird mortality rates at the Collinsville-Montezuma WRA are "high" compared to Altamont and other locations is not supported by other data. The area is not a major avian migration stopover. SMUD believes the site is more similar to a Category 1 project site as described in the voluntary Guidelines issued by the CEC. SMUD has committed in the Phase 2 EIR and will during Phase 3 to working closely with the TAC to determine appropriate monitoring and mitigation for the wind power project and looks forward to working collaboratively with the TAC to determine the appropriate period for monitoring. In the meantime, SMUD provides the assurances of mitigation land as discussed in Mitigation 5b of the FEIR. E-24b SMUD has determined that the project can be constructed with no new above-ground collection lines and will plan accordingly. The Final EIR will remove references to alternatives that include new above-ground lines. E-24c The bullet item on p. 4.5-36 will be modified to include Shiloh I as one of the projects available to compares against bird mortality. E-24d The off-site mitigation ratio was developed following the precedent of SMUD's Phase 2B EIR, as well as the Shiloh II and Montezuma Hills EIRs. The approach is to base the area of off-site compensation habitat on the total rotor-swept area of the project. The maximum calculated rotor-swept area of the SMUD Phase 3 is 4,661,000 square feet or 107 acres. There is an opportunity to provide this compensation habitat that has exceptional biodiversity and a favorable location adjacent to the existing Solano Open Space Land Trust lands. Previous studies have shown the four species detected most often in WTG collisions were American kestrel, red-tailed hawk, red-winged blackbird and horned lark. Based on estimates for burrowing owls, a pair of kestrels probably requires about 7 acres of habitat for reproduction. Based on this, a compensation area of 70 acres could provide habitat to support 10

B5-925 (Cont.)

Comment	Response
	reproducing pairs to compensate for birds lost from WTG collisions. Red-tailed hawks probably require more habitat, and red-winged blackbirds and horned larks may require less. Also, various agencies have indicated a concern that this property is adjacent to the wind development area. It may be appropriate to modify the ratio from 1:1 rotor swept area, to compensate for a perceived lower "value" of the compensation habitat. Initial mortality surveys may indicate a higher or lower rate of mortality that would support a slightly higher or lower ratio. Therefore, SMUD will set aside 136 to 214 acres, as described in the FEIR, to allow for the typical 1:1 ratio, and include additional area that may be needed based on changing the ratio required by agencies.
	E-24e The relevant CEQA criterion is whether the project would have a substantial adverse effect on any species identified as candidate, sensitive, or special status species. A "substantial" effect might be considered one that reduced a population below its ability to reproduce and maintain the population - or an effect of removing 20 percent of the population, for example. The avian species that were reported in the High Winds Wind Power Avian and Bat Fatality Study (Curry and Kerlinger, 2006) over the last two years, in order of frequency were: American kestrel, red-tailed hawk, horned lark, red-winged blackbird, and European starling. American kestrels and red-tailed hawks occur in North American from Alaska to Panama and from California to New York in a wide variety of habitats. They are among the most common species, and both adapt well to urbanized areas. While protected under the general raptor protection laws, neither species is considered sensitive or endangered, and the populations of both are not declining. For this reason, losses due to turbine strikes estimated at fewer than 1/ MW/year are not considered substantial. Similar analyses would apply to the other three species in this list. Bats that were reported in the same document were Hoary and Mexican Free-tailed bats, with a much lower number of western red bat and silver-haired bat. Hoary bats occur from southern Canada to Southern Mexico and coast-to-coast

B5-925 (Cont.)

Comment	Response
	in North America. Mexican free-tailed bats occur from southern Oregon east to Oklahoma and south to southern Mexico. The species is widespread and although all bats are considered sensitive and of concern, are not considered for candidate or threatened status in any state. Based on these criteria, there is no evidence that impacts from WTG collisions in this area would be considered "substantial."

B5-925 (Cont.)

Comment	Response
	E-24f As described in comments E-10, E-17, and E-23, no new above-ground collection lines will be constructed as a part of this project.
	E-25 The section referenced indicates a reference that contained "two currently used dwellings" at the time the site was recorded in 1992. There are no occupied residences on or adjacent to the project site.
	E-26 The following modification will be made on page 4.7-15: Develop and follow a project-specific SWPPP, in compliance with the State Water Resources Control Board (SWRCB) Construction Stormwater Permit and Solano County's Grading and Erosion Control requirements. The implementation of erosion and sedimentation control procedures outlined in the SWPPP will reduce the potential for loss of soils from erosion and prevent erosive soils from impacting sensitive resource areas.
	E-27a SMUD thanks Solano County for providing updated information regarding the completion of the report on the effects of wind farms on military readiness. The following text on page 4.8-9 under the second bullet paragraph two will be modified to read the as follows: Concerns about potential interference between WTGs and radar operations for airports, weather stations, and the DoD have created delays in projects throughout the U.S. The Pentagon authorized a study, under Section 358 of the 2006 defense authorization bill, to assess the effects of the operation of military radar installations proximate to wind farm developments. ~~To date, this report has not been finished. An FAA study currently being prepared to investigate this issue also has not yet been released.~~ This report was completed in 2006, as discussed earlier in Section 4.8.2.3, page 4.8-7 of this DEIR.

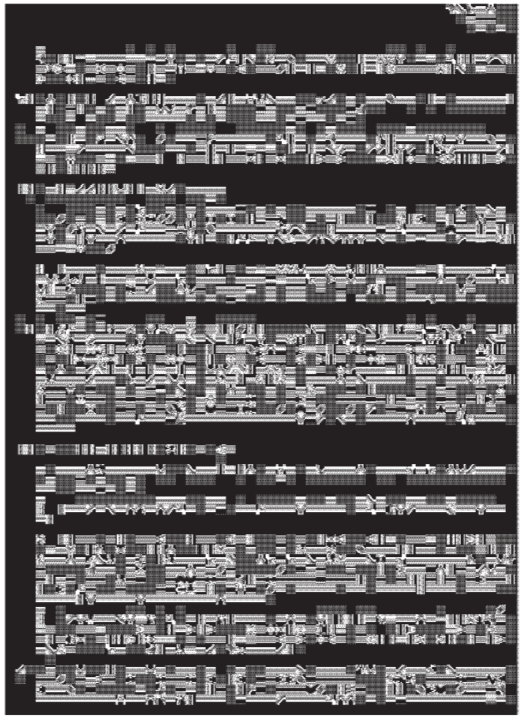
B5-925 (Cont.)

Comment	Response
	The commenter does not identify new impacts that were not disclosed in the DEIR, and no further change in the EIR is required.
	E-27b Radar is addressed on pages 4.8-9 and 4.8-10 of the DEIR. SMUD's comments to the Travis AFB letter dated September 11, 2007 are provided under response to letter D. To address these issues, SMUD plans to begin site preparation of the project after the ASR-11 radar system is tested and operational or another acceptable solution is found. Site preparation is planned for 2008. Construction of turbines will be during mid-2009.To clarify this in the DEIR the following text will be added to page 4.8-10 paragraph three: Since previous projects have been issued "No Hazard Determinations" and the project would be farther from Travis AFB radar than other projects in the WRA, the project would cause no increased in hazard from radar interference. Travis AFB is planning to install a new ASR-11 radar system in October 2008, which is anticipated to solve the existing radar equipment performance. Project construction is scheduled for November 2008, after the installation, operation, and testing is scheduled to be completed for the ASR-11 radar system. In addition to the ASR-11 radar system, other solutions are currently being worked on by other wind developers in the WRA. Note that the FAA "No Hazard Determination" does not address radar issues, according to Travis AFB. SMUD has met with and will continue to meet with Travis AFB personnel to develop solutions to the radar interference issue. Both SMUD and Travis AFB are optimistic that solutions will be reached in a timely manner. The FAA has provided no comments at this time to indicate that a "No Hazard Determination" will not be issued for this project. This impact is therefore considered less than significant. The commenter does not identify new impacts that were not disclosed in the DEIR and no further change in the EIR is required.

B5-925 (Cont.)

Comment	Response
	E-27c DEIR pages 4.8-9 and 4.8-10 discusses the delay in the Shiloh II project. SMUD appreciates the correction that both Shiloh II and Montezuma Wind Projects have been delayed. To correct this, text will be added to page 4.8-9, paragraph seven. This text modification is combined with response to Comment 27d below. E-27d SMUD notes the comment that the radar issue was publicly disclosed by Travis AFB after the FAA issued a "No Hazard Determination." To clarify this, the following text on page 4.8-9, bullet item 2 paragraph 7 will be changed to read as follows: In a letter dated March 8, 2007, and at the Solano County Planning Commission hearing of March 15, 2007 (Solano County, 2007a), Travis AFB raised concerns regarding the Shiloh II and Montezuma Wind Projects and its potential impacts on radar. These concerns were raised after the FAA issued a "No Hazard Determination" (Yankovich, 2007). The commenter does not identify new impacts that were not disclosed in the DEIR and no further change in the EIR is required. E-27e SMUD appreciates the County's comments regarding ALUC determination of Shiloh II. ALUC has provided a comment letter to SMUD regarding the Phase 3 DEIR on November 7, 2007. Responses to the ALUC comments are provided under response to letter H. E-28 The comment is addressed in response to Comments 6(a) and 16. E-29a As the commenter notes, this is the same question raised and responded to in response to Comment 19 above.

B5-925 (Cont.)

Comment	Response
	E-29b This appears to be the same question asked and responded to in response to Comment 29a above. E-30 The reference will be corrected to state that Travis is 13.5 miles away. E-31 As stated in response to Comments E-19 and E-29, the current zoning for the project area is Extensive Agriculture. The General Plan designates the project area as Water-Dependent Industrial (I-WD) and Water-Dependent Industrial Reserve (I-WD Reserve). The commenter does not identify impacts that were not disclosed in the DEIR, and no further change in the EIR is required. E-32a As noted for Comment 25 above, the reference to CA-SOL-361H was used as a dwelling at the time the site was recorded in 1992. There are no occupied residences on or adjacent to the project site. E-32b As noted for Comment 25 above, the reference to CA-SOL-361H was used as a dwelling at the time the site was recorded in 1992. There are no occupied residences on or adjacent to the project site. E-33 The comment is addressed in response to Comments 6(a) and 16. E-34 a,d As noted for Comment 25 above, the reference to CA-SOL-361H was used as a dwelling at the time the site was recorded in 1992. There are no occupied residences on or adjacent to the project site. E-34b The statement on p. 4.11-7 will be changed to read 4,655-acre for consistency.

B5-925 (Cont.)

Comment	Response
	E-34c The paragraph on page 4.11-7 is modified to provide greater accuracy in the distance of residences as follows: For the purposes of this analysis, no residences are within the 4,665-acre project area. The nearest residences are approximately one mile to the northeast (Receptor 1[R1]), 2.5 miles to the east (R3) and ~~1~~ 0.75 mile to the southeast across the Sacramento River (R2). Figure 4.11-1 illustrates the location of these nearest residences. Table 4.11-4 shows the existing baseline noise levels. The first paragraph on page 4.11-12 is modified to provide greater accuracy in the distance of residences as follows: The nearest residences would be approximately 1 mile to the northeast, 2.5 miles to the west, and ~~1~~ 0.75 mile to the southeast across the Sacramento River. This change does not change the result of the noise analysis. E-35 As noted for Comment 25 above, the reference to CA-SOL-361H was used as a dwelling at the time the site was recorded. There are no occupied residences on or adjacent to the project site.

B5-925 (Cont.)

Comment	Response
[redacted]	E-36 The following change will be made to page 4.13-10 Mitigation Measure TRA-3: In addition to complying with local laws specifying maximum loads, and requirements for local hauling permits, SMUD will: • Enter into a secured agreement with Solano County to ensure that any county roads that are damaged are promptly repaired to their pre-construction condition including road repairs, slurry seal, overlay, reconstruction as determined and agreed to by Solano County and SMUD, and performed to Solano County's satisfaction; and • Post a security bond to cover the costs of road maintenance during construction. The project owner shall repair any damage and restore roads to pre-construction conditions prior to operations. Should the owner not perform such repairs to the satisfaction of Solano County, the county will reserve the right to perform the repair work at the owner's cost. Implementation of this mitigation measure will reduce damage to roads to less than significant. No additional mitigation measures are required. The commenter does not identify impacts that were not disclosed in the DEIR, and no further change in the EIR is required. E-37 SMUD notes that the Collinsville-Montezuma Hills WRA is not the only WRA in Solano County. The following change will be made to Page 5-1 paragraph two:

B5-925 (Cont.)

Comment	Response
	Solano County designated the Collinsville-Montezuma Hills WRA in 1987, and since this designation, several hundred WTGs have been installed within the Collinsville-Montezuma Hills WRA. The other WRA in Solano County is Cordelia Hills which is geographically separated from the Collinsville-Montezuma Hills WRA; therefore, the Collinsville-Montezuma Hills WRA is considered the cumulative impact study area for this project. Here after WRA will refer to the Collinsville-Montezuma Hills WRA only. ~~Because the WRA is the only area designated for WTGs in Solano County, the WRA is considered the cumulative impact study area for this project.~~ The commenter does not identify impacts that were not disclosed in the DEIR and no further change in the EIR is required. E-38 SMUD as the lead agency for this project is not conveying the conservation land or easement to CDFG or a third party. SMUD will work closely with the TAC members and the American Wind and Wildlife Institute (AWWI) to determine and implement appropriate habitat enhancement, monitoring, and wildlife research associated with the conservation easement area. SMUD looks forward to working collaboratively with the TAC, AWWI, the Solano Land Trust, and other stakeholders in this regard. The commenter does not identify new impacts that were not disclosed in the DEIR, and no change in the EIR is required. E-39 The commenter is correct; the reference to Solano County being a responsible agency will be deleted in the FEIR. Unnumbered - This is not a comment on the Phase 3 EIR. SMUD looks forward to working with the TAC to complete the mitigation requirements.

B5-925 (Cont.)

SMUD Solano Phase 3 Draft EIR
Response to Comments

Comment	Response
F *********SENT VIA EMAIL********** From: Gail Zavala [mailto:gailzart@comcast.net] Sent: Thursday, November 01, 2007 7:32 PM To: Lonn Maier Subject: We are writing in response to the Environmental Impact Report for the SMUD Solano Wind Project Phase 3. We are wondering why you even bother to ask our opinion on this project when you have already built hundreds of windmills already, without our approval or asking our opinion. Does it really matter that most of the people on Lelia Drive have lived there for at least 15 or more years, and we bought and built on this property on Sherman Island because it afforded us a beautiful landscape with a peaceful feeling, to live our lives in. Now, we all have to look across the river and see these ugly, huge windmills. The sad part about that is that it doesn't even benefit us, but some other residents that DON'T have to look at these monstrosities every day. We live in Sacramento County south of the windmills and these windmills benefit Solano County. We have seen what this looks like down in the Palm Springs area, and hated to see the ruined landscape there, but now it is right across on the previously beautiful hills from us, the hills that made us all feel happy that we lived in this small, special neighborhood in the delta. You have absolutely devalued our property. What difference does it make to you that we are protesting the asthetics of our beautiful area being ruined by SMUD? Half of our neighbors never even received this letter in the mail. You own the property so what can we do if you choose to ruin the environment where we live, as long as it doesn't affect you?? This benefits us in NO way, only others who also don't have to look at these ugly windmills. I know this letter might be read, but discarded immediately, so why even ask us to comment?? Rich and Gail Zavala 4279 Lelia Dr. Rio Vista, Ca. We live on Sherman Island, although our mailing address is Rio Vista.	F-1 SMUD values comments from the public and local residents, and they are a vital part of the decision-making process in considering the proposed Phase 3 Solano Wind project for approval. Under the California Environmental Quality Act, public input provides a framework for environmental review and guides project decision-makers in their process. By no means are your comments ignored or minimized in our process. F-2 One of the resource areas identified in the Phase 3 EIR as significant and unavoidable is the impact of construction and operation of the turbines on visual resources. As noted by the commenter, wind turbine generators are prominent features which can dominate the viewshed of a landscape. That impact is identified in the Phase 3 EIR, and will be an issue to be discussed by the SMUD Board when the project is reviewed for approval. F-3 The turbines being constructed presently by SMUD (as well as the turbines identified in the EIR) will not serve Solano County; they will serve SMUD customers in Sacramento and small portions of Placer County and Yolo County. Wind energy is produced without adding emissions to the local air basin and the global environment. We estimate that our Phase 3 project alone will result in an offset of over 60,000 metric tons of carbon-based emissions that could be otherwise generated by fossil-fuel generation. Furthermore, the use of wind energy by SMUD reduces the need to purchase power from other markets, potentially lowering and stabilizing the prices for everyone. SMUD believes that moving toward more renewable energy sources,

B5-925 (Cont.)

Comment	Response
	including wind energy, benefits everyone, including local residents who are not directly served by SMUD electricity.
	F-4 As noted above, SMUD is interested in the concerns of the local community and the people of California. The CEQA process also requires the applicant to solicit comments from the public and to hold public meetings to receive comments that would identify opportunities to reduce impacts of the project. SMUD appreciates suggestions from this and other commenters.
	F-5 SMUD owns some of the property being developed for wind energy, and will own all the property in the current Phase 3 project. SMUD notes that there are a number of wind plant developers in the area actively pursuing wind development besides SMUD. Florida Power and Light has about 162 MW of wind energy constructed, with another 37 MW proposed. enXco (formerly US Windpower) has about 60 MW of wind energy, with future generation planned. PPM Energy has about 150 MW of wind energy in operation, with another 200 MW planned and pending approval.
	F-6 As noted above, the visual and aesthetic impacts of the wind turbines was one of the potentially significant unavoidable important impacts identified in the DEIR. The commenter did not identify additional impacts that were not addressed in the DEIR, and no change in the EIR is required.

B5-925 (Cont.)

Comment	Response
State of California – The Resources Agency ARNOLD SCHWARZENEGGER, Governor DEPARTMENT OF FISH AND GAME http://www.dfg.ca.gov POST OFFICE BOX 47 YOUNTVILLE, CALIFORNIA 94599 (707) 944-5500 November 7, 2007 Mr. Lonn Maier Sacramento Municipal Utility District Post Office Box 15830 MS B203 Sacramento, CA 95852 Dear Mr. Maier: Subject: Solano Wind Project Phase 3, Draft EIR, SCH # 2006012017, Rio Vista/Collinsville, Solano County Department of Fish and Game (DFG) personnel have reviewed the above Solano Wind Project Phase 3 (Project) Draft Environmental Impact Report (DEIR). The Solano Wind Project Phase 3 is located within the Collinsville-Montezuma Hills Wind Resource Area (WRA) in the southern portion of Solano County. The WRA is north of the confluence of the Sacramento and San Joaquin rivers, approximately 6 miles west of Rio Vista, and 16 miles southeast of Fairfield. The Project is located on 4,655 acres of the WRA and is located south of Montezuma Hills Road and east of Stratton Lane. The Project is bordered to the south and southeast by the Sacramento River. The Montezuma Hills area consists of a series of gently rolling hills of similar size. The hills have a relatively constant crest elevation, generally between 150 and 250 feet above mean sea level. The Project area is designated for agricultural use (dry-land farming and grazing) and is sparsely populated. The Project Sponsor, Sacramento Municipal Utility District (SMUD), proposes to construct up to 84 wind turbine generators (WTG) on the Project site. These WTGs would be south of and adjacent to the previously constructed Phase 1 and 2 projects. The Project would have an energy production capacity of up to 128 megawatts (MW) and could be integrated with the ongoing Phase 1 and 2 projects, which presently provide 102 MW. The Project would include construction of new access roads, meteorological towers, and a power collection system to transport power to the SMUD power grid. The individual WTGs would have a maximum height of 151 meters (495 feet), a maximum 105-meter (345-foot) tower, and a maximum rotor diameter of 107 meters (351 feet). The Project would expand the use of the renewable wind resource in the WRA to meet Sacramento's energy needs and assist SMUD in achieving its goal of supplying 23% of all retail load obligation with renewable resources by the year 2011. DFG is identified as a Trustee Agency pursuant to the California Environmental Quality Act (CEQA) Section 15386 and is responsible for the conservation, protection, and management of the State's biological resources. DFG considers the DEIR as a means to understand and appreciate the development of *Conserving California's Wildlife Since 1870*	

G

B5-925 (Cont.)

SMUD Solano Phase 3 Draft EIR
Response to Comments

Comment		Response
Mr. Lonn Maier November 7, 2007 Page 2		SMUD appreciates the assistance of the Department of Fish and Game in identifying potential impacts of the project. Brief responses to your questions and comments are provided here and will also be in the FEIR.
renewable energy resources while also developing adequate conservation and protection measures to conserve some of the County's biological resources.		
Section 2.5-PROJECT COMPONENTS		
2.5.1-1Towers:		
Please specify what the density of turbines will be in the Project area.	1	G-1 The density of turbines can be calculated based on the maximum of 84 turbines (page 1-1 of the DEIR) in an area of 4,655 acres (page 2-1 of the DEIR), or 0.02 WTG per acre. The spacing on individual turbines is a function of the size of the selected turbine, which will not be known until competitive bidding is completed for the turbines and final layout produced.
2.5.1.5 Safety, Lighting and Grounding		
Plans for lighting should balance FAA requirements with protection of birds and bats. Use flashing lights with the minimum "on" period on turbines. Keep lighting at both operation and maintenance facilities and substations to the minimum required to meet safety and security needs. Use white lights with sensors and switches that keep the lights off when they are not required. These lights should be hooded and directed to minimize backscatter, reflection, skyward illumination, and illumination of areas outside of the facility or substation.	2	G-2 Lighting for the turbines is expected to follow agreements developed between SMUD and the Audubon Society scientists meeting safety requirements while reducing features attractive to bats and birds. SMUD will install minimum lighting consistent with FAA safety requirements and security on buildings associated with the project. There are no substations in the project.
Section 4.5 - BIOLOGICAL RESOURCES		
4.5.3 Significance Criteria, page 4.5-26		
California tiger salamanders (CTS) spend a majority of their lives in upland aestivation habitat. CTS spend approximately the first 4 years of their lives in upland burrows until they mature and migrate to breeding ponds. After breeding, they move back in to upland burrows. Any impacts to upland habitat, including fossorial mammal burrows and creating barriers between aestivation habitat and breeding ponds are considered an impact to CTS. Impacts to CTS upland habitat should be analyzed and mitigated for if impacts will occur.	3	G-3 The CNDDB lists no records of California tiger salamanders (CTS) within 3 miles of the project area, and there are no known breeding ponds in the vicinity. The Shiloh II EIR noted that the nearest localities in the CNDDB were at Jepson Prairie, Antioch (probably extirpated) and Potrero Hills, approximately 4 miles west of Shiloh. There are several seasonal drainages on the property, and there were historical stock ponds that washed out. On this basis, SMUD finds no substantial evidence to support the possibility CTS are present in the project area. Further, SMUD believes that by maintaining open space and grasslands on the property, any existing habitat potential remains intact. SMUD believes it is unlikely CTS occur on the project site, the area disturbed is relatively small (< 3%) and would not include wet areas or potential breeding ponds. SMUD will provide this additional
4.5.3 Significance Criteria, page 4.5-28 and Mitigation BIO-1		
As stated, agricultural lands provide valuable foraging habitat for many species including raptors. Installation of the WTG foundations, access roads, generation step-up transformer, and the addition to the existing O&M building (or construction of a new building) would permanently convert approximately 122 acres of agricultural land to non-foraging habitat. Therefore, this project would impact foraging habitat.	4	
Areas around turbines and along roads that have been disturbed by construction and operation activities may provide habitat for prey species such as insects and small mammals. Increases in prey availability may in turn attract raptors, birds, and bats.	5	

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Comment	Response
	information in the Final EIR to support the determination not to perform CTS surveys.
	G-4 The project is expected to convert 122 acres of agricultural land into roads, foundations and other features for the project. However, SMUD does not agree that gravel roads are excluded from foraging habitat. Road edges, gravel, and topographic relief also provide foraging opportunities for avian and other species. The area covered by the O&M building is possibly removed from foraging habitat, but the relative area is inconsequentially small (i.e., < 10 acres).
	G-5 Field biologists observed that unlike wind projects in the Altamont area, the Solano site has very few squirrels and other fossorial mammals. Over the entire project area, there may be as few as 40 locations where squirrels are seen, and many where none are seen. The reason for this may have to do with recent farming practices, such as tilling 100% of the hills periodically before planting. In any case, the existing density of such animals is much lower than observed at Altamont. SMUD will provide some additional calculations of the area that will be converted to roads and area converted to concrete foundations or buildings in the Final EIR, but it is unlikely this will rise to a level that would be considered a "substantial" loss of habitat under CEQA. Similarly, the project includes provisions that will minimize the potential attraction of prey. Trenches for collection lines will be reseeded; trash will be containerized and removed further reducing the opportunity for burrowing animals. SMUD does not anticipate significant increases in fossorial animals as a result of the project.

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Comment	Response
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putting them at increased risk of collision. Construction and management practices should incorporate measures to minimize activities that may attract prey and predators to wind turbine sites, including benign methods to eliminate or reduce fossorial animals or suppress weedy vegetation. } 5 cont	G-6 SMUD will include references to white-tailed kite, western burrowing owl and bats as species that could potentially be affected by WTGs.
Impact BIO-5	
Impacts to special status species from WTG blades should include white-tailed kite (Fully Protected), western burrowing owl (species of special concern), and special status bat species. } 6	G-7 SMUD feels it is appropriate to compare bird strikes with buildings to bird strikes to WTGs and other sources of mortality as is widely done for other projects. For example, a paper presented at the Third International Partners in Flight Conference, March 2002 describes that "communication towers may kill from 4-50 million birds per year. Collisions with power transmission and distribution lines may kill from hundreds of thousands to 175 million birds annually, and power lines electrocute tens to hundreds of thousands more birds annually, but these utilities are poorly monitored for both strikes and electrocutions. More than 15,000 wind turbines may kill 40,000 or more birds annually nationwide, the majority in California." (Manville, A.M. 2002).
DFG does not feel it is appropriate or accurate to compare bird strikes with buildings to bird strikes with wind turbines; the two are not analogous. DFG suggests removing this paragraph completely. } 7	
The DEIR does not provide a discussion or analysis on bird and bat mortality that has occurred in the WRA area. The DEIR should include reports, data, and a discussion on mortality of raptors and bats in the WRA from currently operating wind energy projects. } 8	
The DEIR presents a progress report of avian use surveys in the Phase 3 project area but does not include bat use surveys for the area. The California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development (Guidelines) includes pre-permitting surveys for bat use in the Project area. These studies should be conducted, disclosed, and analyzed in the EIR. } 9	Add references: Manville, A.M. 2002. *Bird Strikes and Electrocutions at Power Lines, Communication Towers, and Wind Turbines: State of the Art and State of the Science- Next Steps Toward Mitigation.* Third International Partners in Flight Conference, March 20-24, 2002, Asilomar Conference Grounds, California. Published at: http://www.fs.fed.us/psw/publications/documents/psw_gtr191/Asilomar/pdfs/1051-1064.pdf.
The DEIR does not discuss the estimated fatalities from the Project based on the avian use surveys and monitoring data from currently operating wind energy projects in the WRA. Estimated Project impacts/fatalities to birds and bats from wind turbine strikes should be analyzed and discussed. } 10	
Mitigation BIO-1	
As stated, any trees removed will be replaced with the same or compatible size and species. Removal of trees shall be mitigated at a 3:1 ratio. Success criteria for tree replanting shall include a minimum 80% survival rate at the end of a 5-year management and monitoring period. Trees shall be planted on the permanently conserved area for raptors so as not to provide attractive features in the WRA. The permanently conserved land shall be outside of, and not adjacent to, the WRA. } 11	G-8 The most recent data on bird and bat mortality that has been recorded in the WRA area is presented in Appendix II of the Shiloh Wind Plant EIR: "Post-Construction Avian and Bat Fatality Monitoring Study for the High Wind Power Project …" April 2006, and Appendix B of the Montezuma Hills EIR: (FPL Energy Montezuma Wind, LLC, 2006.)

B5-925 (Cont.)

Comment	Response
	In the Montezuma report, it was reported that: "The many studies that have been conducted to date on bird interactions with wind turbines indicate that, in general, wind farms pose little to no risk to local or regional bird populations, including raptors. Studies conducted in the Altamont Pass WRA, however, suggest possible risks to local or regional populations that exceed risks documented in other areas (Erickson et al., 2001; Smallwood and Thelander, 2004). Postconstruction avian monitoring in the Collinsville-Montezuma Hills WRA (Kerlinger et al., 2006) suggests that while mortality has occurred at rates slightly higher than initially expected (0.6 birds/MW/year and 0.28 raptors/MW/year), it is substantially less than in the Altamont WRA (3.0-8.1 birds/MW/year and 1.5-2.2 raptors/MW/year) (Smallwood and Thelander, 2004) and does not occur at levels that would affect local or regional populations." (Estep and Jones & Stokes, 2006). Add references: Estep Environmental Consulting and Jones & Stokes. 2006. *Revised Avian and Bat Assessment for the Montezuma Wind Project*. 2006. Erickson, W. P., G. D. Johnson, M. D. Strickland, D. P. Young, Jr., K. J. Sernka, and R. E. Good. 2001. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparison of Other Sources of Avian Collision Mortality in the United States*. Prepared for the National Wind Coordinating Committee, Washington, DC. Kerlinger, P., R. Curry, L. Culp, C. Wilkerson, A. Jain, B. Fischer, and A. Hasch. 2006. P*ost-construction Avian Monitoring Study for the High Wind Power Project, Solano County, California – Two Year Report*. Prepared for High Winds, LLC and FPL Energy. Smallwood, K. S., and C. G. Thelander. 2004. *Developing Methods to*

B5-925 (Cont.)

Comment	Response
	Reduce Bird Mortality in the Altamont Pass Wind Resource Area. Final Report by BioResource Consultants to the California Energy Commission, Public Interest Energy Research-Environmental Area, Contract No. 500-01-019. This information will be added to the FEIR. The comment adds information to an issue that was identified in the DEIR. G-9 The voluntary "Guidelines" include pre-permitting surveys for bat use in the Project area. Bat surveys were performed in the Collinsville-Montezuma Hills area previously (Post-Construction Avian and Bat Fatality Monitoring Study for the High Winds Wind Power Project, April 2006) and provide enough information to determine that there is a potential for collisions by bats. At this time, it is SMUD's opinion that additional surveys would not change any determination of the EIR. The analysis is based on previous studies in the region, which is considered sufficient for the DEIR. G-10 The DEIR did not attempt to estimate the fatalities that would occur from the project based on monitoring data from currently operating wind energy projects. Some of that information is summarized above in the Response to G-8. SMUD will describe the mortality data from the currently operating projects in the FEIR, on a "per-turbine," "per wind-swept acres" or "per MW" basis. G-11 With respect to removing trees on the project, as described in the DEIR the habitat is open grasslands. The only trees are around old homesteads, particularly some large eucalyptus near Toland Landing. It is not planned to remove any trees. In the event trees need to be removed, SMUD will mitigate at the 3:1 ratio at a location or method agreeable to CDFG. The comment does not identify issues that were not addressed in the DEIR, and no change in the EIR is required.

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SMUD Solano Phase 3 Draft EIR
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Comment		Response
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Mitigation BIO-2 and Table 6-1		
If any streams are permanently filled or impacted, the loss shall be mitigated at a 3:1 ratio. Mitigation can be accomplished by permanently preserving in-kind stream habitat on the property being conserved for raptor populations or at a mitigation bank in Solano County.	12	G-12 The project does not plan, at this time, to fill or alter the bed and/or bank of any streams. If it becomes necessary in the final design to fill a stream, SMUD will submit a Streambed Alteration Agreement (SAA) to CDFG for approval. The SAA will specify the location and amount of mitigation. The possibility for an SAA is described on page 4.5-2.
Mitigation BIO-4		
Any active burrowing owl nests shall have a minimum 250-foot buffer from construction and staging areas from February 1 through August 31. If occupied burrows are to be passively relocated, it will occur outside of the nesting season. Burrows must be passively vacated and excavated between September 1 and January 31 only. DFG requires mitigation for the loss of burrowing owl habitat by providing 6.5 acres of suitable habitat and installation of 2 artificial burrows for every occupied burrow that is passively relocated and/or removed. The 6.5 acres and artificial burrows shall be contiguous with known, occupied burrowing owl burrows and shall be outside of, and not adjacent to, the WRA. Project proponents shall ensure the mitigation lands are protected in perpetuity and shall provide for the long-term management of the lands by funding a management endowment.	13	G-13 SMUD is aware of the burrowing owl mitigation guidelines and intends to comply with them. SMUD appreciates the additional information provided. The comment does not identify impacts that were not identified in the DEIR, and no change in the EIR is required.
***Mitigation** BIO-5a and Table 6-1*		
Surveys for bird and bat mortality should be conducted for 3 years from the onset of turbine operation. The WRA has documented high rates of avian mortality including impacts to a number of special status species. The Guidelines categorize four types of wind energy projects. Category 3 projects are characterized by areas with known avian migration stopover destinations such as water bodies within or immediately adjacent to the project; special-status species occurring on or adjacent to a proposed site; high concentrations of wintering and/or breeding raptors; and sites near or contiguous to wind projects that have experienced high bird or bat fatalities that cannot be avoided or minimized. Category 2 and 3 projects need two years of carcass count data to assess whether pre-permitting impact estimates were accurate, evaluate the effectiveness of mitigation measures, and capture variability between years. Projects with high levels of bird and/or bat use or considerable uncertainty regarding bird and bat use or risk will need more study than Category 2 projects to help understand and formulate ways to reduce the number of fatalities. Category 3 projects may need additional study effort in year two and three if the first year of data shows fatalities higher than expected and/or to be different species than anticipated. The results of the first year of data should be critically assessed to determine which modifications, if any, are needed for the second	14	G-14 The available data do not support the contention that bird mortality rates at the Collinsville-Montezuma WRA are "high" compared to Altamont and other locations (See Estep et al., 2006). The area is not a major avian migration stopover. SMUD believes the site is more similar to a Category 1, as described in the voluntary Guidelines, given the development of the WRA surrounding the proposed project. SMUD has committed in the Phase 2 EIR and will continue through Phase 3 to working closely with the TAC to determine appropriate monitoring and mitigation for the wind power project and looks forward to working collaboratively with the TAC to determine the appropriate period for monitoring.

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Comment	Response
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and third year of study. For example, the second and third year of fatality monitoring may need to focus more effort on turbines or habitat types where impacts were higher than expected by shifting searches away from areas that showed few or no fatalities. First year monitoring results may also warrant a reallocation of study efforts to those seasons where more impacts were recorded. } 14 cont	
The monitoring program shall be developed consistent with the Guidelines. Monitoring reports shall be provided to DFG each month with a comprehensive report at the end of each calendar year. The annual report is due 30 days after the end of each calendar year. At the end of the second year of monitoring, the comprehensive report shall include monitoring from Year 1. At the end of the third year of monitoring, the final, comprehensive report for all 3 years shall be due 90 days after the end of the calendar year. } 15	G-15 SMUD is aware of the voluntary Guidelines, but suggests that the frequency of monitoring reports and timing of delivery, as well as the number of years of monitoring are within the scope of the TAC to decide for all the wind power projects together, and will work collaboratively with the TAC and CDFG to finalize these dates. This comment does not identify new impacts, nor identify methods to reduce impacts that were not discussed in the EIR.
Data collected during the monitoring program should be submitted to DFG's Biogeographic Information and Observation System (BIOS) Program, www.dfg.ca.gov/biogeodata/bios. BIOS is a central online repository that can be viewed without specialized software and in conjunction with other data layers to accommodate larger planning efforts and help inform and improve management decisions. } 16	G-16 Thank you for making SMUD aware of the BIOS program. SMUD is supportive of the CDFG efforts to collect data regionally into a consolidated database, and will cooperate with this effort.
The Project applicant shall notify DFG at the time Project construction is complete. } 17	G-17 SMUD will notify DFG at the time Project construction is complete. Notification will not change impacts as discussed in the DEIR.
A 3-year monitoring program may identify an unanticipated high level of mortalities associated with the Project. The adaptive management process recognizes the uncertainty in forecasting impacts to birds and bats and allows testing of options as experiments to achieve a goal and determine impact avoidance, minimization, and mitigation effectiveness. Options include maintenance activities or habitat modification to make the site less attractive to at-risk species and seasonal changes to operations. During the bat migratory period, limited and periodic feathering of wind turbines during low-wind nights may help avoid impacts to bats. During the raptor migration period, reducing operations has shown to greatly reduce raptor mortality. If the multi-year monitoring reports show high levels of fatalities, removal of problem turbines or seasonal shutdowns of turbines may be options if other minimization measures are ineffective in reducing fatalities. } 18	G-18 As noted above, the monitoring program will be developed in collaboration with TAC. SMUD looks forward to participating with CDFG in a collaborative approach to determining appropriate monitoring and adaptive management responses. The comment does not identify issues not discussed in the EIR.
Mitigation BIO-5b	
Off-site mitigation land to support and enhance raptor populations needs to be provided prior to operation of wind turbines, not after impacts have occurred. Mitigation for impacts from SMUD's Phase 1 and 2 wind energy projects have yet to be achieved while impacts from Phase 1 have been occurring since 2004. } 19	G-19 As mitigation for Phase 1, SMUD committed funds to both the Davis Raptor Rehabilitation Center and a private raptor rehabilitation center in Stockton. SMUD committed in the Phase 2 EIR to provide a set amount of funds to acquire and manage mitigation lands as described by the TAC. That commitment remains intact and available once the

B5-925 (Cont.)

Comment	Response
Mr. Lonn Maier November 7, 2007 Page 6	TAC has met and made a decision on this matter. The comment does not address impacts of the Phase 3 EIR.
As stated, off-site mitigation land to support and enhance raptor populations will be provided at a 2:1 ratio of designated open space to rotor-swept area. Location of the mitigation land shall be outside of, and not adjacent to, the WRA, and shall be in-kind to the habitat impacted. The entire WRA is considered to be habitat permanently lost and, other than the Solano Land Trust property, the WRA can be developed with wind turbines. It is not appropriate to conserve habitat for raptors and bats in or adjacent to an area that causes a high rate of mortality to those species. Location of permanently conserved land shall be coordinated with and approved by DFG. 20	G-20 The DEIR proposed to provide land that is adjacent to the extensive area of Solano Land Trust open space as one option to mitigate the potential adverse impacts, based on rotor-swept area. The size, location and extent of appropriate mitigation land is expected to be the primary subject of discussion with the TAC, such that a combined effort among the wind projects can result in a substantial contribution of open space and habitat for regional resources. SMUD looks forward to working collaboratively with CDFG and the TAC to finalize the size, location and type of habitat committed to mitigation.
The conservation easement placed on the mitigation land to be conserved for raptor populations should include, but not be limited to, the following prohibited activities: • No development on the property • No wind turbine development on the property • No permanent crops such as vineyards and orchards 21	G-21 As noted above, CDFG's goals for commitments for no development, no wind development and no permanent crops will be considered by the TAC to determine the characteristics that would be included for all projects.
The habitat management plan for the mitigation land should be prepared and implemented prior to operation of wind turbines. The habitat management plan is part of mitigation for impacts to raptors and bats, along with conservation of land, and needs to be provided prior to impacts occurring. 22	G-22 SMUD would prefer to participate in developing a habitat management plan in conjunction with the various agencies and wind projects represented in the TAC. SMUD attended the TAC meeting in spring of 2006, but is not aware of any further developments in this area. SMUD believes it would not be in the interest of the Public to act independently in advance of the TAC meeting. The comment does not identify an impact that is not discussed in the DEIR.
Mitigation BIO-6 All transmission and collection lines should be placed underground unless burial of lines underground would result in greater biological impacts. For those lines that cannot be placed underground, they should be placed in the right-of-way with existing above-ground power lines. 23	G-23 SMUD has determined that the project can be constructed with no new above-ground collection lines and will plan accordingly. The Final EIR will remove references to alternatives that include new above-ground lines.
The DEIR does not specify the length of transmission and collection lines that will need to be installed. This information should be discussed in the text. All impacts need to be disclosed, analyzed, and mitigated for in the DEIR, including bird strikes with new, above-ground, transmission and/or collection lines. 24	
Table 6-1, Mitigation BIO-2 DFG should also be included as a Responsible Agency if there are any impacts to 1600 jurisdictional waterways. For any activity that will divert or obstruct the natural flow of, or change or use any material from the bed, channel, or bank (which may include associated riparian resources) of any river, stream, or lake, DFG may require a Streambed Alteration Agreement (SAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of SAAs is subject to CEQA. DFG, as a 25	

B5-925 (Cont.)

Comment	Response
Mr. Lonn Maier November 7, 2007 Page 7 responsible agency under CEQA, will consider the local jurisdiction's (lead agency) Negative Declaration or Environmental Impact Report for the project. The CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of the agreement. A Notification Package for SAA and Section 1600 et seq. of the Fish and Game Code can be obtained at www.dfg.ca.gov/1600/index.html or by contacting the regional office at (707) 944-5520. } 25 cont If you have any questions, please contact Ms. Anna Holmes, Environmental Scientist, at (209) 948-7163 or Mr. Greg Martinelli, Water Conservation Supervisor, at (707) 944-5570. Sincerely, Charles Armor Regional Manager Bay Delta Region cc: State Clearinghouse Post Office Box 3044 Sacramento, CA 95812 Ken Soloman Solano County Department of Resource Management 675 Texas Street, Suite 5500 Fairfield, CA 94533 Michelle Tovar U. S. Fish and Wildlife Service 2800 Cottage Way, W-2605 Sacramento, CA 95825 William Guthrie U. S. Army Corp of Engineers 1325 J Street, Room 1480 Sacramento, CA 95814	G-24 The comment requests the length of transmission lines, with the intent of describing additional hazard of bird strikes with new, above-ground transmission and/or collection lines. As noted above, SMUD has determined that the project can be constructed with no new above-ground transmission lines. Therefore, there should be no potential for substantial bird strikes to above-ground transmission lines. G-25 As noted on page 4.5-2 of the DEIR, a Streambed Alteration Agreement would be required if the project changes the flow of any bed, channel or bank of a river, stream or lake. If the project requires this, CDFG will be responsible for issuing an SAA as described.

B5-925 (Cont.)

Comment	Response
(H) Solano County **Airport Land Use Commission** 675 Texas Street, Suite 700 Fairfield, California 94533 www.solanocounty.com Planning Services Division Phone: (707) 784-6765 / Fax: (707) 784-4805 John Foster Chairman November 7, 2007 Loren Maier, Environmental Project Manager Sacramento Municipal Utility District P.O. Box 15830 MS B203 Sacramento, CA 95852 Dear Mr. Maier: This letter is in response to the Notice of Availability dated October 2, 2007 regarding the Draft Environmental Impact Report for the Sacramento Municipal Utility District Solano Wind Project - Phase 3. The document makes reference to the need for this project to go before the Solano County Airport Land Use Commission (ALUC) due to the height of the proposed turbines (Chapter 4 Project Analysis 4.10.1.2 and 4.13.1.3). Please contact me at the above-referenced phone number when the project is ready for ALUC review. } 1 This is also to acknowledge, as mentioned in the Draft EIR (4.8.2.3 Air Traffic and 5.3 Cumulative Impacts), that SMUD is aware of the ongoing issues between the radar equipment at Travis Air Force Base and wind turbine generators in the area. Solano County received a letter (attached) in September 2007 from Colonel Steven Arquilette of Travis AFB stating that the Air Force would prefer that construction of all wind turbines in the Wind Resource Area be delayed until the new radar systems anticipated by Travis are installed and operational. After the new system is operational, the Air Force will be able to determine the effects, cumulative impacts, of additional wind turbines in the Wind Reserve Area. } 2 Please contact me if you have any further questions. Sincerely, Karen Avery Karen Avery Senior Planner Enclosure: Letter from Steven Arquilette I:\PLANNING\ALUC\ALUC Compatibility Documents\SMUD\Letter to SMUD - Phase III 110707.doc	H-1 The DEIR notes that the Solano County Airport Land Use Commission (ALUC) will need to review the project due to the height of the turbines. SMUD will contact the ALUC when the project is ready for review. The commenter does not identify impacts that were not disclosed in the DEIR and no change in the EIR is required. H-2 Section 4.8.2.3 Air Traffic and Section 5.8 Cumulative Impacts of the DEIR address concerns regarding potential wind turbine interference with radar equipment raised by Travis AFB. SMUD notes that the ALUC is aware of the radar issues concerning Travis AFB and acknowledges that Travis AFB would prefer that construction of all wind turbines in the Wind Resource Area be delayed until the new radar system in installed. SMUD is working with Travis AFB to resolve these issues. The commenter does not identify impacts that were not disclosed in the DEIR, and no change in the EIR is required.

B5-925 (Cont.)

SMUD Solano Phase 3 Draft EIR
Response to Comments

Comment	Response
DEPARTMENT OF THE AIR FORCE HEADQUARTERS 60TH AIR MOBILITY WING (AMC) 12 SEP 2007 Colonel Steven J. Arquiette Commander 600 Brennan Circle Travis AFB CA 94535-5049 Mr. Michael G. Yankovich Solano County Department of Resource Management 675 North Texas Street, Suite 5500 Fairfield, CA 94533 Dear Mr. Yankovich, By letter dated 8 March 2007, Travis Air Force Base submitted comments regarding the Shiloh II Wind Plant Project Environmental Impact Report (EIR). At the Planning Commission's meeting on 15 March 2007, we indicated that these comments would also apply to the Montezuma Wind Plant Project. Since submitting these comments, the project applicants for the Shiloh II and Montezuma Wind Plant Projects supported a visit by Sensis, the manufacturer of our existing radar systems. During that visit, Sensis personnel optimized our radar systems but were unable to significantly mitigate the effects of the existing windmills on that radar. It is continued therefore that additional wind turbines installed before our new radar system is operational can be expected to increase the negative impacts on the existing radar systems, furthering safety concerns for both civil and military aviation. After the Sensis visit, the project applicants for Shiloh II (enXco) proposed a program to mitigate the interference Shiloh II would cause to the base's future radar system (ASR-11). The Air Force's installation of the ASR-11 system is scheduled to begin in November 2007 and to be operational by 31 October 2008. EnXco provided us with information indicating ASR-11 installation and various optimization actions should provide an acceptable level of operational risk over the Collinsville/Montezuma Wind Resource Area (WRA). EnXco also proposed an agreement under which it would provide, if necessary, a specific level of funding to help the Air Force achieve operationally acceptable radar service over the WRA when the new radar system is installed. We have carefully considered enXco's information and proposal, but we are not convinced at this time that there is sufficient data to assure the County and the flying public that the ASR-11 will perform at operationally acceptable levels over the WRA. In addition, any of the proposed Shiloh II turbines that would be operational before the installation of the ASR-11 would be an impact to flying safety before any mitigation action could be undertaken. Further, we understand that optimization of an ASR-11 to perform at operationally acceptable levels over as many wind turbines as already exist in the WRA, and as close as the wind turbines are to the base, has not yet been achieved elsewhere. Therefore, our preference is that construction of additional wind turbines in the WRA be delayed until the new ASR-11 system is installed and operational. At that time, the Air Force will be able to determine whether operationally acceptable radar is available over the WRA and	

B5-925 (Cont.)

Comment	Response
what the effect of additional wind turbines would be. Reluctantly, we have concluded that we can not modify or withdraw our comments concerning the Shiloh II EIR until the new ASR-11 system is operational and the impacts of the existing wind turbines are assessed as it would mean putting both civil and military aircraft operating in this area at greater risk, with an additional risk to the surrounding community. If you have any questions, please contact my Community Planner, Ms Sara Underwood, at (707) 474-5872. Sincerely, STEVEN J. ARQUETTE, Colonel, USAF Commander	

B5-925 (Cont.)

Comment

RECEIVED
NOV 12 2007
LEGAL DEPT.

(I)

ONE VISION PARK, INC.
66 San Fernando Way
San Francisco, CA 94127
(415) 681-9572

11/5/07
HAND DELIVERED

Lonn Maier, Environmental Project Manager
Sacramento Municipal Utility District
P.O. Box 15830 MS B203
Sacramento, CA 95852
Fax: (916) 732-6890
lmaier@smud.org

RE: The Draft Environmental Impact Report for the SMUD Solano Wind Project Phase 3 for the Proposed SMUD Solano Wind Project

Dear SMUD Board Of Directors:

This letter addresses the above subject Draft Initial Study/Proposed Mitigated Negative Declaration public review period. One Vision Park, Inc. (OVP) holds an option to purchase the 2,800 or so acres of land on which SMUD's Phase 3 wind facilities would be constructed within the Draft EIR project/study area. The Draft EIR actually NEGLECTS to mention that SMUD's ownership of the site is subject to OVP's option to purchase and develop the property. OVP is concerned with the Draft EIR's discussion of alternatives, which OVP believes is both erroneous and conclusionary. } 1

The initial concern regarding the Draft EIR is the overall project/study area. The overall project/study area includes the 2,800 or so acres on which OVP holds an option to purchase. The Draft EIR should at least address and/or delineate the property in which OVP holds option to purchase. The Draft EIR should at minimum address the OVP project within the Draft EIR as a reasonably foreseeable project within Draft EIR, Cumulative Impacts. } 2

The Draft EIR flatly states that transportation for the fuel supply needed to sustain a biomass plant is lacking. OVP has extensively researched the uses of barges for transport of the fuel supply. Moreover, OVP has entered into a Memorandum of Understanding with one of the largest barging operators in the Bay Area to provide for transportation and delivery of the fuel supply. However, the Draft EIR fails to consider that the site is alongside the Sacramento River Deepwater Channel, making water transportation quite feasible. } 3

Incidentally, the County of Solano has been completing a General Plan update that includes the Collinsville/Montezuma Hills area. OVP has attended six General Plan Update-Collinsville/Montezuma Hills area community meetings regarding the subject

Response

I-1 URS contacted Solano County by phone and letter in February 2007 requesting a list of all projects for which applications or pre-application information had been filed for use in preparing the cumulative impacts section of the EIR. SMUD expects that the County would have provided information from OVP, had they considered it appropriate. The OVP was not identified among planned and reasonably foreseeable projects by the county at that time. Since the OVP had not been identified to SMUD by the County as a "reasonably foreseeable project," and is at this time speculative, it was not discussed in the DEIR.

I-2 To identify the OVP area, the following text will be added at the end of Section 1.3:

> One Vision Park has options to purchase portions of approximately 2,800 acres of SMUD property. Currently, One Vision Park has not exercised its options, and any future development potential is speculative.

B5-925 (Cont.)

Comment	Response
area land use designation (Water-Dependent Industrial). OVP representatives have been diligently working toward preserving the existing land use designation as well as provide the County and public information regarding OVP's green energy and educational research & development park. SMUD representatives' were present at these meetings also advocating preservation of the Water-Dependent Industrial land use designation.	
The Draft EIR also makes no mention of the fact that OVP has a site plan on file with the Solano County. The site plan proposes general possible locations for various facilities on the OVP site. The Draft EIR does not discuss the effect of SMUD's proposed wind towers on any of the various uses for the site set forth in the Site Plan. } 4	
OVP's intended project is a national example of the "greening" of the industry and the areas of port expansion, renewable energy production (biomass, biofuels, storage & production, solar and other future renewable energy/technologies or combined technologies). Additionally due to the energy related infrastructure on the above subject project/study area, OVP intends to establish research areas that can be utilized by the Department of Energy (DOE), California Energy Commission (CEC), and State of California University systems for foundational research & development projects.	
We regret that SMUD did not work with OVP to assure our earlier input into this Draft EIR. We hope future development of the site will better coordinated with OVP. OVP realizes that interdepartmental communication within SMUD potentially created the Draft EIR oversights. We anticipate a collaboration between SMUD and OVP in order to promote innovation and development of renewable energy. } 5	
OVP has several projects underway which exemplify green industry, green energy, combined energy systems and utilization of the water dependent components of the site. Each project shall be a national showcase of green industrial practices utilizing state of the art systems. The over arching goal of OVP is to integrate government, industry, education and science to establish beneficial systems pertaining to the "greening" of industry, development of alternative energy, research & development of environmental technologies all of which center on improving the human condition. It is an area of global and national importance which merits recognition.	
Sincerely, DAVID PAPERA, CEO, One Vision Park, Inc.	
2	
	I-3 With respect to transportation of biomass, SMUD did not find where in the DEIR it is flatly stated that transportation for the fuel supply needed to sustain a biomass plant is lacking. SMUD notes references to biomass and transportation on page 1-5 and 3-8 as follows: "Successful implementation of biomass plants requires abundance of, and proximity to, fuel sources (wood, manure, green waste) and good transportation systems to acquire the fuel. As currently developed, the Collinsville-Montezuma Hills are remote from any substantial source of biomass fuel." SMUD notes that there is no statement that transportation is lacking. If it is stated elsewhere, SMUD would appreciate being advised so that an appropriate modification can be made if necessary.
	I-4 Regarding that the DEIR makes "no mention that the OVP has a site plan on file with the Solano County," SMUD understands that there is a conceptual drawing with the county but no permits have been applied for, nor project description provided. Further, as noted above, the County did not indicate that OVP was a foreseeable project.
	I-5 The commenter notes that members of OVP have spoken to various personnel at SMUD. SMUD looks forward to further communication and collaboration with the OVP team to implement the goals of renewable energy.

CHAPTER 4
DRAFT EIR DISTRIBUTION LIST, STATE CLEARINGHOUSE CORRESPONDENCE AND PUBLIC NOTICING OF DRAFT EIR

B5-925
(Cont.)

AGENCIES, COMPANIES AND INDIVIDUALS THAT RECEIVED THE DRAFT EIR NOTICE OF AVAILABILITY

Bay Area Air Quality Management District, San Francisco	Robert Hilarides, Lindsay
Mayor Marci Coglianese, City of Rio Vista	Alfred A. Hunt, Rio Vista
Sacramento County Clerk's Office, Sacramento	Joseph L. Huyssoon, Rio Vista
Rodney Adams, Walnut Creek	Denise R. Ingram, Rio Vista
B. Moita Adelaide, Clayton	Robert E. Jarrard, Yucca Valley
Jeanne Anderson, Birds Landing	Lucinda Johnson, Rio Vista
Everett Anderson, Rio Vista	Evelyn J. Kaiser, Rio Vista
Richard Anderson, Rio Vista	Afroditi Katsikis, Rio Vista
Irwin E. Anderson, Rio Vista	George J. Krenecki, Rio Vista
Fredrick C. Anderson, Rio Vista	Kenneth Krohncke, Rio Vista
John J. Bennice, Rio Vista	Annabel Lemon Laplant Elora, Fullerton
Noack Betz, Rio Vista	E Riggio Agm Ludmila, Rio Vista
Charles Bowers, Rio Vista	Dexter E. Mayhood III, Rio Vista
Clara W. Bowers, Rio Vista	Charles Mc Caslin, Rio Vista
Danny Bowers, Rio Vista	Thomas McCormack, Rio Vista
Antone Myron Cabral, Rio Vista	Alfred R. Medders, Rio Vista
Gene Celli, Stockton	Jeana E. Medders, Gridley
William E. Ciaramitaro, Rio Vista	Wayne Murphy, Rio Vista
Shirley Dalporto, Byron	Lisa Gail Peters, Rio Vista
Joseph F. Davi, Rio Vista	Joseph F. Peterson, Rio Vista
Bruce E. Davis, Granite Bay	Don Ratts, Petaluma
Dennis Del Chiaro, Rio Vista	Tony Rosenthal, Brentwood
Edward Lee Del Chiaro, Oakley	Alyce N. Shoji, San Jose
Lillian Del Chiaro, Oakley	Philip E. Snodgrass, Rio Vista
Julio J. Delchiaro, Antioch	Don Springer, Sacramento
Anthony P Demattei, Antioch	Mark Stevenson, Rio Vista
Andrea Diaz, Rio Vista	Charles Streckfuss, Woodland
Fontaine Dibble, Folsom	Victor E. Swanson, Rio Vista
Ross E. Dibble, Rio Vista	Jay Uhalt, Rio Vista
George E. Dierssen III, Clayton	Charles E. Upham, Rio Vista
Myra M. Edaburn, Rio Vista	Benny R Venegas, Walnut Creek
Larry Etherton, Rio Vista	Jan Vick, Rio Vista
Eric C. Fisher, Rio Vista	James T. White, Oakland
Alan Freese, Birds Landing	Martin L. Zaragoza, Oakley
David Frye, Rio Vista	Richard Zavala, Rio Vista
Steve Giacoma, Isleton	Lide Family, Pleasanton
Bruce E. Goble, Rio Vista	Martucci, Concord
Todd Gomes, Rio Vista	Noia, Rio Vista
Linday Gray, Martinez	Rich, Truckee
Christopher P. Gulick, Rio Vista	1998 Snodgrass Family Trust, Rio Vista
Bill Gurule, Lafayette	PG&E, San Francisco
Manases Gutierrez, Rio Vista	Sherman Lake Resort Corp, Lindsay
Walter Haines, Bay Point	Standard Pacific Gas Line Inc, San Francisco
Virginia Hale, Rio Vista	Williams Trust, Morgan Hill
Tia Hamilton, Sacramento	Rich and Gail Zavala, Martinez
Harry & Joanne Hansen, Birds Landing	

B5-925 (Cont.)

AGENCIES AND COMPANIES THAT RECEIVED THE DRAFT EIR

Association of Bay Area Governments (ABAG)	FPL Energy LLC
California Department of Fish and Game	Klinedist PC
California Department of Forestry and Fire Protection	Montezuma Fire Protection District
California Department of Historic Preservation	National Audubon Society
California Department of Parks & Recreation	Pacific Gas and Electric
California Department of Transportation	Public Utilities Commission
California Department of Water Resources	Regional Water Quality Control Board
California Energy Commission	Solano County
California Highway Patrol	Somach, Simmons & Dunn Attorneys At Law
California Native American Heritage Commission	Travis AFB
California S.F. Bay Conservation & Dev't Comm.	U.S. Army Corps of Engineers
California State Lands Commission	U.S. Bureau of Reclamation
City of Rio Vista	U.S. Department of Transportation
Coco Properties LLC	U.S. Environmental Protection Agency
Delta Protection Commission	U.S. Fish and Wildlife Service
Emigh Livestock	Western Area Power Administration
enXco	Yolo Solano County Air Quality Management District
Federal Aviation Administration	

B5-925 (Cont.)

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

November 15, 2007

Lonn Maier
Sacramento Municipal Utility District
P.O. Box 15830 MS B203
Sacramento, CA 95852-1830

Subject: SMUD - Solano Wind Project Phase 3
SCH#: 2006012017

Dear Lonn Maier:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on November 13, 2007, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

B5-925
(Cont.)

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2006012017
Project Title SMUD - Solano Wind Project Phase 3
Lead Agency Sacramento Municipal Utility District

Type EIR Draft EIR

Description The Sacramento Municipal Utility District (SMUD) is proposing to construct and operate phase 3 of the SMUD Solano Wind Project. The project consists of installing up to 85 wind turbine generators in the Montezuma Hill region of southern Solano County, southwest of the town of Rio Vista.

Lead Agency Contact

Name Lonn Maier
Agency Sacramento Municipal Utility District
Phone (916) 732-6566 **Fax**
email
Address P.O. Box 15830 MS B203
City Sacramento **State** CA **Zip** 95852-1830

Project Location

County Solano
City Rio Vista
Region
Cross Streets Montezuma Hills Road
Parcel No. 0090-180-200 & various
Township 3N&... **Range** 2E **Section** 19&... **Base** MDB&M

Proximity to:

Highways Various
Airports
Railways
Waterways Sacramento River and San Joaquin River
Schools
Land Use Extensive Agriculture and Water-Dependent Industrial

Project Issues Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Septic System; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Landuse; Cumulative Effects; Aesthetic/Visual

Reviewing Agencies Resources Agency; Department of Boating and Waterways; California Coastal Commission; Department of Conservation; Department of Fish and Game, Region 3; Department of Fish and Game, Marine Region; Office of Historic Preservation; Department of Parks and Recreation; California Highway Patrol; Caltrans, District 4; State Water Resources Control Board, Clean Water Program; Regional Water Quality Control Board, Region 2; Department of Toxic Substances Control; Native American Heritage Commission; State Lands Commission; Department of Water Resources

Date Received 09/28/2007 **Start of Review** 09/28/2007 **End of Review** 11/13/2007

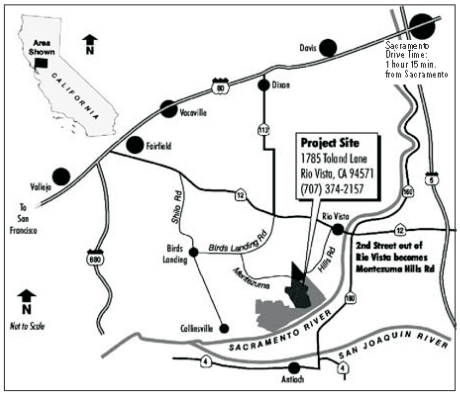
B5-925 (Cont.)

Note: Blanks in data fields result from insufficient information provided by lead agency.

PUBLIC NOTICE

SMUD Solano Wind Project Phase 3
Draft Environmental Impact Report

The Sacramento Municipal Utility District (SMUD) has prepared a draft Environmental Impact Report (EIR) for phase 3 of the proposed Solano Wind Project, located in southern Solano County near the town of Rio Vista. This document has been prepared in compliance with the California Environmental Quality Act (CEQA). SMUD is the CEQA lead agency for the project.



SMUD proposes to construct and operate the third phase of the Solano Wind project, which will add up to 128 megawatts (MW) of clean reliable energy to SMUD's generation mix. The project is located north of the confluence of the Sacramento and San Joaquin Rivers, approximately 6 miles southwest of Rio Vista, and 16 miles southeast of Fairfield. The project area is comprised of 4,655-acre SMUD-owned property south of Montezuma Hills Road and east of Stratton Lane. The project is bordered to the south and southeast by the Sacramento River. The project includes the construction and operation of up to 85 wind turbine generators, an associated collection system, access roads, meteorological towers, an Operation and Maintenance Building, and related facilities.

The draft EIR identifies potentially significant unmitigated environmental impacts to aesthetics, and biological resources. All other potential impacts have been determined to be less than significant after mitigation.

With guidance and oversight of the State Clearinghouse, the draft EIR was released for circulation to appropriate resource agencies and to interested parties on September 28, 2007 for a 45 day public review period that will end November 12, 2007. The document is available on SMUD's web page at www.smud.org/about/reports-ceqa.html and hardcopies may be reviewed at the following locations:

- Sacramento Central Library, 828 I Street, Sacramento
- Rio Vista Public Library, 44 South Second Street, Rio Vista
- Sacramento Municipal Utility District Headquarters Office, 6201 "S" Street, Sacramento

Written comments should be submitted to Lonn Maier; SMUD; PO Box 15830, MS B203; Sacramento, CA 95852-1830 or at lmaier@smud.org before 5 p.m., November 12, 2007. If you would like a copy of the environmental document or have questions, please call (916) 732-6566.

A public meeting for the project will be held at the Veterans Memorial Building located at 610 St. Francis Way in Rio Vista on November 1, 2007 from 6:30 p.m. to 8:30 p.m. Refreshments will be available.

The SMUD Board of Directors will consider adoption of the final EIR and the project at two meetings at which the public may make verbal comments. The Board will take no approval action at the first meeting, which is the Integrated Resources and Customer Service Committee meeting. Both meetings will be held at the SMUD Headquarters Building located at 6201 "S" Street in Sacramento.

SMUD's Integrated Resources and Customer Service Committee Meeting
December 5, 2007; 4:30 p.m., HCC Room

SMUD Board of Directors Meeting
December 20, 2007; 6:00 p.m.
Auditorium

Accommodations are available for disabled individuals. If you need a hearing assistance device or other aid, or have other questions, please call (916) 732-6566.

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SACRAMENTO MUNICIPAL UTILITY DISTRICT
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B5-925
(Cont.)

PUBLIC NOTICE

SMUD Solano Wind Project Phase 3

The Sacramento Municipal Utility District (SMUD) has prepared a draft Environmental Impact Report (EIR) for phase 3 of the proposed Solano Wind Project, located in the southern Solano County near the town of Rio Vista.

The SMUD Committee and Board meetings for the SMUD Solano Wind Project Phase 3 was previously scheduled for December 5, and December 20, 2007 respectively. The dates have been rescheduled to allow interested individuals to participate in an evening Board meeting if desired. The revised dates are:

January 8, 2008
Finance Committee meeting
SMUD HCC room

January 10, 2008
SMUD Board of Directors meeting
SMUD Auditorium

Both meetings will be held at SMUD's Headquarters' Building located at 6301 "S" Street in Sacramento, California.

The SMUD Board of Directors will consider adoption of the final EIR for the project at the two meetings at which the public may make verbal comments.

Accommodations are available for disabled individuals. If you need a hearing assistance device or other aid, or have other questions, please call (916) 732-6566. Please call Lonn Maier at (916) 732-6566 if additional information is needed.

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SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
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(Cont.)

CHAPTER 5
BOARD ACTION, FINDINGS, NOTICE OF DETERMINATION

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(Cont.)

Certification of the FEIR

SMUD as lead agency under CEQA prepared the FEIR and will provide an opportunity for review of the FEIR by the public and commenting agencies, prior to approving the project (Public Resources Code Section 15089). SMUD will hold two Board meetings to review the FEIR, certify the FEIR and make Findings.

Prior to approving the project, SMUD will certify that:

1. The FEIR has been completed in compliance with CEQA
2. The FEIR was presented to the SMUD Board and that the Board considered the information in the FEIR in approving the project; and
3. The FEIR reflects SMUD's independent judgment and analysis.

FINDINGS

According to CEQA, no public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects unless the agency makes one or more written findings for each of those significant effects, accompanied by an explanation of the rationale for each finding. The possible findings are:

1. Changes have been required in the project description which avoid or substantially lessen the significant environmental effects.
2. Changes are within the responsibility and jurisdiction of another public agency and that such changes have been adopted or should be adopted by such agency.
3. Specific economic, legal, social, technological or other considerations, make infeasible the mitigation measures or project alternatives identified in the FEIR.

When making the findings, the SMUD Board shall also adopt a program for reporting on or monitoring the changes it has required.

All these determinations are expected to be made at the SMUD Board meeting on January 10, 2008.

Statement of Overriding Considerations:

CEQA requires the SMUD Board to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining to approve a project. "If the specific economic, legal, social, technological or other benefits of a proposal project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered "acceptable' (14 CCR Section 15093(a)).

If a Statement of Overriding Considerations is made, the SMUD Board will be required to state in writing the specific reasons to support its action based on the FEIR and/or other information in the

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record. The Statement of Overriding Consideration should be included in the Notice of Determination (14 CCR Section 15093(b)).

NOTICE OF DETERMINATION

Following FEIR certification and approval, the SMUD Board will file a Notice of Determination (NOD) with the county clerk in Solano County within five working days. The NOD will include:

1. An identification of the project
2. A brief description of the project
3. The lead agencies name and the date of the approval
4. The determination of the agency whether the project in its approved form will have a significant effect on the environment
5. A statement that an EIR was prepared and certified pursuant to CEQA
6. Whether mitigation measures were made a condition of the approval of the project and whether an MMP was adopted
7. Whether Findings were made pursuant to 14 CCR Section 15093(a)
8. Whether a statement of overriding considerations was adopted for the project
9. The address where a copy of the FEIR and the record of project approval may be examined.

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CHAPTER 6
MITIGATION MONITORING AND REPORTING PROGRAM

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(Cont.)

6.1 INTRODUCTION

Section 21081.6 of the California Public Resource Code (PRC) (CEQA) requires a Lead Agency to "adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation." One of the methods allowed by the PRC to implement this requirement is to "provide that measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, or other measures. Conditions of project approval may be set forth in referenced documents which address required mitigation measures or, in the case of the adoption of a plan, policy, regulation, or other public project, by incorporating the mitigation measures into the plan, policy, regulation, or project design."

6.2 DRAFT MITIGATION MONITORING PLAN

A Draft Mitigation Monitoring Plan has been prepared by SMUD in accordance with Section 21081.6 of the PRC. The Draft Plan, provided at the end of this chapter, reflects the impacts, project design elements, and mitigation measures presented in the draft EIR. Subsequent changes to these features in the FEIR also may require revisions in the Mitigation Monitoring Plan. The Final Mitigation Monitoring Plan would be adopted by SMUD's Board of Directors concurrent with their certification of the FEIR.

6.2.1 Project Identification

Project Name:	Solano Wind Project Phase 3
Project Location:	Montezuma Hills, Birds Landing, California
SCH Number:	2006012017
SMUD Environmental Services Contact:	Lonn Maier
Address:	Sacramento Municipal Utility District P.O. Box 15830 MS B203 Sacramento, California 95852-1830
Telephone Number:	(916) 732-6566

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6.2.2 General Information

This section briefly describes the mitigation monitoring process for the proposed project to be approved by SMUD and the roles and responsibilities of governmental agencies in implementing and enforcing the adopted mitigation measures.

The provisions of this document come into effect when a public agency (SMUD) completes an EIR and makes findings pursuant to the PRC Section 21081.6. SMUD's Environmental Services staff would act as the environmental clearinghouse for the project. Copies of this Mitigation Monitoring Plan would be distributed to all agencies involved with this project. All reports would be sent to SMUD's Environmental Services staff to ensure that copies of the respective reports and documents are forwarded to the appropriate agencies.

The Solano Wind Project Phase 3 would incorporate mitigation measures during the construction and operation of the project regarding all of the resource areas, pursuant to Section 21081.6 of the PRC. SMUD is the Lead Agency for the project; SMUD's Environmental Services staff would be actively involved in the monitoring process and provide appropriate notification to the agencies involved with the project.

6.2.3 Plan Content

All of the Project Design Elements and impacts determined to require mitigation identified in the Phase 3 EIR are presented in Table 6-1, providing a comprehensive Mitigation Monitoring Plan. The Mitigation Monitoring Plan and the entities that would be responsible for ensuring compliance are also described in Table 6-1.

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Table 6-1

Mitigation Monitoring Plan
(for specific mitigation and detailed descriptions, please refer to individual Chapters)

Potential Impact	Mitigation Measure	Compliance Demonstrated By	Responsible Agency	Timing
Aesthetics and Visual Resources				
Impact VIS-1: The project would have a substantial, adverse effect on a scenic vista from Sherman Island Wildlife Habitat and Recreation Area.	Mitigation VIS-1: WTGs will be coated in non-contrasting colors.	SMUD would implement a maintenance program that will repair and/or remove non-functioning WTGs.	SMUD	Throughout project construction and operation
Impact VIS-2: The project would substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings on three state scenic highways.	Mitigation VIS-2: WTGs will be coated in non-reflective finish.	The WTGs would be painted non-reflective off-white, light gray, or other light neutral shade.	SMUD	Throughout project construction and operation
Impact VIS-3: The project would cause incremental change to the landscape that would degrade the existing visual quality of that area	Mitigation VIS-3: SMUD will repair or remove non-functioning WTGs.	SMUD will remove or repair non-functioning WTGs.	SMUD	Throughout project construction and operation
Impact VIS-4: The project would create a new source of substantial light or glare from each string of towers, which would adversely affect day or nighttime views in the area.	Mitigation VIS-4: Lighting will not include bright white lights or "glare" fixtures.	WTG lighting would be limited to meeting FAA safety requirements.	SMUD	Throughout project construction and operation
Agricultural Resources				
Impact AG-1: The project would involve changes in the existing environment that would result in the conversion of farmland in the project area to non-agricultural use.	~~None required~~ This impact is considered less than significant and no mitigation is required.	NA	NA	NA
Impact AG-2: The project could result in temporary impacts to agricultural lands that lie adjacent to the WTGs and associated facilities during construction.	~~None required~~ This impact is considered less than significant and no mitigation is required.	NA	NA	NA
Air Quality				
Impact AIR-1: The project would cause a short-term increase in criteria air pollutants and precursor emissions from construction activities.	Mitigation AIR-1: Implement industry BMPs to reduce vehicle and equipment emissions and dust emissions pursuant to mitigation measures recommended by the YSAQMD.	SMUD's Construction Contractor will develop a Construction Fugitive Dust Control Plan which will be submitted to the county for approval as required by the Solano County Grading Permit.	SMUD	Throughout project construction

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Table 6-1 (continued)

Potential Impact	Mitigation Measure	Compliance Demonstrated By	Responsible Agency	Timing
Biological Resources				
Impact BIO-1: The Project would result in both permanent and temporary habitat loss for sensitive or special status raptors and migratory birds.	Mitigation BIO-1: Restore the Project area to the maximum extent that is feasible and practical.	SMUD or its designated Contractor will monitor revegetated areas annually as required by the Solano County Grading Permit and provide a memo to the county.	SMUD, Solano County	Throughout project construction and operation
Impact BIO-2: Project construction and installation could result in adverse effects by filling wetlands and stream habitat.	Mitigation BIO-2: Avoid wetlands and streams to the maximum extent that is feasible and practical, to prevent impacts to the aquatic environment.	If wetlands and waters of the United States can not be fully avoided, SMUD will apply for a USACE Section 404 permit and will comply with all reporting activities as required.	SMUD, USACE	Throughout project construction
Impact BIO-3: Construction in fallow agricultural areas, annual grasslands, or marshes or wetlands, where special status plants could occur, may result in the loss of Carquinez goldenbush (CNPS 1B) or other special status plants.	Mitigation BIO-3: Avoid special status plants to the maximum extent that is feasible and practical, to reduce impacts to these species.	A SMUD designated botanist will provide a memo of special status protection zones on the project to SMUD, CDFG and USFWS. SMUD will keep a record who has attended the environmental awareness training in the project file.	SMUD, CDFG, USFWS	Prior to project construction Throughout project construction
Impact BIO-4: Project construction and trenching for underground power lines could disturb nesting raptors, special status birds, and migratory birds.	Mitigation BIO-4: Avoid impact to western burrowing owls and other nesting raptors, special status birds, and migratory birds habitat.	SMUD will implement CDFG guidelines for avoiding burrowing owls as outlined in Chapter 4. A final burrowing owl monitoring report/memo will be provided to CDFG at the completion of monitoring.	SMUD, CDFG	Throughout project construction

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Table 6-1 (continued)

Potential Impact	Mitigation Measure	Compliance Demonstrated By	Responsible Agency	Timing
Impact BIO-5: WTG blades could result in mortality of golden eagles and Swainson's hawks, causing a substantial adverse effect on species identified as sensitive or on special status species.	Mitigation BIO-5a: Implement a Bird and Bat Mortality Monitoring Program. Mitigation BIO-5b: Provide off-site mitigation land to support and enhance raptor populations.	SMUD will provide CDFG and USFWS with a final bird mortality monitoring report. SMUD will convey by fee-title or conservation easement land off-site mitigation land to the CDFG, or other third party for operation as a mitigation area.	SMUD, CDFG, USFWS	The final bird mortality monitoring report will be due 3 months after the completion of the monitoring.
Impact BIO-6: Overhead wires installed for Project operation could result in electrocution of, or a collision with, raptors and other protected species.	Mitigation BIO-6: Abide by guidelines provided in the *Avian Powerline Interaction Committee's Suggested Practices for Avian Protection on Powerlines* (APLIC, 2006) to minimize adverse impacts to raptors and other species.	The Project Engineer will provide a memo to SMUD Project Manager that the project Siting Plan abides by the guidelines in the *Avian Powerline Interaction Committee's Suggested Practices for Avian Protection on Powerlines* (APLIC, 2006)	SMUD~~, Solano County~~	Prior to project construction
Impact BIO-7: Water pumped from the Sacramento River for use in dust abatement in construction areas and on roads in the Project area could adversely affect Delta smelt and juvenile salmonids.	Mitigation BIO-7: For any diversion of water from the Sacramento River, install fish screening devices to prevent or minimize potential impacts to Delta smelt and juvenile salmonids.	SMUD's Construction Contractor will develop a Construction Fugitive Dust Control Plan which will be submitted to the county for approval as required by the Solano County Grading Permit. Screening Criteria for Anadromous Salmonids will be included in this report.	SMUD~~, Solano County~~	Prior to project construction
Cultural Resources				
Impact CUL-1: The Project could affect unknown cultural resources if revisions are made to the current Project components.	Mitigation CUL-1: If the components of the Project, such as the location of proposed facilities or the locations of ground-disturbing activities, are revised, perform supplemental evaluation and cultural surveys in areas that were not previously evaluated (i.e., those not already surveyed and reported on in the Cultural Resources Report [URS 2007b]). Specific mitigation measures including submitting a report to Solano County are outlined in Chapter 4.	If the components of the Project, such as the location of proposed facilities or the locations of ground-disturbing activities, are revised, SMUD will submit results of a cultural evaluation finding to the county.	SMUD, Solano County	Prior to ground disturbing activities occurring in revised locations.

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Table 6-1 (continued)

Potential Impact	Mitigation Measure	Compliance Demonstrated By	Responsible Agency	Timing
Impact CUL-2: During construction, the Project could encounter buried significant historical resources, archaeological resources (including human remains), unique archaeological resources, and/or paleontological resources.	Mitigation CUL-2: Develop and implement an Unanticipated Discovery Protocol Program to minimize or avoid impacts on potentially significant resources in the event of an unanticipated discovery during construction. Specific mitigation are outlined in Chapter 4.	SMUD will notify the Solano County Department of Resource Management if any cultural resources are disturbed during excavation.	SMUD, Solano County DRM	Immediately after discovery.
Geology, Soils, Mineral Resources, and Seismicity				
Impact GEO-1: Ground shaking from a significant seismic event associated with any of the faults in the vicinity of the Project could cause risk of substantial loss, injury, or death.	Mitigation GEO-1: Design facilities to withstand ground shaking.	The Project Engineer will provide a memo to SMUD Project Manager certifying that UBC class 4 has been met.	SMUD	Prior to construction
Impact GEO-2: The Project could cause a loss of soils, resulting from erosion.	Mitigation GEO-2: Control erosion.	Develop and follow a project specific SWPPP.	SMUD	Throughout project construction
Impact GEO-3: Localized mud or debris slides could impact Project facilities.	Mitigation GEO-3: Conduct a geotechnical engineering study and site WTGs accordingly.	The Project Engineer and SMUD Project Manager will approve the geotechnical engineering study and final WTG Siting Plan. These approved documents will be kept in the project file.	SMUD	Prior to construction
Impact GEO-4: New road cuts could destabilize slopes, causing risks to life and property.	Mitigation GEO-4: Conduct a geotechnical engineering study and site and design new roads accordingly.	The geotechnical engineering study described in Mitigation Measure GEO-3 will provide useful information for the placement of new roads.	SMUD	Prior to construction
Impact GEO-5: Construction on expansive soils could create risks to life and property.	Mitigation GEO-5: Design facilities to withstand expansive soils.	The geotechnical engineering study described in Mitigation Measure GEO-3 will provide useful information for the placement and design of facilities based on shrink-swell potential of the soil.	SMUD	Prior to construction
Impact GEO-6: Low permeability soils on the site will not adequately support septic tank and leach field sanitary sewer system installation.	Mitigation GEO-6: Comply with county requirements for sanitary sewer systems.	SMUD will obtain a sewage disposal permit from the county.	SMUD; Solano County	Prior to the sewer system construction

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Table 6-1 (continued)

Potential Impact	Mitigation Measure	Compliance Demonstrated By	Responsible Agency	Timing
Impact MIN-1: The Sherman Island Gas Field could be disrupted.	Mitigation MIN-1: Avoid gas well areas.	If necessary, the California Department of Conservation, Division of Oil, Gas and Geothermal Resources will provide a construction overview of the project.	SMUD, California Department of Conservation, Division of Oil, Gas and Geothermal Resources	Throughout project planning and siting
Hazards and Hazardous Materials				
Impact HAZ-1: There will be a short-term hazard to the public or the environment if accidental spills of Project-related hazardous materials occurred during construction activities.	Mitigation HAZ-1: Prepare and implement an SWPPP to include the procedures for proper spill response during construction activities.	Develop and follow a project specific SWPPP.	SMUD	Prior to and throughout project construction
Impact HAZ-2: There will be a short-term hazard to the public or the environment if subsurface hazardous materials are disturbed during construction activities.	Mitigation HAZ-2: Delineate any areas known or suspected of having hazardous materials in the construction area prior to the start of construction activities and avoid those areas, where feasible, once construction begins.	Use Phase 1 Site Assessment Report to describe areas where construction might encounter hazardous materials.	SMUD	Prior to the start of construction Prior to and during construction
Impact HAZ-3: There would be a long-term hazard to the public or the environment if hazardous materials are accidentally spilled into the environment as a result of operations activities.	Mitigation HAZ-3: Prepare and implement a Hazardous Materials Management Plan to detail the procedures for proper hazardous materials storage and spill response during operations.	Develop and implement a Hazardous Materials Plan	SMUD	Prior to and during construction
Impact HAZ-4: The use of motor vehicles, portable generators, and welding equipment during construction and operation could increase fire hazards in the Collinsville-Montezuma Hills area, which is designated as a high-risk wildfire area.	Mitigation HAZ-4: This impact is considered less than significant and no mitigation is required.	NA	NA	NA
Impact HAZ-5: The project could expose employees and the public to hazards from accidental rotor failure.	Mitigation HAZ-5: This impact is considered less than significant and no mitigation is required.	NA	NA	NA
Hydrology and Water Quality				
Impact WQ-1: Project construction could result in temporary but significant increases in sedimentation and turbidity to downstream waters that could violate water quality standards or objectives.	Mitigation WQ-1: Develop and implement an SWPPP.	Develop and follow a project specific SWPPP.	SMUD	Prior to and during construction
Impact WQ-2: Project O&M activities could result in a violation of water quality standards or waste discharge requirements through fuel or lubricant spills to surface waters.	Mitigation WQ-2: Implement measures to ensure that chemicals associated with Project O&M will not enter receiving waters.	Develop and follow a project specific SWPPP. The SWPPP will be developed to provide greater preventive measures for controlling the accidental release of chemicals used on the site.	SMUD, Solano County DRM	Prior to project operation

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Table 6-1 (continued)

Potential Impact	Mitigation Measure	Compliance Demonstrated By	Responsible Agency	Timing
Impact WQ-3: The Project may include the construction of an O&M Building close to, or within, a FEMA-mapped Special Flood Hazard Area.	Mitigation WQ-3: Model the area of the proposed O&M Building to determine whether the building can be sited outside of the mapped flood zone. If not, elevate the first floor of the O&M Building.	An O&M Building Siting Plan will be developed by and approved by SMUD Project Manager and Project Engineer. A Hydrology report will be prepared for siting the O&M Building outside of the flood zone.	SMUD	Prior to construction of the O&M Building
Impact WQ-4: Project construction will result in land clearing, which could elevate the turbidity of receiving streams and thus impair the beneficial uses of the receiving waters.	Mitigation WQ-4: Obtain and implement a Solano County Grading Permit and conduct construction consistent with the SWPPP and the state General Permit for Construction Activities.	Obtain and implement a Solano County Grading Permit Develop and follow a project specific SWPPP.	SWPPP Solano County DRM	Prior to construction
Land Use, Planning, Population, and Housing				
Impact LU-1: The project would significantly displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere.	~~None required~~ Mitigation LU-1: This impact is considered less than significant and no mitigation is required.	NA	NA	NA
Noise				
None identified		NA	NA	NA
Public Services, Utilities, and Service Systems				
Impact PSU-1: The Project could increase the demand for fire protection or emergency medical services.	Mitigation PSU-1a: Prepare and implement of a Grass Fire Control Plan. PSU-1b: Prepare and implement a Health and Safety Plan.	SMUD will prepare a Grass Fire Control Plan which will be sent to the Montezuma Hills Fire Department and the Solano County DRM. SMUD will prepare a Health and Safety Plan which will be available at the site for inspection by authorized agencies.	SMUD, Solano County DRM, Montezuma Hills Fire Department.	Prior to construction and throughout project operation
Impact PSU-2: The Project could interfere with microwave transmissions or television or radio reception.	Mitigation PSU-2: Evaluate the potential for WTG interference with microwave transmissions.	A microwave and fixed RF transmitting facilities study will be prepared and WTGs sited to avoid interference.	SMUD	Prior to ~~Final~~ FEIR

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Table 6-1 (continued)

Potential Impact	Mitigation Measure	Compliance Demonstrated By	Responsible Agency	Timing
Transportation/Traffic				
Impact TRA-1: The Project will cause a temporary increase in traffic during construction.	Mitigation TRA-1: Develop a traffic control plan that includes the use of pilot cars when moving oversize loads.	SMUD will prepare a Traffic Control Plan which will be approved by Solano County Public Works.	SMUD; Solano County Public Works	Prior to project construction
Impact TRA-2: If existing roadways require widening, construction activities may cause temporary disruptions of traffic flow, including emergency access.	Mitigation TRA-2: Minimize lane closures and provide alternative access for the Project.	SMUD will prepare a Traffic Control Plan which will be approved by Solano County Public Works.	SMUD; Solano County Public Works	Throughout project construction
Impact TRA-3: Construction activities may cause damage to existing roads.	Mitigation TRA-3: Minimize and repair any Project-related damage to existing roads.	SMUD will ~~obtain bonds~~ ensure payment to cover road repair as required by Solano County.	SMUD; Solano County Public Works	Prior to shipment of WTGs
Impact TRA-4: WTGs may cause an impact to aviation patterns.	Mitigation TRA-4: Coordinate with FAA and Travis AFB to prevent aviation impacts.	Consult with FAA to prevent aviation impacts~~, and, if necessary, participate in furnishing radar upgrades to minimize interference from WTGs~~.	FAA; Travis AFB	Prior to construction

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CHAPTER 7
ANNOTATED DRAFT EIR

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(Cont.)

According to CEQA Guidelines (14 CCR Section 15132), the FEIR must include the DEIR or a revision of the draft. The FEIR in this case consists of the DEIR, as amended by the following sections where changes have been made to provide additional clarification, corrections or changes to the DEIR. The following sections list, in order of the document, effective changes to the DEIR incorporated in the FEIR.

(p. 1-1)

1.1 PROJECT DESCRIPTION

In addition, ~~four options (~~Option~~s 1, 2, and~~ 3 at latitude 38.124, longitude 121.829~~, and Option 4 in the western portion of the project area~~) ~~are~~ is proposed for expanding the existing Russell generation step up transformer. ~~The new generation step-up transformer would be just west of the existing PG&E Vaca-Dixon Contra Costa 230-kilovolt (kV) transmission line right-of-way (PG&E transmission line ROW). Options 1, 2, and 3 are different configurations of the circuits in the Russell generation step-up transformer, supported in the case of Option 1 by a second step up transformer north of Montezuma Hills Road.~~

(p. 1-3)

1.3 CUMULATIVE IMPACTS

This section addresses the impacts of these existing wind farms in combination with the impacts of the proposed project. In addition, reasonably foreseeable future projects are addressed in this section (see Table 1-3).

- One Vision Park has options to purchase portions of approximately 2,800 acres of SMUD land. Currently, One Vision Park has not exercised its options, and, as such, any future development potential is speculative.

Potential impacts that are either individually or incrementally minor may become significant when combined with impacts associated with past and currently approved projects, as well as reasonably foreseeable future projects.

(p. 2-1)

2.1 GENERAL LOCATION

In addition, ~~several options (~~Option~~s 1, 2, and~~ 3 at latitude 38.124, longitude 121.829) ~~are~~ is proposed for expanding the existing Russell generation step-up transformer, which is near Montezuma Hills Road, 1 mile east of the intersection of Montezuma Hills Road and Birds Landing Road~~, or developing a new generation step-up location (Option 4). The new step-up transformer location would be west of the existing PG&E Vaca-Dixon Contra Costa 230-kilovolt (kV) transmission line right-of-way (ROW) (PG&E transmission line ROW)~~ (see Figure 2-2). ~~These~~ This option~~s~~ ~~are~~ is discussed in greater detail in Section 2.6.3.

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(p. 2-1, after paragraph 2)

Table 2-1. Assessors Parcel Numbers Included In The Solano Wind Project Phase 3

0090-100-080	0090-180-060	0090-190-220
0090-100-280	0090-180-070	0090-210-010
0090-100-290	0090-180-120	0090-220-160
0090-100-300	0090-180-130	0090-220-170
0090-100-310	0090-180-150	0090-220-180
0090-180-030	0090-180-170	0090-220-200
0090-180-040	0090-180-200	0090-220-270
0090-180-050	0090-190-210	

A commenter noted a discrepancy in maximum turbine height. The following changes are made to make maximum turbine height 492 feet; not 495 feet.

(p.2-2)

2.2.1 Wind Turbine Generators

The individual WTGs would have a maximum height of 151 meters (~~495~~492 feet), a maximum 105-meter (328-foot) tower[1], and a maximum rotor diameter of 107 meters (335 feet). Section 2.5 provides additional detail on the range of WTGs and towers being considered for the project. Figure 2-2 shows the potential Phase 3 siting areas (footprints) within which this range of WTGs would be built. Although the final WTG locations would not be known until the completion of SMUD's procurement process and selection of the WTG supplier, which would be some time in late 2007, the WTGs would be located within the areas depicted on Figure 2-2.

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(p.2-2)

2.2.2 Electrical Collection System

The project might include additions to, or improvements or replacements of, the existing Phase 1 and Phase 2 Solano Wind Project power collection system, including the expansion of the Russell generation step-up transformer~~ or the development of a new generation step-up location~~. The collection system alternatives are described in Section 2.6.

(p. 2-5)

SMUD determined that the project collection lines could be constructed underground, rather than the above-ground and underground options described in the DEIR. Also, 230 kV lines cannot be

[1] Tower height and hub height are used interchangeably for purposes of this document.

reasonably placed underground. Therefore, the collection options have been revised in the text and in the figures to remove references to above-ground collection lines, and to remove the option for 230 kV collection lines. See revised Figures 2-2, 4.5-1, 4.7-1, 4.8-1, 4.9-1, 4.10-1, and 4.11-1 (located at the end of this chapter.

(p. 2-9)

The following text is modified on page 2-9, paragraph 3:

The majority of the project area is owned in fee title by SMUD. Of the project area, 411 acres are currently part of the enXco V project and contain 62 Kenetech 56-100 WTGs. SMUD is in the process of acquiring these portions of the enXco V project area. The existing turbines will be removed during construction of the SMUD-Solano Wind Project Phase 3. ~~The property is owned in fee title by SMUD.~~ To maintain current land use to the extent practicable, land is leased to farmers for dry-land farming and grazing.

(p. 2-10)

The following modification will be made on page 2-10:

- Distances from property boundaries. The Wind Turbine Siting Plan (Solano County 1987) and Solano County zoning regulations pertaining to WTG permitting state that WTG noise must not exceed a community noise equivalent level (CNEL) value of 50 decibels A-scale (dBA) at any property line abutting a residential zone, or 60 dBA at any other property line. There are no residences in the project area. The closest residence is 4,000 feet from the project boundary.

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(p. 2-10)

The following modification will be made on page 2-10:

- **Visual impacts**. The *Wind Turbine Siting Plan* (Solano County, 1987) ~~identifies several mitigation measures to reduce visual impacts.~~ WTGs, access roads, and associated buildings are to be located in areas not visible from scenic roadways and residences and new transmission lines are to be placed below ground. The WTGs are to be painted in neutral, non-reflective tones to reduce contrast with the surroundings. The WTGs are to be lighted according to FAA requirements and are not to be lighted for any other reason.

(p. 2-11)

Additional information is added to Table 2-3 on page 2-11 as follows:

Table 2-3. Specifications of Potential Project WTGs

Type[a]	Approximate Kilowatts (per turbine)	Blade Diameter (meters/feet)	Windswept Area (meter²/feet²)[b]	Tower Height (meters/feet)[c]	Maximum Blade Tip Height (meters/feet)
Clipper IIa	2,500	93/305	6,793/73,119	80–100/263–328	147/458
Gamesa	2,000	90/295	6,362/68,500	100/328	145/476
GE 1.5 sle	1,500	77/253	4,670/50,272	61–100/200–328	139/455
GE 2.5 xl	2,500	100/328	7,854/84,540	75–100/246–328	150/492
Mitsubishi 95/2.4	2,400	95/312	7,088/76,295	80/263	128/419
RePower MM92	2,000	93/305	6,720/72,333	78.5–100/258–328	147/481
Siemens SWT-3.6-107	3,600	107/351	9,000/96,900	90/295	154/471
Vestas V90-3.0	3,000	90/295	6,362/68,500	80–105/263–345	150/492

[a] Unless otherwise specified, WTGs from any other manufacturer that generally meet the specifications presented in this table also are covered by this EIR.

[b] Windswept area may vary because of rounding.

[c] Top of the foundation to the center of the hub.

(p. 2-16 through 2-17)

2.6 COLLECTION SYSTEM

2.6.1 Collection System Interconnection to Transmission Grid

B5-925 (Cont.)

To connect to the Russell generation step-up transformer, one of three alternative routes for upgraded or new collection lines would be developed, depending on the outcome of constraints described in Section 2.6.2 (see the map on Figure 2-2). The power collection system is expected to use the WTG voltage of 34.5 kV for the major collection backbone. Final transmission to the Russell or Bird's Landing Switchyard could be at standard voltages, up to and including ~~230~~ 69 kV. Alternative Route 1, ~~the upgrade to~~ parallel to the Phase 1 and Phase 2 collection system, would run in an easterly direction from the Russell generation step-up transformer to the Phase 1 Project area. Alternative Route 2 would run parallel to PG&E's 500-kV line. Proposed Alternative Route 3 would run along or parallel to the existing PG&E 230-kV transmission lines in the project area. ~~In addition, Alternative Routes 2 and 3 could be developed using generation step-up alternatives (Options 1, 2, and 3) to expand the existing Russell generation step-up transformer, or using a new step-up transformer location in the project area (Option 4).~~

(p. 2-17 through 2-20)

2.6.3 Proposed Components

2.6.3.1 Power Collection System Alternatives

- **Alternative Route 1**

This alternative would involve ~~upgrading~~ underground cables below the existing transmission lines that serve the Phase 1 and Phase 2 projects. The existing 21.6-kV transmission lines are within 20 feet of the easement, and four circuits run in parallel, primarily above ground. ~~To increase line-carrying capacity, the voltage could be increased to either 34.5 or 69 kV. The~~ New 34.6 on 69 kV circuits would be ~~above~~ underground, along the existing ROW. The WTG power cables on the western side of the project would be below ground to the new collection location on the Phase 1 property. Modifying the existing collection station would require new power transformers and new circuit breakers on SMUD's Phase 1 property (see Figures 2-4 and 2-5). Russell generation step-up transformer improvements, to take the incoming 69 kV up to the transmission voltage of 230 kV, ~~include~~ are described in Option~~s 1, 2, and~~ 3.

- **Alternative Route 2**

New 34.5-kV ~~or 230-kV~~ collection lines would be constructed along the western side of the existing 500-kV PG&E transmission line ROW. The new collection lines could be located in the existing PG&E ROW if an agreement were reached, or they could be located in a new ROW further to the west. The collection lines would be ~~above ground if run at either 34.5 kV or 230-kV or~~ underground ~~if run~~ at 34.5 kV. The Russell generation step-up transformer improvements, to take the incoming 34.5 kV up to the transmission voltage of 230 kV, includes Option~~s 1, 2, and~~ 3, described in the following section. ~~If the 230-kV transmission line were used for the entire route, the Option 4 step-up power improvement would be used, with the step-up transformer located as close to the northwestern segment of the project area as possible, near the 500-kV line ROW.~~

- Alternative Route 3

This alternative would involve installing new 34.5-kV ~~or 230-kV transmission~~collection lines along the western side of the existing PG&E Vaca-Dixon 230-kV transmission line ROW. The collected wind power would be conveyed from the project area to the Russell generation step-up transformer. The new collection lines would be ~~aboveground or~~ underground. This alternative would require an agreement with PG&E to build within its ROW or the development of new agreements with Florida Power and Light (FPL Energy) for land adjacent to the existing ROW. Russell generation step-up transformer improvements to take the incoming 34.5 kV up to the transmission voltage of 230 kV included Option~~s 1, 2, and~~ 3, described in the following section. ~~If the 230-kV transmission line were used for the entire route, the Option 4 step-up power improvement would be used, with the step-up transformer located as close to the existing 230-kV line at the northern end of the project area as possible.~~

B5-925 (Cont.)

(p. 2-23 through 2-24)

2.6.3.2 Generation Step-Up Options

~~•**Option 4, 230-kV Generation Step-Up Location**~~

~~Option 4 would be used with collection Alternatives 2 or 3 if an agreement for a new 230-kV line along an existing PG&E transmission line ROW (either the 230-kV Vaca-Dixon line or the 500-kV Tesla line) could be obtained from PG&E, or if a new ROW could be negotiated. This option would locate the power step-up transformer in the Phase 3 area, and the power would be conveyed to the Russell generation step-up transformer on an overhead line at 230-kV (see Figure 2-9). The new step-up power transformer location would be in the northwestern section of the project area, nearest the end of the selected route alternative. At the Russell generation step-up transformer, the incoming 230-kV line might require the addition of a new circuit breaker to connect the power to the existing high bus; this could involve the addition of new land to the south of the existing step-up transformer.~~

2.6.4 Power Line Design

~~Each~~ The A~~a~~lternative 1 ~~for the~~ collection system includes two possible voltages. The lower voltage ~~of each alternative is~~system at 34.5 kV or 69 kV could be installed using underground cables. Alternatives 2 and 3 would use 34.5 kV, and the expected transmission method is to install insulated power cables underground, either directly buried or in protective conduit. ~~If the higher voltage (at 69-kV or 230 kV) were selected, overhead construction would be used.~~

Underground construction would require geophysical surveying of the route for possible obstructions and an Underground Service Alert (USA) check for existing utilities. Trenching would be required, resulting in temporary surface disturbances, soil stockpiling, and exposure of soils to erosion. Following the installation of the conduit and or cable, backfilling with native soils or engineered fill would be required. After initial installation, visual impacts would not be a concern, and it is expected that the area would revegetate quickly.

B5-925 (Cont.)

~~Overhead construction (Alternative 1 only) could be completed either by reusing existing poles or by using new steel or wood poles. Tubular steel poles could be used for theAny new poles line, rather than steel lattice towers, to reduce potential visual impacts. New tubular steel poles with an average height of 120 feet could be used to support the new line (see Figure 2-10 for a typical configuration). The steel poles would be installed on drilled concrete caisson foundations, approximately 6 to 10 feet in diameter, with an estimated depth of 15 to 30 feet. The new structures would be placed to minimize wetland impacts, minimize additional easements, and minimize the number of poles to the fullest extent possible.~~

All ~~transmission~~ power collection lines would be designed in accordance with State of California Public Utilities Commission (PUC) regulations, including General Order (G.O.) 95 "Rules of Overhead Line Construction~~:~~" (required by Alternative 1 only). Designs also would meet requirements of the National Electric Safety Code (NESC), Title 8, California Code of Regulations (CCR), Articles 35, 36, and 37 of the "High Voltage Electric Safety Orders," the National Electrical Code (NEC, ~~NFPE~~NFPA-70), applicable interconnection standards, and related industry standards.

(p. 2-29)

Figures 2-6, 2-7 and 2-9 are no longer applicable in the FEIR.

After review, SMUD determined to eliminate step-up transformer Options 1, 2 and 4. Therefore, figures 2-6, 2-7 and 2-9 are eliminated in the FEIR.

(p. 2-34)

The FEIR will include the temporary air quality impacts in the list references under "Project Approval Process" as follows on p. 2-34, paragraph 3:

A statement of overriding considerations provides specific reasons why the benefit of a proposed project outweigh the adverse effect. The project is expected to have potentially adverse effects to air quality, aesthetic and biological resources, which are anticipated to be outweighed by the benefits of increasing renewable energy. Therefore the project approval process is likely to include the formulation and adoption of "findings of overriding consideration" by the SMUD Board.

The following footnote is added to the description on p. 3-6 to clarify there are two wind sites in Solano County:

B5-925 (Cont.)

(p. 3-6)

SMUD has considered a wind energy project at other locations. Specifically, the California Energy Commission (CEC) has identified five WRAs in California (CEC, 2003): Altamont Pass, Pacheco Pass, San Gorgonio Pass, Collinsville-Montezuma Hills[1], and Tehachapi Pass. The Collinsville-Montezuma Hills WRA was found to be the only one of these WRAs wherein future wind energy development was not already limited by existing and planned (committed) resource developments. Further limiting development in the Altamont Pass, are recent agreements and litigation which require removal of existing WTGs before an equivalent capacity of new WTGs can be permitted (Center for Biological Diversity, 2004).

1 Solano County technically has two WRAs: Collinsville-Montezuma Hills and Cordelia Hills WRAs. However, the Solano County wind turbine siting plan places restrictions on the development of the Cordelia Hills WRA and local land use is not agriculture. Residents in the area expressed strong opposition to the aesthetic impacts of a proposed wind project there in the 1990s.

(p. 4.1-1)

4.1 METHODOLOGY

This report analyzes potential environmental impacts from the construction and operation of the project. The various parts of the project are described in Section 2.0 (Project Description) and generally would consist of the following.

- Construction and operation of up to 85 WTGs in the Collinsville-Montezuma Hills WRA. The WTGs would consist of one or more models up to the size and capacity of the Siemens SWT-3.6-107 WTG, with a maximum wind energy generation of 128 MW. The total rotor swept area is estimated to be from 68 to 107 acres, depending on the WTG selected.
- Each WTG would consist of a tower foundation, crane pads, temporary construction areas, underground utility trenching, staging areas, and temporary construction areas surrounding the tower foundation. The project may include operation of an on-site concrete plant to provide foundations for WTG towers.
- Thirteen miles of new 30-foot-wide access roads would be constructed to service the WTGs.
- Up to two new meteorological towers would be constructed to provide data for turbine operation.
- A power collection system would be constructed to transport power from the WTGs to the power grid via the Russell generation step-up transformer. The power collection system would include one of four options for new step-up transformers.
- Construction and operation of a new or enlarged O&M building.

(p.4.2-10 through 11)

A commenter noted a discrepancy in maximum turbine height. The following changes are made to make maximum turbine height 492 feet; not 495 feet.

Project Characteristics

B5-925 (Cont.)

The proposed project area occupies 4,655 acres in the Montezuma Hills south of the Sacramento River. Figure 2-2 is a map showing the proposed project area. Details about the project design and layout are provided in Chapter 2, Project Description. As noted in the description, the final WTG locations would be determined upon completion of SMUD's procurement process and selection of the WTG supplier in late 2007; however, the WTGs would be located within the areas depicted in Figure 2-2. The project proposes up to 85 WTGs. The proposed build-out to 128 MWs of generating capacity for the project would require 85 units if the 1.5-MW units were used or as few as 35 units if 3.6-MW units were installed. The WTGs would have a maximum height of ~~495~~ 492 feet, with a maximum 345-foot-tall tubular steel tower and a blade diameter of up to 351 feet. Figure 2-3 includes elevation drawings of potential WTG configurations that could be selected for the project site.

(p. 4.3-3)

The project area is predominately zoned Extensive Agriculture (A160) with 411 acres zoned Water-Dependent Industrial (I-WD). The General Plan designates 3,110 acres of the project area as I-WD and 1,227 acres as Water-Dependent Industrial Reserve (I-WD Reserve). The project area consists primarily of rolling hillsides that are used for dry-land farming and grazing. The project area does not include any Prime Farmland, Farmland of Statewide Importance, or Unique Farmland (Solano County, 2006). The I-WD and I-WD Reserve designations for the project area allows interim

agricultural use, but is primarily intended to allow water-dependent industries. SMUD will not seek to change the zoning designation at this time for the project area since WTGs are allowed under current zoning. The project area is currently leased and being used for grazing of cattle and goats as well as dry-land farming. ~~The General Plan designates the project area as Extensive Agriculture (180 acres) and Water-Dependent Industrial (4,475 acres). The project area consists primarily of rolling hillsides that are used for dry-land farming and grazing.~~ The project area does not include any Prime Farmland, Farmland of Statewide Importance, or Unique Farmland (Solano County, 2006). ~~The I-WD District designation for the remainder of the project area allows interim agricultural use, but it is primarily intended to allow water-dependent industries. The project area is currently leased and being used for grazing of cattle and goats as well as dry-land farming~~

(p. 4.3-4 through 4.3-7)

4.3.4 Impact Analysis

Impact AG-1: The project would involve changes in the existing environment that would result in the conversion of farmland in the project area to non-agricultural use.

Construction of the WTGs and roads would result in a total of approximately 122 acres (3% of the project area) being permanently converted to non-agricultural uses.

The following is a breakdown of the project components that would result in the conversion of these acres:

- 0.39 acre needed to construct the pads/foundations for the 85 WTGs;
- Less than 0.1 acre needed for the two meteorological towers;
- 1~~.62 acres needed for Russell generation step-up transformer expansion (Option 1 and 2)~~, 2.0 acres for Russell generation step-up transformer expansion (Option 3)~~, or 1.0 acre for new 230-kv substation (Option 4)~~;

B5-925 (Cont.)

(p. 4.5-30)

Insert after second paragraph:

Swainson's hawks are listed as threatened under California law, and although rare, they occur in the project area. Swainson's hawks have been reduced by the loss of habitat, and potentially pesticides. CDFG considers loss of even a single Swainson's hawk as potentially significant.

The most recent data on bird and bat mortality that has been recorded in the WRA area is presented in Appendix II of the Shiloh Wind Plant EIR: "Post-Construction Avian and Bat Fatality Monitoring Study for the High Wind Power Project …-" April 2006, and Appendix B of the Montezuma Hills EIR: (FPL Energy Montezuma Wind, LLC,~~.~~ 2006.)

In the Montezuma report, it was reported that: "The many studies that have been conducted to date on bird interactions with wind turbines indicate that, in general, wind farms pose little to no risk to local or regional bird populations, including raptors. Studies conducted in the Altamont Pass WRA, however, suggest possible risks to local or regional populations that exceed risks documented in other areas (Erickson et al., 2001; Smallwood and Thelander, 2004). Postconstruction avian monitoring in the Collinsville-Montezuma Hills WRA (Kerlinger et al., 2006) suggests that while mortality has occurred at rates slightly higher than initially expected (0.6 birds/MW/year and 0.28 raptors/MW/year), it is substantially less than in the Altamont WRA (3.0-8.1 birds/MW/year and 1.5-2.2 raptors/MW/year) (Smallwood and Thelander, 2004) and does not occur at levels that would affect local or regional populations." (Estep and Jones & Stokes, 2006).

SMUD would expect mortality results similar to those reported for the High Wind Project, based on the proximity of that project.

(p. 4.5-30, paragraph 4)

Some biologists believe the number of birds killed by WTGs is not significant when compared to other sources of anthropogenic (man-made) mortality. A report by Erickson and Johnson (2005) summarized estimates of other mortality as 97 to 976 million from collisions with buildings; 130 million from collisions with high-tension lines, between 4 and 5 million from collisions with communications towers, and as many as 80 million from collisions with cars. In comparison, ~~WTGs were reported to have killed an estimated 20,000 to 37,000 birds in 2003~~. More than 15,000 wind turbines may kill 40,000 or more birds annually nationwide, the majority in California (Manville, A.M. 2002). By this analysis the total number of birds killed by WTGs may not be significant, but even low rates of mortality to specific species such as golden eagles and Swainson's hawk may be significant.

B5-925 (Cont.)

(p. 4.5-36)

On p. 4.5-36, the sixth bullet will be modified to include Shiloh I as follows:

- "Attempt to validate, through comparison, that bird mortality from the project is not disproportionate to other wind projects (e.g. Shiloh I and II Wind Plant Project, Montezuma Wind Project, Solano County High Winds Project, and SMUD Solano Wind Project Phase 2B)"

(p. 4.5-36)

To correct a mathematical calculation of rotor-swept area, the text for Mitigation Bio-5b on page 4.5-36 is modified as follows:

Within 2 years of the first delivery of power from the Solano Wind Project Phase 3, provide ~~156~~136 to ~~168~~214 acres of property within the WRA as open space suitable as breeding and foraging habitat

for raptors impacted by the project. This conservation land or easement will meet the following requirements.

(p. 4.7-15, final paragraph)

Develop and follow a project-specific SWPPP, in compliance with the State Water Resources Control Board (SWRCB) Construction Stormwater Permit and Solano County's Grading and Erosion Control requirements. The implementation of erosion and sedimentation control procedures outlined in the SWPPP will reduce the potential for loss of soils from erosion and prevent erosive soils from impacting sensitive resource areas.

(p. 4.8-2, paragraph 1)

The DEIR incorrectly stated that the project lay within the jurisdiction of the San Francisco Bay RWQCB (SFRWQCB). The project lies within both the San Francisco and Central Valley. SMUD contacted the San Francisco RWQCB to determine the correct jurisdiction. The staff opined that most of the project was within CVRWQCB and that they would refer the project to that agency. The following change will be made to page 4.8-2, paragraph one in the FEIR:

The Project lies within the jurisdiction of the ~~San Francisco Bay~~ Central Valley RWQCB, which establishes water quality standards, including beneficial uses and water quality objectives, for the region.

B5-925 (Cont.)

(p. 4.8-9, paragraph 5)

The text under the second bullet is modified to read as follows:

Concerns about potential interference between WTGs and radar operations for airports, weather stations, and the DoD have created delays in projects throughout the U.S. The Pentagon authorized a study, under Section 358 of the 2006 defense authorization bill, to assess the effects of the operation of military radar installations proximate to wind farm developments. ~~To date, this report has not been finished. An FAA study currently being prepared to investigate this issue also has not yet been released.~~ This report was completed in 2006, as discussed earlier in Section 4.8.2.3, page 4.8-7 of this DEIR.

(p. 4.8-10, paragraph 3)

The following information updates radar agreements:

Since previous projects have been issued "No Hazard Determinations" and the project would be farther from Travis AFB radar than other projects in the WRA, the project would cause no increased in hazard from radar interference. Travis AFB is planning to install a new ASR-11 radar system in

October 2008, which is anticipated to solve the existing radar equipment performance. Project construction is scheduled for November 2008, after the installation, operation, and testing is scheduled to be completed for the ASR-11 radar system. In addition to the ASR-11 radar system, other solutions are currently being worked on by other wind developers in the WRA. Note that the FAA "No Hazard Determination" does not address radar issues, according to Travis AFB. SMUD has met with and will continue to meet with Travis AFB personnel to develop solutions to the radar interference issue. Both SMUD and Travis AFB are optimistic that solutions will be reached in a timely manner. The FAA has provided no comments at this time to indicate that a "No Hazard Determination" will not be issued for this project. This impact is therefore considered less than significant.

(p. 4.8-9, paragraph 7)

In a letter dated March 8, 2007, and at the Solano County Planning Commission hearing of March 15, 2007 (Solano County, 2007a), Travis AFB raised concerns regarding the Shiloh II and Montezuma Wind Projects and its potential impacts on radar. These concerns were raised after the FAA issued a "No Hazard Determination" (Yankovich, 2007).

(p. 4.11-7, paragraph 2)

The paragraph on page 4.11-7 is modified to provide greater accuracy on the distance of residences as follows:

For the purposes of this analysis, no residences are within the 4,655~~4,200~~-acre project area. The nearest residences are approximately 1 mile to the northeast (Receptor 1 [R1]), 2.5 miles to the west (R3), and ~~0.75~~ mile to the southeast across the Sacramento River (R2). Figure 4.11-1 illustrates the location of these nearest residences. Table 4.11-4 shows the existing baseline noise levels.

This change does not change the results of the noise analysis.

B5-925 (Cont.)

(p. 4.11-12)

The first paragraph on page 4.11-12 is modified to provide greater accuracy in the distance of the residences as follows:

The nearest residences would be approximately 1 mile to the northeast, 2.5 miles to the west, and ~~1~~ 0.75 mile to the southeast across the Sacramento River.

(p. 4.13-9, paragraph 5)

The requirement to include a TCP is augmented in response to comments received:

A Traffic Control Plan will be prepared and implemented during construction. Typical traffic control plan measures will include use of pilot cars for oversize loads, traffic safety measures, such as warning signs, construction traffic schedules that avoid peak traffic hours, coordination with local jurisdictions, providing safety personnel to direct traffic as needed, and applying BMPs to reduce traffic impacts. The TCP will include measures to minimize lane closures and to evaluate alternate routes of access to minimize construction-related traffic delay and accidents.

With implementation of this mitigation measure, short-term impacts to traffic caused by construction will be less than significant. No further mitigation measures are required.

(p. 4.13-10)

In addition to complying with local laws specifying maximum loads, and requirements for local hauling permits, SMUD will:

- Enter into a secured agreement with Solano County to ensure that any county roads that are damaged are promptly repaired to their pre-construction condition including road repairs, slurry seal, overlay, reconstruction as determined and agreed to by Solano County and SMUD, and performed to Solano County's satisfaction; and

- Post a security bond to cover the costs of road maintenance during construction. The project owner shall repair any damage and restore roads to pre-construction conditions prior to operations. Should the owner not perform such repairs to the satisfaction of Solano County, the county will reserve the right to perform the repair work at the owner's cost.

B5-925 (Cont.)

Implementation of this mitigation measure will reduce damage to roads to less than significant. No additional mitigation measures are required.

(p. 5-1, paragraph 2)

Solano County designated the Collinsville-Montezuma Hills WRA in 1987, and since this designation, several hundred WTGs have been installed within the Collinsville-Montezuma Hills WRA. ~~Because the WRA is the only area designated for WTGs in Solano County~~, The other WRA in Solano County is Cordelia Hills which is geographically separated from the Collinsville-Montezuma Hills WRA, therefore the Collinsville-Montezuma Hills WRA is considered the cumulative impact study area for this project. Hereafter WRA will refer to the Collinsville-Montezuma Hills WRA only.

(p. 6-5)

Impact BIO-6:	Overhead wires installed for Project operation could result in electro-cution of, or a collision with, raptors and other protected species.	Mitigation BIO-6:	Abide by guidelines provided in the *Avian Powerline Interaction Committee's Suggested Practices for Avian Protection on Powerlines* (APLIC, 2006) to minimize adverse impacts to raptors and other species.	The Project Engineer will provide a memo to SMUD Project Manager that the project Siting Plan abides by the guidelines in the *Avian Powerline Interaction Committee's Suggested Practices for Avian Protection on Powerlines* (APLIC, 2006)	SMUD~~, Solano County~~	Prior to project construction
Impact BIO-7:	Water pumped from the Sacramento River for use in dust abatement in construction areas and on roads in the Project area could adversely affect Delta smelt and juvenile salmonids.	Mitigation BIO-7:	For any diversion of water from the Sacramento River, install fish screening devices to prevent or minimize potential impacts to Delta smelt and juvenile salmonids.	SMUD's Construction Contractor will develop a Construction Fugitive Dust Control Plan which will be submitted to the county for approval as required by the Solano County Grading Permit. Screening Criteria for Anadromous Salmonids will be included in this report.	SMUD~~, Solano County~~	Prior to project construction

B5-925 (Cont.)

The following documents are added to the references section (Chapter 7) of the DEIR:

Estep Environmental Consulting and Jones & Stokes. 2006. *Revised Avian and Bat Assessment for the Montezuma Wind Project*. 2006.

Erickson, W. P., G. D. Johnson, M. D. Strickland, D. P. Young, Jr., K. J. Sernka, and R. E. Good. 2001. *Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparison of Other Sources of Avian Collision Mortality in the United States.* Prepared for the National Wind Coordinating Committee, Washington, DC.

Kerlinger, P., R. Curry, L. Culp, C. Wilkerson, A. Jain, B. Fischer, and A. Hasch. 2006. P*ost-construction Avian Monitoring Study for the High Wind Power Project, Solano County, California – Two Year Report.* Prepared for High Winds, LLC and FPL Energy.

Manville, A.M. 2002. "Bird Strikes and Electrocutions at Power Lines, Communication Towers, and Wind Turbines: State of the Art and State of the Science- Next Steps Toward Mitigation. Third International Partners in Flight Conference." March 20-24, 2002, Asilomar Conference Grounds, California. Published at: http://www.fs.fed.us/psw/publications/documents/psw_gtr191/Asilomar/pdfs/1051-1064.pdf.

Smallwood, K. S., and C. G. Thelander. 2004. *Developing Methods to Reduce Bird Mortality in the* Altamont *Pass Wind Resource Area.* Final Report by BioResource Consultants to the California Energy Commission, Public Interest Energy Research-Environmental Area, Contract No. 500-01-019.

B5-925 (Cont.)

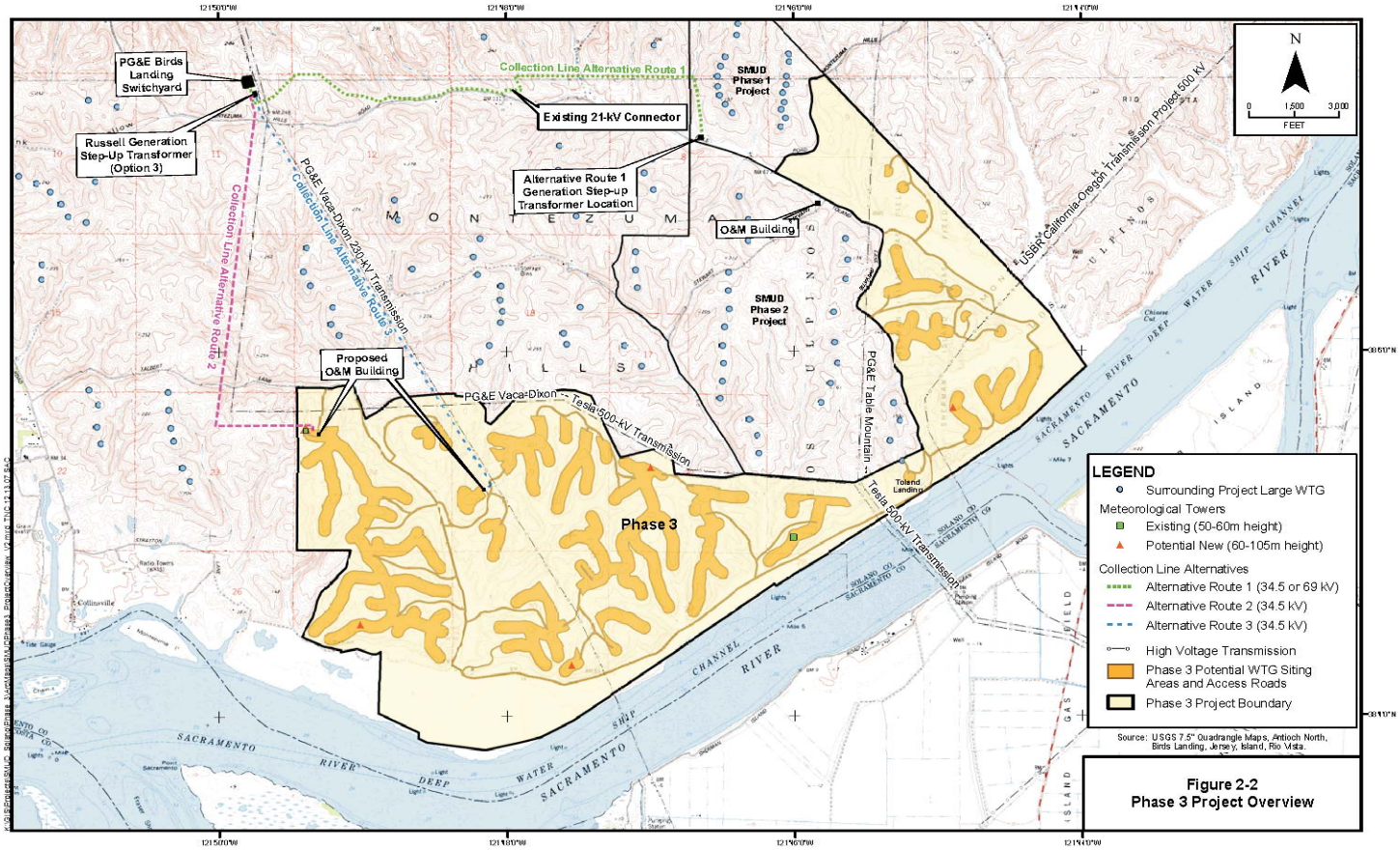

Figure 2-2
Phase 3 Project Overview

B5-925
(Cont.)

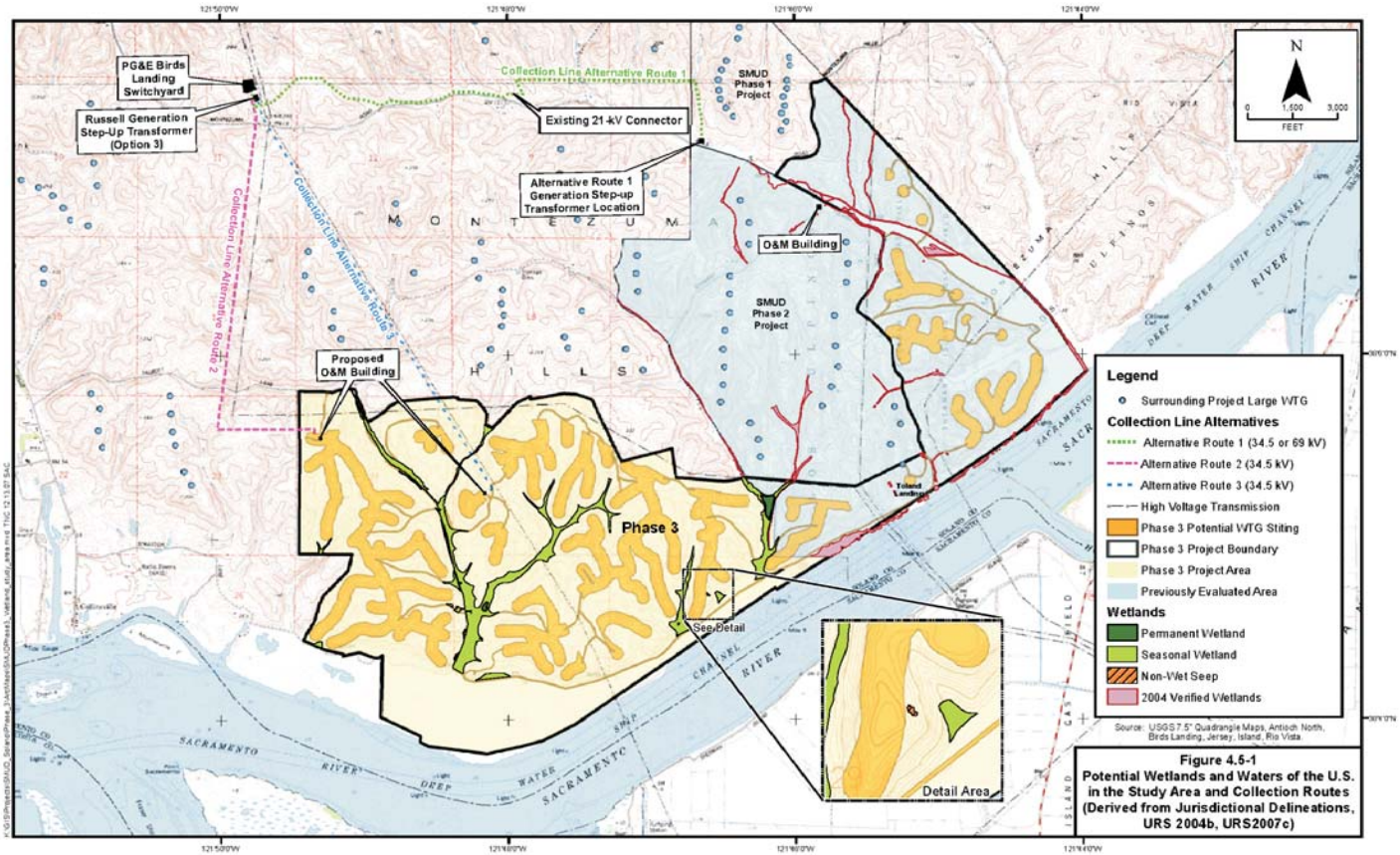

Figure 4.5-1
Potential Wetlands and Waters of the U.S. in the Study Area and Collection Routes (Derived from Jurisdictional Delineations, URS 2004b, URS2007c)

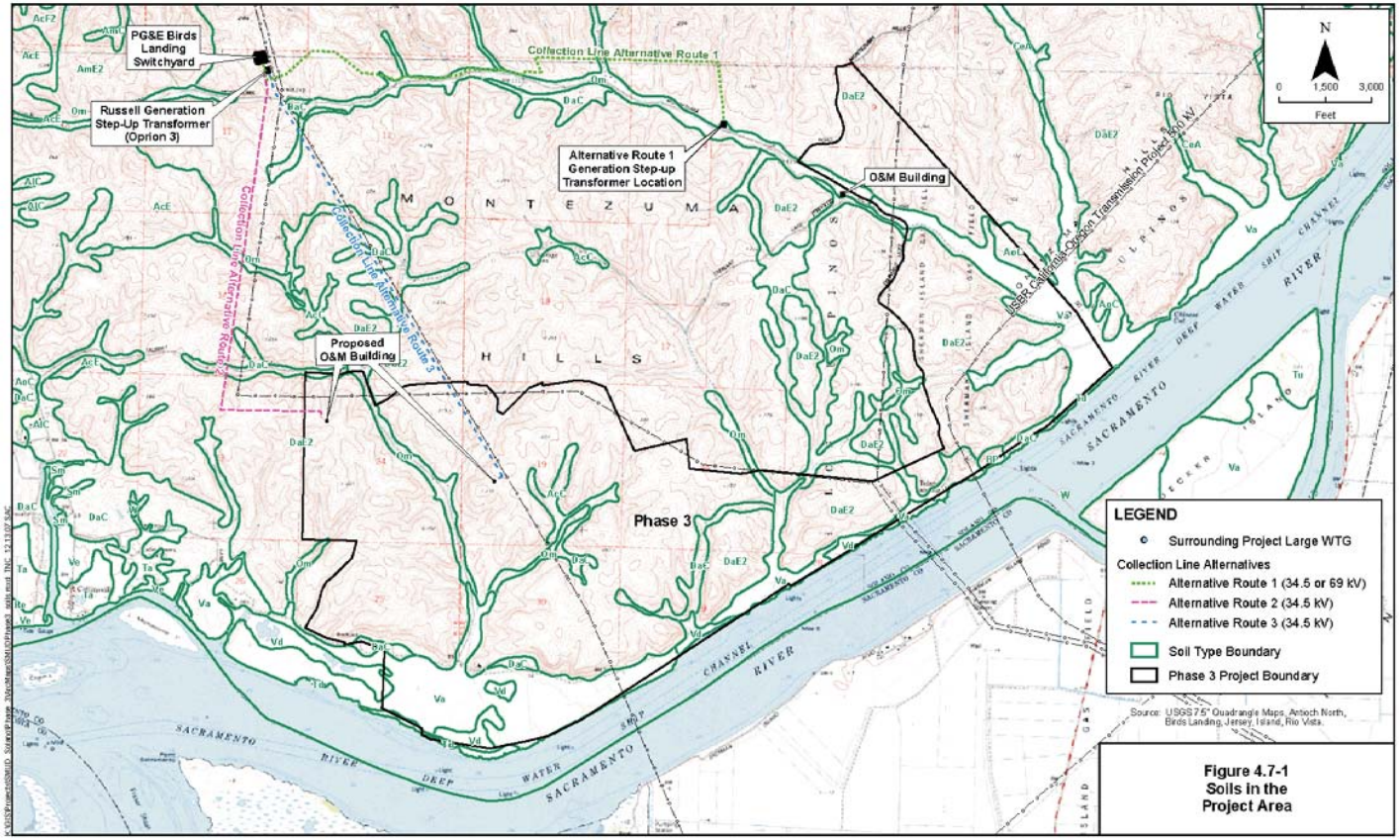

Figure 4.7-1
Soils in the Project Area

B5-925
(Cont.)

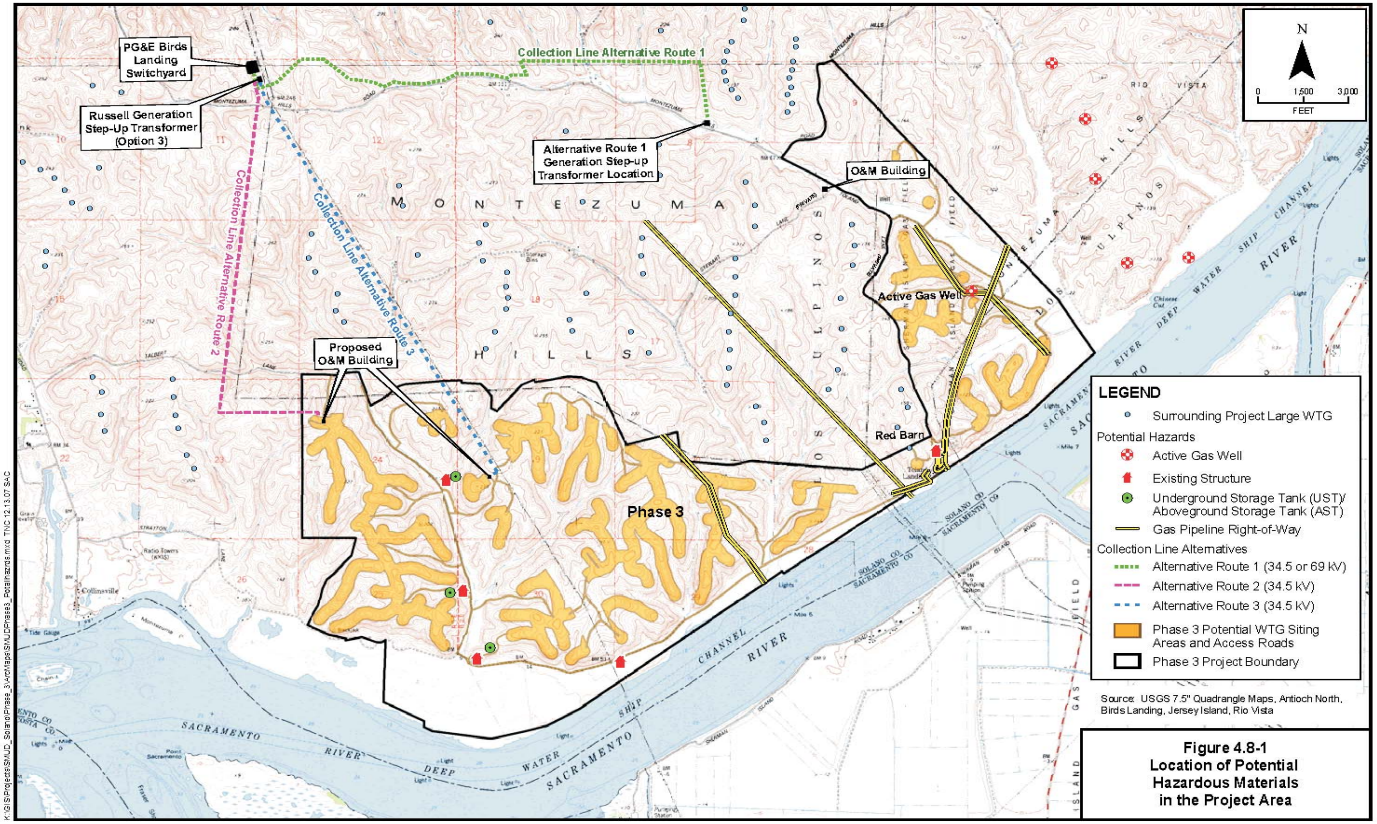

Figure 4.8-1
Location of Potential Hazardous Materials in the Project Area

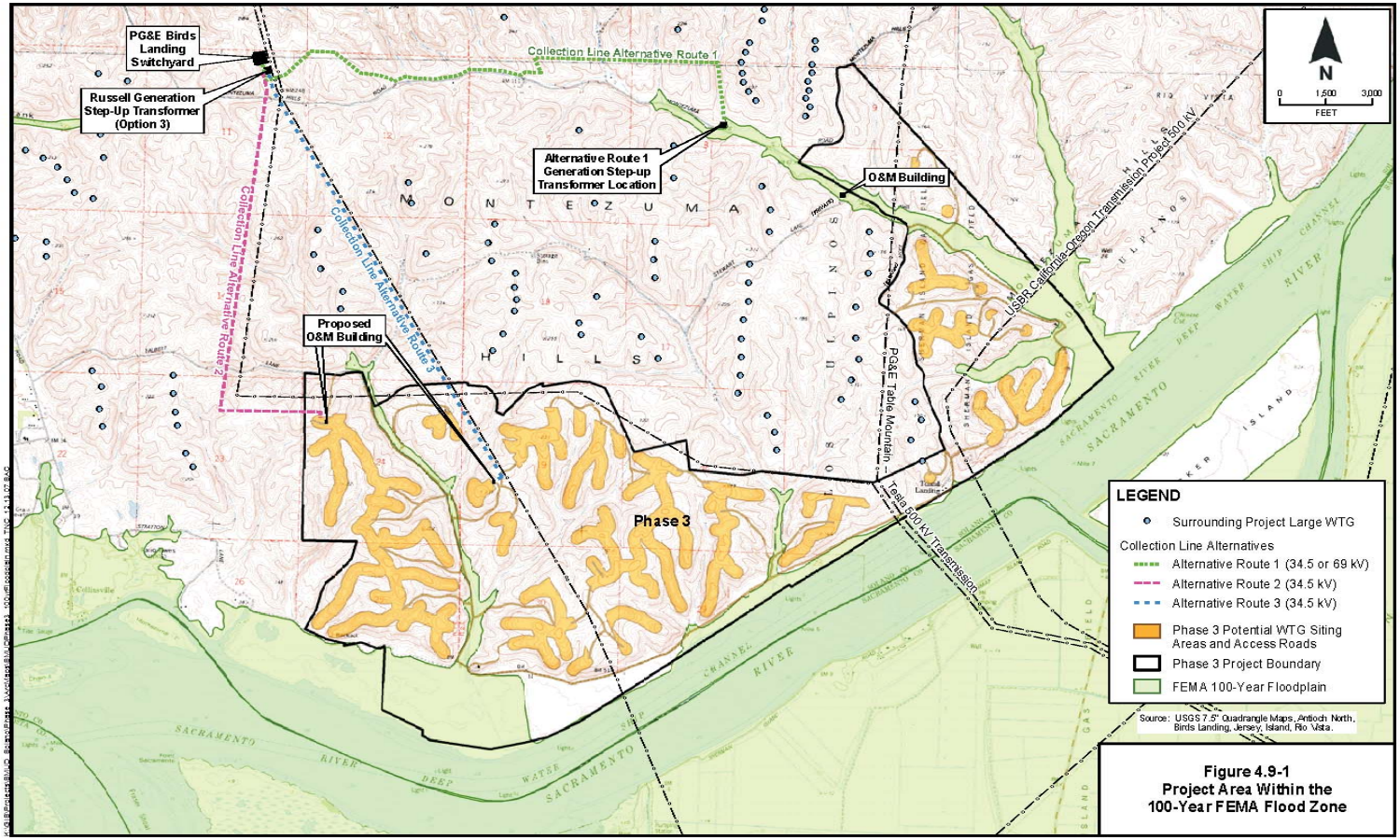

Figure 4.9-1
Project Area Within the 100-Year FEMA Flood Zone

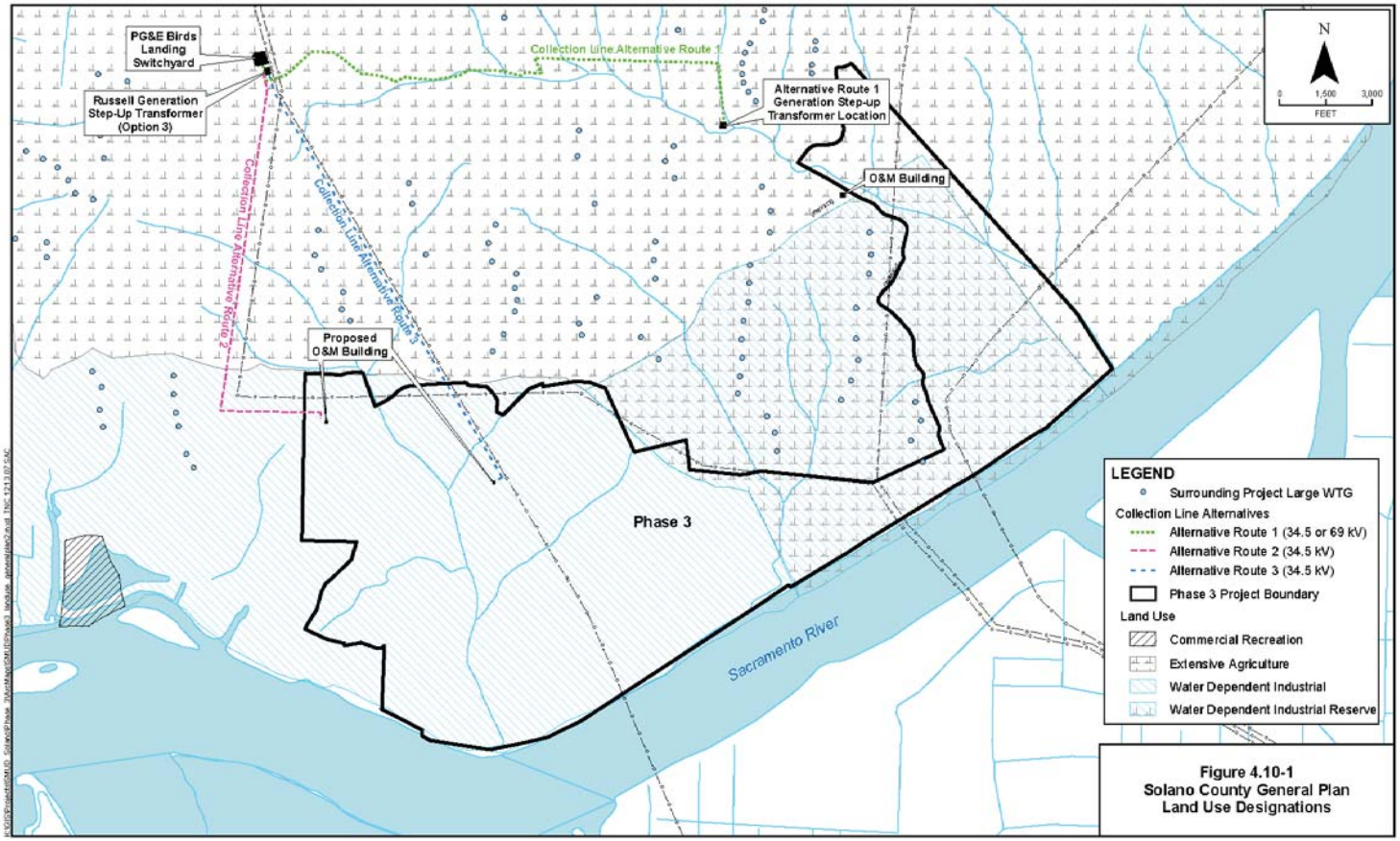

Figure 4.10-1
Solano County General Plan Land Use Designations

B5-925 (Cont.)

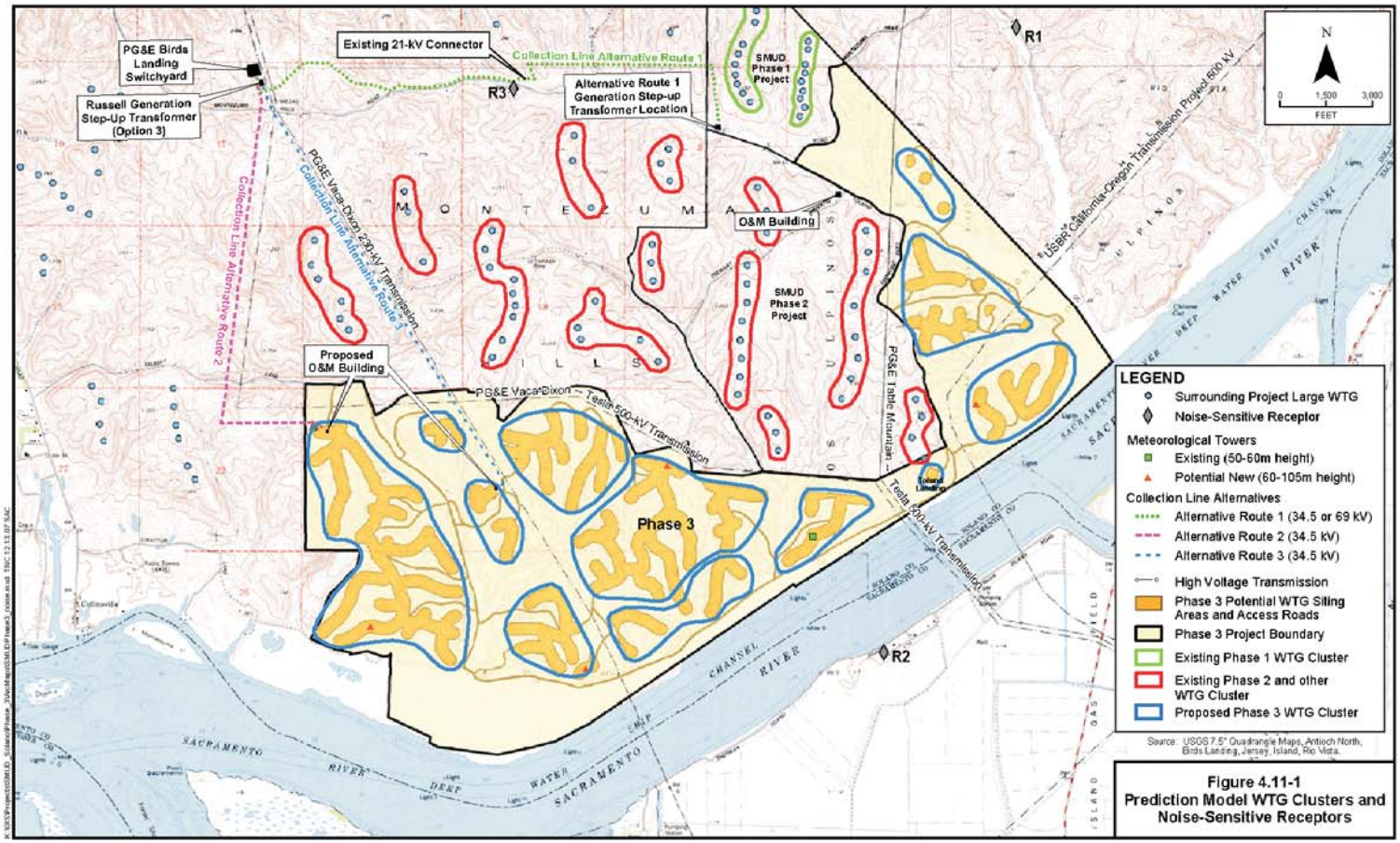

Figure 4.11-1
Prediction Model WTG Clusters and Noise-Sensitive Receptors

B5-925
(Cont.)

Yolo Subsidence Monitoring Project

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The Yolo County Subsidence Network

Recommendations
for Future Monitoring
May, 2000

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GPS equipment set up at station HERSHEY near Colusa Basin Drainage Canal.

EXECUTIVE SUMMARY

In late 1998, a series of meetings was initiated between representatives of the Water Resources Association of Yolo County (WRA), the U.S. Army Corps of Engineers Topographic Engineering Center (the CORPS) and the National Geodetic Survey (NGS) to explore the subject of ground subsidence monitoring in Yolo County.

Subsequent meetings attended by representatives of the Corps, the California Department of Water Resources (DWR), and various Yolo County and city agencies resulted in a plan to establish a network of survey monuments throughout the county.

Partners and funding sources were identified, and the City of Davis was selected as lead agency for the project.

The network, which would serve as the framework for monitoring subsidence in the county, was installed in July 1999. Global Positioning System (GPS) observations on the network were completed in August of 1999.

With the network now in place, we offer the following recommendations for consideration by the project participants:

> Recommendation 1. Inform public and private agencies involved in construction, utilities management, public works and related activities in the county about the network and the location of all stations. Information about the project's web site should be included in this information.
>
> Recommendation 2. Task a single county entity with visiting each monument in the network annually to

B5-925 (Cont.)

assess the integrity of the individual monuments. Any discrepancies in monument description or condition should be brought to the attention of interested County parties and to the National Geodetic Survey (NGS). Follow proper formats for reporting such discrepancies.

Recommendation 3. Identify stations in imminent danger of destruction and replace them in advance, following National Geodetic Survey guidelines. (A copy of these guidelines may be obtained from the NGS California State Geodetic Advisor, Marti Ikehara - <marti_ikehara@dot.ca.gov>).

Recommendation 4. Re-observe the entire network in three years (2002).

Recommendation 5. Investigate the benefits of more frequent re-observation of particular areas of the county.

Recommendation 6. Investigate densification of the network in areas of particular interest.

Recommendation 7. Provide continuing nonfinancial support for the Continuously Operating Reference Station (CORS) at the University of California, Davis.

Recommendation 8. Investigate the establishment of a CORS site in the north county area.

Recommendation 9. Consider the merits of encouraging the Federal Emergency Management Agency (FEMA) to adopt the results of the project in its flood plain mapping efforts.

Recommendation 10. Investigate other supporting technologies as an adjunct to the GPS Subsidence Network within Yolo County. A complete list of these recommendations and their rationale is included in Section VI of this report.

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Conclusion

A county-wide, unified, dense, and highly accurate network of monumented geodetic control stations sufficient to meet most spatial positioning requirements is now in place in Yolo County.

The network will support subsidence monitoring, its primary function, but will also meet most surveying, engineering design and Geographic Information System (GIS) technology needs into the future.

Full benefit from use of the network for monitoring subsidence can only be realized if the network is preserved and re-measured periodically.

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Final Report

I. INTRODUCTION

This report outlines recommendations for capitalizing on the existence of a highly-accurate county-wide network of stations established using the Global Positioning System (GPS) in 1999.

This network provides the basis for monitoring subsidence in the county with an accuracy suitable to meet all participating agency requirements. It further provides the basis for other spatial positioning requirements in the county including Geographic Information System (GIS) development.

The project was the culmination of a series of meetings and actions by agencies with a concern about subsidence in Yolo County. A list of the agency participants and those personnel who participated in the project is included.

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II. BACKGROUND

The Global Positioning System is a highly-accurate, satellite-based, spatial positioning technology. It is capable of providing sub-centimeter horizontal positions (coordinates) over large distances.

Because of the nature of the GPS satellite configuration and other considerations it is not able to provide equally accurate vertical positions (elevations). Generally speaking, the accuracy of GPS-derived elevations is only one-half to one-third as accurate as GPS-derived horizontal positions (latitude and longitude), and achieving this vertical accuracy requires a greater effort than that required for horizontal accuracies.

The plan of the Yolo County network was to develop a methodology to achieve the maximum vertical accuracy in a reasonable and practical manner.

In 1994, the National Oceanographic and Atmospheric Administration's (NOAA's) National Geodetic Survey (NGS) began testing large multi-day GPS data sets to determine a set of guidelines for achieving a few centimeters of accuracy in the vertical coordinate. The data were extracted from GPS observations obtained by the Harris-Galveston Coastal Subsidence District in Texas and over the network established near the National Institute of Science and Technology (formerly the National Bureau of Standards). This latter network served as the proving ground for GPS manufacturing companies to test their equipment against a known standard.

After over a year of testing, including a test project in the San Francisco Bay area, the guidelines were established where, with a minimum of observation time and with some more-demanding observing techniques, elevations could be determined at the two to three centimeter level (about one inch). This is approximately

B5-925 (Cont.)

consistent with older terrestrial leveling techniques over distances such as the station spacing in the Yolo County network. But terrestrial leveling techniques are more labor-intensive, require longer time to complete, and are about five times more costly.

The network in the Bay area was then extended eastward in 1996. It was further extended in 1997 and 1998 into the Sacramento-San Joaquin River delta area, including the area of Yolo County along and below the Highway 80 corridor.

These succeeding projects proved the ability of the GPS technology to meet previously unattainable levels of accuracy over reasonably short time periods and with reasonably short observation times per station (a minimum of 30 minutes).

In late 1998, representatives of the U.S. Army Corps of Engineers' Topographic Engineering Center and NGS met to discuss the use of GPS technology to measure and monitor subsidence in other areas of the Central Valley.

Water Resources Association of Yolo County (WRA) Executive Coordinator presented the information to the WRA Technical Committee. Interested WRA members (the cities of Davis, Winters and Woodland, the County of Yolo and the Yolo County Flood Control and Water Conservation District) and the California Department of Water Resources agreed to pursue the establishment of a GPS network in the county suitable for monitoring subsidence.

Reconnaissance to select existing survey monuments and sites for new survey monuments for the Yolo County project began in late May, 1999, and field observations were completed in August.

A total of 50 stations were established in the survey. After completion of the basic project stations in July, it was decided that a station near each of two extensometers, operated by the California Department of Water Resources, should also be included in the project. Observations to these extensometer sites (near Zamora and on the Conaway Ranch) were obtained in late August.

Stations observed in the project are listed here.

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III. DISCUSSION

While the use of GPS to determine accurate elevations is becoming more widespread, subsiding areas present unique concerns.

Subsidence is generally caused by fluid withdrawal or hydro-compaction. In some areas of the country it is caused by groundwater withdrawal (e.g., California's Central Valley, Texas' Harris-Galveston Counties) and in others by oil and gas withdrawal (e.g., the Port of Long Beach). Hydro-compaction has been known to occur in some areas of the western San Joaquin Valley.

Subsidence can be extreme. In the Mendota area of Fresno County there has been over 27 feet of subsidence over the history of recorded leveling, which began in the 1920's.

B5-925 (Cont.)

In general, most of the Central Valley of California is subject to subsidence.

Subsidence is not a phenomenon that lends itself to prediction (of annual rates, for example), except in an average sense, since it is a function of several variables that vary from year to year and even from season to season.

Subsidence is not uniform over even relatively small areas. Differential subsidence (the amount a particular area subsides with respect to a neighboring area) can occur over points separated by as little as a mile, and perhaps less. For this reason, subsidence can only be monitored accurately if it is related to areas of stability, and this is where GPS technology is of particular benefit.

Prior to the mid-1990s the generally accepted method of measuring and monitoring subsidence was by conventional leveling techniques. These techniques were extremely labor-intensive and costly. Because of the differential nature of subsidence a denser network of leveling was required, driving the cost up higher yet.

By 1996 GPS had proven itself capable of achieving similar coverage with comparable accuracies at only a fraction of the cost. But it did not obviate the need to tie areas of subsidence to known areas of stability, sometimes tens of kilometers distant (as in the case of Yolo County).

A complicating factor in the use of GPS is that the coordinates obtained, both horizontal and vertical, are related to a mathematical surface, expressed in Cartesian (x, y, and z) coordinates. These coordinates then need to be converted to the geodetic system.

In North America the geodetic system is composed of two parts; the horizontal part is the North American Datum of 1983 (NAD83) and the vertical part is the North American Vertical Datum of 1988 (NAVD88). It is a relatively straightforward process to translate the GPS-derived Cartesian coordinates into the NAD83 and NAVD88 geodetic coordinates.

The accuracy of this translation depends on the physical stability of the points being measured. Subsiding areas present unique problems that make accurate coordinate conversion problematic. To overcome these problems it is necessary to perform simultaneous GPS observations in the subsiding area and stations with known NAVD88 elevations in non-subsiding (stable) areas. This was accomplished in the Yolo County network.

View the results of terrestrial leveling that was performed between some of the network stations.

The use of GPS eliminates the need for significantly more expensive and labor-intensive terrestrial leveling techniques.

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IV. THE YOLO COUNTY NETWORK

The Yolo County network consists of 47 stations inside the county and three stations outside the County.

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The stations outside the county serve to connect the network to areas of stability to the east and to the north. An existing stable site in western Yolo County was also used. Two of the stations in the network are Continuously Operating Reference Stations (CORS). These two stations are part of the Bay Area Regional Deformation (BARD) network monitored by the University of California, Berkeley Seismological Laboratory in cooperation with the University of California, Davis. The BARD network provides monitoring of the network of CORS sites throughout northern California. Coordinates (latitude, longitude and elevation) for these sites are monitored continuously.

The Yolo County network, a combination of existing and new survey monuments, was observed according to guidelines established by the National Geodetic Survey. The GPS observations took place in July and August, 1999.

A copy of the project map is included in the envelope at the back of the printed report. For a more complete discussion of the network observations and related information see "The Yolo County 1999 GPS Subsidence Project: Field Operations Report", also by Don D'Onofrio and Jim Frame.

The network, for its county-wide coverage and accuracy, is still only a combination of discrete points. It is simply the framework to which other stations, perhaps more dense and employing other technologies, can be related.

It is also important to note that the network coordinates represent positions at the time of the observation. Since subsidence is a dynamic process, differing from location to location, the coordinates are susceptible to change over time. These issues are discussed in the recommendations, (Section VI).

The Yolo County project was accomplished under contract with Frame Surveying & Mapping, a Davis-based firm, which retained Don D'Onofrio for his geodetic expertise. All observations were performed with support from a number of participating public agencies. These agencies included:

- U.S. Bureau of Reclamation
- California Department of Transportation
- Yolo County Planning and Public Works Department
- City of Woodland

Personnel from these agencies were provided at no cost to the project.

This support accounted for about 70 person-days of effort. This is both a significant contribution and an outstanding example of cooperative effort among different levels of government.

The overall project was managed and administered by the City of Davis Public Works Department. The value of these staff contributions is approximately $25,000.

In addition, GPS survey equipment-usage contributions were provided for the duration of the project by the following agencies:

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- U.S. Bureau of Reclamation
- California Department of Transportation
- University of California, Davis

The GPS and related equipment was provided to the project at no cost. The value of the equipment contributions is approximately $15,000.

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V. SUBSIDENCE IN OTHER AREAS

At least two areas of the United States have established ongoing GPS monitoring of subsidence: the Harris-Galveston Coastal Subsidence District in Texas and the Port of Long Beach in California.

In both cases their monitoring efforts go back to the 1950s. The former began GPS monitoring in 1995 and the latter about 1998.

Other areas in California have been surveyed for subsidence, including the Santa Clara Valley, Coachella Valley and the California Aqueduct.

Representatives involved in these efforts have been contacted for subsidence monitoring recommendations. Appendix D features a list of those contacted and a sample of the letter sent to each. A review of the responses combined with input from county and local agencies should help to develop a sound policy for future monitoring of the Yolo County network.

Any policy developed for these monitoring efforts must include the ability to relate Yolo County survey monuments to those stable survey monuments outside the County.

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VI. RECOMMENDATIONS FOR MONITORING AND USE OF THE YOLO COUNTY NETWORK

A first step in capitalizing on the county-wide network is to ensure that the survey monuments that make up the network are preserved.

Survey monuments are susceptible to destruction from construction activities, inadequately planned or improperly executed maintenance activities, and vandalism. Occasionally a monument will be in the way of highway construction and cannot be preserved. Establishment of a new station monument and transfer of elevation prior to the destruction of the original will preserve the value of the monument to be destroyed and the associated subsidence history.

> Recommendation 1. Inform public and private agencies involved in construction, utilities management, public works and related activities in the county about the network and the location of all stations. Information about the project's web site should be included in this information. There is no cost, per se, associated with this recommendation. Information about the network,

B5-925 (Cont.)

including station listing, description, and a variety of related information are included in the project web site.

Recommendation 2. Task a single county entity with visiting each monument in the network annually to assess the integrity of the individual monuments. Any discrepancies in monument description or condition should be brought to the attention of interested County parties and to the National Geodetic Survey (NGS). Follow proper formats for reporting such discrepancies.

We estimate that Recommendation 2 will require about one person-week of effort per year. This includes visiting all sites and preparing reports on any discrepancies noted.

Recommendation 3. Identify stations in imminent danger of destruction and replace them in advance, following National Geodetic Survey guidelines. (A copy of these guidelines may be obtained from the NGS California State Geodetic Advisor, Marti Ikehara - <marti_ikehara@dot.ca.gov>). A station destroyed before replacement represents a permanent break in the subsidence history of that station.

We estimate that Recommendation 3 will require about three person-days of effort for each station destined to be destroyed plus the cost of materials to establish the new station. This includes selecting the location of the new site (in the vicinity of the destroyed station), resetting the new station monument, performing a terrestrial leveling tie between the two monuments, and preparing the necessary documentation.

NOTE: Recommendation 4. Re-observe the entire network in three years (2002). Depending on the results of this re-observation the county can better determine the time period for subsequent re-observations.

We estimate that Recommendation 4 will require somewhat less time and cost than the original (1999) project since there will be few, if any, new survey monuments to be set. This assumes the project will be accomplished in the same manner as the 1999 project, i.e., observation personnel and equipment provided by participating agencies. It is possible that changes in the use of the GPS technology may allow the project to be accomplished in a shorter time frame, and thus at a further reduced cost.

Recommendation 5. Investigate the benefits of more frequent re-observation of particular areas of the county. We have no estimate for the cost of such a project because of the uncertainty of the size and scope of such a project. Subsidence rates and amounts differ throughout the county. Areas where smaller amounts of subsidence are critical to infrastructure maintenance might lend themselves to

B5-925 (Cont.)

more frequent re-observation.

We can provide estimates if there is interest in considering a project in a particular area.

Recommendation 6. Investigate densification of the network in areas of particular interest. We have no estimate for the cost of such a project because of the uncertainty of the size and scope of the project. As discussed above, differential subsidence can occur over relatively small areas. The basic network, which provides an excellent framework for the county as a whole, might not provide the spacing and location of monuments for a more in-depth investigation in concentrated areas, e.g., the cities of Davis or Woodland or, the levees along Cache Creek.

Using modified GPS observing techniques, specifically Real Time Kinematic (RTK), can provide a reasonably cost-effective and timely means to accomplish an accurate survey over city-sized areas. Conventional terrestrial leveling techniques might also be suitable over these short distances.

Recommendation 7. Provide continuing nonfinancial support for the Continuously Operating Reference Station (CORS) at the University of California, Davis. This site can be of significant value in ongoing subsidence measurement operations.

The UCD CORS site is referenced to other CORS outside the county and can help to provide real-time elevations at the site in the NAVD88 reference frame. County agencies can use this site in ongoing subsidence measurement operations.

Recommendation 8. Investigate the establishment of a CORS site in the north county area. We estimate the cost of a CORS installation to be about $30,000 plus annual monitoring and maintenance costs; there are entities outside the county that may be willing to cooperate with the county in sharing these costs.

The 20-plus CORS sites that have been established in northern California have been established in areas to support earthquake hazard research. The site at UC Davis is the only one that adequately serves Yolo County for subsidence purposes. Our experience with establishing CORS sites as part of California's Earthquake Hazards Reduction Program indicate that obtaining land use permits for CORS establishment can be very time-consuming.

Experience in southern California has shown that educational institutions frequently make good partners for such an installation. A CORS site established in Dunnigan, couple with the two existing extensometers monitored by the California Department of Water Resources (in Zamora and on the Conaway Ranch), would provide an excellent basis for indications of

B5-925 (Cont.)

general subsidence trends in the county.

Recommendation 9. Consider the merits of encouraging the Federal Emergency Management Agency (FEMA) to adopt the results of the project in its flood plain mapping efforts.FEMA flood plain maps are required to be based on NAVD88 elevations supplemented by data from other Federal, state and local agencies.

The 1999 YOLO County GPS Subsidence Network will provide the most accurate and up-to-date NAVD88 elevations in the county. Affected personnel and agencies will have to fully understand the issues of flood plain mapping in subsiding areas. Subsidence could place previously unaffected properties in the flood plain, and could similarly result in the removal of some currently affected areas from requiring flood plain insurance.

Recommendation 10. Investigate other supporting technologies as an adjunct to the GPS Subsidence Network within Yolo County. (See Section VII.)
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VII. OTHER SUPPORTING TECHNOLOGIES

There are additional technologies that can provide information about change detection (subsidence).

These are: Synthetic Aperture Radar (SAR) and Light Detection And Ranging (LIDAR). Both technologies provide areal coverage, rather than discrete point coverage as with GPS. Both LIDAR and SAR have other uses beyond those for use as detectors of vertical changes.

Synthetic Aperture Radar (SAR) is a technology suited for change detection. The technology employs aircraft- or satellite-based sensors that monitor the ground and in successive passes can determine the change in elevation over large areas to about five centimeter accuracy. There are some issues that need to be resolved, especially in agricultural areas. The technology cannot distinguish between the ground and the tops of vegetation. In an extreme case, successive passes over a field lying fallow at the first observation and with a full mature crop of corn at the second would indicate the change of perhaps a couple of meters!

Light Detection And Ranging (LIDAR) is the optical analog of radar. The energy source for the system is laser. The system serves as a range finder, measuring the distance from the LIDAR platform, generally an aircraft, to the ground. It otherwise provides information and data similar to SAR for the purposes of monitoring vertical changes.

It should be remembered that both SAR and LIDAR are change detection technologies. They can apparently record the relative differences in an area over time, but cannot measure the absolute change without some ground-truth mechanism. That is where GPS is needed, whether or not SAR or LIDAR are employed. There are costs associated with each of these technologies (SAR and LIDAR).

In the early phases of their development and use, there may be

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(Cont.)

reid web design

B5-925
(Cont.)

Exhibit A

B5-925
(Cont.)

Dr. Clyde Thomas Williams
Professional Summary

EDUCATION

Geology and Zoology, 1958, University of Kansas, Lawrence, KS
Zoology, 1966, University of Kansas, Lawrence, KS
Paleontology-Geology and Zoology, 1974, University of California, Berkeley CA
Work Experiences – Major Companies and Organizations (1972-2009)
URS Research Co., San Mateo, CA
Engineering Science, Berkeley and Arcadia, CA and International Offices
Parson Corporation, Pasadena, CA, and International Offices
MHA Consultants, San Mateo, CA
ERM Corporation and Mott-Macdonald, Hong Kong, PRC
Hyder Consulting, Currie and Brown, and Harlund-Bartholmew & Assoc., Dubai, UAE
Dubai World, Nakheel, Jebel Ali Properties, and Neemtech, Dubai, UAE
NGOs/NFP - Sierra Club, LA and Golden Gate Audubon Society, NRDC, etc.

SPECIFIC WORK EXPERIENCES (Planning, Design, Construction Management, and Environmental Assessment and Implementation)

- Chevron, Shell, and ARCO Refineries, Scoping/ISs, EIRs, EH&S, Constr.Mgmt., and Environment Mitigation
- Chevron, Morro Bay-LA/SFBay Single Point Mooring Buoy and Statewide Pipelines
- US Navy, Elk Hills Reserve Production Development and Western US Transmission
- Corps of Engineers, New Orleans Baton Rouge Environmental Management Plan including oil/gas exploration, production, and processing
- Corps of Engineers and Port of Los Angeles, Port of LA-Midland Odessa Pipeline EIR/EIS
- China Light and Power, EIR for Black Point (Hong Kong) Power Station (5000MW),
- Gov't. Mongolia, Minist. Environ. & Nat.Res., Environmental Assessment Strengthening for major existing and proposed mining, hydroelectric, and coal-fuelled generation facilities
- Dubai Ports Authority, Salt Dome Gas Storage Planning, Design, and Assessment
- Hyder Consulting, Trans-Arabia Pipelines, Powerlines, and Railways Project Assessment
- So.Cal.Edis., High Voltage Tehachapi Transmission System, EIR
- LA City, LAFD, Emergency Response, Gas Blowout Control, and Site Remediation for Ross-Dress-for-Less/Fairfax Gas Explosion (1985 and 1988)
- British Petroleum Corp., Endicott-Arctic Ocean Oil Production and Transmission, Alaska
- CPUC, Divesture of Montebello and Playa Del Rey Gas Storage Facilities (So.Cal.GasCo.)
- CPUC, Divesture of SCE Gas and Hydroelectric Generation Facilities
- MHA, Availability, Recharge, and Recovery of Groundwater in upper Owens Valley
- Montebello Task Force, DOGGR Review, DEIR and Specific Plan for Montebello Oil Field
- LA County, PXP Community Standards District, EIR and Mitigation for Inglewood Oil Field
- LA City, Review of Playa Vista Gas Monitoring and Control System (Playa del Rey Field)
- LA City, Groundwater Recharge and Recovery of Hyperion Treated Sewage Effluent
- Dubai Municipality, Groundwater Recharge and Recovery of the Al Awir Treatment Plant

COUNTRIES OF WORK AND RESIDENCY

United States (Mainland, Hawaii, and Alaska), Peru, Kenya, Uganda, Egypt, Syria, Jordan, Saudi Arabia, Yemen, Oman, UAE, Qatar, Bahrain, Kuwait, Iran. Pakistan, Afghanistan, India, Sri Lanka, Malaysia, Thailand, Indonesia, Philippines, Marshall Islands, China, Hong Kong, Taiwan, Korea, Japan

B5-925 (Cont.)

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June 22, 2009

Mr. Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Re: Draft Environmental Impact Report for the Sacramento Natural Gas Storage Project, CPCN Application No. A.07-04-013 / SCH No. 2007112089

Dear Mr. Rosauer:

The RCC Group, LLC (RCC) is a Davis, California-based environmental consulting practice, with more than 25 years of professional experience in providing these services to the regulated community, with a focus on environmental management systems (EMS), hydrogeologic, watershed and environmental engineering studies.

As Managing Member of RCC and Principal Hydrogeologist, I have reviewed and now submit the following comments on the Draft Environmental Impact Report (DEIR) for the proposed Sacramento Natural Gas Storage, LLC (SNGS) underground natural gas storage project (Project), at the request of the Avondale Glen Elder Neighborhood Association (AGENA). It is my professional judgment, based upon over 25 years of experience in groundwater and watershed hydrology, as well as groundwater quality protection,[1] the DEIR dated April 2009 is substantially deficient. I have based my analysis on the information set forth in the DEIR and the supporting documents made available online by the PUC. I have also reviewed additional documents made available to me by AGENA and in the public domain in commenting on the DEIR.

Please find below, my comments on the adequacy of the DEIR and the Project's potential to cause **significant** environmental impacts.

B5-926

I. PROJECT DESCRIPTION

In summary, the information provided in Section D.7 is deficient with regard to the following: 1) it is incorrect in several important instances, 2) impacts on the groundwater resources occurring beneath the Project as well as to the existing and future groundwater quality are not adequately addressed, 3) conclusions are presented for which no clear rationale is provided or developed, and 4) the conclusions of significant impact to groundwater stated in selected sections are not consistent in related DEIR sections. The California Division of Oil, Gas and Geothermal Resources (CADOGGR) Well Map used for this technical review was accessed at: http://owr.conservation.ca.gov/Well/WellMap.aspx?apinum=06720227

B5-927

[1] Resume attached as Exhibit A.

As examples of these deficiencies, Section D.7.1.3 Groundwater devotes only five superficial paragraphs to this critically important subject matter, and of these five paragraphs, only one paragraph addresses the "conceptual" hydrogeology of the Project Area, and a second shorter paragraph mentions the ongoing soil and groundwater pollution activities at the nearby Depot Park, where the Project compressor station (and presumably underground pipelines) are proposed for construction. No mention of the critical importance of groundwater resource protection is provided in this Project Description, and there is no clear correlation to the "conceptual" geologic setting described in Section D.5.1.1 Regional Topographic and Geologic Setting earlier in this DEIR.

Section D.7.1.3 Groundwater paragraphs do not rise to the level of "sufficient" description of groundwater resources in the Project Area, nor do they constitute any form of hydrogeologic assessment or evaluation, which should have been prepared by a California Professional Geologist, to ensure the accurate research and presentation of this critically important subject matter. In fact, no historical or contemporary relevant technical references regarding groundwater resources and quality for Sacramento County were even cited in Section D.7.6 References, which would lead the reviewer to conclude that the DEIR has missed the opportunity to be a credible assessment of subsurface environmental conditions and impacts.

B5-927 (Cont.)

Section D.7.1.4 Water Quality is even less brief at 3 paragraphs, and no paragraphs even mention historical, or existing groundwater quality conditions in the Project Area. Crucial to the success of the Project should be the understanding of groundwater quality issues in this portion of Sacramento County, and the magnitude of impacts that Project Operations will have on existing groundwater quality conditions within the Project Area and vicinity.

Section D.7.3.2 Applicant Proposed Measures presented in Table D.7-3 do not provide a clear understanding of the complexity involved with complex groundwater monitoring plan design, the approval process, and actual implementation. Similarly, there is no discussion or recognition of the potential liability exposure that Project construction, or post-construction activities may have on existing soil and groundwater remediation activities in the Project Area and vicinity. For example, any "dewatering" or disruption of an ongoing groundwater investigation or remediation may allow the current responsible parties (such as US Army Corps of Engineers or private parties) to require SNGS, LLC to participate in the actual cost of remediation.

In summary, the discussion of groundwater hydrology and water quality resources and potential impacts on these resources, and their hydraulic relationship to surface water resources is incomplete. See below for details.

II. ENVIRONMENTAL ANALYSIS

a. Hydrology and Water Quality

B5-928

Specific comments identified in Section D.7 are presented below, in no particular order of importance.

On Page D.7-5. "Solana County" should be Solano County, although this may be a typographic error.

B5-929

On Page D.7-5., Groundwater reportedly "occurs in a shallow aquifer contained in the Modesto Formation or in a deeper aquifer consisting of the Mehrten Formation." The name "Modesto"

Formation cannot be a typographic error, but rather an error in researching groundwater resources of Sacramento County. The more correct response should be "the Laguna Formation" or a clarification thereof. As such, the information and limited data presented does not correlate with the Section D.5.1.1 Regional Topographic and Geologic Setting descriptions earlier in this DEIR. This text Section does not meet the standard of care required by a California Professional Geologist, but rather appears to be the result of an author in search of relevant discussion - without subject matter comprehension.

Historical and existing California Department of Water Resource data (such as DWR Bulletin 118-6, 1980) suggest the base of "fresh groundwater" (lower than 3000 µmhos at 25°C) may occur at depths of as much as 1200-feet below ground surface (bgs). There is no attempt to present a contemporary groundwater resource and quality profile between the target reservoir rock, and shallow groundwater, which the DEIR reports to be 65 to 75-feet bgs. Such a profile is would be an expectation of a technical document that intends to support a USEPA Class II injection well application, which is the technical focus of the proposed Project. **B5-929 (Cont.)**

On Pages D.7-5 and D.7-6., the discussion of "beneficial uses" is both superficial and incorrect, and does not reflect the fact that the Central Valley Office of the Regional Water Quality Control Board (CVRWQCB or Water Board) is the primary authority on groundwater quality as well as surface water quality. The Water Board manages the Basin Plan, which contains an anti-degradation policy that states that any activities or discharges to a water body (surface or groundwater regardless of depth) cannot further degrade water quality, regardless of the current condition. Consequently, any activities that degrade water quality due to Project activities will clearly impact groundwater resources and quality, and those impaired beneficial uses should be discussed. In my opinion, cumulative impacts of Project activities on existing and long-term groundwater quality are not addressed in the current DEIR, but should be addressed. **B5-930**

On Page D.7-13. Section D.7.3.1 provides 9 bullet points that outline impacts to water resources. Of these, the sixth bullet point is the most relevant to this Project, and is not adequately addressed with regard to understanding baseline conditions, and long-term responsibility for remediation of contaminated aquifers beneath the Project Area and vicinity. The text following the list does not adequately address all of the remaining relevant points. For example, dewatering is mentioned several times during the discussion of the Project construction (e.g. page D.7-18). However, nowhere in the Section is there a discussion of the potential liability exposure that Project construction dewatering, or post-construction activities may have on existing soil and groundwater remediation activities in the Project Area and vicinity. Whether data exist to definitively answer these questions, the specific impact of Project life-cycle activities on existing area groundwater contamination should be addressed and if no data are available, the method to obtain the data should be identified. **B5-931**

Selected Applicant Proposed Measures (APMs) provided in Table D.7-3 are insufficient to guarantee with reasonable certainty the quality of soil and shallow groundwater will be protected during and after construction. The following are examples of the underestimated complexity presented by the limited APMs described in Section D.7.3.2

- APM 12 indicates that all 'wash-down" activities will take place 100 ft from "sensitive areas". It does not consider the presence of hazardous wastes (as defined by California Department of Toxics Substances Control or DTSC), which may be generated as a result of actions such as removal of soil, water or hazardous fluids from equipment. The generation of hazardous wastes has unintended consequences such as their storage and disposal by qualified personnel. The generation of hazardous wastes could be the focus of APM 8; however, there is no clear recognition of this relationship. **B5-932**

- Similarly, in APM 8 or 12 there is no discussion regarding long-term maintenance of pipelines, other than to mention that "smart pigs" will be used in accordance with industry practices. What is not mentioned is the care that must be taken when pipeline maintenance devices such as "pigs" are removed from the pipeline and the need to implement best management practices (BMPs) to remove and dispose the hazardous concentrations of waste materials that are often encrusted on these devices when they are removed. Included in these hazardous residues are petroleum hydrocarbons and hazardous concentrations of metals, as well as "naturally occurring radioactive materials or NORM" as it is referred to by industry. The accidental release of any hazardous substances to facility paved or unpaved surface areas could be a long-term persistence impact in the local environment. If any hazardous substances materials are present in the soil, these substance could be moved to surface waters during major rain events leading to potential downstream adverse impacts on aquatic communities and human health. This potential impact must be analyzed. The preparation of any contingency plan, does not guarantee that the proper implementation by untrained or ill-prepared staff will not occur during the Project life-cycle. B5-933

- In APM 16, there is a statement that a "Bore Plan and Frac-Out Contingency Plan" will be prepared, which should "minimize any negative impact" should a "Frac-out" (well blowout and explosion or fire) occur. The California DOGGR requires the preparation of several critical safety documents such as these, but there may not be any requirements to coordinate these "blow-out" prevention plans with State and County first responders, as well as Hazmat personnel. As stated above, the preparation of any contingency plan, does not guarantee that the proper implementation by untrained or ill-prepared staff will not occur during the Project life-cycle. B5-934

- A brief mention of drilling fluids ("drilling mud") is found in APM 16, and then again on Page D.7-17. Drilling fluids are described in the DEIR as consisting of "bentonite and non-toxic detergents." The implication is that any release will be "non-toxic" and therefore cause no adverse impacts to aquatic communities or human health. Characterizing any compound, including drilling fluids as "non-toxic" is incorrect. "Non-toxic" drilling fluids were designed by the drilling industry in the 1980s to not use synthetic hydrocarbon compounds such as those being remediated at the former Sacramento Army Depot hazardous waste sites. Instead, they are formulated with other substances (such as metals), which are used to control the heat generated by the drill bit advancing in the subsurface deposits. Spent drilling fluids are considered a Class II "designated waste" by the CVRWQCB and require special management and disposal considerations. It should be recognized in the DEIR that as the drilling of any well (injection, production or monitoring) will encounter residual petroleum hydrocarbons in the deeper deposits, including the 'cap rock" and target gas zones. B5-935

Toxicity, as defined and codified in California Health & Safety code, is the degree to which a compound is poisonous or causes adverse impacts to individual organisms. Effects are determined by exposure and concentration of the compound. The release of drilling mud to surface waters would cause sedimentation and turbidity and adverse impacts on aquatic communities and human health as outlined in the text. This understanding of toxicity must be adopted in the DEIR and applied throughout the DEIR's analysis. B5-936

It is not clear how the conclusion was drawn that the implementation of APMs 8 and 16 would reduce impacts to surface or groundwater to less-than-significant. The methodology by which the conclusion was made is unexplained in the DEIR and needs to be outlined in detail. It appears that there is an assumption that implementation of APMs 8 and 16 will either prevent

movement of drilling mud to surface waters, or reduce the amount to a level such that no adverse impacts are expected. There is no rationale provided to support such a conclusion. Once a more complete risk assessment is developed, the method used to reach the conclusion should be explained and all supporting documentation provided so that each can be evaluated. In APM 8, neither the methodology nor the information on which the DEIR's conclusions are based are provided in or appended to the DEIR, thereby, making a full evaluation impossible. B5-936 (Cont.)

On Page D.7-22, Impact H-8 does focus on the potential for natural gas contamination of ground water, but does not adequately address the scope of investigation and monitoring for identifying and remediating contamination of any groundwater in the Project area. A groundwater monitoring plan may be a requirement of CADOGGR, but the impacts and monitoring requirements should also be reviewed by the CVRWQCB since the re-pressurization of the target zone may impact the movement and redistribution of saline and hyper-saline (salt concentrations greater than seawater) groundwater at depth. The California Central Valley RWQCB is under tremendous scrutiny to better control all historical and new sources of salts in groundwater of the state. B5-937

A statement at the bottom of page D.7-22 indicates that a detailed discussion of the potential for movement of natural gas to groundwater was provided in Section D.6 and a summary is provided in the following pages D.7-23 and D.7-24. The conclusion provided on page D.7-23 is that long-term impacts to groundwater at the Site and vicinity are significant. No summary was found for the potential movement of gas to surface waters. The discussion on Page D.6-25 is that the potential for contamination of surface waters by stored gas is low but present and therefore the effects could be significant. This statement should be reiterated in section D.7. B5-938

III. ALTERNATIVES ANALYSIS

With respect to the substantive areas analyzed above, other than the "No Project" Alternative, conclusions for Alternative Project Sites generally replicate the conclusions for the Florin Gas Field site, and rely on the same flawed APMs. The lack of a thorough review of potential impacts, lack of a transparent rationale for conclusions, and the failure to present in the DEIR, the detail of information on which conclusions were based, renders the conclusions made with respect to Alternative Sites inadequate and incomplete. B5-939

IV. OTHER CEQA CONSIDERATIONS

a. Significant Irreversible Environmental Changes

As outlined above, significant impairments to groundwater resources and quality are anticipated; however, these impairments from Project activities need to be addressed as the length of time to remediate contamination at depth is entirely unknown. In addition, what is known is that any investigation and remediation will be costly due to depths of investigations. B5-940

CONCLUSION

In conclusion, technical errors suggesting inadequate research or coordination with other DEIR Sections, the lack of a thorough review of potential Project impacts, the lack of a transparent rationale for conclusions of less-than-significant impacts, and the failure to make available to the public the information on, which groundwater resources and quality conclusions were based, render those same conclusions suspect and not credible. B5-941

RCC Group, LLC

Richard C. Casias, P.G.

Managing Member and Principal Scientist

RCC Group, LLC

RCC Group LLC

Richard C. Casias, P.G., R.E.A.

HIGHLIGHTS OF QUALIFICATIONS

The RCC Group, LLC (RCC) is a Davis, California based environmental consulting practice, with more than 25 years of professional experience in providing professional services with a focus on environmental management systems (EMS), hydrogeologic, watershed and environmental engineering studies. As RCC's Principal Scientist, Richard Casias' specific technical experience includes the preparation of environmental and groundwater resource investigations, water quality degradation analysis, subsurface wastewater disposal, EMS development and implementation (ISO14001), hazardous waste management, and waste minimization initiatives including pollution prevention (P2). Additionally, RCC conducts environmental compliance audits, and Phase I and II environmental assessments of commercial and agricultural property in accordance with ASTM and USEPA All Appropriate Inquiry (AAI) due-diligence standards. Mr. Casias also provides professional services regarding remedial investigation of soil and groundwater contamination in both urban and rural settings.

Mr. Casias has conducted environmental and water resource investigations primarily in the Western United States, including California, Hawaii, Nevada, Arizona, New Mexico, Texas, and to a limited extent in Utah and Washington State. His international experience includes the Northern Mexico state of Chihuahua, Costa Rica, Honduras and Guatemala.

Mr. Casias and his firm's Associates provides consulting services ranging from initial project conception and feasibility analysis to technical work plan preparation, complex site characterization, environmental data management and analysis, reporting and presentations before regulatory agencies and redevelopment authorities, as well as litigation support. He has considerable success in managing complex, multi-site environmental programs and budgets for the regulated community, including Sites with multiple responsible parties (PRPs). As Project Manager, Mr. Casias provides strategic guidance to Clients and redevelopment teams on Brownfields and similar distressed properties where environmental challenges may be present.

B5-942

- RCC is a California Certified Small Business Enterprise # 0037546, and certified by the City of Sacramento Office of Small Business Development as an Emerging and Small Business Enterprise, Vendor No. RCC5075000P

- Mr. Casias also maintains his California registrations as Professional Geologist and Registered Environmental Assessor Class I.

PROFESSIONAL PROFILE OF MR. CASIAS

B.S. Geology, 1980. University of California, Davis
Graduate-level course work, water chemistry, and groundwater flow modeling, University of California Davis, 1984
Graduate-level course work, hydrogeology, and watershed hydrology, University of Nevada/Reno, 1983

Professional Affiliations and Certifications

Cal/EPA OEHHA Hazardous Substance Cleanup Arbitration Panel Member since 1997 (ERAP)
Professional Geologist, California (License No. 7122, Exp. 01/31/10)

Registered Environmental Assessor, California - Class I (REA No. 04890), current since 1993
40-Hour OSHA Health & Safety Training (29 CFR 1910.120), current since 1985
8-Hour OSHA Health & Safety Annual Refresher, current for 2008-2009

Publications

Casias, R.C. "Origin and Components of Environmental Assessments." Presented at the Greater Bakersfield Chamber of Commerce Symposium entitled "Environmental Liability Risks, Disclosures, Obligations and Origins Associated with Real Property Transactions." Bakersfield, California. July 17, 1991.

Casias, R.C. and B.K. Schroth. "Application of Hydrogeological and Hydrogeochemical Principles in an Evaluation of Groundwater Resource Impacts." Presented at the Nevada Water Resources Association Annual Conference. Las Vegas, Nevada. February 1990.

Casias, R.C. and C.R. Foget. "Concepts of Immiscible Fluids Applied to Hydrocarbon Product Contamination of Shallow Aquifers." Annual Meeting of the Association of Engineering Geologists. San Diego, California. October 1983.

Ryder, R.A. and R.C. Casias. "Geothermal Wastewater Treatment and Disposal." *Proceedings of the 39th Annual Industrial Waste Conference.*" Purdue University. May 1984.

Walker, William J. and R.C. Casias. "Current Environmental Science Issues and Principles for Attorneys." Environmental Law Section–Review. Sacramento County Bar Association. Spring 1994.

Professional References

Project specific professional references for RCC are available upon request.

* * *

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B5-942 (Cont.)

Document No. B6

To:
Mr. Michael Rosauer
California Public Utilities Commission
c/o Dudek
605 Third Street
Encinitas, California 92024

Re:
PROPOSED SACRAMENTO NATURAL GAS STORAGE, LLC'S
SACRAMENTO NATURAL GAS PROJECT
CPCN APPLICATION NO. 07-04-013
STATE CLEARING HOUSE NO. 2007112089

To whom it may concern:

There is no certainty that once the underground Florin field is refilled with natural gas, gas will not leak into the aquifer or to the surface. The risks of this proposed project are significant and far outweigh possible benefits. Please do not award a CPCN for this project. **B6-1**

I am the president of Save the Foothills Coalition, an environmental and community advocacy group, part of whose mission is to protect small communities from industrial encroachment and the degradation it causes. **B6-2**

Sincerely,
Charles M. Ashley

President
www.savethefoothills.org
559-855-6376
31277 Watts Valley Road
Tollhouse, CA 93667

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Document No. B7

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JONATHAN WEISSGLASS

FRED H. ALTSHULER
OF COUNSEL

JAMIE L. CROOK
FELLOW

June 23, 2009

Via hand delivery

Michael Rosauer
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Re: Draft Environmental Impact Report for the Sacramento Natural Gas Storage Project, CPCN Application No. A.07-04-013 / SCH No. 2007112089

Dear Mr. Rosauer:

Please find enclosed the Comment Letter of AGENA, electronically copied on CD. This is an exact copy of the comment letter that was transmitted in a series of six emails, sent by Mr. Chris Butcher on June 22, 2009.

In total AGENA is submitting the following documents:

1) Comment Letter of AGENA
2) Exhibits to AGENA's Comment Letter
3) Dr. John O. Robertson, Ph.D., P.E., President (retired 2008), Earth Engineering, Inc., Fallbrook, California. (Attachment A to AGENA's Comment Letter.)
4) Dr. Roy J. Shlemon, Ph.D., Principal, Roy J. Shlemon & Associates, Inc., Newport, California. (Attachment B to AGENA's Comment Letter.)
5) Alvin J. Greenberg, Ph.D., FAIC, REA, QEP, President and Principal Toxicologist, Risk Science Associates, San Rafael, California. (Attachment C to AGENA's Comment Letter.)

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6) Dr. Michael L. Johnson, Ph.D., Principal and President, Michael L. Johnson, LLC, Davis, California; Associate Director, Center for Watershed Sciences, John Muir Institute of the Environment, University of California at Davis, Davis, California. (Attachment D to AGENA's Comment Letter.)
7) Dr. Clyde T. Williams, Ph.D., Consultant. (Attachment E to AGENA's Comment Letter.)
8) Richard C. Casias, P.G., R.E.A., RCC Group, LLC, Davis, California. (Attachment F to AGENA's Comment Letter.)

B7-1 (Cont.)

If you have any difficulty opening the documents, please contact Mr. Butcher:

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Thank you,

Jennifer Sung

Encl.
cc: Chris Butcher