Southern California Edison
Circle City and Mira Loma-Jefferson PTC A.15-12-007

DATA REQUEST SET A1512007 ED-SCE-03

To: CPUC
Prepared by: DeShawn Spencer
Title: Engineer - Electric System Planning
Dated: 06/16/2016

Question 01:

SCE has indicated that the Circle City Substation, an unstaffed and automated 66/12 kV low-profile 56 MVA substation, would have a potential capacity of 112 MYA at final build out. Please provide an estimate as to when (i.e., what year) it is anticipated that the Circle City Substation would be built out to a capacity of 112 MVA.

Response to Question 01:

SCE annually produces a 10-year load forecast projection. Within the current 10-year forecast, covering the years 2016-2025, SCE has not identified that Circle City Substation would be constructed to full build out (112 MVA). However, extending the forecast beyond 2025, SCE anticipates that Circle City Substation would be constructed to a capacity of 112 MVA between years 2034-2040. This forecasted year would be dependent on many variables including load growth, economic conditions, and changes in customer electrical use patterns.

Southern California Edison
Circle City and Mira Loma-Jefferson PTC A.15-12-007

DATA REQUEST SET A1512007 ED-SCE-03

To: CPUC
Prepared by: Pascual Garcia
Title: Construction Project Manager
Dated: 06/16/2016

Question 02:

SCE has requested that a range of new light weight steel (LWS) poles be described in the project description because the existing LWS poles that are proposed to be utilized by the Project may not meet pole loading requirements.

Given that the poles may need to be replaced as part of the Project, the CPUC will need to analyze that scenario in the EIR, and the GIS data, which is used to make the EIR figures, should be revised to reflect this scenario. Please provide revised GIS layers consistent with this pole replacement scenario. The EIR project description will indicate that the poles would be replaced, but will acknowledge that there is a potential that certain poles could be utilized by the Project.

Also, the current GIS data suggests that 26 existing poles would be used by the Project, but the range of new LWS poles requested by SCE includes an additional 22 poles. Does this suggest that SCE is confident that the existing poles to be used by the Project at Mira Loma Substation would not need to be replaced? In addition, at least one of the existing poles currently proposed to be used by the Project is a tubular steel pole (TSP) (e.g., pole 4787858E). Ifthat pole is replaced, would it be replaced by a TSP instead of a LWS pole?

Response to Question 02:

SCE has reviewed the GIS and determined that SCE plans to utilize 23 existing LWS poles; however, during final engineering, these existing poles may not meet pole loading requirements. Therefore, for purposes of the EIR analysis, the attached GIS has been revised to identify these existing poles as remove/replace. As described in Data Request in Data Request No. 2, Question 9, existing TSP 4787858E will not be replaced.

Southern California Edison
Circle City and Mira Loma-Jefferson PTC A.15-12-007

DATA REQUEST SET A1512007 ED-SCE-03

To: CPUC
Prepared by: Pascual Garcia
Title: Construction Project Manager
Dated: 06/16/2016

Question 03:

The second paragraph of PEA Section 3.1.3.4 indicates that eight wood poles would be removed and the existing distribution facilities would be transferred to new subtransmission line facilities. This appears to conflict with recent input by SCE that suggests that there would only be two wood poles replaced with LWS poles associated with the Source Line Routes, please clarify.

Response to Question 03:

The second paragraph of PEA Section 3.1.3.4 is correct; eight wood distribution poles will be removed and the existing distribution facilities would be transferred to the new subtransmission line facilities. The attached Table 2-4 from the draft DEIR Project Description has been revised. The GIS was revised to show these existing distribution facilities and is attached.

TABLE 2-4
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Circle City Substation					
Street encroachment (sewer, water, and driveway)	1	8,700 square feet	0.2	0.2	0.0
Street encroachment (possible storm drain extension)	1	17,800 square feet	0.4	0.4	0.0
Circle City Substation and Laydown Yard	1	485,580 square feet	19.5	8.42	11.08
Subtotal: Circle City Substation			**20.1**	**9.02**	**11.08**
Source Line Routes					
Guard structures	30	50 feet by 75 feet	2.6	2.6	0.0
Remove existing wood pole (1)	2	100 feet by 75 feet	0.3	0.3	<0
Remove existing wood pole and replace with LWS pole (1, 2, 3,)	~~2~~8	200 feet by 100 feet	~~.9~~3.7	~~.9~~3.7	0.0
Construct new wood pole (2, 12)	2	200 feet by 100 feet	0.9	0.9	<0.1
Construct new LWS pole (2, 12)	~~8~~186	200 feet by 100 feet	~~37.2~~39.5	~~36.4~~38.6	~~0.8~~0.9
Construct new TSP (2, 13)	25	200 feet by 100 feet	11.5	10.0	1.5
~~Construct new LWS pole (4,~~	~~13~~	~~200 feet by 100 feet~~	~~5.9~~	~~5.9~~	~~0.0~~
Construct new TSP (4,	5	200 feet by 100 feet	2.3	2.3	0.0
Conductor stringing set-up area – puller/tensioner (5)	19	600 feet by 100 feet	26.2	26.2	0.0
Install new underground vault (6, 15)	7	175 feet by 100 feet	2.8	2.8	< 0.1
Install new underground duct bank (6, 7, 17)	4,490	Linear feet by 15 feet wide	1.6	1.6	0.0
Access and spur roads (8, 9)	0.4	Linear miles by 18 feet wide	1.0	0.4	0.6
Material and equipment staging area (near Circle City Substation) (11)	1	5 acres	5.0	5.0	0.0
Subtotal: Source Lines			**~~97.0~~97.4**	**~~94.1~~94.4**	**3.0**

TABLE 2-4 (Continued)
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Mira Loma-Jefferson 66 kV Subtransmission Line					
Guard structures	60	50 feet by 75 feet	5.2	5.2	0.0
Remove existing wood pole (1)	2	100 feet by 75 feet	0.3	0.3	< 0

TABLE 2-4 (Continued)
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Remove existing wood pole and replace with LWS pole (1, 2, 3)	141	200 feet by 100 feet	64.7	64.7	0.0
Remove existing LWS pole and replace with LWS pole (1, 2, 3)	83	200 feet by 100 feet	38.1	38.1	0.0
Construct new LWS pole (2, 12)	18	200 feet by 100 feet	8.3	8.1	.2
Remove existing LWS pole and replace with TSP (1, 2, 13)	3	200 feet by 100 feet	1.4	1.2	.2
Construct new TSP (2, 13)	6	200 feet by 100 feet	2.8	2.4	0.4
Remove existing TSP and replace with TSP (1, 2, 13)	1	200 feet by 100 feet	.5	.5	0
Remove existing TSP and replace with LWS pole (1, 2, 3)	1	200 feet by 100 feet	.5	0.5	0
Remove existing wood pole and replace with TSP (1, 2, 13)	10	200 feet by 100 feet	4.6	4.1	0.5
Remove existing wood H-Frame and replace with LWS pole (1, 2, 3)	1	200 feet by 100 feet	0.5	0.5	0
Remove existing H-frame hybrid and replace with H-frame hybrid (1, 2, 3)	2	200 feet by 100 feet	0.9	0.9	0.0
Conductor stringing set-up area – puller/tensioner (5)	46	600 feet by 100 feet	63.36	63.36	0.0
Install new underground vault (6, 15)	1	175 feet by 100 feet	0.4	0.4	< 0.1
Install new underground duct bank (6, 7, 16)	420	Linear feet by 15 feet wide	0.1	0.1	0.0
Install new cable into existing vaults and duct bank (6, 7)	4	175 feet by 100 feet	1.6	1.6	0.0
Access and spur roads (8, 9)	5.8	Linear miles by 18 feet wide	12.6	0	12.6
Construction areas for access roads (10)	6.1	Linear miles by 10-foot-wide minimum buffer on each side	14.8	14.8	0.0
Material and equipment staging area (Hellman Avenue) (11)	1	5 acres	5.0	5.0	0.0
Mira Loma Vacant Lot – material and equipment staging area (11)	1	3.0 acres	3.0	3.0	0.0
Jefferson Substation - material and equipment staging area (11)	1	0.5 acre	0.5	0.5	0.0
Mira Loma Substation – material and equipment staging area (11)	1	3 acres	3.0	3.0	0.0
Subtotal Mira Loma-Jefferson 66 kV Subtransmission Line			**232.2**	**218.3**	**13.9**

TABLE 2-4 (Continued)
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Telecommunications					
Underground conduit installation	1,200 feet	Linear feet by 24 feet	0.7	0.7	0.0
Manhole installation	7	40 feet by 50 feet	0.3	0.3	0.0
Subtotal: Telecommunications			**1.0**	**1.0**	**0.0**
Distribution					
Install new underground vault	29	40 feet by 51 feet	1.36	1.36	< 0.1
Install new underground duct bank	15,840 feet	Linear feet by 32 feet	11.6	11.6	0.0
Remove existing pole	4	100 feet by 200 feet	1.84	1.84	0.0
Remove existing wood pole and replace with wood pole (12)	15	100 feet by 200 feet	6.89	6.89	0.0
Install wood pole (12)	6	100 feet by 200 feet	2.75	2.75	< 0.1
Subtotal: Distribution			**24.44**	**24.44**	**0.0**
Total			**~~374.74~~375.14**	**~~346.86~~347.16**	**27.98**

NOTES:

1 Includes the removal of existing conductor, teardown of existing structure, and removal of foundation (applicable to TSPs only) 2 feet below ground surface.
2 Includes structure assembly and erection, conductor installation, and foundation installation (applicable to TSPs only); area would be restored, after construction. A portion of the ROW beneath and within 25 feet of the structure would remain permanently disturbed and cleared of vegetation.
3 The structure would be replaced with the same or similar sized/type of structure; therefore, the disturbance is negligible or cancelled out.
4 Includes structure assembly and erection, conductor installation, and foundation installation (applicable to TSPs only) all located on Circle City Substation; property would be restored to a condition that meets the needs of the operation and maintenance of the Project.
5 Based on 6,400-foot conductor reel lengths, the number of circuits, and the route design.
6 Includes all underground civil construction activities associated with vault, duct bank, and cable installations; area would be restored and/or repaved after construction.
7 Based on 1,650-foot conductor reel lengths, the number of circuits, and the route design.
8 Based on the length of road in "miles x road width," which varies from 14 to 22 feet, curve-widening, intersections, and miscellaneous transitional areas.
9 May include, but is not limited to, areas for slope cuts/fills, and drainages outside of the 18-foot access road width.
10 Temporary disturbance for access road construction areas include a minimum of 10 feet of buffer on each side of the access roads to accommodate for BMPs and/or potential environmental resource protection devices during construction.
11 The disturbed acreage for the material storage yards would be restored upon completion of the Project.
12 Wood and LWS Pole Information: average depth 11 feet and average diameter 4 feet, earth removed per hole = 5.12 cubic yards, average surface area = 12.56 square feet per pole. Portion of ROW within 10 feet of a Light Weight Steel or Wood Pole, are to remain cleared of vegetation and would be permanently disturbed (approximately 0.01 acre per LWS and Wood Pole).
13 TSP Foundation Information: average depth 30 feet and average diameter 8 feet, earth removed per foundation = 55.82 cubic yards, average surface area = 50.24 square feet per TSP. Portion of ROW within 25 feet of a TSP are to remain cleared of vegetation and would be permanently disturbed (approximately 0.06 acre per TSP).
14 H-frame Hybrid: depth 18 feet and 5-foot-diameter, quantity two per H-frame, earth removed for footing = 18.17 cubic yards each, 36.34 cubic yards total; surface area = 19.63 square feet each, 39.26 square feet total. Portion of ROW within 25 feet of a Hybrid Pole are to remain cleared of vegetation and would be permanently disturbed (approximately 0.06 acre per Hybrid pole)
15 Underground Vault Excavation Information: average 12 feet deep, 12 feet wide, and 24 feet long = 128 cubic yards, average surface area = 288 square feet per vault.
16 Underground Duct Bank Trenching Information for Mira Loma-Jefferson and Source Line Routes: average 5 feet deep, 2 feet wide, and 420 feet long = 155.55 cubic yards, average surface area = 840 square feet.
17 Underground Duct Bank Trenching Information Source Line: average 5 feet deep, 2 feet wide, and 4,490 feet long = 1,662.96 cubic yards, average surface area = 8,980 square feet.

SOURCE: PEA Table 3-4 (SCE, 2015)

Southern California Edison
Circle City and Mira Loma-Jefferson PTC A.15-12-007

DATA REQUEST SET A1512007 ED-SCE-03

To: CPUC
Prepared by: Pascual Garcia
Title: Construction Project Manager
Dated: 06/16/2016

Question 04:

PEA Section 3.1.3.1 indicates a total of94 new LWS poles would be associated with the Source Lines, but SCE's recent input suggests that there would be 96 new LWS poles. Please clarify.

Response to Question 04:

PEA Section 3.1.3.1 is correct, there are 94 new LWS poles associated with the Source Lines. Table 2-4 from the draft DEIR Project Description has been revised and is attached.

TABLE 2-4
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Circle City Substation					
Street encroachment (sewer, water, and driveway)	1	8,700 square feet	0.2	0.2	0.0
Street encroachment (possible storm drain extension)	1	17,800 square feet	0.4	0.4	0.0
Circle City Substation and Laydown Yard	1	485,580 square feet	19.5	8.42	11.08
Subtotal: Circle City Substation			**20.1**	**9.02**	**11.08**
Source Line Routes					
Guard structures	30	50 feet by 75 feet	2.6	2.6	0.0
Remove existing wood pole (1)	2	100 feet by 75 feet	0.3	0.3	<0
Remove existing wood pole and replace with LWS pole (1, 2, 3,)	~~2~~8	200 feet by 100 feet	~~.9~~3.7	~~.9~~3.7	0.0
Construct new wood pole (2, 12)	2	200 feet by 100 feet	0.9	0.9	<0.1
Construct new LWS pole (2, 12)	~~8~~186	200 feet by 100 feet	~~37.2~~39.5	~~36.4~~38.6	~~0.8~~0.9
Construct new TSP (2, 13)	25	200 feet by 100 feet	11.5	10.0	1.5
~~Construct new LWS pole (4,~~	~~13~~	~~200 feet by 100 feet~~	~~5.9~~	~~5.9~~	~~0.0~~
Construct new TSP (4,	5	200 feet by 100 feet	2.3	2.3	0.0
Conductor stringing set-up area – puller/tensioner (5)	19	600 feet by 100 feet	26.2	26.2	0.0
Install new underground vault (6, 15)	7	175 feet by 100 feet	2.8	2.8	< 0.1
Install new underground duct bank (6, 7, 17)	4,490	Linear feet by 15 feet wide	1.6	1.6	0.0
Access and spur roads (8, 9)	0.4	Linear miles by 18 feet wide	1.0	0.4	0.6
Material and equipment staging area (near Circle City Substation) (11)	1	5 acres	5.0	5.0	0.0
Subtotal: Source Lines			**~~97.0~~97.4**	**~~94.1~~94.4**	**3.0**

TABLE 2-4 (Continued)
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Mira Loma-Jefferson 66 kV Subtransmission Line					
Guard structures	60	50 feet by 75 feet	5.2	5.2	0.0
Remove existing wood pole (1)	2	100 feet by 75 feet	0.3	0.3	< 0

TABLE 2-4 (Continued)
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Remove existing wood pole and replace with LWS pole (1, 2, 3)	141	200 feet by 100 feet	64.7	64.7	0.0
Remove existing LWS pole and replace with LWS pole (1, 2, 3)	83	200 feet by 100 feet	38.1	38.1	0.0
Construct new LWS pole (2, 12)	18	200 feet by 100 feet	8.3	8.1	.2
Remove existing LWS pole and replace with TSP (1, 2, 13)	3	200 feet by 100 feet	1.4	1.2	.2
Construct new TSP (2, 13)	6	200 feet by 100 feet	2.8	2.4	0.4
Remove existing TSP and replace with TSP (1, 2, 13)	1	200 feet by 100 feet	.5	.5	0
Remove existing TSP and replace with LWS pole (1, 2, 3)	1	200 feet by 100 feet	.5	0.5	0
Remove existing wood pole and replace with TSP (1, 2, 13)	10	200 feet by 100 feet	4.6	4.1	0.5
Remove existing wood H-Frame and replace with LWS pole (1, 2, 3)	1	200 feet by 100 feet	0.5	0.5	0
Remove existing H-frame hybrid and replace with H-frame hybrid (1, 2, 3)	2	200 feet by 100 feet	0.9	0.9	0.0
Conductor stringing set-up area – puller/tensioner (5)	46	600 feet by 100 feet	63.36	63.36	0.0
Install new underground vault (6, 15)	1	175 feet by 100 feet	0.4	0.4	< 0.1
Install new underground duct bank (6, 7, 16)	420	Linear feet by 15 feet wide	0.1	0.1	0.0
Install new cable into existing vaults and duct bank (6, 7)	4	175 feet by 100 feet	1.6	1.6	0.0
Access and spur roads (8, 9)	5.8	Linear miles by 18 feet wide	12.6	0	12.6
Construction areas for access roads (10)	6.1	Linear miles by 10-foot-wide minimum buffer on each side	14.8	14.8	0.0
Material and equipment staging area (Hellman Avenue) (11)	1	5 acres	5.0	5.0	0.0
Mira Loma Vacant Lot – material and equipment staging area (11)	1	3.0 acres	3.0	3.0	0.0
Jefferson Substation - material and equipment staging area (11)	1	0.5 acre	0.5	0.5	0.0
Mira Loma Substation – material and equipment staging area (11)	1	3 acres	3.0	3.0	0.0
Subtotal Mira Loma-Jefferson 66 kV Subtransmission Line			**232.2**	**218.3**	**13.9**

TABLE 2-4 (Continued)
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Telecommunications					
Underground conduit installation	1,200 feet	Linear feet by 24 feet	0.7	0.7	0.0
Manhole installation	7	40 feet by 50 feet	0.3	0.3	0.0
Subtotal: Telecommunications			**1.0**	**1.0**	**0.0**
Distribution					
Install new underground vault	29	40 feet by 51 feet	1.36	1.36	< 0.1
Install new underground duct bank	15,840 feet	Linear feet by 32 feet	11.6	11.6	0.0
Remove existing pole	4	100 feet by 200 feet	1.84	1.84	0.0
Remove existing wood pole and replace with wood pole (12)	15	100 feet by 200 feet	6.89	6.89	0.0
Install wood pole (12)	6	100 feet by 200 feet	2.75	2.75	< 0.1
Subtotal: Distribution			**24.44**	**24.44**	**0.0**
Total			**~~374.74~~375.14**	**~~346.86~~347.16**	**27.98**

NOTES:

1 Includes the removal of existing conductor, teardown of existing structure, and removal of foundation (applicable to TSPs only) 2 feet below ground surface.
2 Includes structure assembly and erection, conductor installation, and foundation installation (applicable to TSPs only); area would be restored, after construction. A portion of the ROW beneath and within 25 feet of the structure would remain permanently disturbed and cleared of vegetation.
3 The structure would be replaced with the same or similar sized/type of structure; therefore, the disturbance is negligible or cancelled out.
4 Includes structure assembly and erection, conductor installation, and foundation installation (applicable to TSPs only) all located on Circle City Substation; property would be restored to a condition that meets the needs of the operation and maintenance of the Project.
5 Based on 6,400-foot conductor reel lengths, the number of circuits, and the route design.
6 Includes all underground civil construction activities associated with vault, duct bank, and cable installations; area would be restored and/or repaved after construction.
7 Based on 1,650-foot conductor reel lengths, the number of circuits, and the route design.
8 Based on the length of road in "miles x road width," which varies from 14 to 22 feet, curve-widening, intersections, and miscellaneous transitional areas.
9 May include, but is not limited to, areas for slope cuts/fills, and drainages outside of the 18-foot access road width.
10 Temporary disturbance for access road construction areas include a minimum of 10 feet of buffer on each side of the access roads to accommodate for BMPs and/or potential environmental resource protection devices during construction.
11 The disturbed acreage for the material storage yards would be restored upon completion of the Project.
12 Wood and LWS Pole Information: average depth 11 feet and average diameter 4 feet, earth removed per hole = 5.12 cubic yards, average surface area = 12.56 square feet per pole. Portion of ROW within 10 feet of a Light Weight Steel or Wood Pole, are to remain cleared of vegetation and would be permanently disturbed (approximately 0.01 acre per LWS and Wood Pole).
13 TSP Foundation Information: average depth 30 feet and average diameter 8 feet, earth removed per foundation = 55.82 cubic yards, average surface area = 50.24 square feet per TSP. Portion of ROW within 25 feet of a TSP are to remain cleared of vegetation and would be permanently disturbed (approximately 0.06 acre per TSP).
14 H-frame Hybrid: depth 18 feet and 5-foot-diameter, quantity two per H-frame, earth removed for footing = 18.17 cubic yards each, 36.34 cubic yards total; surface area = 19.63 square feet each, 39.26 square feet total. Portion of ROW within 25 feet of a Hybrid Pole are to remain cleared of vegetation and would be permanently disturbed (approximately 0.06 acre per Hybrid pole)
15 Underground Vault Excavation Information: average 12 feet deep, 12 feet wide, and 24 feet long = 128 cubic yards, average surface area = 288 square feet per vault.
16 Underground Duct Bank Trenching Information for Mira Loma-Jefferson and Source Line Routes: average 5 feet deep, 2 feet wide, and 420 feet long = 155.55 cubic yards, average surface area = 840 square feet.
17 Underground Duct Bank Trenching Information Source Line: average 5 feet deep, 2 feet wide, and 4,490 feet long = 1,662.96 cubic yards, average surface area = 8,980 square feet.

SOURCE: PEA Table 3-4 (SCE, 2015)

Southern California Edison
Circle City and Mira Loma-Jefferson PTC A.15-12-007

DATA REQUEST SET A1512007 ED-SCE-03

To: CPUC
Prepared by: Pascual Garcia
Title: Construction Project Manager
Dated: 06/16/2016

Question 05:

The first paragraph of PEA Section 3.1.3.I indicates that the Pedley Lines would require two new wood poles; however, SCE's recent input suggests that there would be no new wood poles constructed associated with the Source Lines. Please clarify.

Response to Question 05:

The first paragraph of PEA Section 3.1.3.1 is correct. The Pedley Lines would require two new wood poles and are accounted for in the original GIS. Table 2-4 from the draft DEIR Project Description has been revised and is attached.

TABLE 2-4
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Circle City Substation					
Street encroachment (sewer, water, and driveway)	1	8,700 square feet	0.2	0.2	0.0
Street encroachment (possible storm drain extension)	1	17,800 square feet	0.4	0.4	0.0
Circle City Substation and Laydown Yard	1	485,580 square feet	19.5	8.42	11.08
Subtotal: Circle City Substation			**20.1**	**9.02**	**11.08**
Source Line Routes					
Guard structures	30	50 feet by 75 feet	2.6	2.6	0.0
Remove existing wood pole (1)	2	100 feet by 75 feet	0.3	0.3	<0
Remove existing wood pole and replace with LWS pole (1, 2, 3,)	~~2~~8	200 feet by 100 feet	~~.9~~3.7	~~.9~~3.7	0.0
Construct new wood pole (2, 12)	2	200 feet by 100 feet	0.9	0.9	<0.1
Construct new LWS pole (2, 12)	~~8~~186	200 feet by 100 feet	~~37.2~~39.5	~~36.4~~38.6	~~0.8~~0.9
Construct new TSP (2, 13)	25	200 feet by 100 feet	11.5	10.0	1.5
~~Construct new LWS pole (4,~~	~~13~~	~~200 feet by 100 feet~~	~~5.9~~	~~5.9~~	~~0.0~~
Construct new TSP (4,	5	200 feet by 100 feet	2.3	2.3	0.0
Conductor stringing set-up area – puller/tensioner (5)	19	600 feet by 100 feet	26.2	26.2	0.0
Install new underground vault (6, 15)	7	175 feet by 100 feet	2.8	2.8	< 0.1
Install new underground duct bank (6, 7, 17)	4,490	Linear feet by 15 feet wide	1.6	1.6	0.0
Access and spur roads (8, 9)	0.4	Linear miles by 18 feet wide	1.0	0.4	0.6
Material and equipment staging area (near Circle City Substation) (11)	1	5 acres	5.0	5.0	0.0
Subtotal: Source Lines			**~~97.0~~97.4**	**~~94.1~~94.4**	**3.0**

TABLE 2-4 (Continued)
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Mira Loma-Jefferson 66 kV Subtransmission Line					
Guard structures	60	50 feet by 75 feet	5.2	5.2	0.0
Remove existing wood pole (1)	2	100 feet by 75 feet	0.3	0.3	< 0

TABLE 2-4 (Continued)
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Remove existing wood pole and replace with LWS pole (1, 2, 3)	141	200 feet by 100 feet	64.7	64.7	0.0
Remove existing LWS pole and replace with LWS pole (1, 2, 3)	83	200 feet by 100 feet	38.1	38.1	0.0
Construct new LWS pole (2, 12)	18	200 feet by 100 feet	8.3	8.1	.2
Remove existing LWS pole and replace with TSP (1, 2, 13)	3	200 feet by 100 feet	1.4	1.2	.2
Construct new TSP (2, 13)	6	200 feet by 100 feet	2.8	2.4	0.4
Remove existing TSP and replace with TSP (1, 2, 13)	1	200 feet by 100 feet	.5	.5	0
Remove existing TSP and replace with LWS pole (1, 2, 3)	1	200 feet by 100 feet	.5	0.5	0
Remove existing wood pole and replace with TSP (1, 2, 13)	10	200 feet by 100 feet	4.6	4.1	0.5
Remove existing wood H-Frame and replace with LWS pole (1, 2, 3)	1	200 feet by 100 feet	0.5	0.5	0
Remove existing H-frame hybrid and replace with H-frame hybrid (1, 2, 3)	2	200 feet by 100 feet	0.9	0.9	0.0
Conductor stringing set-up area – puller/tensioner (5)	46	600 feet by 100 feet	63.36	63.36	0.0
Install new underground vault (6, 15)	1	175 feet by 100 feet	0.4	0.4	< 0.1
Install new underground duct bank (6, 7, 16)	420	Linear feet by 15 feet wide	0.1	0.1	0.0
Install new cable into existing vaults and duct bank (6, 7)	4	175 feet by 100 feet	1.6	1.6	0.0
Access and spur roads (8, 9)	5.8	Linear miles by 18 feet wide	12.6	0	12.6
Construction areas for access roads (10)	6.1	Linear miles by 10-foot-wide minimum buffer on each side	14.8	14.8	0.0
Material and equipment staging area (Hellman Avenue) (11)	1	5 acres	5.0	5.0	0.0
Mira Loma Vacant Lot – material and equipment staging area (11)	1	3.0 acres	3.0	3.0	0.0
Jefferson Substation - material and equipment staging area (11)	1	0.5 acre	0.5	0.5	0.0
Mira Loma Substation – material and equipment staging area (11)	1	3 acres	3.0	3.0	0.0
Subtotal Mira Loma-Jefferson 66 kV Subtransmission Line			**232.2**	**218.3**	**13.9**

TABLE 2-4 (Continued)
ESTIMATED TEMPORARY AND PERMANENT LAND DISTURBANCE

Facility or Activity	Quantity	Approximate Area Disturbed per Facility or Activity	Total Approximate Area to be Disturbed During Construction (acres)	Approximate Temporary Disturbance (acres)	Approximate Permanent Disturbance (acres)
Telecommunications					
Underground conduit installation	1,200 feet	Linear feet by 24 feet	0.7	0.7	0.0
Manhole installation	7	40 feet by 50 feet	0.3	0.3	0.0
Subtotal: Telecommunications			**1.0**	**1.0**	**0.0**
Distribution					
Install new underground vault	29	40 feet by 51 feet	1.36	1.36	< 0.1
Install new underground duct bank	15,840 feet	Linear feet by 32 feet	11.6	11.6	0.0
Remove existing pole	4	100 feet by 200 feet	1.84	1.84	0.0
Remove existing wood pole and replace with wood pole (12)	15	100 feet by 200 feet	6.89	6.89	0.0
Install wood pole (12)	6	100 feet by 200 feet	2.75	2.75	< 0.1
Subtotal: Distribution			**24.44**	**24.44**	**0.0**
Total			**~~374.74~~375.14**	**~~346.86~~347.16**	**27.98**

NOTES:

1 Includes the removal of existing conductor, teardown of existing structure, and removal of foundation (applicable to TSPs only) 2 feet below ground surface.
2 Includes structure assembly and erection, conductor installation, and foundation installation (applicable to TSPs only); area would be restored, after construction. A portion of the ROW beneath and within 25 feet of the structure would remain permanently disturbed and cleared of vegetation.
3 The structure would be replaced with the same or similar sized/type of structure; therefore, the disturbance is negligible or cancelled out.
4 Includes structure assembly and erection, conductor installation, and foundation installation (applicable to TSPs only) all located on Circle City Substation; property would be restored to a condition that meets the needs of the operation and maintenance of the Project.
5 Based on 6,400-foot conductor reel lengths, the number of circuits, and the route design.
6 Includes all underground civil construction activities associated with vault, duct bank, and cable installations; area would be restored and/or repaved after construction.
7 Based on 1,650-foot conductor reel lengths, the number of circuits, and the route design.
8 Based on the length of road in "miles x road width," which varies from 14 to 22 feet, curve-widening, intersections, and miscellaneous transitional areas.
9 May include, but is not limited to, areas for slope cuts/fills, and drainages outside of the 18-foot access road width.
10 Temporary disturbance for access road construction areas include a minimum of 10 feet of buffer on each side of the access roads to accommodate for BMPs and/or potential environmental resource protection devices during construction.
11 The disturbed acreage for the material storage yards would be restored upon completion of the Project.
12 Wood and LWS Pole Information: average depth 11 feet and average diameter 4 feet, earth removed per hole = 5.12 cubic yards, average surface area = 12.56 square feet per pole. Portion of ROW within 10 feet of a Light Weight Steel or Wood Pole, are to remain cleared of vegetation and would be permanently disturbed (approximately 0.01 acre per LWS and Wood Pole).
13 TSP Foundation Information: average depth 30 feet and average diameter 8 feet, earth removed per foundation = 55.82 cubic yards, average surface area = 50.24 square feet per TSP. Portion of ROW within 25 feet of a TSP are to remain cleared of vegetation and would be permanently disturbed (approximately 0.06 acre per TSP).
14 H-frame Hybrid: depth 18 feet and 5-foot-diameter, quantity two per H-frame, earth removed for footing = 18.17 cubic yards each, 36.34 cubic yards total; surface area = 19.63 square feet each, 39.26 square feet total. Portion of ROW within 25 feet of a Hybrid Pole are to remain cleared of vegetation and would be permanently disturbed (approximately 0.06 acre per Hybrid pole)
15 Underground Vault Excavation Information: average 12 feet deep, 12 feet wide, and 24 feet long = 128 cubic yards, average surface area = 288 square feet per vault.
16 Underground Duct Bank Trenching Information for Mira Loma-Jefferson and Source Line Routes: average 5 feet deep, 2 feet wide, and 420 feet long = 155.55 cubic yards, average surface area = 840 square feet.
17 Underground Duct Bank Trenching Information Source Line: average 5 feet deep, 2 feet wide, and 4,490 feet long = 1,662.96 cubic yards, average surface area = 8,980 square feet.

SOURCE: PEA Table 3-4 (SCE, 2015)

Southern California Edison
Circle City and Mira Loma-Jefferson PTC A.15-12-007

DATA REQUEST SET A1512007 ED-SCE-03

To: CPUC
Prepared by: Alisa Krizek
Title: Environmental Project Manager
Dated: 06/16/2016

Question 06:

The acreage identified in the text description of PEA Section 4.4.1.1 appears to conflict with the acre amounts described in PEA Table 4.4-7. Please clarify which are accurate for the wetland jurisdictional features and provide updated wetland delineation GIS data that represents the most current and accurate information if applicable.

Response to Question 06:

The acre amounts described in PEA Table 4.4-7 are accurate. The text description should be revised as follows:

"As summarized in Table 4.4-7: Potentially Jurisdictional Resources and Impacts and as depicted in Attachment 4.4-F: Jurisdictional Resources Map, the jurisdictional delineation identified a total of approximately ~~10.12~~ 15.5 acres of USACE-jurisdictional waters of the U.S. (approximately ~~1.13~~ 2.38 acres are wetlands and ~~8.99~~ 13.12 acres are non-wetland waters) and approximately ~~15.41~~ 21.53 acres of CDFW-jurisdictional waters in the survey area. The RWQCB-jurisdictional boundaries include those determined for the USACE under waters of the U.S., as well as isolated waters, which include the impoundments in the survey area. Therefore, a total of approximately ~~19.97~~ 25.36 acres under the jurisdiction of the RWQCB was identified to be present in the survey area."

The wetland delineation GIS provided with the PEA submittal represents the most current and accurate information.

Southern California Edison
Circle City and Mira Loma-Jefferson PTC A.15-12-007

DATA REQUEST SET A1512007 ED-SCE-03

To: CPUC
Prepared by: Alisa Krizek
Title: Environmental Project Manager
Dated: 06/16/2016

Question 07:

Please provide copies ofthe following:

- USACE wetland delineation determination letter (if approved);
- 2014/2015 wet season vernal pool fairy shrimp survey report;
- Delhi sands flower-loving fly 2015 and/or 2016 survey reports (if they were conducted for those years);
- Bat habitat assessment; and
- Any other special-status survey reports conducted in 2015 or 2016 (rare plants, riparian birds, etc.).

Response to Question 07:

Attached for your review is the 2014/2015 wet season fairy shrimp survey report, the Delhi sands flower-loving fly 2015 survey report, and the Bat habitat assessment.

SCE plans to submit jurisdictional waters permit applications with a preliminary jurisdictional delineation and does not plan to obtain an approved jurisdictional delineation.

The 2015/2016 wet season fairy shrimp surveys were completed on June 12th; the survey report is expected to be complete August 8th. Similar to previous surveys, no sensitive and regulated fairy shrimp species were detected during the 2015/2016 focused, protocol-level fairy shrimp surveys.

Riparian bird surveys are underway; the surveys are expected to be complete on August 2nd; results will be provided shortly thereafter.

Environmental
Intelligence, LLC

October 29, 2015

Zsolt Kahancza
Biologist
Corporate Environmental, Health, and Safety
Southern California Edison
1218 S. Fifth Ave.
Monrovia, CA 91016

SUBJECT: Methods, Results and Conclusions of the 2015 Delhi Sands Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*) Focused Survey for the Circle City Substation and Mira Loma-Jefferson Subtransmission Line Project.

SUMMARY: *Environmental Intelligence, LLC (EI) conducted focused surveys for the federally endangered Delhi Sands Flower-Loving Fly in 2015 on Southern California Edison's (SCE) proposed Circle City Substation and Mira Loma-Jefferson Subtransmission Line Project. The project contains approximately 48 acres of Delhi Sands Soil where conditions were determined to be appropriate for possible occupancy. Surveys were conducted twice a week between July 1 and September 18, 2015. No Delhi Sands Flower-Loving Fly's were encountered during the 2015 surveys.*

Dear Mr. Kahancza:

Environmental Intelligence, LLC (EI) has been retained by Southern California Edison (SCE) to conduct focused surveys for the Delhi Sands flower-loving fly (*Rhaphiomidas terminatus abdominalis*) on the Circle City Substation and Mira Loma-Jefferson Sub-transmission Line Project (Circle City Project). Surveys were conducted between July 1 and September 18, 2015 by biologists Jeremiah George (TE-837760-8) and Dale Powell (TE-006559-6). The Circle City Project preferred route contains approximately 48 acres of Delhi Sands flower-loving fly suitable habitat located within the incorporated cities of Eastvale in Riverside County and Ontario in San Bernardino County, California. This technical report, submitted on October 26, 2015 details the findings of the 2015 focused survey efforts.

BACKGROUND BIOLOGY

The Delhi Sands flower-loving fly (DSFLF) was listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) on September 23, 1993 (58 Federal Register 49881) and is protected under the provisions of the Endangered Species Act of 1973, as amended (ESA). The DSFLF is currently placed in the Dipteran (fly) family Mydidae (mydid flies) and is brown-orange in color, with dark brown ovoid spots on the dorsal surface of the abdomen. Adults are approximately one inch in size. This species is a rapid flyer with a long proboscis utilized for obtaining nectar in a manner superficially similar to a hummingbird. The peak adult flight period lasts on average several weeks during July, August, and September. The historic range of the DSFLF is estimated to have been approximately 40 square miles in northwestern Riverside and

southwestern San Bernardino counties (USFWS 1996). Habitat has been lost and fragmented by a variety of activities including agriculture, livestock operations, urbanization, sand-mining, illegal dumping, off-road vehicles, and non-native plant invasion. It is estimated that the DSFLF's present distribution is less than a few percent of its former range (USFWS 2008). Known current DSFLF populations occur in isolated pockets of habitat surrounded by urban development and invasive exotic vegetation (USFWS 1997, 2008).

DSFLF habitat is limited to areas that include Delhi fine sand. The USFWS has identified the presence of Delhi sand soils as the baseline criterion for the determination of suitable or potentially suitable habitat for this species (USFWS, 1996). Fine unconsolidated sand is required for oviposition (egg laying) as females must insert their abdomens deep into the sand during this process (Rogers and Mattoni 1993). All species of flower-loving flys (genus *Rhaphiomidas*) are restricted to sandy soils. The larval and pupal portion of the DSFLF's life cycle is largely unknown. Larval and pupal development takes place in the sandy soils. The length of time for larval development in DSFLF is unknown but captive-rearing experiments with the closely related Valley mydas fly (*Rhaphiomidas trochilus*) showed that species is capable of indeterminate development, molting two to three time per year for at least three years prior to pupation (Osborne and Ballmer in USFWS 2008). The specifics of the larval diet are unknown. Appropriate vegetative cover is often sparse (0 to 50% cover) to absent in blowout areas of dune formations and sand pits. However, populations have been found within habitat that has a higher cover of nonnative annuals. Plant species present at most occupied DSFLF habitat includes California buckwheat (*Eriogonum fasciculatum* var. *polifolium*), California croton (*Croton californicus*), and telegraph weed (*Heterotheca grandiflora*). Areas with known extant, historically documented DSFLF or presumed appropriate habitat within the range of Delhi fine sands have been divided into three recovery units the Colton, Jurupa, and Ontario Recovery Units. The Circle City project is within the Ontario Recovery Unit.

PROJECT LOCATION & DESCRIPTION

The Circle City Substation and Mira Loma-Jefferson Sub-transmission Line Project (Circle City Project) preferred route contains approximately 48 acres of Delhi Sands flower-loving fly suitable habitat located in Township 2S and 3S, Range 7W, Sections 12 and 13 of the United States Geological Survey (USGS) Guasti and Sections 13, 23, 24, and 2 of Corona North 7.5-minute series quadrangle maps. The Circle City Project is located within the historic range of the Delhi Sands fly and lies within the Ontario Recovery Unit as established in the Final Recovery Plan for The Delhi Sands Flower-Loving Fly (USFWS 1997). The project area is generally located south of Interstate 10, west of Milliken/Hamner Avenue, east of Archibald Avenue, and north of Limonite Avenue in the cities of Eastvale in Riverside County and Ontario in San Bernardino County, California (Exhibit 1-3).

Southern California Edison proposes to construct a new 66/12 kilovolt (KV) distribution substation (Circle City Substation) covering approximately 4.0 acres of an 11.15-acre parcel located in the City of Corona. The Circle City Substation would be an unstaffed, automated 56- megavolt-ampere (MVA), low-profile substation with a potential capacity of 112 MVA at final build out. New fiber optic cable and communication equipment would be included to connect the Circle City Substation to SCE's existing telecommunication system. In addition, SCE proposes to construct four new 66 kV source line segments. Two source line segments, in a double-circuit configuration, would be a combination of overhead and underground construction. Each line would be approximately 1.2 miles in length and would be created by connecting to the existing Chase-Corona-Databank 66 kV

sub-transmission line to form the new Circle City Corona No. 2 66 kV sub-transmission line and the new Chase-Circle City-Databank 66 kV sub transmission lines. Two new source line segments, in a double-circuit configuration, would be a combination of overhead and underground construction. Each would be approximately 3.5 miles in length and would be created by connecting to the existing Mira Loma-Corona-Pedley 66 kV sub-transmission line to form the new Mira Loma-Circle City- Pedley and Circle City-Corona No. 1 66 kV sub-transmission lines.

The project would also include construction of approximately six new 12 kV distribution circuit getaways and the construction of a new 66 kV sub-transmission line. This line, which would be a combination of both overhead and underground construction, would be approximately 10.7 miles in length and would be constructed from the existing Mira Loma Substation to a location adjacent to the existing Corona Substation. Upgrades to the existing Mira Loma Substation would be provided to accommodate the new Mira Loma-Jefferson 66 kV sub-transmission line. The Circle City Project is located in Township 2S and 3S, Range 7W, Sections 12 and 13 of the USGS Guasti and Sections 13 and 23 of the Corona North 7.5-minute series quadrangle maps (APN 021817119, 021817110, 021817118, 021821127, 021821117, 021821124, 021825106, 021833129, 021833130, 021833118, 021833112, 021832117, 021803304, 021803313, 021832130, 021805201, 021805211, 021832125).

METHODS

Site Description

Soils on the surveyed portions of the Circle City Project are primarily mapped Delhi Series Soils (Exhibit 2). Two DSFLF "indicator species", annual bur-sage and telegraph weed are present in small numbers. The majority of the survey areas are heavily disturbed and dominated by non-native vegetation, including golden crownbeard (*Verbesina encelioides*), ripgut brome (*Bromus diandrus*), barley (*Hordeum* sp.) and Russian thistle (*Salsola tragus*). Topography is relatively flat, draining to the south or southwest. Elevation ranges from 450 to 800 feet above mean sea level. Recent disturbances to the survey areas includes disking, general weed abatement, livestock operations, agriculture, road construction and residential-commercial development.

Approximately 48 acres were surveyed for DSFLF during the 2015 season. The survey areas measured between a few acres and 15 acres. The survey area included a 300 foot right-of-way (ROW) around all proposed project work areas.

The northern survey area is primarily located around the perimeter of the Mira Loma substation and extends slightly northeast and southwest along the transmission ROW (Exhibit 2, pg.1). Land use in the area consists of agriculture and road expansion construction of Hamner Avenue and extension of Cantu-Galleano Ranch Road. Habitat on-site consists of mowed, ruderal vegetation dominated by non-native grasses, golden crownbeard and Russian thistle (Exhibit 2, pg.1; Exhibit 3; pg 1 and Appendix A, photos 1-9).

The central survey areas are located just north of the intersection of Eucalyptus Avenue and Sumner Road and extends south as three patches of potential habitat to Remington Avenue. Land use in the area consists of active livestock feedlots at the northern end and the southern half is actively being graded for eventual home building (Exhibit 2, pg. 2-3; Exhibit 3, pg. 2-3 and Appendix A, photos 9-11).

The southern survey area is associated with the partially channelized Mill Creek. The area was used for agriculture until relatively recently and appears to have had a number of structures onsite

(Google Earth©, imaging for December 2006). The structures appear to have been removed in the last 5 years. The area now is owned by the County of Riverside under the Riverside County Flood Control District. The area has virtually no vegetation apparently from ongoing vegetation management. The site was observed being treated with herbicide twice during survey visits (Exhibit 2, pg.4; Exhibit 3, pg 4 and Appendix A, photos 12-13).

Focused Survey

Focused surveys were conducted according to USFWS protocol for DSFLF surveys (USFWS 1996, 2004). Interim survey guidelines for the Delhi Sands flower-loving fly recommend that surveys be conducted by federally permitted biologists on nonconsecutive days between July 1 and September 20 between the hours of 1000 and 1400 Pacific Daylight Time (USFWS 1997, 2004). No more than 50 acres per day can be surveyed by one biologist (USFWS 1996, 2008).

Since the establishment of interim protocol guidelines in 1996, adult DSFLF flies have been observed during the month of July, this prompted a revised recommended survey start date of July 1 (USFWS 2004). USFWS now asks that surveys begin no later than the first week of July and conclude the week of September 20. Delhi Sands flower-loving fly surveys at the Circle City Project were conducted according to current USFWS protocol.

The Circle City Project was surveyed twice a week, for a total of 24 surveys between July 1 and September 18, 2015 between the hours of 1000 and 1400. Transects were walked slowly through the survey area in an effort to detect active or resting DSFLF and post-eclosion pupal cases (hatched). Site photographs were taken to record site conditions and a subset of these photos are appended to this report (Appendix A). A comprehensive plant, invertebrate, and wildlife inventory was not conducted during the focused survey effort; however, all wildlife and vascular plant species identified on the site incidental to conducting focused DSFLF surveys were recorded and are appended to this report (Appendices B & C). Detailed daily survey information is summarized in Table 1.

TABLE I. DSFLF SURVEY DATES, TIMES, AND WEATHER CONDITIONS

Date	Survey Hours	Biologist (s)*	Weather Conditions (Start)	Weather Conditions (End)
1 July	1000 – 1400	JG, MP	65 % clouds, wind 3-5 mph, 86° F	25 % clouds, wind2-4 mph, 93° F
2 July	1000 – 1400	DP, MP	5 % clouds, 3-5 mph, 80° F	clear, wind 2-4 mph, 91° F
7 July	1000 – 1400	JG, MP	80 % clouds, calm, 73° F	clear, wind 3-5 mph, 85° F
9 July	1000 – 1400	JG, MP	90 % clouds, wind 1-3 mph, 74 ° F	clear, wind 3-6 mph, 81° F
14 July	1000 – 1400	JG, SR	clear, wind 2-4 mph, 77° F	clear, wind 3-6 mph, 91° F
16 July	1000 – 1400	JG, SR	clear, wind 1-3mph, 77° F	clear, wind 3-6 mph, 89° F
20 July	1000 – 1400	JG, SR	80 % clouds, wind 2-7 mph, 77° F	50 % clouds, wind 4-6 mph, 85° F
23 July	1000 – 1400	JG, SR	15 % clouds, calm, 74° F	Clear, calm, 86° F
28 July	1000 – 1400	JG, SR	clear, winds 2-4 mph, 73° F	clear, wind 3-5 mph, 85° F
30 July	1000 – 1400	JG, SR	40% clouds, wind 2-4 mph, 83° F	clear, wind 4-6 mph, 95° F
4 August	1000 – 1400	JG	clear, calm, 79° F	5 % cloud cover, winds 4-6 mph, 91° F
6 August	1000 – 1400	JG, JR	clear, calm, 87° F	clear, wind 2-4 mph, 99° F
10 August	1000 – 1400	JG, JK	clear, calm, 71° F	clear, wind 2-4 mph, 86° F
12 August	1000 – 1400	JG	clear, wind 2-4 mph, 80° F	clear, wind 5-7 mph, 94° F
18 August	1000 – 1400	DP, JK	clear, wind 1-3 mph, 84° F	clear, 4-6 mph, 93° F
21 August	1000 – 1400	JG, TR	clear, calm, 78° F	clear, wind 4-6 mph, 91° F
25 August	1000 – 1400	JG, JR	clear, calm, 83° F	clear, wind 5-7 mph, 98° F
1, September	1000 – 1400	JG, SD	clear, wind 3-5 mph,76° F	clear, 3-5mph, 84° F
4 September	1000 – 1400	JG, MP	clear, calm , 88° F	clear, 2-4 wind 2-4 mph, 97° F
8 September	1000 – 1400	JG, MP	5 % clouds, calm, 93° F	40 % clouds, calm, 102° F
10 September	1000 – 1400	JG, MP	clear, wind 3-5 mph, 78° F	5 % clouds, wind 3-5 mph, 85° F
16 September	1000 – 1400	JG, MP	15 % clouds, wind 1-3 mph, 72° F	Clear, wind 4-6 mph 78° F
18 September	1000 – 1400	JG, MP	clear, calm, 77° F	clear, wind 4-6 mph, 89° F

*Biologist(s): Jeremiah N. George (JG), Dale Powell (DP), Mitch Provance (MP), Scott Duff (SD), Steven Ricchiazzi_(SR), James Raisco_(JR), Jennifer Kendrick (JK), Travis Marella (TM)

RESULTS

The Delhi Sands Flower Loving Fly was not detected during the 2015 focused survey season. Daily survey temperatures averaged 89 degrees (Fahrenheit), with starting temperatures averaging 79 degrees and ending temperatures averaging 97 degrees. The minimum starting temperature was 71 degrees, and the maximum ending temperature was 102 degrees. Daily wind speeds averaged 4-5 miles per hour. Daily cloud cover estimates averaged 9-10 percent, with starting cloud cover averaging 15-18 percent, and ending cloud cover averaging 5 percent. No precipitation was recorded during days DSFLF surveys were conducted. However, two rain events forced our original survey schedule to be modified. A summary of survey dates, times, weather conditions,

surveyor and survey results, is provided in Table 1.

PREVIOUS SURVEYS

Previous protocol surveys have been conducted on the Circle City Project alignment from 2010-2014 without any detection of DSFLF (Bonterra 2010, 2011; Chambers Group, Inc. 2012, 2013 and 2014). A review of previous survey reports shows that all potential habitat on the alignment has been consistently surveyed and all previous survey efforts has been virtually identical. The only difference in survey coverage is a decrease in survey acreage due primarily to housing and associated infrastructure development between 2010-2014 which has rendered some previously surveyed areas uninhabitable for the DSFLF (see below).

LAND USE CHANGES

Over the last 2-3 years a number of areas previously included in surveys for DSFLF have been developed as residential communities or seen extensive site grading and modification for pending development as part of the planned communities of The Preserve at Chino and Ontario Ranch. Residential development has been completed on the west side of Hellman Avenue between Kimbell Avenue south of the intersection of Hellman and Pine Avenues, removing approximately 30 acres surveyed in previous years (see Bonterra 2010, 2011, for previous survey areas). The completion of the Park Place component of Ontario Ranch north of Bellgrave Avenue between Archibald and Sumner Avenues has removed some acreage surveyed as recently as 2014 (Chambers Group, Inc. 2014). Work on the extension of Cantu Galleano Ranch Road west of Hamner Avenue and site grading and construction for the New Haven component of Ontario Ranch was ongoing over the 2015 survey season. Completed and ongoing work on this component of Ontario Ranch also removed acreage previously surveyed (Chambers Group, Inc. 2012, 2013 and 2014).

CONCLUSIONS

Based on the 2015 survey and previous surveys conducted from 2010-2014, the DSFLF appears absent from the project alignment. Surface and subsurface soil conditions remain appropriate in some areas but the entirety of the alignment has suffered major disturbances including a long history of agricultural use and recent urbanization. A number of plant indicator species of appropriate habitat for DSFLF such as California buckwheat and California croton found during earlier surveys were not relocated during the 2015 surveys. It appears from previous survey reports that numerous areas of the ROW and associated survey areas have seen extensive disturbance since 2010. The only general sand obligate invertebrate species observed over the course of the surveys was a species of mydid fly (*Nemomydas pantherinus*) (Appendix 1, photo 14). This species of mydid fly has a patchy but large distribution in the southwest where sandy substrates are present, it has been observed to persist in heavily disturbed sites on Delhi sand soils after most other native invertebrate species associated with sandy soils have been extirpated (personal observation J. George). No other sand-obligate invertebrates characteristic or endemic to the Delhi sand dune system were documented. Species noticeably absent include the convergent apiocerid fly (*Apiocera convergens*), unnamed Jerusalem cricket (*Stenopelmatus* sp.) and the Delhi sands metalmark (*Apodemia virgulti nigrescens*).

Sincerely,
Jeremiah N. George

ENVIRONMENTAL INTELLIGENCE

Attachments

Exhibit 1: Project Location USGS Topographic Map
Exhibit 2: Delhi Soils and Survey Area Map
Exhibit 3: Photo Location Map

Appendix A: Representative Photographs
Appendix B: Floral Compendium
Appendix C: Faunal Compendium
Appendix D: Field Notes

LITERATURE CITED

Dicus Biological (For Chambers Group, Inc.) 2012. Delhi Sands Flower-Loving Fly (Rhaphiomidas terminates abdominalis) Focused Survey and Technical Report for the Circle City Substation and Mira Loma-Jefferson Sub-transmission Line Project.

Dicus Biological (For Chambers Group, Inc.)2013. Delhi Sands Flower-Loving Fly (Rhaphiomidas terminates abdominalis) Focused Survey and Technical Report for the Circle City Substation and Mira Loma-Jefferson Sub-transmission Line Project.

Dicus Biological (For Chambers Group, Inc.) 2014. Delhi Sands Flower-Loving Fly (Rhaphiomidas terminates abdominalis) Focused Survey and Technical Report for the Circle City Substation and Mira Loma-Jefferson Sub-transmission Line Project.

EnviroPlus Consulting (For Bonterra Inc.) 2010. Delhi Sands Flower-loving Fly (Rhaphiomidas terminatus abdominalis) Focused Adult Survey at Southern California Edison's Circle City Project in San Bernardino and Riverside Counties, California.

EnviroPlus Consulting (For Bonterra Inc.) 2011. Delhi Sands Flower-loving Fly (Rhaphiomidas terminatus abdominalis) Focused Adult Survey at Southern California Edison's Circle City Project in San Bernardino and Riverside Counties, California.

George, J.N. & Mattoni, R. 2006. Rhaphiomidas terminatus terminatus Cazier, 1985 (Diptera: Mydidae): Notes on the rediscovery and conservation biology of a presumed extinct species. The Pan-Pacific Entomologist, 82(1): 30 –35.

Kingsley, K.J. 1996. Behavior of the Delhi sands flower-loving fly (Diptera: Mydidae), a little-known endangered species. Annals of the Entomological Society of America, 89(6), 883–891.

Kingsley, K.J. 2002. Population dynamics, resource use, and conservation needs of the delhi sands flower-loving fly (Rhaphiomidas terminatus abdominalis Cazier) (Diptera: Mydidae), an Endangered Species. Journal of Insect Conservation, 6(2), 93–101.

Rogers, R. and R. Mattoni 1993. Observations on the natural history and conservation biology of the giant flower loving flies, Rhaphiomidas (Diptera: Apioceridae). Dipterological Research 4(l-2):21-34.

U. S. Fish & Wildlife Service 1993. Listing of the Delhi Sands Flower-Loving Fly. 58 Federal Register 49881.

United States Fish and Wildlife Service 1996. Interim General Survey Guidelines for the Delhi Sands Flower-Loving Fly.

United States Fish and Wildlife Service 1997. Delhi sands flower-loving fly (Rhaphiomidas terminatus abdominalis) recovery plan. U.S. Fish & Wildlife Service, Portland, Oregon. 1-51.

United States Fish and Wildlife Service 2004. Revised interim General Survey Guidelines for the Delhi Sands Flower-Loving Fly.

U. S. Fish & Wildlife Service 2006. Delhi Sands Flower-loving Fly (Rhaphiomidas terminatus abdominalis) 5-Year Review: Summary and Evaluation. Carlsbad Fish and Wildlife Office Carlsbad, California. 1-29.

Certification Statement for DSFLF Surveys Conducted for the
Circle City Substation and Mira Loma-Jefferson Sub-Transmission Line Project in 2015

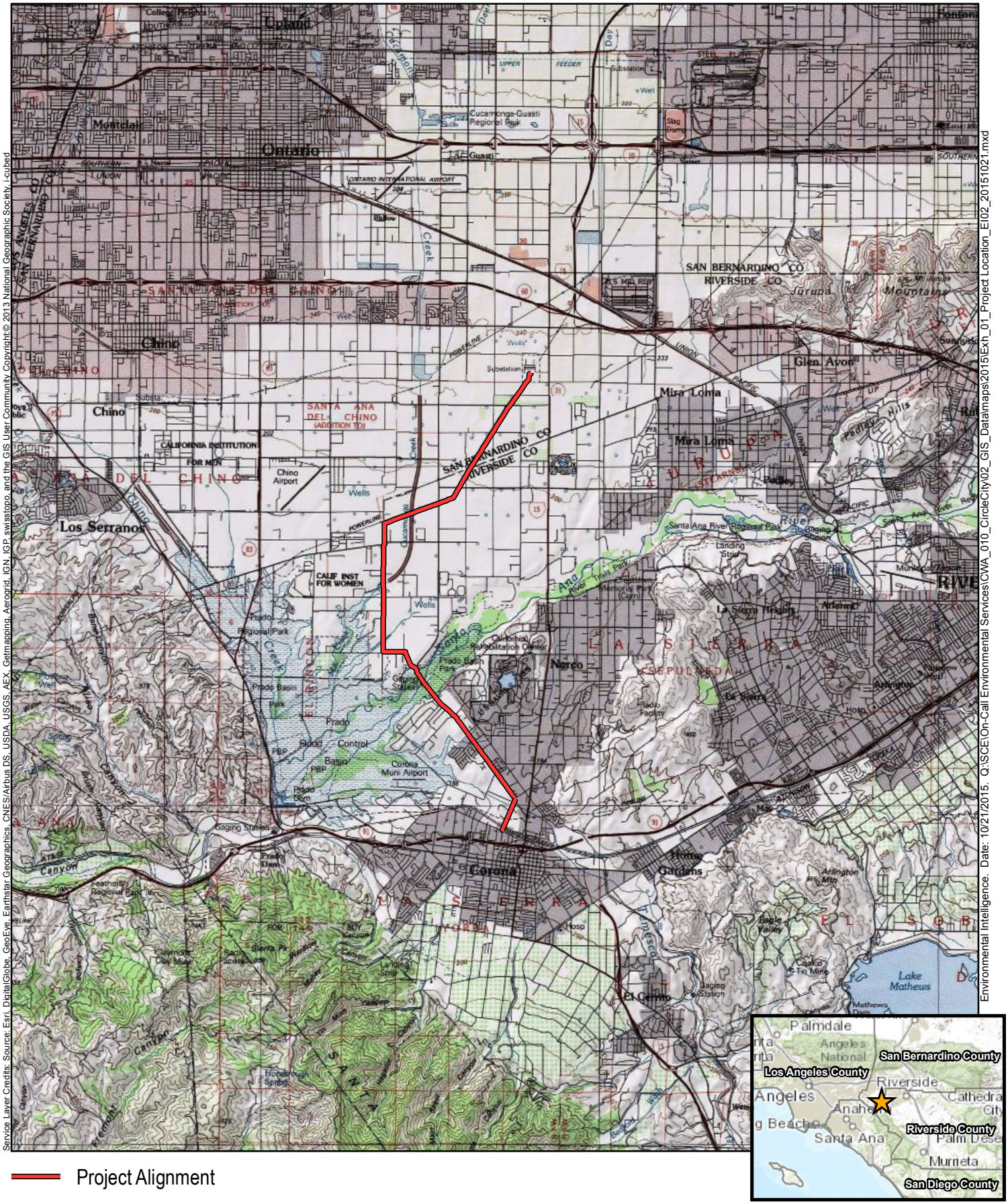
I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Jeremiah N. George

	TE-837760-8	10/29/2015
Surveyor	Permit #	Date

Dale Powell

	TE-006559-6	10/29/2015
Surveyor	Permit #	Date



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP swisstopo, and the GIS User Community Copyright:© 2013 National Geographic Society, i-cubed

Environmental Intelligence. Date: 10/21/2015. Q:\SCE\On-Call Environmental Services\CWA_010_CircleCity\02_GIS_Datamaps\2015\Exh_01_Project Location_EI02_20151021.mxd

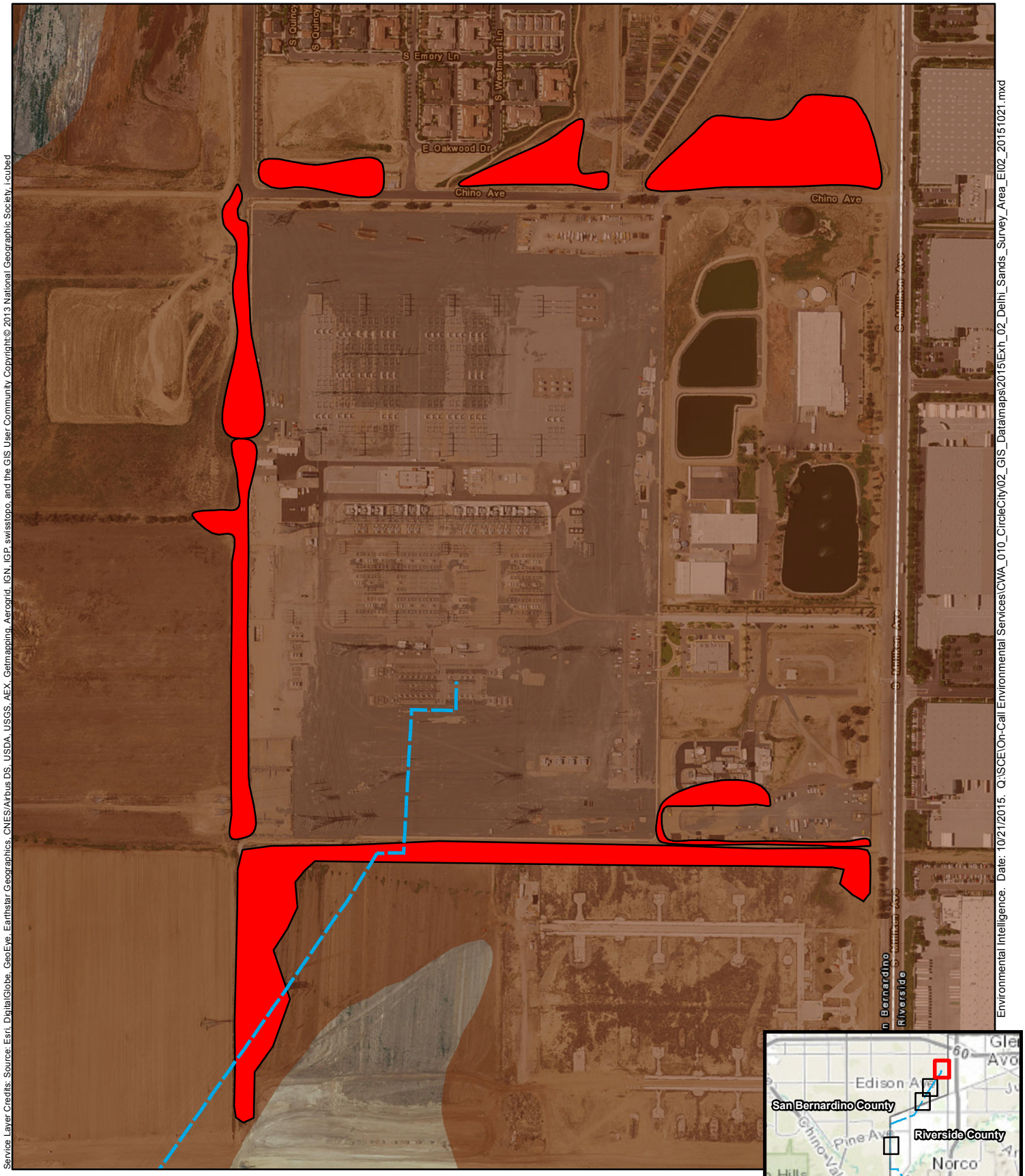
Project Alignment

0 1 2 4 Miles

1:150,000 1 in = 2 miles

Exhibit 1: Project Location

Circle City Project | Riverside and San Bernardino County, CA



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Copyright:© 2013 National Geographic Society, i-cubed

Environmental Intelligence. Date: 10/21/2015. Q:\SCE\On-Call Environmental Services\CWA_010_CircleCity\02_GIS_Data\maps\2015\Exh_02_Delhi_Sands_Survey_Area_EI02_20151021.mxd

Subtransmission Route Alternative 1

Delhi Sands Survey Area

Delhi Series Soil (NRCS 2015)

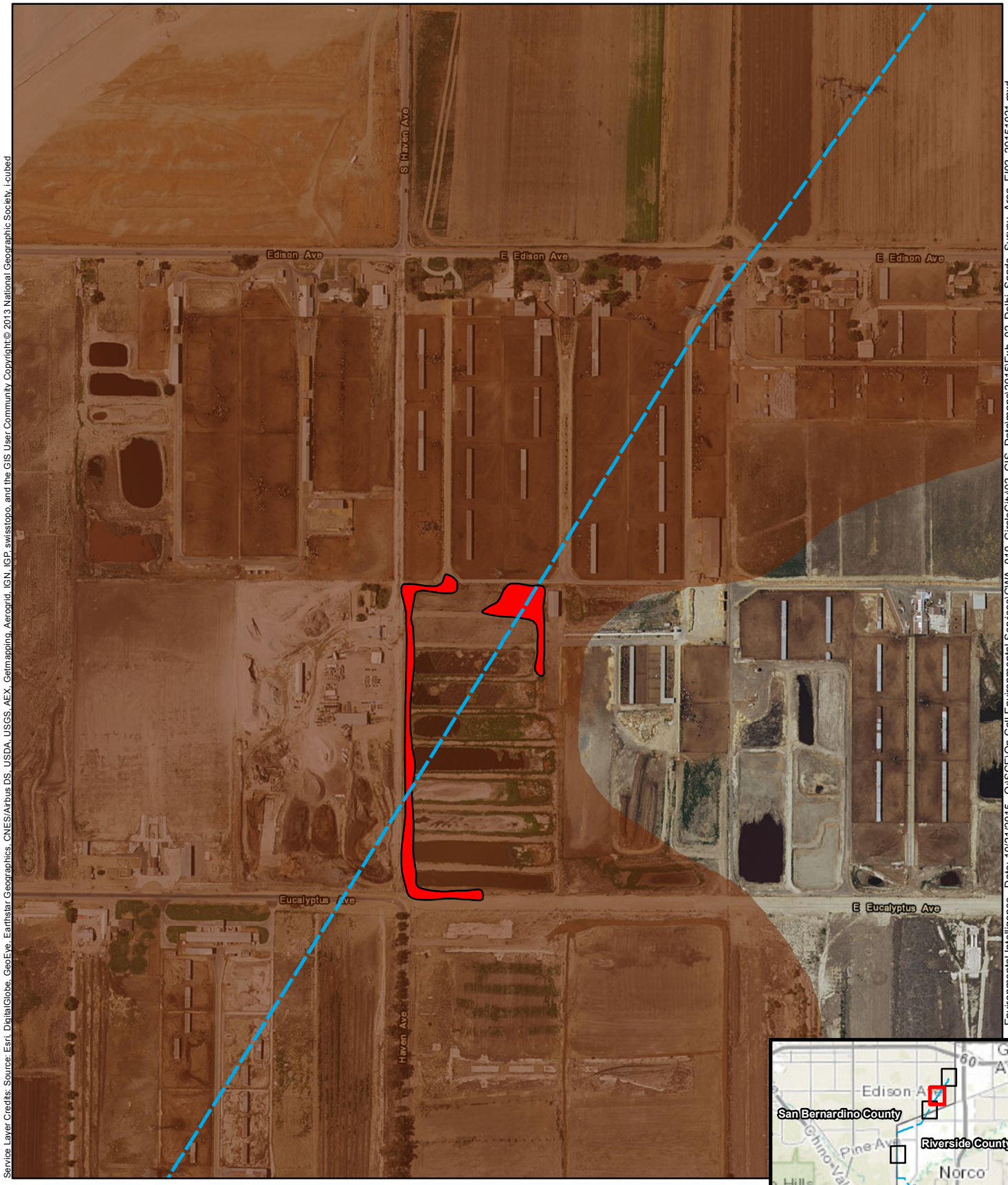
0 250 500 1,000 Feet

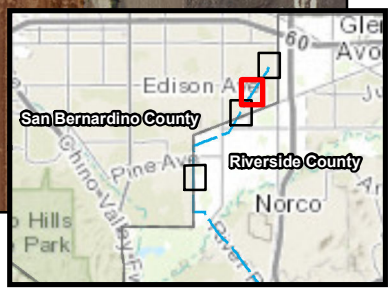
1:6,400

1 inch = 533 feet

Exhibit 2: Survey Area Page 1 of 4

Circle City Project | Riverside and San Bernardino County, CA





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Copyright:© 2013 National Geographic Society, i-cubed

Environmental Intelligence. Date: 10/21/2015. Q:\SCE\On-Call Environmental Services\CWA_010_CircleCity\02_GIS_Datamaps\2015\Exh_02_Delhi_Sands_Survey_Area_EI02_20151021.mxd

Subtransmission Route Alternative 1

Delhi Sands Survey Area

Delhi Series Soil (NRCS 2015)

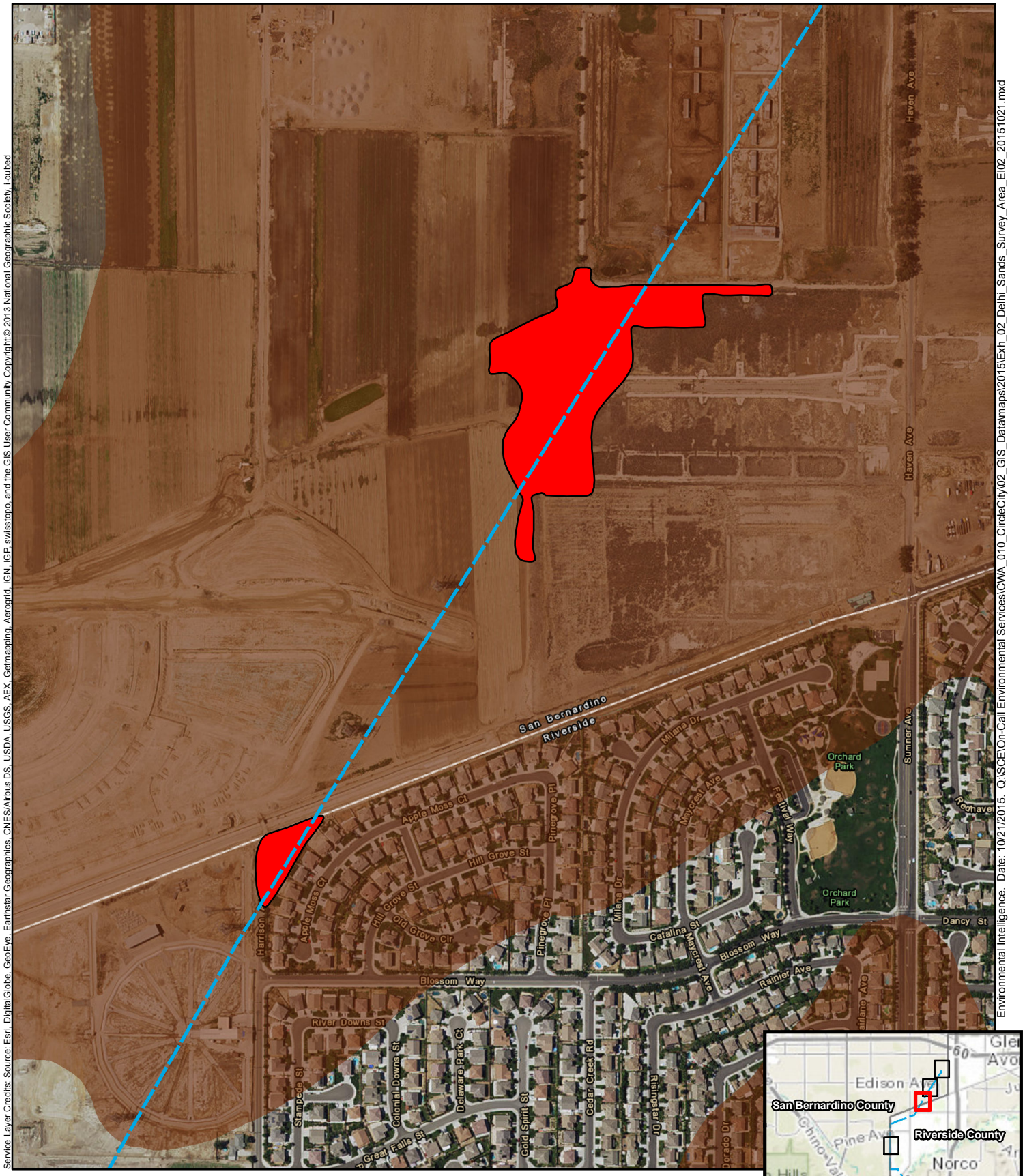
0 250 500 1,000 Feet

1:6,400

1 inch = 533 feet

Exhibit 2: Survey Area Page 2 of 4

Circle City Project | Riverside and San Bernardino County, CA



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Copyright:© 2013 National Geographic Society, i-cubed

Environmental Intelligence. Date: 10/21/2015. Q:\SCE\On-Call Environmental Services\CWA_010_CircleCity\02_GIS_Datamaps\2015\Exh_02_Delhi_Sands_Survey_Area_EI02_20151021.mxd

Subtransmission Route Alternative 1

Delhi Sands Survey Area

Delhi Series Soil (NRCS 2015)

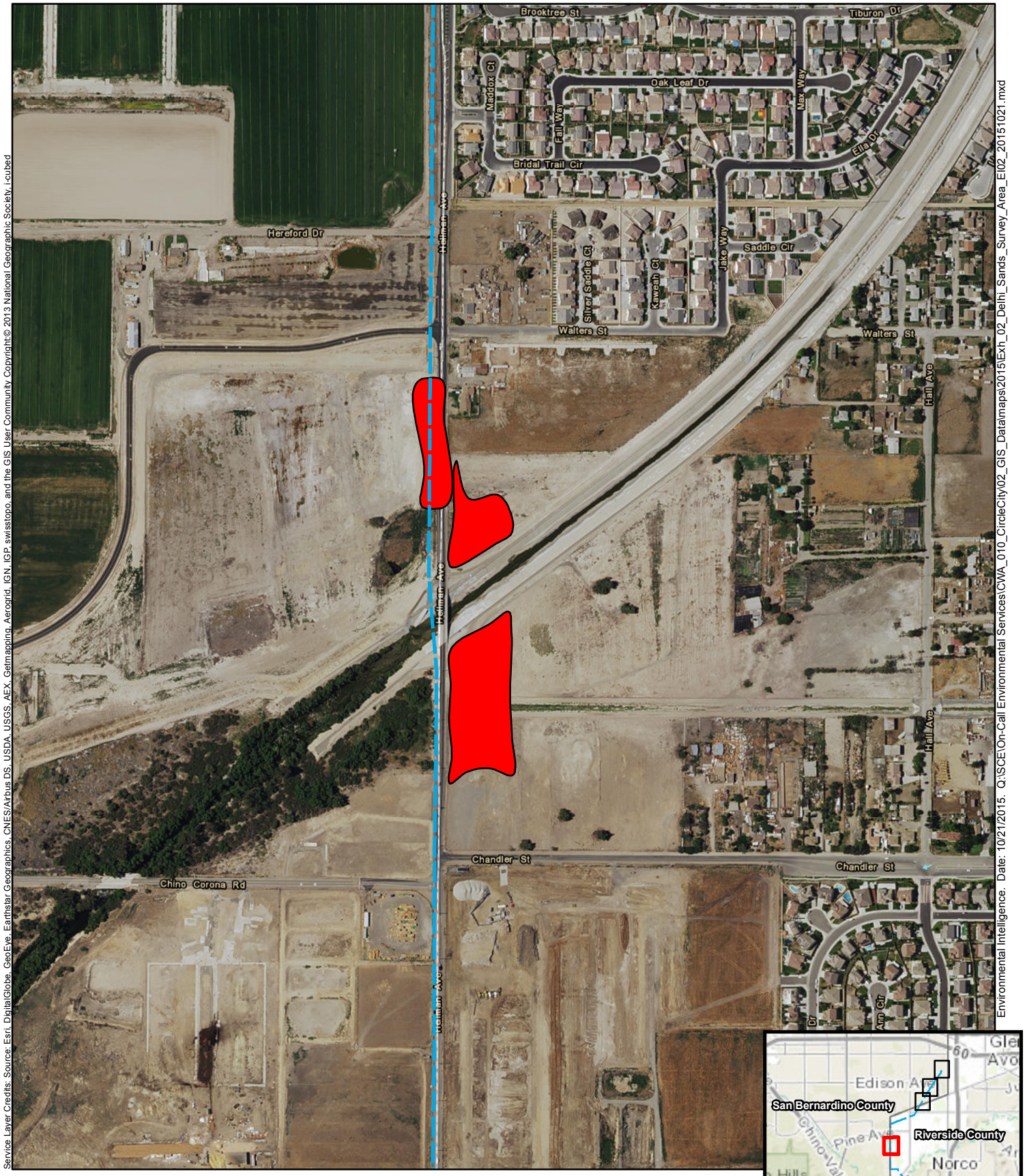
0 250 500 1,000 Feet

1:6,400

1 inch = 533 feet

Exhibit 2: Survey Area Page 3 of 4

Circle City Project | Riverside and San Bernardino County, CA



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Copyright:© 2013 National Geographic Society, i-cubed

Environmental Intelligence. Date: 10/21/2015. Q:\SCE\On-Call Environmental Services\CWA_010_CircleCity\02_GIS_Dataimaps\2015\Exh_02_Delhi_Sands_Survey_Area_EI02_20151021.mxd

Subtransmission Route Alternative 1

Delhi Sands Survey Area

Delhi Series Soil (NRCS 2015)

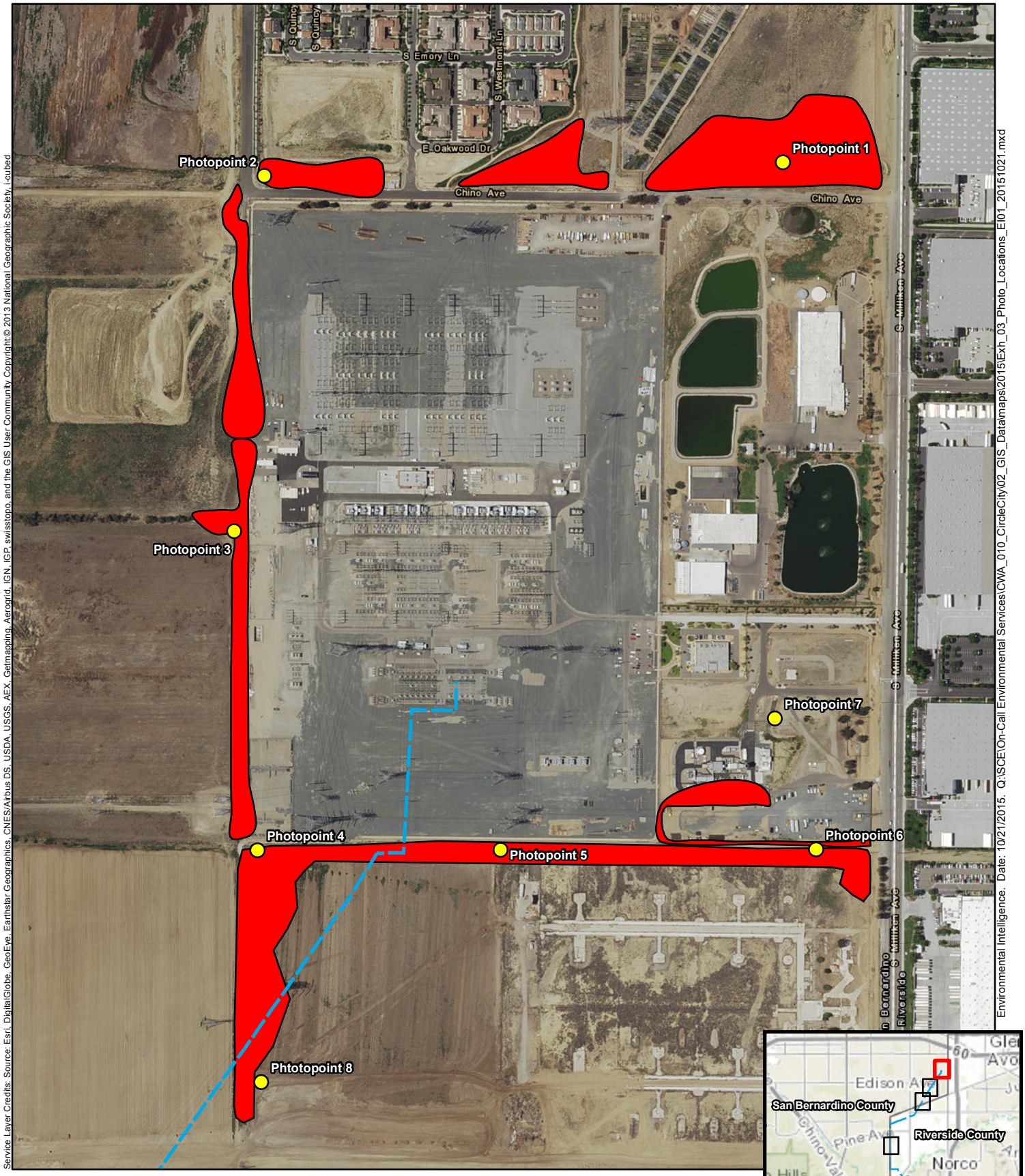
0 250 500 1,000 Feet

1:6,400

1 inch = 533 feet

Exhibit 2: Survey Area Page 4 of 4

Circle City Project | Riverside and San Bernardino County, CA



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Copyright:© 2013 National Geographic Society, i-cubed

Environmental Intelligence. Date: 10/21/2015. Q:\SCE\On-Call Environmental Services\CWA_010_CircleCity\02_GIS_Datamaps\2015\Exh_03_Photo_Locations_EI01_20151021.mxd

Subtransmission Route Alternative 1

Delhi Sands Survey Area

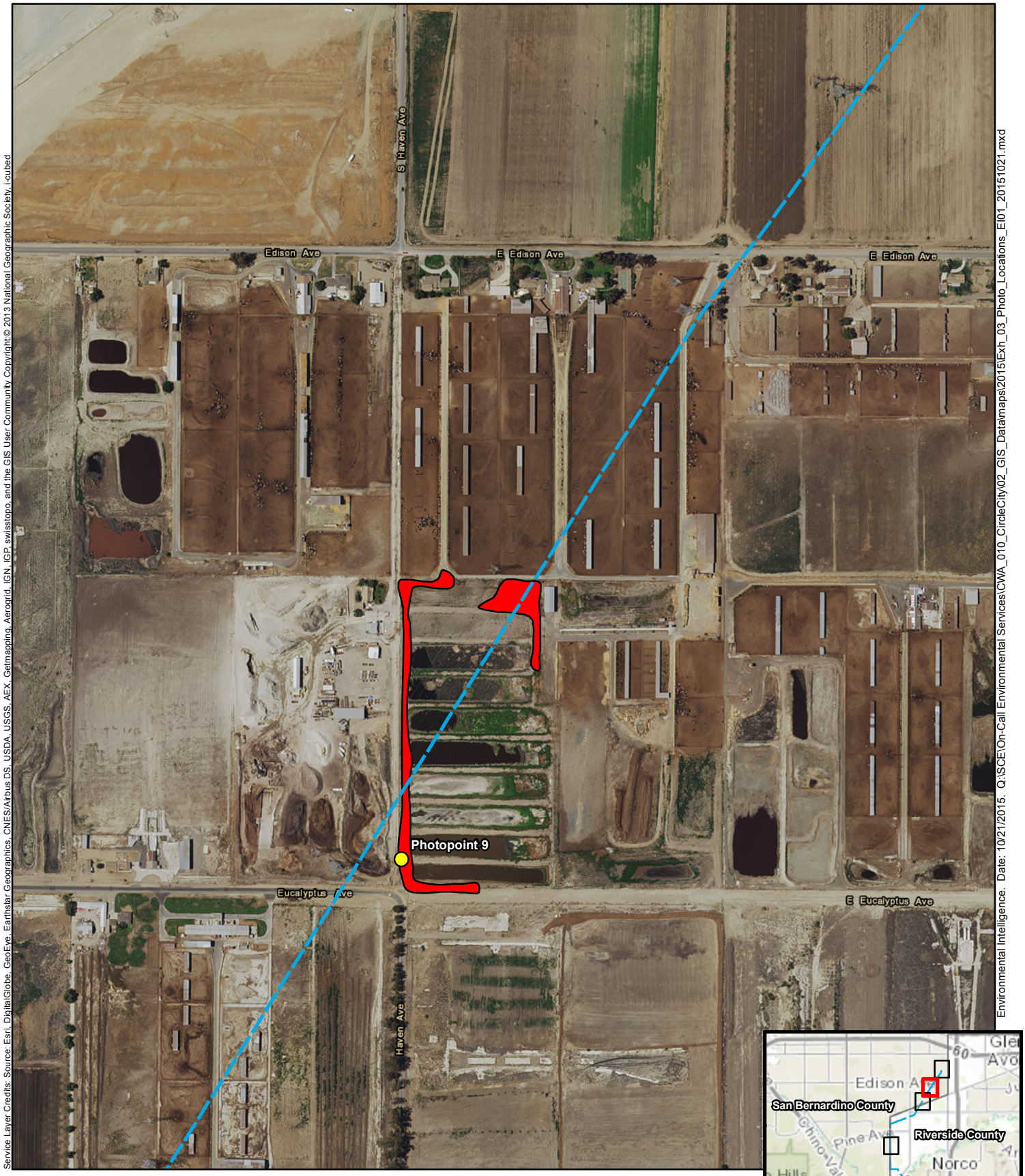
Photograph Locations

0 250 500 1,000 Feet

1:6,400 1 inch = 533 feet

Exhibit 3: Site Photograph Locations Page 1 of 4

Circle City Project | Riverside and San Bernardino County, CA



Subtransmission Route Alternative 1

Delhi Sands Survey Area

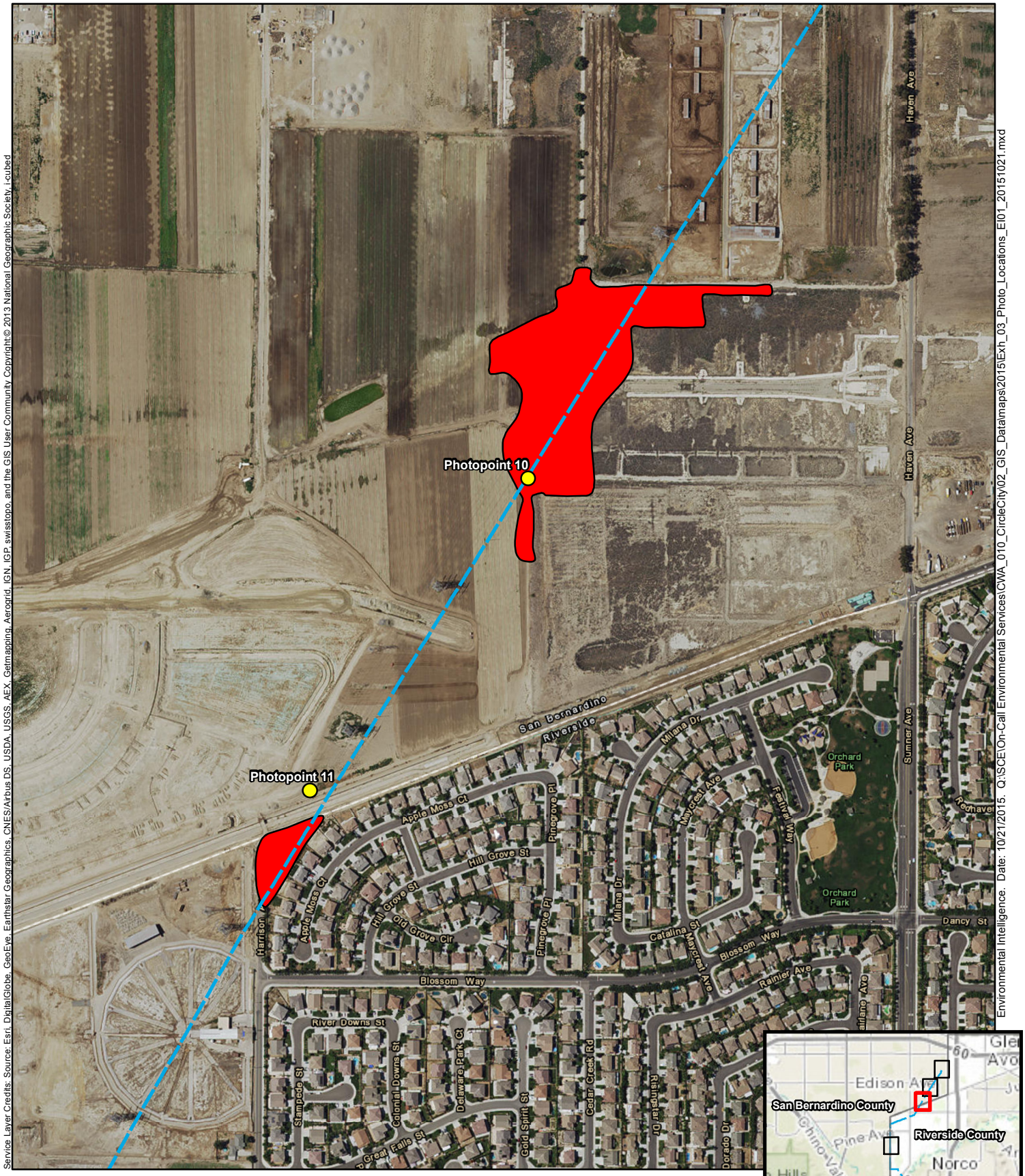
Photograph Locations

0 250 500 1,000 Feet

1:6,400 1 inch = 533 feet

Exhibit 3: Site Photograph Locations Page 2 of 4

Circle City Project | Riverside and San Bernardino County, CA



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Copyright:© 2013 National Geographic Society, i-cubed

Environmental Intelligence. Date: 10/21/2015. Q:\SCE\On-Call Environmental Services\CWA_010_CircleCity\02_GIS_Datamaps\2015\Exh_03_Photo_Locations_EI01_20151021.mxd

Subtransmission Route Alternative 1

Delhi Sands Survey Area

Photograph Locations

0 250 500 1,000 Feet

1:6,400 1 inch = 533 feet

Exhibit 3: Site Photograph Locations Page 3 of 4

Circle City Project | Riverside and San Bernardino County, CA

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community Copyright:© 2013 National Geographic Society, i-cubed

Environmental Intelligence. Date: 10/21/2015. Q:\SCE\On-Call Environmental Services\CWA_010_CircleCity\02_GIS_Data\maps\2015\Exh_03_Photo_Locations_EI01_20151021.mxd

Subtransmission Route Alternative 1

Delhi Sands Survey Area

Photograph Locations

0 250 500 1,000 Feet

1:6,400 1 inch = 533 feet

Exhibit 3: Site Photograph Locations Page 4 of 4

Circle City Project | Riverside and San Bernardino County, CA

Photo point 1:

View of habitat conditions immediately northeast of the Mira Loma Substation adjacent to the intersection of Chino Avenue and S. Milliken Avenue. Area historically utilized for agriculture.

Photo point 2:

View of habitat conditions on the northwestern perimeter of the Mira Loma Substation.

Photo point 3:

View looking north along the western perimeter of the Mira Loma Substation. Emergent Vegetation visible in image consists of old agricultural windbreak of eucalyptus.

Photo point 4:

View looking south from the southwestern perimeter of the Mira Loma Substation. Area historically utilized for agriculture.

Photo point 5:

View looking west along the southern perimeter of the Mira Loma Substation.

Photo point 6:

second view looking west along the southern perimeter of the Mira Loma Substation.

Photo point 7:

View looking southwest from the southeastern corner of the inside of the Mira Loma Substation.

Photo point 8:

View looking north along row towards the Mira Loma Substation. Area historically utilized for agriculture.

Photo point 9:

View looking northeast along ROW and Haven Avenue near its junction with Eucalyptus Avenue. Area currently utilized for livestock effluent settling ponds.

Photo point 10:

view looking north of general habitat conditions near the ROWs intersection with the San Bernardino and Riverside county line.

Photo point 11:

Second view looking north of general habitat conditions near the ROWs intersection with the San Bernardino and Riverside county line. Area historically utilized for agriculture.

Photo point 12:

View looking north of project row adjacent to Hellman Avenue north of its intersection with Chandler Street. Channelized section of Mill Creek visible in the background. This site was historically utilized for agriculture.

Photo point 13:

Second View looking north of project row adjacent to Hellman Avenue north of its intersection with Chandler Street. Channelized section of Mill Creek in the background. This site was historically utilized for agriculture.

Photo 14:

View of mating pair of the mydid fly Nemomydas pantherinus encountered on the project row.

Appendix C:

FLORAL COMPENDIUM

CIRCLE CITY PROJECT
FLORAL COMPENDIUM

SCIENTIFIC NAME (* introduced/nonnative species)	**COMMON NAME**
ADOXACEAE – ELDERBERRY FAMILY	
Sambucus nigra subsp. *caerulea*	blue elderberry
AMARANTHACEAE – AMARANTH FAMILY	
**Amaranthus albus*	prostrate pigweed
**Amaranthus blitoides*	mat amaranth
Amaranthus palmeri	Palmer's amaranth
ANACARDIACEAE – SUMAC FAMILY	
**Schinus molle*	Peruvian peppertree
APIACEAE – CARROT FAMILY	
**Apium graveolens*	celery
**Conium maculatum*	poison hemlock
APOCYNACEAE – DOGBANE FAMILY	
**Nerium oleander*	oleander
ARECACEAE – PALM FAMILY	
**Washingtonia robusta*	Mexican fan palm
ASTERACEAE – SUNFLOWER FAMILY	
Ambrosia acanthicarpa	annual bur-sage
Ambrosia psilostachya	western ragweed
Artemisia douglasiana	mugwort
Baccharis pilularis subsp. *consanguinea*	coyote brush
Baccharis salicifolia	mule fat
Carduus pycnocephalus	Italian thistle
**Centaurea melitensis*	tocalote
**Cirsium vulgare*	bull thistle
**Cnicus benedictus*	blessed thistle
**Cotula australis*	Australian brass buttons
**Dimorphotheca sinuata*	Cape marigold
Erigeron canadensis	Canadian horseweed
**Erigeron floribundus*	horseweed
Gnaphalium palustre	western marsh cudweed
**Hedypnois cretica*	cretanweed
Helianthus annuus	common sunflower
Heterotheca grandiflora	telegraph Weed
**Hypochaeris glabra*	smooth cat's-ear
**Lactuca serriola*	prickly lettuce
**Matricaria discoidea*	pineapple weed
**Oncosiphon piluliferum*	stinknet
Pseudognaphalium californicum	California everlasting
**Sonchus asper*	prickly sow thistle
**Sonchus oleraceus*	common sow-thistle

SCIENTIFIC NAME (* introduced/nonnative species)	**COMMON NAME**
**Taraxacum officinale*	horned dandelion
**Verbesina encelioides* ssp. *exauriculata*	golden crownbeard
Xanthium strumarium	common cocklebur
**Xanthium spinosum*	spiny cocklebur
BORAGINACEAE – BORAGE FAMILY	
Amsinckia intermedia	common fiddleneck
Eriodictyon trichocalyx	hairy yerba santa
Heliotropium curassavicum var. *oculatum*	seaside heliotrope
Phacelia ramosissima var. *latifolia*	branching phacelia
BRASSICACEAE – MUSTARD FAMILY	
**Brassica tournefortii*	Saharan mustard
**Capsella bursa-pastoris*	common shepherd's-purse
**Hirshfeldia incana*	short-podded mustard
**Lepidium latifolium*	broadleaved pepperweed
**Raphanus sativus*	radish
Nasturtium officinale	watercress
**Sisymbrium altissimum*	tall tumblemustard
**Sisymbrium irio*	London rocket
**Sisymbrium orientale*	oriental sisymbrium
CARYOPHYLLACEAE – CARNATION FAMILY	
**Cerastium glomeratum*	sticky mouse-ear chickweed
**Spergularia* sp.	sandspurry
**Stellaria media*	common chickweed
CHENOPODIACEAE – GOOSEFOOT FAMILY	
**Atriplex semibaccata*	Australian saltbush
Atriplex serenana var. *serenana*	saltscale
**Atriplex suberecta*	peregrine saltbush
**Bassia hyssopifolia*	
**Chenopodium album*	lamb's quarters
Chenopodium berlandieri	pit-seeded goosefoot
**Chenopodium murale*	nettle leaf goosefoot
**Chenopodium strictum* var. *glaucophyllum*	white leaved goosefoot
**Salsola tragus*	Russian thistle
CONVOLVULACEAE – MORNING GLORY FAMILY	
**Convolvulus arvensis*	bindweed
Cressa truxillensis	alkali weed
Cuscuta sp.	California dodder
CYPERACEAE – SEDGE FAMILY	
**Cyperus eragrostis*	tall cyperus
Eleocharis cf. *parishii*	Parish’s spike-rush
Schoenoplectus acutus var. *occidentalis*	common tule
EUPHORBIACEAE – SPURGE FAMILY	
Croton setigerus	turkey-mullein

SCIENTIFIC NAME (* introduced/nonnative species)	**COMMON NAME**
**Euphorbia maculata*	spotted spurge
**Ricinis communis*	Castor bean
FABACEAE (LEGUMINOSAE) – PEA FAMILY	
Acmispon americanus	parish's lotus
**Medicago polymorpha*	California burclover
**Melilotus indica*	sourclover
GERANIACEAE – GERANIUM FAMILY	
**Erodium cicutarium*	red-stem Filaree
**Erodium botrys*	long-beaked filaree
LAMIACEAE (LABIATAE) – MINT FAMILY	
**Marrubium vulgare*	horehound
LYTHRACEAE – LOOSESTRIFE FAMILY	
**Lythrum hyssopifolia*	grass poly
MALVACEAE – MALLOW FAMILY	
**Malva parviflora*	cheeseweed
MYRTACEAE – MYRTLE FAMILY	
**Eucalyptus* sp.	eucalyptus
ONAGRACEAE – EVENING PRIMROSE FAMILY	
Camissonia bistorta	California suncup
Camissonia micrantha	miniature suncup
Epilobium ciliatum	ciliate willow-herb
PHRYMACEAE – LOPSEED FAMILY	
Mimulus guttatus	seep-spring mimulus
PLANTAGINACEAE – PLANTAGO FAMILY	
**Plantago lanceolata*	ribgrass
**Veronica anagallis-aquatica*	water speedwell
POACEAE (GRAMINEAE) – GRASS FAMILY	
**Avena barbata*	slender wild oat
**Avena fatua*	common wild oat
**Bromus diandrus*	ripgut brome
**Bromus madritensis* subsp. *rubens*	red brome
**Leptochloa fusca* subsp. *uninervia*	Mexican sprangletop
**Cynodon dactylon*	Bermuda grass
**Festuca arundinaceae*	Alta fescue
**Festuca myuros*	rattail sixweeks grass
**Hordeum murinum*	mouse barley
**Phalaris minor*	littleseed canarygrass
**Piptatherum miliceum*	rice grass
**Poa annua*	annual blue grass
**Polypogon monspeliensis*	rabbit-foot grass

SCIENTIFIC NAME (* introduced/nonnative species)	**COMMON NAME**
**Secale cereale*	cereal rye
POLYGONACEAE – BUCKWHEAT FAMILY	
**Polygonum aviculare*	prostrate knotweed
**Rumex crispus*	curly dock
Rumex hymenosepalus	canaigre
RUBIACEAE – MADDER FAMILY	
**Galium aparine*	common bedstraw
SALICACEAE – WILLOW FAMILY	
Populus fremontii	cottonwood
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
SIMAROUBACEAE – SIMAROUBA FAMILY	
**Ailanthus altissima*	tree of heaven
SOLANACEAE – NIGHTSHADE FAMILY	
Datura wrightii	Wright's datura
**Nicotiana glauca*	tree tobacco
TAMARICACEAE – TAMARISK FAMILY	
**Tamarix ramosissima*	saltcedar
TYPHACEAE – CATTAIL FAMILY	
**Typha* sp.	Southern cattail
URTICACEAE – NETTLE FAMILY	
Hesperocnide tenella	western stinging nettle
Urtica dioica subsp. *holosericea*	hoary nettle
VITACEAE – GRAPE FAMILY	
Vitis girdiana	Southern California grape
ZYGOPHYLLACEAE – CALTROP FAMILY	
**Tribulus terrestris*	puncture vine

Appendix C:

FAUNAL COMPENDIUM

CIRCLE CITY PROJECT
FAUNAL COMPENDIUM

INVERTEBRATES

INSECTS	INSECTA
Flys	**DIPTERA**
Robber flys	**Asilidae**
No Name Robber Fly	*Efferia albibarbis*
Robber Fly	*Efferia* sp.
Bumblebee Robber Fly	*Mallophora fautrix*
Bee Flys	**Bombyliidae**
Bee fly species	*Toxophora pellucida*
Bee fly species	*Villa atrata*
Bottle flys	**Calliphoridae**
Bottle fly species	*Calliphora* sp.
Long-legged fly	**Dolichopodiae**
Long-legged fly species	*Condylostylus* sp.
Muscid fly	**Muscidae**
House Fly	*Musca domestica*
Flesh Fly	**Sacrophagidae**
Flesh fly species	*Sarcophaga* sp.
Hover flys	**Syrphidae**
Assorted genera encountered	
Horse flys	**Tabanidae**
Horse Fly	*Tabanus punctifer*
Crane flys	**Tipulidae**
Crane Fly	*Tipulidae* sp.
Mydid Fly	**Mydidae**
Mydid Fly	*Nemomydas pantherinus*
Butterflies	**Lepidoptera**
Swallowtails	**Papilionidae**
Giant Swallowtail	*Papilio cresphontes*
True Brushfoots butterflies	**Nymphalidae**
Common Buckeye	*Precis coenia*
Gulf Fritillary	*Agraulis vanilla*
West Coast Lady	*Vanessa Annabella*

Gossamer-winged butterflies	**Lycanidae**
Pygmy Blue	*Brephidium exilis*
Marine Blue	*Leptotes marina*
Ceraunus Blue	*Hemiargus ceraunus*
Common Hairstreak	*Strymon melinus*
Skipper butterflies	**Hesperiidae**
Fiery Skipper	*Hylephila phyleus*
Eufala Skipper	*Lerodea eufala*
Common Checkered Skipper	*Pyrgus albescens*
Whites and Sulfur butterflies	**Pieridae**
Alfalfa butterfly	*Colias eurytheme*
Cabbage white	*Pieris rapae*
Checkered white	*Pontia protodice*
Cloudless sulfur	*Phoebis sennae*

VERTEBRATES

REPTILES	**REPTILIA**
Harmless Egg-Laying Snakes	**Colubridae**
Sand Diego Gopher Snake	*Pituophis catenifer annectens*
Tree, Side-blotched, and Horned Lizards	
Great Basin Fence Lizard	*Sceloporus occidentalis longipes*
Western Side-blotched Lizard	*Uta stansburiana elegans*
BIRDS	**AVES**
SCREAMERS, SWANS, GEESE, AND DUCKS	**ANSERIFORMES**
Ducks, Geese, and Swans	**Anatidae**
Canada Goose	*Branta canadensis*
PELICANS, HERONS, IBISES, AND ALLIES	**PELECANIFORMES**
Herons, Bitterns, and Allies	**Ardeidae**
Snowy Egret	*Egretta thula*
HAWKS, KITES, EAGLES, AND ALLIES	**ACCIPITRIFORMES**
New World Vultures	**Cathartidae**
Turkey Vulture	*Cathartes aura*
Hawks, Kites, Eagles, and Allies	**Accipitridae**
Cooper's Hawk	*Accipiter cooperii*
Red-tailed Hawk	*Buteo jamaicensis*
SHOREBIRDS, GULLS, AUKS, AND ALLIES	**CHARADRIIFORMES**
Lapwings and Plovers	**Charadriidae**
Killdeer	*Charadrius vociferus*
PIGEONS AND DOVES	**COLUMBIFORMES**
Pigeons and Doves	**Columbidae**

Rock Pigeon	*Columba livia*
Mourning Dove	*Zenaida macroura*
SWIFTS AND HUMMINGBIRDS	**APODIFORMES**
Hummingbirds	**Trochilidae**
Anna's Hummingbird	*Calypte anna*
Rufous Hummingbird	*Selasphorus rufus*
CARACARAS AND FALCONS	**FALCONIFORMES**
Caracaras and Falcons	**Falconidae**
American Kestrel	*Falco sparverius*
PASSERINE BIRDS	**PASSERIFORMES**
Tyrant Flycatchers	**Tyrannidae**
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Western Kingbird	*Tyrannus verticalis*
Vireos	**Vireonidae**
Warbling Vireo	*Vireo gilvus*
Crows and Jays	**Corvidae**
American Crow	*Corvus brachyrhynchos*
Common Raven	*Corvus corax*
Larks	**Alaudidae**
Horned Lark	*Eremophila alpestris*
Swallows	**Hirundinidae**
Cliff Swallow	*Petrochelidon pyrrhonota*
Long-tailed Tits and Bushtits	**Aegithalidae**
Bushtit	*Psaltriparus minimus*
Thrushes	**Turdidae**
Western Bluebird	*Sialia mexicana*
Mockingbirds and Thrashers	**Mimidae**
Northern Mockingbird	*Mimus polyglottos*
Starlings	**Sturnidae**
European Starling	*Sturnus vulgaris*
Wood-Warblers	**Parulidae**
Orange-crowned Warbler	*Oreothlypis celata*
Yellow-rumped Warbler	*Setophaga coronat*
Wilson's Warbler	*Cardellina pusilla*
Emberizids	**Emberizidae**
Chipping Sparrow	*Spizella passerina*
Lincoln's Sparrow	*Melospiza lincolnii*
White-crowned Sparrow	*Zonotrichia leucophrys*
Blackbirds	**Icteridae**

Western Meadowlark	*Sturnella neglecta*
Brewer's Blackbird	*Euphagus cyanocephalus*
Bullock's Oriole	*Icterus bullockii*
Fringilline and Cardueline Finches and Allies	**Fringillidae**
House Finch	*Haemorhous mexicanus*
Lesser Goldfinch	*Spinus psaltria*
MAMMALS	**MAMMALIA**
Rabbits and Hares	**Leporidae**
Audubon’s Cottontail	*Sylvilagus audubonii*
Squirrels	**Sciuridae**
California Ground Squirrel	*Spermophilus beecheyi*
Pocket Gophers	**Geomyidae**
Botta's Pocket Gopher	*Thomomys bottae*
Canines	**Canidae**
Coyote	*Canis latrans*

Appendix D:

FIELD NOTES

CIRCLE CITY - DSFLF
1 JULY 2015 JG-MP DP
945 - 200 27 photos taken
START N. End - wheelchair path.
65%, CC, w 3-5 mph
86°F
- Species encountered -
Invets | Herps
L. marina | Gopher snake
B. exilis =
C. eurytheme | Plant List separate
S. melanus | Running List.
Apis mellifera | Rumex hymenosepalus - abundant
Bombus -
+ Syphoidea =
+ Tripoloidea. | Birds -
musca domestica | House Finch | Common ground dove
Turkey vulture +
- Normal south | See photos! DSC- 7434

END 25%, CC, w 2-4 mph, 93°F
= NO DSFLF observed
Habitat marginal @ best.

Circle city DSFLF
2 JULY 2015 JG-MP - DP
10 - 200 pm -
5%, CC, 3-5 mph, 80°F
START @ South End - wheel
NORTH see photos

Invets
Hemaphysalis - interesting.
B. melliferus.
Circomyrmex -
- Schistocerca sp.
- Sphecodes

Plants
Debaltrosa
↳ Recently totally Distributed

See photos of central Section exposure grading.

BIRDS
-
House Finch
Sparrow
- 1 Thrasher glossy x 25 ++
-

END
Clear w2-4 mph / 91°F

7 JULY 2015 JG/MP - CIRCLE CITY
START NORTH side near Mira Loma SUB.
80% cc, calm, 73°F Photos X (27)
= 10-2:22 pm (2:45 offsite) See, For Floral Invert Activity Down IDent.
See photo Tally.

→ END conditions @ 2:22 pm
clear, wind 3-5mph, 85°F

Inverts -
* Neoneuroptera, Active mating
Euphoria sp.
* LPT
Mellophora
Eucerum sp.
Syrphidae - Hover.
- P. clepsydrates.
Pontia
P. coenia on :

Plants

Birds
Smoky eglet.
RTH watching video
T. vult.
R pigeon
Anna's hummingbird.
- Avian Kestrel
Cottontail x 5

Helmen Road

NO DSFLF Encountered.

9 JULY 2015 JG/MP / DP CIRCLE CITY
START South side.
10:00 am 90°cc, w 1-3mph, 74°F
See photos DSC [798-912]

Inverts -
LPT - Neoneuroptera x 7
- Danaus - [illegible]
Coleoptera - [illegible]
Check
- Propylea.

Birds
- RTH - watching video
- Mourning Dove
- Smyrphorus - Clean American.

MP - FLORAL LIST

END (NORTH END -)
clear, wind 3-6mph, 81°F
#

NO DSFLF observed.

14 JULY 2015 CIRCLE CITY DSFLF (survey 5) JG, SR Rincon
START NORTH side @ Mira Loma SUB
clear, w 2-4mph, 77°F - See photos -

Inverts
Philodrilla
- Mesor - sp. Ant.
- P. coenia
- Apis mellifera
- Neoneuroptera

SR - FLORAL NOTES - emailed - To me - Post Survey.
- See email For
- 14 July 2015 -
#

Photos X 8 See NOTES -

Birds
Horned Lark
Pipit
Sage Thrasher
W. Meadow Lark.
W. Bluebird
Mourning Dove.
European Starling.
Yellow rumped warb ?
Chipping sparrow
Lincoln sparrow
Turkey vulture
- cotton
Hawks
Utah

Mammals -
Cottontail - Coyote - X 2
Ground Sq
Pocket gopher

END SOUTHSIDE
Clear, wind 3-6mph
91°F (Kestrel)

See collected Inverts - For Identity.

NO DSFLF observed

16 JULY 2015 CIRCLE CITY. DSFLF (Survey 6)
10-2 pm JG/SR
Clear, wind 1-3mph, 77°F
Humid conditions today.
START mid span - Due to access
- See photos -
↳ SR emailed his observations Post Survey -
= offsite South ½ + then North ½
=

Inverts -
Apis
Ectesia
Pontia protodice (white)
Strymon strig.
Leptotes sarp
B. exilis -
= Diptera -
Tipulidae
Villa sp.
Collected -
Toxophora -

Note
Canto gelles on Road at the quarry
See photos -

END
2:15 pm
Clear, wind 3-6mph, 89°F

= Birds -
W. Kingbird
Turkey
Brewers
Lesser g Finch
Lincoln sparrow
White crowned -
Bushtit

Mammals
Pigeon
European starling
Cottontail -

NO DSFLF OBSERVED

JULY 20, 2015 CIRCLE CITY - JG/SR
DSFLF surveys
10 - 2:20pm JG/SR
START -
80% cc, wind 2-7mph | See Site photos 2SC-17-52]
77°F.
START Southside w/raced north.

Finish
2:15-2:20pm
80% cc, winds 3-5mph
86°F

Inverts
- Odocs sp.
- → collected as voucher
- Neoneydes
- villa sp.
- Bombix
- Acilid - check ID
Anthrax.

NO DSFLF

Birds New
Belted kingfisher.
Wilson warbler - Must off season
Cliff Swallow.
Blue grosbeak.
= Mourning dove
Kestrel
Hoper
Sandpipers.

= NOTE commisonia species adjacent to ML SUB
Interesting taxa.

JULY 23, 2015 CIRCLE CITY DSFLF Survey
9:45 - 2:0 SG/SR
START mid span
[illegible]
[illegible]
[illegible]
[illegible]
= END
clear, calm, 86°F

NO DSFLF

JULY 28, 2015 CIRCLE CITY DSFLF survey.
Arrive @ 9:35
10 - 2:20pm JG/SR
clear, winds 2-4mph, 73°F
Inverts.
- Neoneydes
- odocs. sp.
- multiside

Birds - not New
Lower Residual.

ML SUB START
↓
Canta gulin.
N W E S
(See photos) For Reporting.
= END
clear, wind 3-5, 85°F

NO DSFLF

JULY 30, 2015 Circle City DSFLF survey.
START 10-2pm JG/SR
40% clouds, wind 2-4, 83°F
= Inverts
Neoneydes still present
also villa anthrax ?
- check ID with
Seep-Photos 137
Dsc 118-

Birds
Ibis - extensive foraging in settling ponds.
Very HOT TODAY -
= END -
clear, wind 4-6mph, 95°F

NOTE - check Entomologist site after survey -

NO DSFLF

JULY 20, 2015 CIRCLE CITY - JG/SR
DSFLF SURVEYS

10 - 2:25pm JG/SR
START -
80% cc, wind 2-7mph | See Site photos 250-17-52]
77°F.

START Southside w/raced north.

Finish
2:15-2:25pm

Inverts
- Odocs sp.
- → collected as voucher
- Nemoaydes
- villa sp.
- Bombix
- Acilid - check ID
Anthrax.

50% cc, winds 3-5mph
86°F

NO DSFLF

Birds New
Belted kingfisher.
Wilson warbler - Must off season
Cliff Swallow.
Black phoebe.
= Mammals
cottontail
Hoper
Scalapoors.

= NOTE commisonia species adjacent to ML SUB
Interesting taxa.

JULY 23, 2015 CIRCLE CITY DSFLF SURVEY

9:45 - 2:0 SG/SR
START mid span
[illegible]
[illegible]
155 clouds, calm, 77°F
NO New species observed
Note extensive Turkey vulture movement.

= END
clear, calm, 88°F

NO DSFLF

JULY 28, 2015 CIRCLE CITY DSPLF survey.

Arrive @ 9:25
10 - 2:25pm JG/SR

clear, winds 2-4mph, 73°F
Inverts.
- Nemoaydes
- odocs. sp.
- multiside

Birds - not New
Amer Kestrel.

ML SUB START
N W E S
↓
Canta gulin. > (see photos) For Reporting.

= END

clear, wind 3-5, 85°F
#

NO DSFLF

NOTE - checked Extensively site after survey -

JULY 30, 2015 Circle City DSFLF survey.

START 10-2pm JG/SR
40% clouds, wind 2-4, 83°F
= Inverts
Nemoaydes still present
also villa anthrax ?
- check ID with
Seq-Photos 137
Dsc 118-

Birds
Ibis - extensive foraging in settling ponds.

= END - Very HOT TODAY -
clear, wind 4-6mph, 95°F

NO DSFLF

August 4, 2015 circle city. DSFLF survey
JG 10 - 2pm
START ML SUB
clear, calm, 79°F

→ No new Invert observations

→ save FOR Birds + mammals.

FLORA

Possible stephanomeria sp. check with MP.

± [see Photos] DSC - x(7)

= END 2pm

5% cc, winds 4-6mph, 91°F
STOP

NO DSFLF

August 6, 2015 Circle City DSFLF survey
START South end today.
→ JG / JR
clear, calm, 87°F

=
Inverts.
-
T. Cranny
→ colonial cowbird sp.
Deposited UCR.
Neomysydes present - SMM
=
NO Apiaceae - one would think they would persist
=
Mammals
G. Sq
=
Birds
Butters Hummingbird.
STOP clear, wind 2-4mph, HOT 99°F
=
NO DSFLF
Insect activity low @ end of survey Due To Temp.

August 10, 2015 CIRCLE CITY DSFLF surveys
START NORTH END [ML SUB]
clear, calm, 71°F JG / JK 10 - 2pm

No New Faunal observations.
NO DSFLF or Neomysdeyes
- Note possible BUOW white wash on adjacent burrow system - see photos
STOP - 2pm
clear, winds 2-4 mph, 86°F
—
NO DSFLF

—
Circle - DSFLF not elsewhere in known occupied habitat.

August 12, 2015 circle city DSFLF surveys
10 - 2pm JG only -
START @ South end continued NORTH
clear, wind's 2-4, 80°F

No New wildlife or Floral observations
- see photos For conditions.

→ STOP - 2pm
clear, winds 5-7, 94°F

Note late RTH nesting. adjacent Eucalyptus grove interesting.

NO DSFLF

NOTE Aug 18th
Dale Powell conducted survey

August 21, 2015 circle city DSFLF survey
JG/TR
START 10 - 2pm END
clear, calm, 78°F
- Says phacelia resting adjacent to Mira Loma sub.
moved NORTH to south.

- See photos.
- Rumex hymenosepalus - relict plant.

→ Ibis thick @ settling ponds

→ STOP clear, wind 4-6mph, 91°F

* NO DSFLF present onsite. *

Aside
NOTE: DSFLF Reference Pops Active TODAY

August 25, 2015 CIRCLE CITY DSFLF SURVEYS
9:50 - 2:00pm JG/JR
START Clear, calm, 83°F
START SOUTH END -
→ NOTE Active construction in Area.
massive grading -
Invasive
Nemomydes observed -
BIRDS
RTH
Sparrow
Mourning Dove
Western Kingbird
Reptile - crepuscular
→

NO DSFLF Present.

STOP 2pm
clear, winds 5-7mph, 97°F
→

Note observed Reference site attr survey & single DSFLF observed

September 1, 2015 CIRCLE CITY DSFLF SURVEY
JG/SD (EI)
START @ Mira Loma Sub 9:15 - 2:10
clear, wind 3-5mph, 76°F

Inverts - New or Noteworthy.
- Effetia
- Mallophora
- Leptus (hemiptera)
- Sarcophagus.
- Tabanus punctifer.
* Lepa
- Aquilerus.
- Vanessa atalanta
- Hemiargus ceraunus.
- Pylgrus - alb
- Leptura - atrata
- Prostia prata
- phaedis sennae - ? - likely.

START - SOUTH END - Jumped to central parcel.
NOTE: grading @ outside South parcel

* STOP 2:00pm
NORTH END
clear, 3-5mph wind, 84°F
*

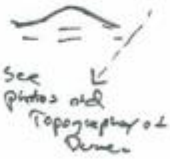
NO DSFLF Present observed
*

* Birds
Wilsons - migrant
Orange crowned warbler - mig.
Yellow rumped warb - ?

September 4, 2015 CIRCLE CITY DSFLF SURVEY.
9:50 - 2:10pm JG/ Mitch Provance
START @ MIRA LOMA
clear, 2-4mph wind, 97°F

Inverts
NO New Taxa

Birds
Fallout migration
See scattered notes
Seems early.



See photos and Topography of Dunes

→ Access increasingly difficult @ dunes gulches Road.

NO DSFLF observed -
STOP @ 2:10pm
clear, 2-4mph wind, 97°F

September 8, 2015 CIRCLE CITY DSFLF SURVEY
JG/MP(EI)
(10-2:00pm)
START SOUTH-END - WALK NORTH
See extensive photo Doc conducted TODAY
57. cloud, calm, 93°F
Inverts
✓ No New Inverts
Completed @ 1:59 pm
40% clouds, calm 102°F
Note Invert activity Low @ high Temp.
✓ BIRDS
No New
some Fall migrant activity.
Activity [See photos DSC: 192-212]
Date stamp.
± Note get new floral compendium Records From Mitch.
NO DSFLF Observed present.

September 10, 2015 CIRCLE CITY DSFLF SURVEY
JG/MP(EI)
10-2pm
START NORTH END MLSUB. walked south.
START
clear, wind 3-5 mph, 78°F
No New TARA observed.
⇒ STOP 2:00 pm
Southwest -
5% clouds, wind 3-5 mph, 85°F
NO DSFLF observed.

September 16, 2015 CIRCLE CITY DSFLF SURVEYS 2nd To Last
10-2pm START SOUTH END
JG/MP(EI)
15% cloud c/winds Temp 72°F 1-3 mph
MLSUB ✓
Central Parcel(s)
2 coreopsis clean Parcels.
± row.
Note Photos Documentation
±
Hemizonia out on
Vitis?! - interesting.
±
OR Maybe Lathyrus (check)
Mitch Please - Finish final site FLORAL compendium During survey activities - No new additions today.
± STOP clear, wind 4-6 mph, 78°F
NO DSFLF

September 18, 2015 CIRCLE CITY DSFLF SURVEY LAST
10-2pm START Central Portion
JG/MP See Photos for end of Survey Documentation
Start: Clear Calm, 77°F
Inverts
No New
Note on Commisonia & circle bank with Mitch For ID?!
Birds
No New

(LAST SURVEY FOR Season)
NO - DSFLF - STOP.
END-2pm
clear, 4-6 mph, 89°F
NO DSFLF

Delhi Sands Flower-loving Fly **Dale and Jun Rong Powell**

Site: Mira Loma

Date		9:00	10:00	11:00	NOON	1:00	2:00	3:00
8/18/15	Temp		77°	79°	82°	89°		
Week	Wind		2/4	3/5	4/6	3/5		
	Weath		clear	clear	clear	clear		
	Temp							
Week	Wind							
	Weath							

Delhi Sands Flower-loving Fly **Dale and Jun Rong Powell**

	Mira Loma 8/18/15
Coleoptera	
Carabidae	
Chrysomelidae	
Coccinellidae	
Curculionidae	
Rhipiphoridae	
Scarabaeidae	✓
Tenebrionidae	
Dermaptera	
Diptera	
Apioceridae	
Asilidae	
Bombyliidae	✓
Calliphoridae	
Chironomidae	
Conopidae	
Muscidae	✓
Mydidae	
Sarcophagidae	
Stratiomyidae	
Syrphidae	
Tabanidae	
Tachinidae	
Hemiptera	
Anthocoridae	
Lygaeidae	
Miridae	
Nabidae	
Pentatomidae	✓
Reduviidae	
Scutelleridae	
Homoptera	
Aphididae	
Cercopidae	
Cicadellidae	
Cicadidae	
Membracidae	

Delhi Sands Flower-loving Fly **Dale and Jun Rong Powell**

Mira Loma	8/12/15
Coleoptera	
Carabidae	
Chrysomelidae	
Coccinellidae	
Curculionidae	
Rhipiphoridae	
Scarabaeidae	✓
Tenebrionidae	
Dermaptera	
Diptera	
Apioceridae	
Asilidae	
Bombyliidae	✓
Calliphoridae	
Chironomidae	
Conopidae	
Muscidae	✓
Mydidae	
Sarcophagidae	
Stratiomyidae	
Syrphidae	
Tabanidae	
Tachinidae	
Hemiptera	
Anthocoridae	
Lygaeidae	
Miridae	
Nabidae	
Pentatomidae	✓
Reduviidae	
Scutelleridae	
Homoptera	
Aphididae	
Cercopidae	
Cicadellidae	
Cicadidae	
Membracidae	

FINAL

2014/2015 FOCUSED, PROTOCOL-LEVEL WET SEASON FAIRY SHRIMP SURVEY REPORT FOR THE PROPOSED CIRCLE CITY SUBSTATION AND MIRA LOMA-JEFFERSON SUBTRANSMISSION LINE PROJECT

RIVERSIDE AND SAN BERNARDINO COUNTIES, CALIFORNIA

Prepared for:

UNITED STATES FISH AND WILDLIFE SERVICE
CARLSBAD FISH AND WILDLIFE OFFICE
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

and

SOUTHERN CALIFORNIA EDISON
1218 S. Fifth Avenue, 265A
Monrovia, CA 91016

Prepared by:

BUSBY BIOLOGICAL SERVICES, INC.
4626 Cass Street #192
San Diego, CA 92109

Prepared on Behalf of:

CHAMBERS GROUP, INC.
5 Hutton Centre Drive, Suite 750
Santa Ana, California 92707

August 20, 2015

TABLE OF CONTENTS

Page

SECTION 1.0 – INTRODUCTION 1
1.1 PROJECT LOCATION AND DESCRIPTION 1
1.2 PROJECT BACKGROUND 4
1.2.1 Fairy Shrimp Natural History 4
1.2.2 Previous Surveys 5

SECTION 2.0 – SURVEY METHODS 6

SECTION 3.0 – RESULTS AND DISCUSSION 8
3.1 BASIN SAMPLING SCHEDULE 8
3.2 BASIN SAMPLING RESULTS 9

SECTION 4.0 – SUMMARY 13

SECTION 5.0 – SURVEYORS' CERTIFICATION 14

SECTION 6.0 – REFERENCES 15

LIST OF APPENDICES

APPENDIX A – SURVEY TRACKING TABLE
APPENDIX B – BASIN CONDITIONS BY SURVEY
APPENDIX C – BASIN CONDITIONS SUMMARY
APPENDIX D – REPRESENTATIVE SITE PHOTOGRAPHS
APPENDIX E – FIELD DATA FORMS

LIST OF TABLES

Page

Table 1: Survey Type, Date, and Surveyors 8

Table 2: Excluded Basins 10

LIST OF FIGURES

Page

Figure 1: Project Vicinity 1

Figure 2: Project Location (Aerial) 2

Figure 3: Project Location (Topo) 3

Figure 4: Survey Results Map……12

SECTION 1.0 – INTRODUCTION

Busby Biological Services, Inc. (BBS) performed focused, protocol-level wet season fairy shrimp surveys during the 2014/2015 survey season for Southern California Edison (SCE) on behalf of Chambers Group, Inc. (Chambers Group) for the proposed Circle City Substation and Mira Loma-Jefferson Subtransmission Line Project (proposed project) located in Riverside and San Bernardino counties in southern California (Figures 1 through 3). The following report provides a summary of the proposed project location and description, a brief description of the fairy shrimp species that have a potential to occur within the vicinity of the proposed project, a summary of previously conducted surveys for the proposed project, the survey methodology, and the results of the focused surveys.

1.1 PROJECT LOCATION AND DESCRIPTION

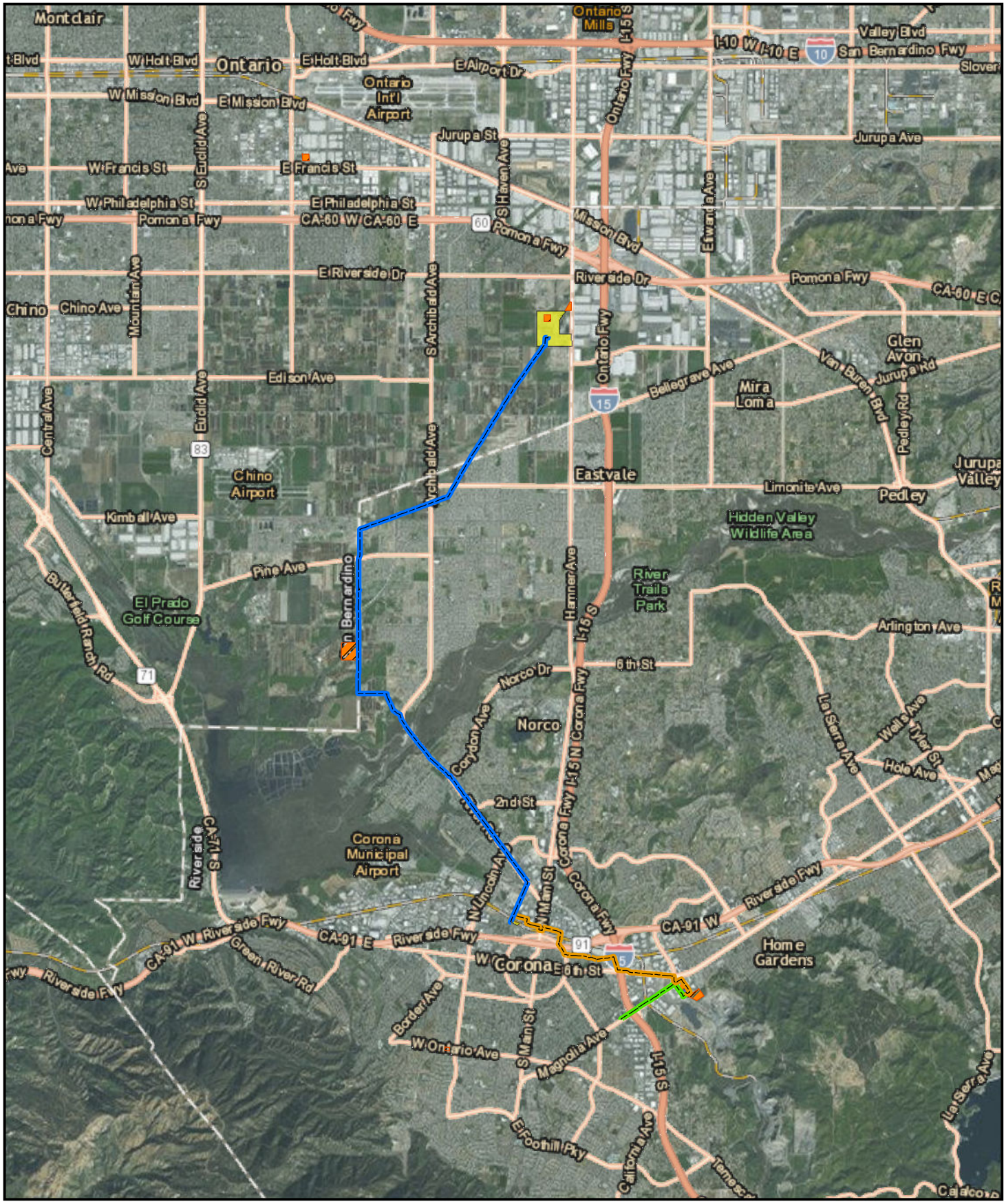
For the proposed project, SCE proposes to (1) construct the Circle City Substation, a new 66/12 kilovolt (kV) distribution substation, with four 66 kV source line segments, six new 12 kV distribution circuit getaways, and a new 66 kV subtransmission line (Mira Loma-Jefferson); (2) upgrade the existing Mira Loma Substation; and (3) install new fiber optic cable and communication equipment to connect the proposed Circle City Substation to SCE's existing telecommunication system. The purpose of the proposed project is to ensure the availability of safe and reliable electric service to meet customer electrical demand in the Electrical Needs Area.

The majority of the proposed project route spans across the U.S. Geological Survey (USGS) Corona North Quadrangle 7.5-Minute Topographic Map (USGS 1967a), with only the extreme northern portion of the proposed project within the Guasti Quadrangle Map (USGS 1966) and the extreme southern portion of the proposed project within the Corona South Quadrangle Map (USGS 1967b) (Figure 3). The proposed project route extends from the City of Ontario in San Bernardino County south through the City of Eastvale, the City of Norco, and the City of Corona in Riverside County. The proposed project route primarily runs west of Interstate 15 (I-15) and north of State Route 91 (SR 91), with the southern end of the project route extending south of SR 91 and east of I-15 (Figures 1 through 3). A portion of the proposed project area occurs within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) area.

Land uses surrounding the proposed project area are dominated by industrial and agricultural uses, such as waste management facilities and various agricultural industries (e.g., manure facilities, dairy farms, croplands) within the northern portion of the proposed project area and residential, commercial, and industrial uses in the southern portion of the proposed project area (Figure 2). Undeveloped open space is present surrounding Prado Flood Control Basin near the center of the proposed project area.

The proposed project survey area includes the proposed project alignment as well as (1) a 300-foot buffer around all substations sites, including the existing Mira Loma Substation, the existing Corona Substation, the proposed Circle City Substation, and the alternative Circle City Substation site; (2) a 300-foot buffer on either side of the proposed Mira Loma-Jefferson 66 kV subtransmission line route; and (3) a 300-foot buffer around all proposed material yards, access roads, guard structures, and pulling sites for the proposed routes (Figures 1 through 3).

Figure 1
Circle City & Mira Loma-Jefferson Sub Station
Project Vicinity Map



Legend

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

- Staging Yard

Substation

- Existing
- Proposed

N

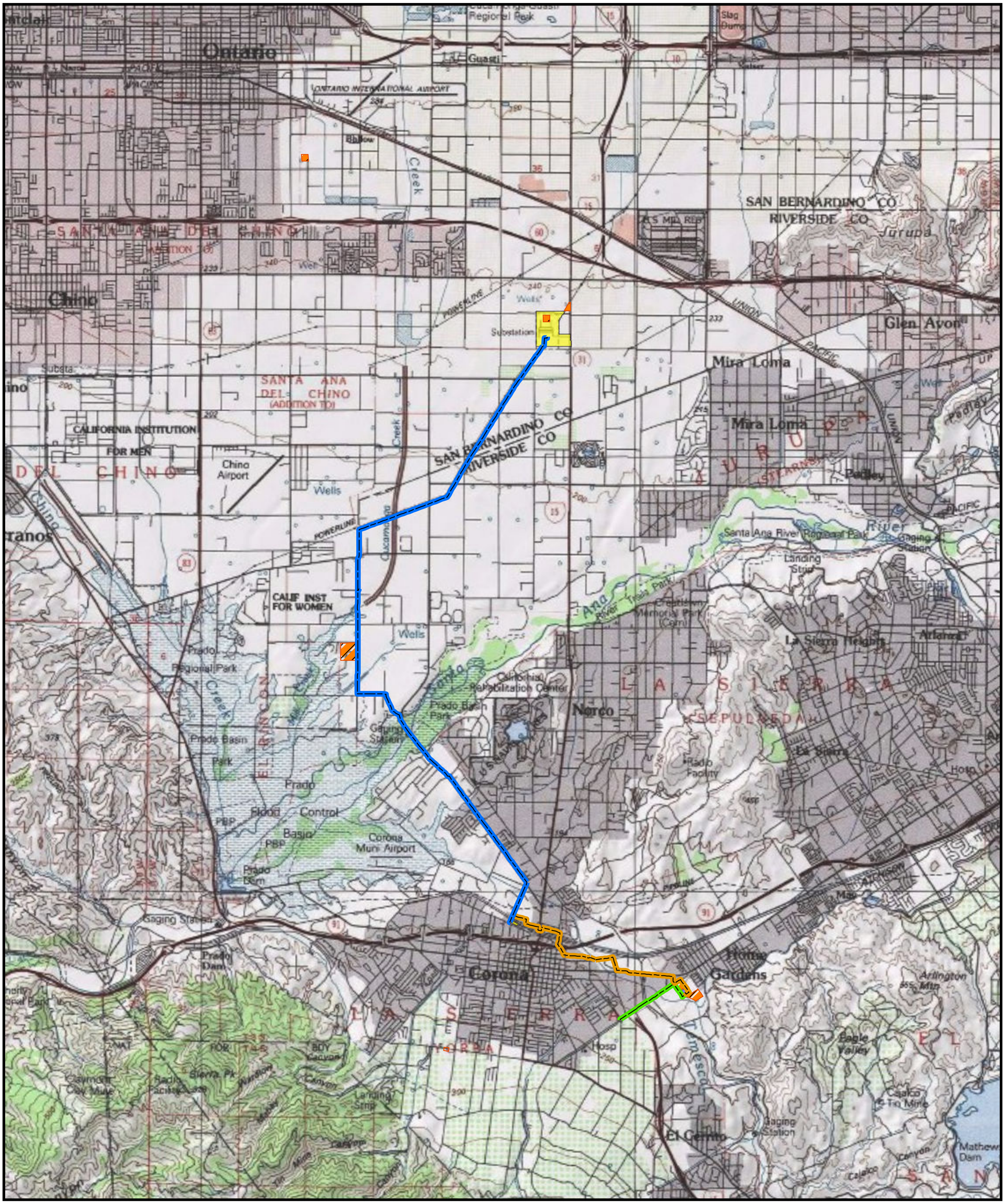
0 0.5 1 2
Miles

Figure 2

Circle City & Mira Loma-
Jefferson Sub Station
Project Location Map

Name: 20817 Figure 2 Project Location Map (Aerial).Mxd
Print Date: 8/7/2015, Author: msimmons

CHAMBERS GROUP



Legend

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

Staging Yard

Substation

- Existing
- Proposed

N

0 0.5 1 2
Miles

Figure 3

Circle City & Mira Loma-
Jefferson Sub Station
Project Location Map

Name: 20817 Figure 3 Project Location Map (Topo).Mxd
Print Date: 8/7/2015, Author: msimmons

CHAMBERS GROUP

Topography within the proposed project area is generally flat, with elevations ranging from approximately 630 to 790 feet above mean sea level (amsl). Several soil types occur within the proposed project area, including Arbuckle gravelly loam; Buchenau loam, slightly saline-alkali; Cajalco fine sandy loam; Chino silt loam; Chino silt loam, drained; Chualar clay loam; Cieneba rocky sandy loam; Cortina sandy loam; Cortina gravelly sandy loam; Delhi fine sand; Delhi loamy fine sand; Dello loamy sand, poorly drained; Dello loamy fine sand, gravelly substratum; Domino silt loam; gravel pits; Garretson gravelly very fine sandy loam; Grangeville loamy fine sand, drained; Grangeville fine sandy loam; Grangeville sandy loam, sandy substratum, drained, saline-alkali; Grangeville fine sandy loam, poorly drained, saline-alakali; Greenfield sandy loam; Hanford coarse sandy loam; Hilmar loamy sand; Hilmar loamy very fine sand; Hilmar loamy fine sand; Metz loamy fine sand, gravelly sand substratum; Pachappa fine sandy loam; Placentia fine sandy loam; Ramona sandy loam; Ramona very fine sandy loam; riverwash; rough broken land; San Emigdio fine sandy loam; San Emigdio fine sandy loam, deep; San Emigdio loam; Temescal rocky loam; terrace escarpments; and Waukena fine sandy loam, saline-alkali (USDA NRCS 1980, 1974).

1.2 PROJECT BACKGROUND

The proposed project survey area is located in a busy commercial, industrial, agricultural, and residential area that is subject to a high frequency and volume of activity associated with these uses. In particular, construction projects, sewer and road maintenance and upgrades, various forms of vehicular traffic, and operations and maintenance associated with waste management facilities and various agricultural industries (e.g., manure facilities, dairy farms, croplands) are the types of activities that appear to have the highest frequency and volume of use within the proposed project survey area.

Because of the high frequency and volume of activity along the proposed project route, the conditions within the proposed project area are highly disturbed and constantly changing, creating a dynamic environment for fairy shrimp. For example, because the majority of the basins surveyed for fairy shrimp within the proposed project survey area occur within urban areas (e.g., road sides, dirt lots, agricultural lots, construction yards) that are frequently disturbed by vehicle traffic (e.g., cars, garbage/recycling trucks, cattle trucks, construction equipment, maintenance vehicles, and other commercial vehicle), the elimination of basins, formation of new basins, and/or reconfiguration of existing basins occurs frequently. Changes to the basins are particularly pronounced following rain events during the wet season since the substrate supporting these basins is more prone to disturbance when saturated. With these unpredictable influences, the proposed project survey area has the potential to change unexpectedly, both from a short-term perspective, as described above, and from a long-term perspective, as observed between the 2012/2013 survey season and the 2014/2015 survey season.

1.2.1 Fairy Shrimp Natural History

The proposed project area contains habitat that has the potential to support fairy shrimp; therefore, focused fairy shrimp surveys are required. In addition to the common fairy shrimp species, versatile fairy shrimp (*Branchinecta lindahli*), three federally listed and/or Western Riverside County MSHCP covered fairy shrimp species have a potential to occur within the vicinity of the proposed project, including Riverside fairy shrimp (*Streptocephalus woottoni*), vernal pool fairy shrimp (*Branchinecta lynchi*), and Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*).

The Riverside fairy shrimp was federally listed as endangered in August of 1993 (USFWS 1993) and is a MSHCP-covered species. On December 4, 2012, U.S. Fish and Wildlife Service (USFWS) published a Final Rule revising the critical habitat for the Riverside fairy shrimp that became effective on January 3, 2013 (USFWS 2012). The previous critical habitat consisted of land in four units in Ventura, Orange, and San Diego counties, California. The revised critical habitat now includes land in three units in Ventura, Orange, and San Diego counties, California, for a total of approximately 1,724 acres, which represents critical habitat for this species. No critical habitat for Riverside fairy shrimp occurs in Riverside or San Bernardino Counties in both the original Final Rule and revised Final Rule.

The vernal pool fairy shrimp was federally listed as threatened on September 19, 1994 (USFWS 1994) and is a MSHCP-covered species. On August 11, 2005, USFWS published a Final Rule designating 858,846 acres of critical habitat for four vernal pool crustaceans and 11 vernal pool plants that became effective on September 12, 2005 (USFWS 2005). This critical habitat includes land from Oregon south to Ventura County, California. Areas in Riverside County are excluded from critical habitat in this final revised rule.

The Santa Rosa Plateau fairy shrimp is not formally listed by the resource agencies but is tracked by the California Department of Fish and Wildlife (CDFW) and is a MSHCP-covered species. The only known habitat for this species is protected on the Santa Rosa Plateau Ecological Reserve, approximately 27 miles southeast of the proposed project area.

1.2.2 Previous Surveys

Focused, protocol-level wet season fairy shrimp surveys were conducted during the 2011/2012 wet season by BonTerra Consulting (2012) and during the 2012/2013 wet season by BBS (2013). BonTerra Consulting detected common versatile fairy shrimp in six of the seven basins that were surveyed along the entire proposed project alignment. BBS detected common versatile fairy shrimp in 21 basins and unidentifiable immature fairy shrimp (likely versatile fairy shrimp) in 14 basins of the 86 basins that were surveyed along the entire proposed project alignment.

SECTION 2.0 – SURVEY METHODS

The focused 2014/2015 wet season fairy shrimp surveys were conducted in accordance with the USFWS survey protocol, titled *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods* and dated April 19, 1996. The detailed methods for the basin identification, numbering, and basin sampling are discussed below.

Following the first substantial rain of the 2014/2015 rainy season, BBS initiated the first protocol-level wet season survey along the entire proposed project alignment. During the first sampling visit, BBS recorded the location of each sampled basin using a hand held Global Positioning System (GPS) unit and onto aerial field maps of the proposed project survey area. In addition, BBS assessed the entire proposed project survey area during each of the first several visits to locate newly inundated basins that required sampling.

The basins that were previously surveyed by BonTerra Consulting in 2011/2012 and BBS in 2012/2013 were given the same numbers that were used during those previous surveys for consistency and to allow the data obtained during the 2014/2015 surveys to be compared with these previous survey results. Any new potential basins were numbered using a new number or, in areas where additional basins were identified within the vicinity of a previously-labeled basin, letter suffixes (i.e., a, b, c) were assigned to each separate basin so that the data for each individual basin could be collected and presented separately for the 2014/2015 wet season surveys. If these basins eventually separated into two or more basins, numbers (i.e., a.1, a.2, a.3) were used to further identify these individual basins.

During each survey, BBS biologists recorded information about each basin, such as estimated and actual maximum depth, length, and width; air and water temperature; habitat condition; disturbance level; and disturbance type. The maximum dimensions of each basin were estimated during the first sampling of that basin, based on the observed conditions onsite. The dimensions, air temperature, and water temperature of each inundated basin were measured and recorded during each successive sampling visit.

Using the classification provided in the USFWS survey protocol, the habitat condition for each basin was classified as undisturbed, disturbed, ungrazed, or grazed, and the disturbance level was classified high, medium, or low. The disturbance type included classifications that BBS created because none of the classifications in the USFWS protocol adequately described the basins within the proposed project survey area. BBS classified each basin as a road rut, a roadside ditch, or a manmade depression. A basin was classified as a road rut if it was a depression caused by vehicular activity along a road way or in a high traffic area with a dirt substrate. A basin was classified as a roadside ditch if it was a depression, usually linear, adjacent to an earthen berm that ponded because the area had been graded or contoured, and the basin was not caused by vehicular activity. A basin was classified as a manmade depression if it was not immediately adjacent to a roadway and if it ponded because of grading, contouring, or other human activity but was not caused by vehicular traffic.

BBS sampled each inundated basin by sweeping a hand-held net through the water and examining the net contents. For each basin that was surveyed, BBS recorded the basin number, survey date, and air temperature, as well as the maximum depth, width, and length of the basin at the time of that sampling event. BBS also recorded the aquatic species observed in each

basin. For fairy shrimp observed, BBS noted the reproductive status and approximate numbers of fairy shrimp in each basin and, when possible, identified which species were present.

SECTION 3.0 – RESULTS AND DISCUSSION

This section provides a summary of the sampling effort, including the survey schedule (Table 1) and the basin sampling results. Appendix A contains the Survey Tracking Table, which provides an overall summary of each basin per survey.

Focused, protocol-level 2014/2015 wet season surveys were conducted by permitted BBS biologists Darin Busby (TE-115373-3) and Melissa Busby (TE-080779-2), and assisted by Linette Lina, Laurie Gorman, Corine Klein, Sylvia Villalobos, and Heather Franklin. On March 20, 2015, Laurie Gorman was authorized by USFWS to independently conduct protocol-level fairy shrimp surveys under the permit of Darin Busby; therefore, Ms. Gorman conducted two surveys independently in May. Table 1 provides a summary of survey type, survey dates, surveyors, and assistants.

Table 1: Survey Type, Date, and Surveyors

Survey Type	Date	Surveyors	Assistants
Protocol Survey	12/11/14	Darin Busby M. Busby	L. Lina L. Gorman
Protocol Survey	12/19/14	D. Busby	L. Lina
Protocol Survey	12/20/14	D. Busby	--
Protocol Survey	12/26/12	D. Busby	C. Klein
Protocol Survey	1/02/15	D. Busby	S. Villalobos
Protocol Survey	1/07/15	D. Busby	--
Protocol Survey	1/19/15	D. Busby	S. Villalobos
Protocol Survey	2/3/15	M. Busby	L. Gorman
Basin Check	2/14/15	--	H. Franklin
Protocol Survey	3/2/15	D. Busby	S. Villalobos
Basin Check	3/15/15	--	H. Franklin
Basin Check	4/13/15	--	H. Franklin
Basin Check	4/29/15	--	H. Franklin
Protocol Survey	5/14/15	L. Gorman	--
Protocol Survey	5/20/15	L. Gorman	--
Basin Check	5/28/15	L. Gorman	--

3.1 BASIN SAMPLING SCHEDULE

BBS monitored the rain events for the 2014/2015 rainy season (National Oceanic and Atmospheric Administration [NOAA] 2014) to determine when to initiate surveys and to determine an appropriate sampling schedule. The first significant rain event in the region during the 2014/2015 season occurred between November 30 and December 4, 2014, when approximately 3 inches of rain fell. Therefore, BBS initiated the first protocol-level wet season survey within the entire proposed project survey area on December 11, 2014, within 2 weeks after this rain event. The initial survey included a thorough survey of the entire proposed project alignment to identify all basins, both basins previously surveyed in 2011/2012 or 2013/2014 and new basins. The following week after this first survey, the region received several more rain events, totaling approximately 2 inches of rainfall. Therefore, on December 19 and 20, 2014, BBS resurveyed the entire proposed project alignment for basins that were either newly

inundated or had re-inundated, or were still inundated from the previous survey on December 11, 2014. In response to the frequent rain events during December, BBS conducted surveys within the proposed project survey area approximately every week during the first six survey events between December 11, 2014 and January 7, 2015, because the basins were inundating at different frequencies, which required the basins to be surveyed on different survey schedules to satisfy survey protocol guidelines.

The region experienced dry and warm weather conditions in January and February, when only approximately 1 inch of rain fell during each of these months. BBS surveyed the proposed project alignment for inundated basin approximately every 2 weeks during the next three survey events between January 7 and February 2, 2015, as the frequency of rain events and amount of rain during this period caused some basins to dry, allowing BBS to survey all basins on the same schedule. All basins remained dry for the majority of February as no rain fell until the end of February, allowing BBS to conduct another survey on March 2, 2015.

The region experienced more dry and warm weather in March and April, when less than a half inch of rain fell during each of these months. All basins remained dry during the majority of this period as verified by Chambers Group during three basin checks.

An increase in rainfall occurred in the region in May, when approximately 1 inch of rain fell. In response to the late season rain, BBS conducted the final two surveys along the proposed project alignment on March 15 and 20, 2015.

After a final check of the basins on May 28, 2015, verifying that all basins along the proposed project alignment were dry, and after monitoring the weather during the month of June when only a trace amount of precipitation fell, surveys were discontinued.

3.2 BASIN SAMPLING RESULTS

Prior to conducting the first wet season sampling, BBS reviewed the maps of the proposed project survey area and the results from the 2012/2013 survey season and identified 72 potential basins within the proposed project alignment that could provide potentially suitable habitat for fairy shrimp. Following the first substantial rain of the 2014/2015 rainy season between November 30 and December 4, 2014, BBS initiated the first protocol-level wet season survey along the entire proposed project alignment on December 11, 2014.

During the first survey on December 11, 2014, BBS confirmed that 11 of these 72 potential basins could be excluded from the 2014/2015 wet season surveys, as summarized in Table 2 and in the Survey Tracking Table (Appendix A). Reasons for exclusion include disturbances such as the construction along Hellman Road that eliminated Basins 8c through 8j, active cattle/dairy operations (e.g., elimination of 22a), and grading and paving (e.g. elimination of the 2 Complex). These excluded basins are not discussed further or included in any other tables in this report. During the next several surveys as the ground became increasingly saturated after each rain event, BBS assessed the entire proposed project survey area for new basins to determine the location of additional basins requiring sampling.

Several basins that were surveyed during the 2012/2013 survey season never inundated and, therefore, were never surveyed during the 2014/2015 survey season. As previously discussed, the proposed project survey area is located in a busy commercial, industrial, agricultural, and residential area that is subject to a high frequency and volume of vehicular traffic and other land uses that cause alterations to potential fairy shrimp habitat. Basins that had been definitively

eliminated by construction or other disturbances were excluded, as described above. Other basins that did not inundate but could not be definitively excluded were monitored during the survey season for inundation. For example, Basins 19, 19a, 19b, 19c, and 19d never inundated during the 2014/2015 survey season, although they frequently inundated during the 2012/2013 survey season. These basins occur within the Mira Loma Substation and appeared to have been filled in with gravel during operations and maintenance activities at the substation. Similarly, other basins such as Basins 3b, 3c, 3d, 3e, 4a, 4b, 4h, and 4e along River Road never inundated during the 2014/2015 survey season, likely because they occur along road sides frequently disturbed by vehicle traffic that has altered the way rain water and runoff collect in these areas. In addition, Basins 37, 38, 39a, 39b, and 39c never inundated during the 2012/2013 survey season, but inundated once during the 2014/2015 survey season. These basins are not likely to provide substantial or sustained conditions for fairy shrimp as these areas had been recently graded, and a thick application of hydromulch appeared to have allowed the basins to retain water after one storm event at the beginning of the survey season. Several other basins within the proposed project survey area did not inundate for similar reasons as those described above.

Table 2: Excluded Basins

Basin Number	Rationale for Excluding
2 Complex	Former basins in dirt parking lot were paved over with asphalt.
8c	Former basin along dirt shoulder of Hellman Road was graded during construction.
8d	Former basin along dirt shoulder of Hellman Road was graded during construction.
8e	Former basin along dirt shoulder of Hellman Road was graded during construction.
8f	Former basin along dirt shoulder of Hellman Road was graded during construction.
8g	Former basin along dirt shoulder of Hellman Road was graded during construction.
8h	Former basin along dirt shoulder of Hellman Road was graded during construction.
8i	Former basin along dirt shoulder of Hellman Road was graded during construction.
8j	Former basin along dirt shoulder of Hellman Road was graded during construction.
22a	Former basin within dirt lot of cattle/dairy operation was fenced and graded.
36	Former basin within dirt lot was fenced and graded during construction.

Of the 61 potential basins within the survey area that were checked during the 2014/2015 survey season, 49 of these basins inundated and 12 of these basins never inundated during the 2014/2015 season (Figure 4). Of the 49 basins that inundated and were surveyed during the 2014/2015 survey season, 22 of these basins supported fairy shrimp, and 27 of these basins did not support any fairy shrimp. Of the 22 basins that supported fairy shrimp, BBS was able to identify the fairy shrimp as versatile fairy shrimp in all of these basins. In 19 of these 22 basins supporting versatile fairy shrimp, there were also sampling visits when the fairy shrimp within the basin were too young to identify to species; however, these were likely versatile fairy shrimp,

based on the presence of adult versatile fairy shrimp in these basins during the 2012/2013 and 2014/2015 survey seasons and the unlikely occurrence of any other fairy shrimp species in the proposed project alignment.

For each basin that was surveyed, BBS recorded the basin number, survey date, and air temperature, as well as the maximum depth, width, and length of the basin at the time of that sampling. BBS also recorded the aquatic species observed in each basin. For fairy shrimp observed, BBS noted the reproductive status and approximate numbers of fairy shrimp in each basin and, when possible, identified which species were present. Appendix B, Basin Conditions by Survey Table, provides a summary for each basin by date and includes information only for dates that the specific basin was sampled. If the basin was dry or not sampled for another reason, the information is included in the Survey Tracking Table (Appendix A) but not in the Basin Conditions by Survey Table. Once surveys were completed, BBS compiled the data for each of the basins and prepared the Basin Conditions Summary Table (Appendix C). This table provides the basin number, actual maximum depth, estimated maximum depth, actual maximum surface area, and estimated maximum surface area. The table also summarizes the habitat condition, disturbance type, and disturbance level and provides the GPS coordinates for each basin. Appendix D provides example photographs of several basins within the proposed project survey area. Copies of the original field datasheets are provided as Appendix E to this report.

Figure 4
Circle City & Mira Loma-
Jefferson Sub Station
Fairy Shrimp Survey Results
Map

Overview Map | Version Date: 8/7/2015

Legend

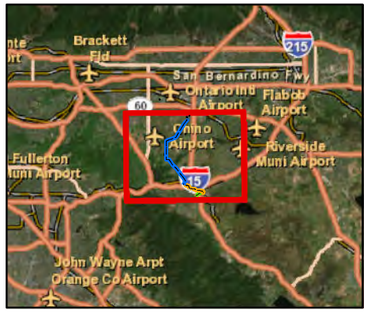
- Map Book Page

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City
- Substation Site

N

0 0.5 1 2
Miles



CHAMBERS GROUP

20817 Figure 4 Fairy Shrimp Survey Results over.mxd

Figure 4

Circle City & Mira Loma-
Jefferson Sub Station
Fairy Shrimp Survey Results
Map

 Version Date: 8/10/2015

Legend

Basins

- Surveyed in 2013 and 2015
- Surveyed in 2013 only, Never inundated in 2015
- Surveyed in 2013 only, Excluded in 2015 (active construction)
- Never inundated in 2013, Surveyed in 2015 only
- 300 foot Survey Area

Project Elements

- Access Roads
- Staging Yard
- Substation Site

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

N

0 150 300 600
Feet

CHAMBERS GROUP

20817 Figure 4 Fairy Shrimp Survey Results.mxd

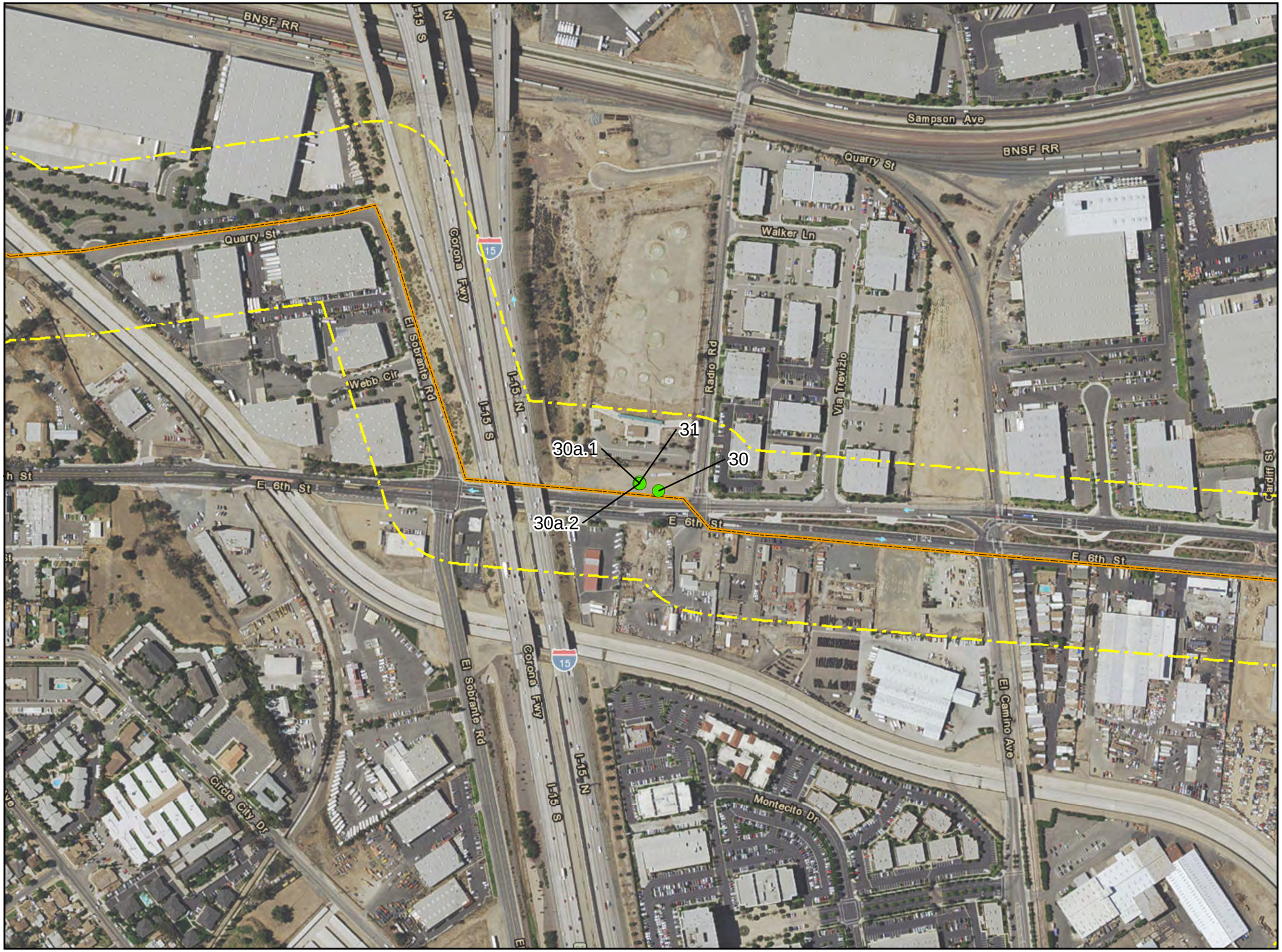


Figure 4
Circle City & Mira Loma-
Jefferson Sub Station
Fairy Shrimp Survey Results
Map

 Version Date: 8/10/2015

Legend

Basins

- Surveyed in 2013 and 2015
- Surveyed in 2013 only, Never inundated in 2015
- Surveyed in 2013 only, Excluded in 2015 (active construction)
- Never inundated in 2013, Surveyed in 2015 only
- 300 foot Survey Area

Project Elements

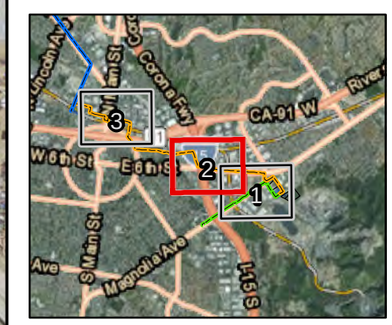
- Access Roads
- Staging Yard
- Substation Site

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

N

0 150 300 600
Feet



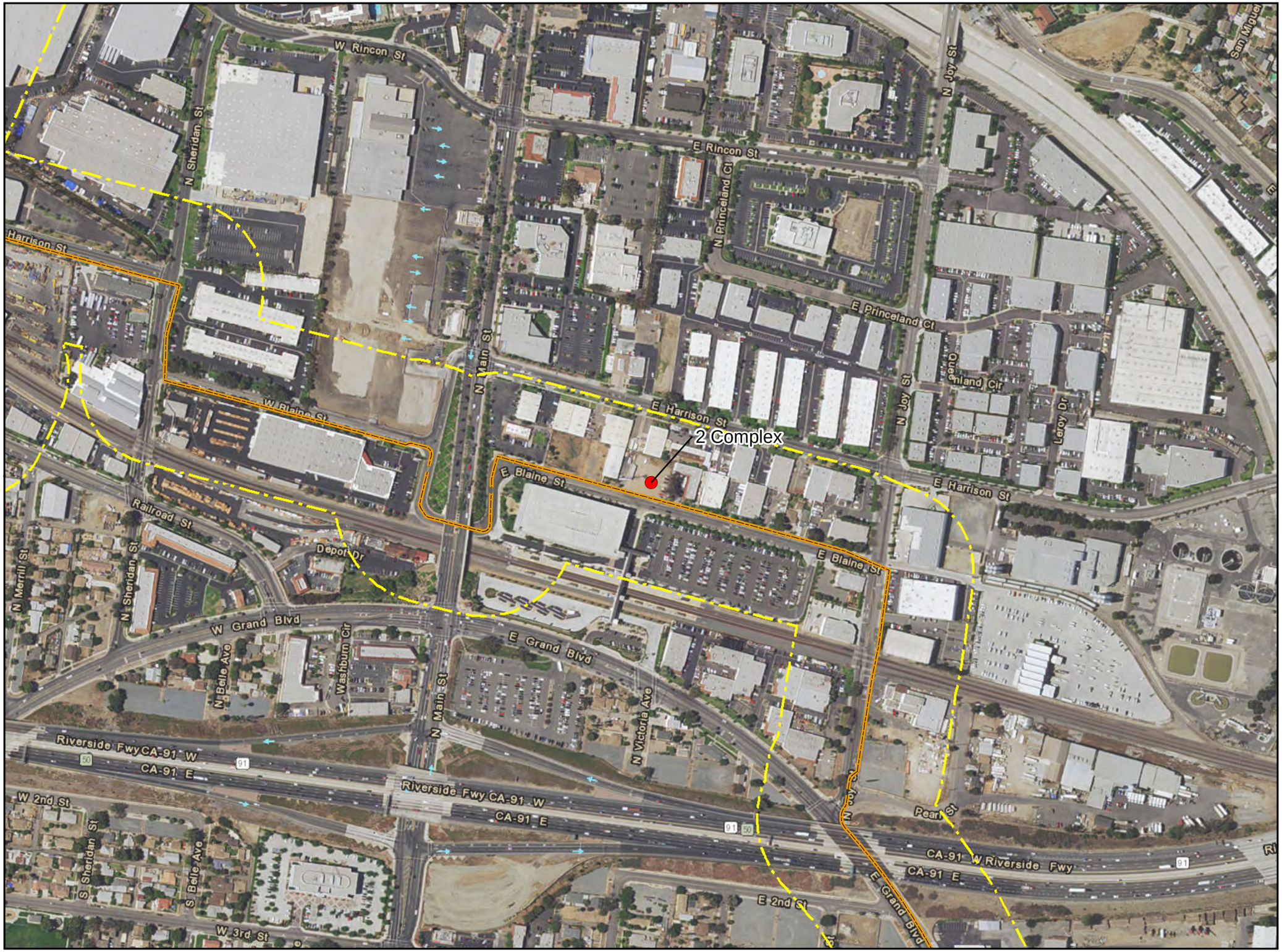
CHAMBERS GROUP

20817 Figure 4 Fairy Shrimp Survey Results.mxd

Figure 4

Circle City & Mira Loma-
Jefferson Sub Station
Fairy Shrimp Survey Results
Map

 Version Date: 8/10/2015



Legend

Basins

- Surveyed in 2013 and 2015
- Surveyed in 2013 only, Never inundated in 2015
- Surveyed in 2013 only, Excluded in 2015 (active construction)
- Never inundated in 2013, Surveyed in 2015 only
- 300 foot Survey Area

Project Elements

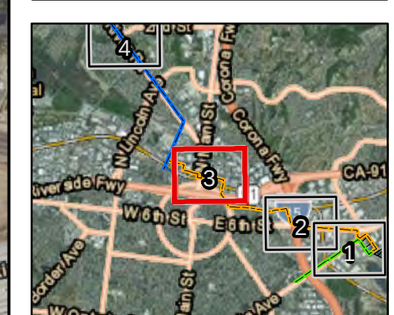
- Access Roads
- Staging Yard
- Substation Site

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

N

0 150 300 600
Feet



CHAMBERS GROUP

20817 Figure 4 Fairy Shrimp Survey Results.mxd

Figure 4

Circle City & Mira Loma-Jefferson Sub Station
Fairy Shrimp Survey Results
Map

Version Date: 8/10/2015

Legend

Basins

- Surveyed in 2013 and 2015
- Surveyed in 2013 only, Never inundated in 2015
- Surveyed in 2013 only, Excluded in 2015 (active construction)
- Never inundated in 2013, Surveyed in 2015 only
- 300 foot Survey Area

Project Elements

- Access Roads
- Staging Yard
- Substation Site

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

N

0 150 300 600
Feet

CHAMBERS GROUP

20817 Figure 4 Fairy Shrimp Survey Results.mxd

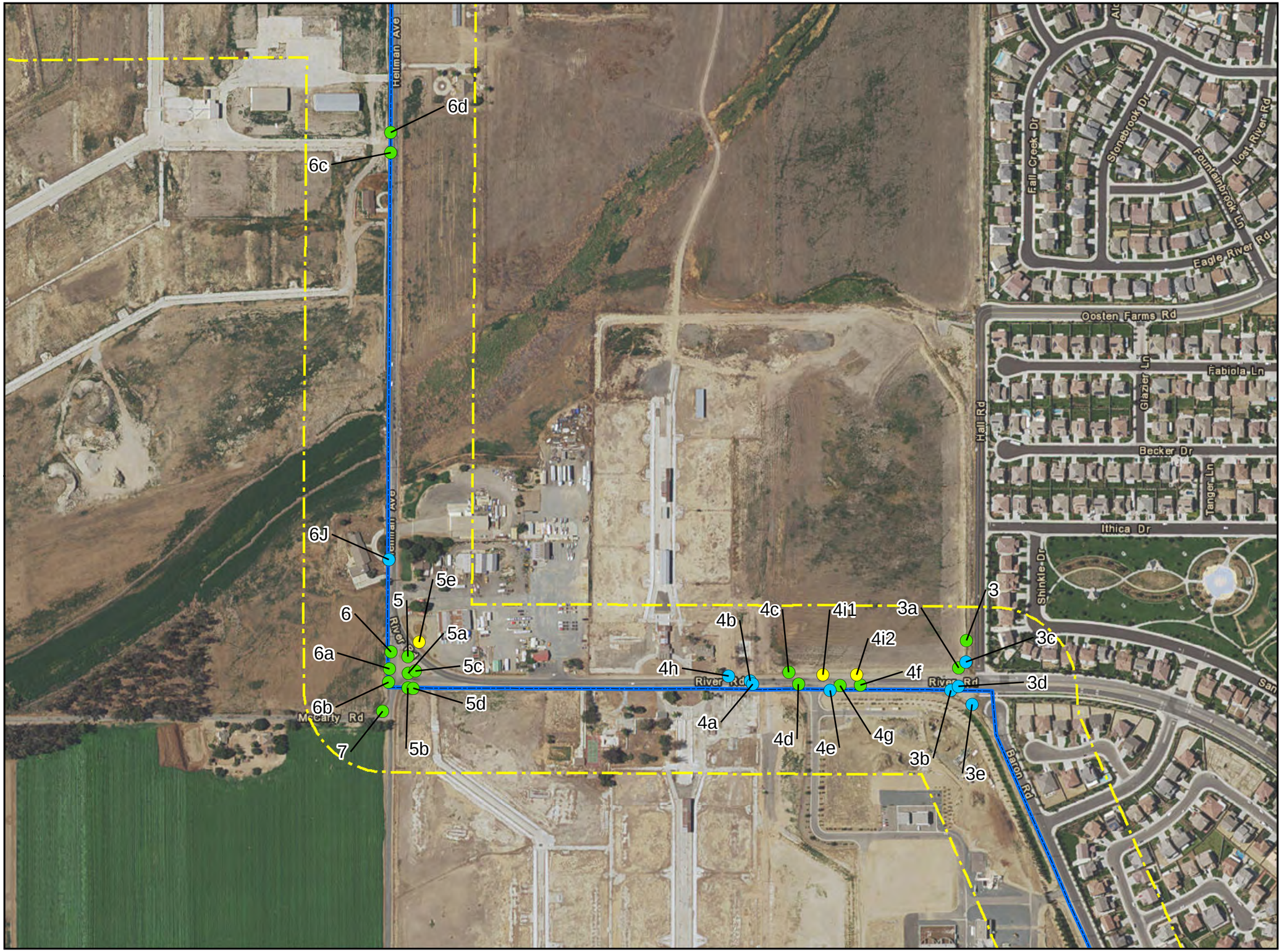


Figure 4

Circle City & Mira Loma-
Jefferson Sub Station
Fairy Shrimp Survey Results
Map

 Version Date: 8/10/2015

Legend

Basins

- Surveyed in 2013 and 2015
- Surveyed in 2013 only, Never inundated in 2015
- Surveyed in 2013 only, Excluded in 2015 (active construction)
- Never inundated in 2013, Surveyed in 2015 only
- 300 foot Survey Area

Project Elements

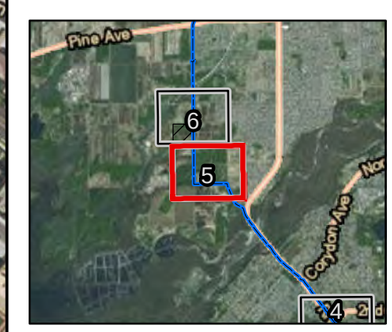
- Access Roads
- Staging Yard
- Substation Site

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

N

0 150 300 600
Feet



CHAMBERS GROUP

20817 Figure 4 Fairy Shrimp Survey Results.mxd

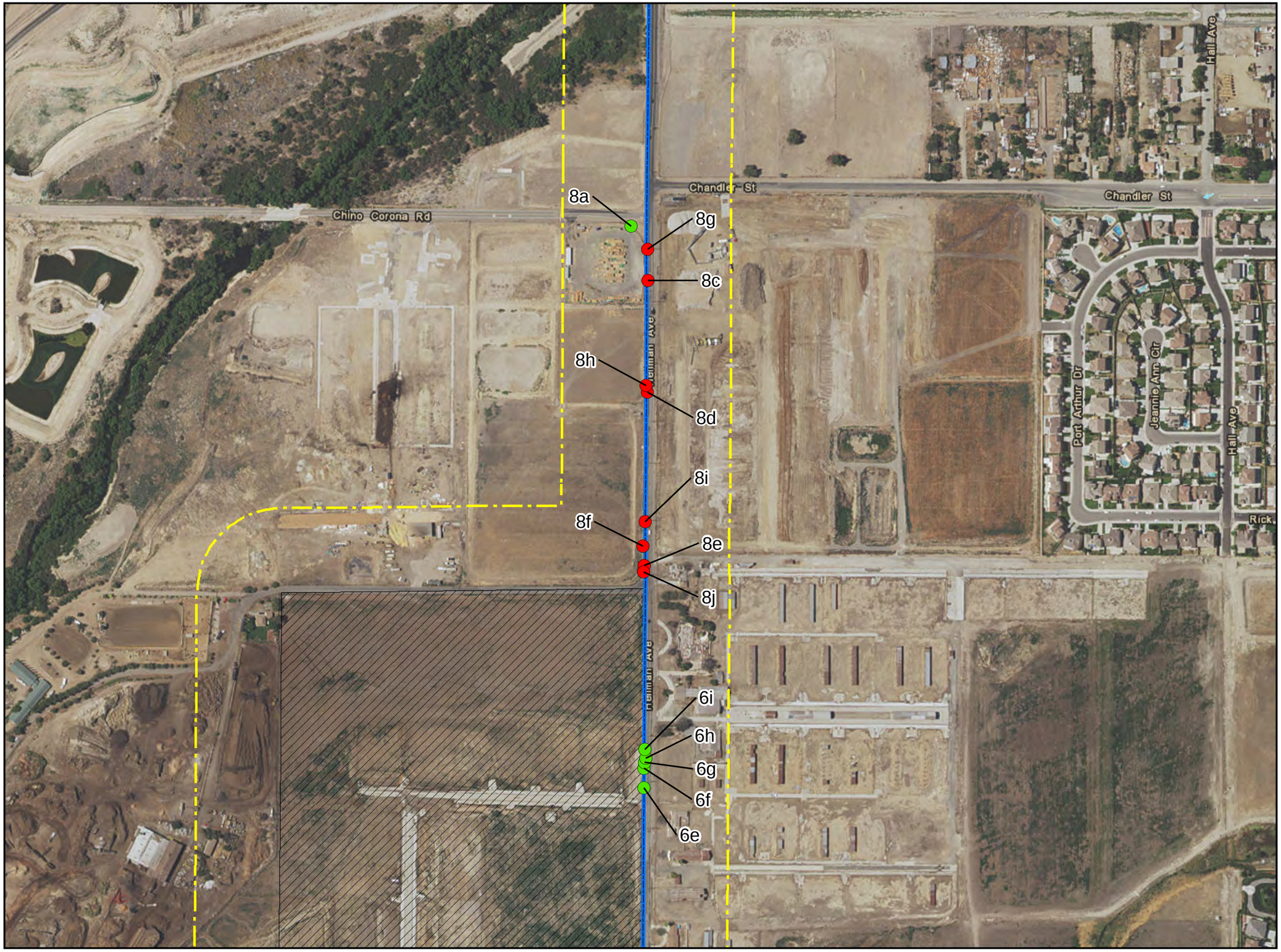


Figure 4
Circle City & Mira Loma-Jefferson Sub Station
Fairy Shrimp Survey Results Map

 Version Date: 8/10/2015

Legend

Basins

- Surveyed in 2013 and 2015
- Surveyed in 2013 only, Never inundated in 2015
- Surveyed in 2013 only, Excluded in 2015 (active construction)
- Never inundated in 2013, Surveyed in 2015 only
- 300 foot Survey Area

Project Elements

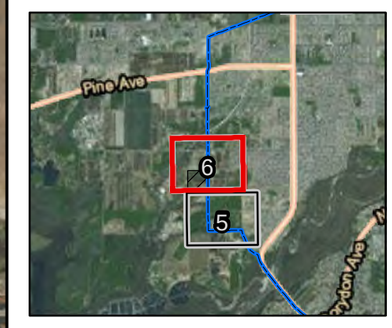
- Access Roads
- Staging Yard
- Substation Site

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

N

0 150 300 600
Feet



CHAMBERS GROUP

20817 Figure 4 Fairy Shrimp Survey Results.mxd

Figure 4
Circle City & Mira Loma-Jefferson Sub Station
Fairy Shrimp Survey Results Map

 Version Date: 8/10/2015

Legend

Basins

- Surveyed in 2013 and 2015
- Surveyed in 2013 only, Never inundated in 2015
- Surveyed in 2013 only, Excluded in 2015 (active construction)
- Never inundated in 2013, Surveyed in 2015 only
- 300 foot Survey Area

Project Elements

- Access Roads
- Staging Yard
- Substation Site

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

N

0 150 300 600
Feet

CHAMBERS GROUP

20817 Figure 4 Fairy Shrimp Survey Results.mxd

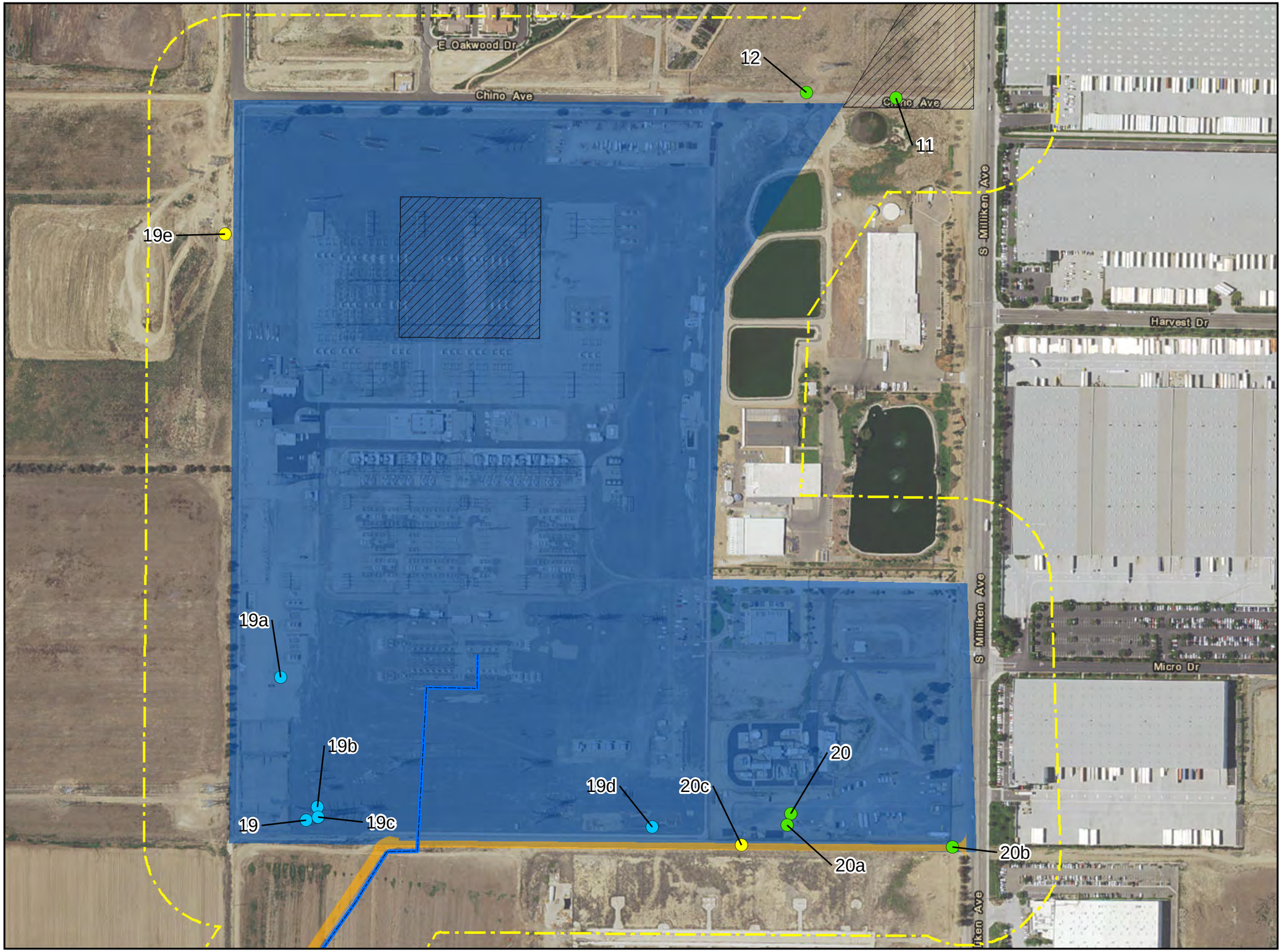


Figure 4
Circle City & Mira Loma-
Jefferson Sub Station
Fairy Shrimp Survey Results
Map

 Version Date: 8/10/2015

Legend

Basins

- Surveyed in 2013 and 2015
- Surveyed in 2013 only, Never inundated in 2015
- Surveyed in 2013 only, Excluded in 2015 (active construction)
- Never inundated in 2013, Surveyed in 2015 only
- 300 foot Survey Area

Project Elements

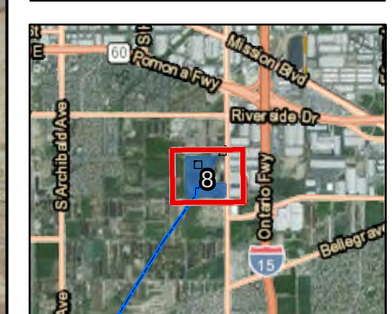
- Access Roads
- Staging Yard
- Substation Site

Transmission Line

- Corona - Circle City
- Mira Loma - Corona
- Tap - Circle City

N

0 150 300 600
Feet



CHAMBERS GROUP

20817 Figure 4 Fairy Shrimp Survey Results.mxd

SECTION 4.0 – SUMMARY

No sensitive and regulated fairy shrimp species were detected during the 2011/2012, 2012/2013, or 2014/2015 focused, protocol-level fairy shrimp surveys conducted within the proposed project survey area.

Approximately 72 potential basins were identified within the proposed project survey area during the 2014/2015 wet season surveys. Of these 72 potential basins, BBS excluded 11 basins and checked 61 basins for inundation. Of the 61 basins checked during the 2014/2015 survey season, 49 basins inundated and 12 basins never inundated during the season. Of the 49 basins that inundated during the season, 22 of these basins supported fairy shrimp and 27 of these basins did not support any fairy shrimp. Of the 22 basins that supported fairy shrimp, BBS was able to identify the fairy shrimp as versatile fairy shrimp in all of these basins. In 19 of these 22 basins supporting versatile fairy shrimp, there were also sampling visits when the fairy shrimp within the basin were too young to identify to species; however, these were likely versatile fairy shrimp, based on the presence of adult versatile fairy shrimp in these basins during the 2012/2013 and 2014/2015 survey seasons and the unlikely occurrence of any other fairy shrimp species in the proposed project alignment.

SECTION 5.0 – SURVEYORS' CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represent my work.

15 August 2015

Melissa Busby Date
ESA Permit Number TE-080779-2

15 August 2015

Darin Busby Date
ESA Permit Number TE-115373-3

15 August 2015

Laurie Gorman Date
ESA Permit Number TE-233367-2
(Surveyed under ESA Permit Number TE-115373-3)

SECTION 6.0 – REFERENCES

BonTerra Consulting

2012 *90-Day Report for the Wet Season Presence/Absence Survey for Vernal Pool Branchiopods Conducted on the Circle City Substation and Mira Loma- Jefferson Subtransmission Line Project, San Bernardino and Riverside Counties, California.* Prepared for USFWS Carlsbad Fish and Wildlife Office. August 2012.

National Oceanic and Atmospheric Administration (NOAA)

2015 National Weather Service Forecast Office, San Diego Weather. http://www.nws.noaa.gov/climate/index.php?wfo=sgx.

2014 National Weather Service Forecast Office, San Diego Weather. http://www.nws.noaa.gov/climate/index.php?wfo=sgx.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS).

1980 *Soil Survey Geographic (SSURGO) Database for San Bernardino County, Southwestern Part, California.* Fort Worth, TX: USDA, NRCS.

1974 *Soil Survey Geographic (SSURGO) Database for Western Riverside Area, California.* Fort Worth, TX: USDA, NRCS.

U.S. Fish and Wildlife Service (USFWS)

2012 Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the Riverside Fairy Shrimp; Final Rule. *Federal Register* 77(233): 72070–72140. Washington, D.C.: USFWS.

2005 Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants in California and Southern Oregon; Final Rule. *Federal Register* 70(154): 46923–46999. Washington, D.C.: USFWS.

1996 Interim Survey Guidelines to Permittees for Recovery Permits under Section under 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Brachiopods.

1994 Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, and the Vernal Pool Tadpole Shrimp; and Threatened Status for the Vernal Pool Fairy Shrimp. *Federal Register* 59(180): 42136–48153. Washington, D.C.: USFWS.

1993 Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Three Vernal Pool Plants and the Riverside Fairy Shrimp. *Federal Register* 58(147): 41384–41392. Washington, D.C.: USFWS.

U.S. Geological Survey (USGS)

1967a *Corona North Quadrangle 7.5-Minute Topographic Map* (Photorevised 1981).

1967b *Corona South Quadrangle 7.5-Minute Topographic Map* (Photorevised 1988).

1966 *Guasti Quadrangle 7.5-Minute Topographic Map* (Photorevised 1981).

APPENDIX A – SURVEY TRACKING TABLE

ATTACHMENT A: SURVEY TRACKING TABLE

Basin I.D.	12/11/14 (Survey 1)	12/19/14 (Survey 1)	12/20/14 (Survey 1)	12/26/14 (Survey 2)	01/02/15 (Survey 3)	01/07/15 (Survey 3)	01/19/15 (Survey 4)	02/03/15 (Survey 5)	2/14/15 (Basin Check)	3/2/15 (Survey 6)	3/15/15 (Basin Check)	4/13/15 (Basin Check)	4/29/15 (Basin Check)	05/14/15 (Survey 7)	05/20/15 (Survey 8)	05/28/15 (Basin Check)	Identified Fairy Shrimp	Unidentified Fairy Shrimp	Notes
2 Complex	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Parking lot paved.
3	D	⊘	SNN	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	None	None	
3a	D	⊘	SNN	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	None	None	
3b	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
3c	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
3d	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
3e	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
4a	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
4b	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
4c	A	A	SNN	A	SNN	D	I	⊘	D	I	D	D	D	D	I, A	D	VFS (A)	I	4c, 4i.1 and 4i.2 were connected during survey #1.
4d	D	⊘	SNN	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	None	None	
4e	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
4f	I	A	SNN	A	SNN	D	I	D	D	I	D	D	D	D	D	D	VFS (A)	I	4f and 4g were connected during surveys 2-4 and 6.
4g	⊘	A	SNN		SNN			D	D		D	D	D	D	D	D	VFS (A)	I	4f and 4g were connected during surveys 2-4 and 6.
4h	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
4i.1	I, A		SNN	A	SNN	D	I	I, A	D	I	D	D	D	D	D	D	VFS (A)	I	4c, 4i.1 and 4i.2 were connected during survey #1.
4i.2			SNN	A	SNN	D	I	D	D	I	D	D	D	D	D	D	VFS (A)	I	4c, 4i.1 and 4i.2 were connected during survey #1.
5	I, A	I, A	SNN	I, A	SNN	A	I, A	A	D	I	D	D	D	D	D	D	VFS (A)	I	Basins 5 and 5a were connected during survey #1. Only adult female *Branchinecta* sp. during survey #5.
5a			SNN	I, A	SNN	⊘	I, A	A	D	I	D	D	D	D	D	D	VFS (A)	I	Basins 5 and 5a were combined during survey #1.
5b	D	I, A	SNN	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	VFS (A)	I	Basins 5b and 5d were combined during survey #1 and 6.
5c	D	I, A	SNN	SNN	D	D	I	D	D	I	D	D	D	D	D	D	VFS (A)	I	
5d	D	I, A	SNN	SNN	D	D	I	D	D	⊘	D	D	D	D	D	D	VFS (A)	I	Basins 5b and 5d were combined during survey #1 and 6.
5e	D	⊘	SNN	SNN	A	D	⊘	⊘	D	⊘	D	D	D	D	D	D	VFS (A)	None	
6	D	I, A	SNN	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	VFS (A)	I	
6a	D	I, A	SNN	SNN	D	D	D	D	D	I	D	D	D	D	D	D	VFS (A)	I	Basins 6a and 6b were combined during survey #1 and 6.
6b			SNN	SNN	D	D	D	D	D		D	D	D	D	D	D	VFS (A)	I	Basins 6a and 6b were combined during survey #1 and 6.
6c	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
6d	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
6e	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	

ATTACHMENT A: SURVEY TRACKING TABLE

Basin I.D.	12/11/14 (Survey 1)	12/19/14 (Survey 1)	12/20/14 (Survey 1)	12/26/14 (Survey 2)	01/02/15 (Survey 3)	01/07/15 (Survey 3)	01/19/15 (Survey 4)	02/03/15 (Survey 5)	2/14/15 (Basin Check)	3/2/15 (Survey 6)	3/15/15 (Basin Check)	4/13/15 (Basin Check)	4/29/15 (Basin Check)	05/14/15 (Survey 7)	05/20/15 (Survey 8)	05/28/15 (Basin Check)	Identified Fairy Shrimp	Unidentified Fairy Shrimp	Notes
6f	⊘	⊘	SNN	D		D	D	D	D	D	D	D	D	D	D	D	None	None	Too shallow to sample during survey #1.
6g	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
6h	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
6i	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
6j	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
7	I	I, A	SNN	I	SNN	D	⊘	⊘	D	I	D	D	D	I	SNN	D	VFS (A)	I	
8a	I, A	A	SNN	D	SNN	D	D	D	D	D	D	D	D	D	D	D	VFS (A)	I	
8c	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Active construction.
8d	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Active construction.
8e	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Active construction.
8f	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Active construction.
8g	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Active construction.
8h	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Active construction.
8i	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Active construction.
8j	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Active construction.
11	D	⊘	SNN	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	None	None	
12	D	⊘	SNN	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	None	None	
19	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	19, 19a,19b, 19c, and 19d possibly filled in with gravel; unable to inundate.
19a	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	19, 19a,19b, 19c, and 19d possibly filled in with gravel; unable to inundate.
19b	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	19, 19a,19b, 19c, and 19d possibly filled in with gravel; unable to inundate.
19c	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	19, 19a,19b, 19c, and 19d possibly filled in with gravel; unable to inundate.
19d	D	D	SNN	D	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
19e	D	D	⊘	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	None	None	
20	I, A	SNN	A	I, A	SNN	D	I	D	D	I	D	D	D	D	I	D	VFS (A)	I	20 and 20a were connected during surveys 2, 3, and 6.
20a	I, A	SNN	A		SNN		⊘	D	D		D	D	D	D	D	D	VFS (A)	I	20 and 20a were connected during surveys 2, 3, and 6.
20b	⊘	SNN	D	D	D	D	⊘	D	D	⊘	D	D	D	D	D	D	None	None	Fed by street runoff.
20c	D	D	A	SNN	⊘	D	D	D	D	⊘	D	D	D	D	D	D	VFS (A)	None	New basin detected during survey 2; overflow from 20 and 20a.
22a	E	E	E	E	E	D	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Dairy operations.
23	D	⊘	SNN	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	None	None	
23a	D	⊘	SNN	SNN	D	D	D	D	D	⊘	D	D	D	D	D	D	None	None	
29	⊘	⊘	SNN	SNN	D	D	D	⊘	D	⊘	D	D	D	D	D	D	None	None	
29a	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
29b	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	

ATTACHMENT A: SURVEY TRACKING TABLE

Basin I.D.	12/11/14 (Survey 1)	12/19/14 (Survey 1)	12/20/14 (Survey 1)	12/26/14 (Survey 2)	01/02/15 (Survey 3)	01/07/15 (Survey 3)	01/19/15 (Survey 4)	02/03/15 (Survey 5)	2/14/15 (Basin Check)	3/2/15 (Survey 6)	3/15/15 (Basin Check)	4/13/15 (Basin Check)	4/29/15 (Basin Check)	05/14/15 (Survey 7)	05/20/15 (Survey 8)	05/28/15 (Basin Check)	Identified Fairy Shrimp	Unidentified Fairy Shrimp	Notes
30	D	A	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	VFS (A)	None	
30a.1	I, A	A	SNN	I, A	SNN	D	D	D	D	D	D	D	D	D	D	D	VFS (A)	I	30a.1 and 30a.2 connected during
30a.2	I, A			I, A	SNN	D	I	D	D	D	D	D	D	D	D	D	VFS (A)	I	30a.1 and 30a.2 connected during survey #2.
31	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	
36	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	EXCLUDED. Active construction.
37	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	Recently graded and hydroseeded road.
38	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	Recently graded and hydroseeded road.
39a	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	Previously riparian habitat that was recently cleared and hydroseeded after construction.
39b	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	Previously riparian habitat that was recently cleared and hydroseeded after construction.
39c	D	⊘	SNN	SNN	D	D	D	D	D	D	D	D	D	D	D	D	None	None	Previously riparian habitat that was recently cleared and hydroseeded after construction.

Key

A =	Adult	N/A =	Not Applicable
D =	Dry	SNN =	Survey Not Necessary
E =	Excluded	VFS =	Versatile Fairy Shrimp (Branchinecta lindahli)
I =	Immature	⊘ =	Surveyed but no fairy shrimp detected
N =	Nauplii		

APPENDIX B – BASIN CONDITIONS BY SURVEY

ATTACHMENT B: BASIN CONDITIONS BY SURVEY TABLE

Basin I.D.	Survey Date	Air Temp (°F)	Basin Conditions					Fairy Shrimp			Other Species
			Water Temp (°F)	Actual Depth (in.)	Actual Width (ft.)	Actual Length (ft.)	Max Surface Area (sq. ft.)	Species	Reproductive Status	Number	
3	12/19/14	64	56	6	6	168	800	N/A	N/A	N/A	None
	3/2/15	54	55	6	6	140	650	N/A	N/A	N/A	None
3a	12/19/14	64	61	3.5	4	27	75	N/A	N/A	N/A	None
	3/2/15	54	55	5	5	30	100	N/A	N/A	N/A	None
4c	12/11/14	67	74	5	5	154	600	VFS	A	1,000s	UW
	12/19/14	64	56	10	9	510	4000	VFS	A	1,000s	None
	12/26/14	60	53	5	5	150	560	VFS	A	1,000s	SS, WF, UW
	1/19/15	47	53	6	6	154	750	Unk	I	1,000s	None
	2/3/15	78	79	4	4	151	450	N/A	N/A	N/A	UB, UW, SS, ML
	3/2/15	54	56	7	6	135	650	Unk	I	1,000s	None
	5/20/15	78	88	2.5	3	43	120	Unk, VFS	I, A	1,000s; 1s	CO, SS, WB, UB, UL, ML
4d	12/19/14	64	58	2	5	30	125	N/A	N/A	N/A	None
	3/2/15	54	64	2.5	5	25	100	N/A	N/A	N/A	None
4f	12/11/14	67	74	2	3	62	180	Unk	I	10s	None
	12/19/14	64	58	5	12	130	1440	VFS	A	100s	None
	12/26/14	60	53	4	8	106	800	VFS	A	100s	None
	1/19/15	47	51	4	8	108	800	Unk	I	1,000s	SS
	3/2/15	54	56	4	5	105	500	Unk	I	1,000s	WB
4g	12/11/14	67	70	3	3	32	90	N/A	N/A	N/A	None
	12/19/14	64	58	5	12	130	1440	VFS	A	100s	None
	12/26/14	60	53	4	8	106	800	VFS	A	100s	WB
	1/19/15	47	51	4	8	108	800	Unk	I	1,000s	SS
	3/2/15	54	56	4	5	105	500	Unk	I	1,000s	WB

ATTACHMENT B: BASIN CONDITIONS BY SURVEY TABLE

Basin I.D.	Survey Date	Air Temp (°F)	Basin Conditions					Fairy Shrimp			Other Species
			Water Temp (°F)	Actual Depth (in.)	Actual Width (ft.)	Actual Length (ft.)	Max Surface Area (sq. ft.)	Species	Reproductive Status	Number	
4i.1	12/11/14	67	78	2	3	38	90	Unk, VFS	I, A	1,000s	None
	12/19/14	64	56	10	9	510	4500	VFS	A	1,000s	None
	12/26/14	60	54	4	5	110	500	VFS	A	1,000s	SS, UW
	1/19/15	47	52	5	6	110	600	Unk	I	1,000s	SS
	2/3/15	78	73	1.5	3.5	18.5	55	Unk, Branchinecta sp.	I, A	100s; 1	Unk beetle, insect larvae, SS, WB
	3/2/15	54	58	4	4	105	400	Unk	I	1,000s	None
4i.2	12/11/14	67	75	1.5	2	31	60	Unk, VFS	I, A	1000s	None
	12/19/14	64	56	10	9	510	4500	VFS	A	1,000s	None
	12/26/14	60	55	5	4	136	520	VFS	A	1,000s	None
	1/19/15	47	51	5	5	136	675	Unk	I	1,000s	SS
	3/2/15	54	58	4.5	4	110	400	Unk	I	1,000s	None
5	12/11/14	64	68	5	37	39	1370	VFS	I,A	1,000s	None
	12/19/14	64	65	6	65	85	4800	VFS	I,A	1,000s; 100s	None
	12/26/14	60	54	6	41	42	1600	VFS	I,A	1,000s; 1,000s	SS
	1/7/15	60	53	3	13	31	360	VFS	A	100s	SS, C
	1/19/15	47	54	7	36	40	1330	Unk, VFS	I, A	100s; 100s	SS, WF, C
	2/3/15	78	77	4.5	21.5	33	600	Branchinecta sp.	A	1s	SS, ML, WF, UL
	3/2/15	64	60	7	24	33	710	Unk	I	1,000s	None

ATTACHMENT B: BASIN CONDITIONS BY SURVEY TABLE

Basin I.D.	Survey Date	Air Temp (°F)	Basin Conditions					Fairy Shrimp			Other Species
			Water Temp (°F)	Actual Depth (in.)	Actual Width (ft.)	Actual Length (ft.)	Max Surface Area (sq. ft.)	Species	Reproductive Status	Number	
5a	12/11/14	64	74	3.5	13	46	560	Unk, VFS	I, A	1,000s	None
	12/19/14	64	65	6	65	85	5200	Unk, VFS	I, A	1,000s; 100s	None
	12/26/14	60	54	4	15	54	750	Unk, VFS	I, A	100s; 1,000s	SS, WB
	1/7/15	60	54	1	4	6	20	N/A	N/A	N/A	SS, C
	1/19/15	47	54	5	14	45	560	Unk, VFS	I, A	10s; 1,000s	SS, C
	2/3/15	78	75	2.75	7.5	25.5	170	VFS	A	10s	SS, C, WF
	3/2/15	64	60	4	13	54	640	Unk	I	1,000s	None
5b	12/19/14	64	65	4.5	16	68	1000	Unk, VFS	I, A	10s, 10s	None
	3/2/15	64	60	3	20	57	1100	N/A	N/A	N/A	None
5c	12/19/14	64	69	4	6	51	100	Unk, VFS	I, A	100s, 100s	None
	1/19/15	47	54	3	4	6	20	Unk	I	100s	None
	3/2/15	64	60	4	10	14	130	Unk	I	100s	None
5d	12/19/14	64	65	4.5	16	68	990	Unk, VFS	I, A	10s, 10s	None
	1/19/14	47	54	1	1	3	3	Unk	I	10s	None
	3/2/15	64	60	3	20	57	1100	N/A	N/A	N/A	None
5e	12/19/14	64	60	9	8	140	1040	N/A	N/A	N/A	None
	1/2/15	43	40	1.5	1.5	29	30	VFS	A	2	SS
	1/19/15	47	58	2	2	30	60	N/A	N/A	N/A	SS
	2/3/15	78	78	2.5	1.5	30	30	N/A	N/A	N/A	None
	3/2/15	64	60	7	4	105	400	N/A	N/A	N/A	None
6	12/19/14	64	69	2.5	15	32	450	Unk, VFS	I, A	1,000s, 10s	None
	3/2/15	64	60	3	15	37	525	N/A	N/A	N/A	None

ATTACHMENT B: BASIN CONDITIONS BY SURVEY TABLE

Basin I.D.	Survey Date	Air Temp (°F)	Basin Conditions					Fairy Shrimp			Other Species
			Water Temp (°F)	Actual Depth (in.)	Actual Width (ft.)	Actual Length (ft.)	Max Surface Area (sq. ft.)	Species	Reproductive Status	Number	
6a	12/19/14	64	62	3	11	54	540	Unk, VFS	I, A	1,000s,	None
	3/2/15	64	60	4	10	36	360	Unk	I	100s	None
6b	12/19/14	64	62	3	11	54	540	Unk, VFS	I, A	1,000s, 10s	None
	3/2/15	64	60	4	10	36	350	Unk	I	100s	None
6c	12/19/14	64	69	4	6	51	300	N/A	N/A	N/A	None
6d	12/19/14	64	69	3	8	32	240	N/A	N/A	N/A	None
6e	12/19/14	64	69	1.5	5	22	100	N/A	N/A	N/A	None
6f	12/11/14	67	N/A	1	4	2	8	N/A	N/A	N/A	None
	12/19/14	64	68	3	5	20	100	N/A	N/A	N/A	None
6g	12/19/14	64	70	2.5	5	9	45	N/A	N/A	N/A	None
6h	12/19/14	64	65	5	7	19	125	N/A	N/A	N/A	None
6i	12/19/14	64	71	2	7	18	120	N/A	N/A	N/A	None
7	12/11/14	67	73	3.5	14	76	1050	Unk	I	1,000's	None
	12/19/14	64	54	7	24	130	2875	Unk, VFS	I,A	1,000's	None
	12/26/14	60	54	5	14	75	950	Unk	I	100's	None
	1/19/15	47	52	5	19	80	1350	N/A	N/A	N/A	WB
	2/3/15	78	78	4.5	10	64	600	N/A	N/A	N/A	None
	3/2/15	64	60	6	16	82	1200	Unk	I	100s	None
	5/14/15	66	72	3	6	28	125	Unk	I	10s	UW, WB
8a	12/11/14	64	69	1.5	5	43	200	Unk, VFS	I,A	10's	None
	12/19/14	64	67	3	8	68	520	VFS	A	10s	None
11	12/19/14	64	61	3	12	26	260	N/A	N/A	N/A	None
	3/2/15	52	60	4	15	33	450	N/A	N/A	N/A	None
12	12/19/14	64	60	2	9	20	160	N/A	N/A	N/A	None
	3/2/15	52	60	2.5	11	22	210	N/A	N/A	N/A	None
19d	3/2/15	52	60	4	13	37	420	N/A	N/A	N/A	None
19e	12/20/14	53	53	9	20	90	1530	N/A	N/A	N/A	None

ATTACHMENT B: BASIN CONDITIONS BY SURVEY TABLE

Basin I.D.	Survey Date	Air Temp (°F)	Basin Conditions					Fairy Shrimp			Other Species
			Water Temp (°F)	Actual Depth (in.)	Actual Width (ft.)	Actual Length (ft.)	Max Surface Area (sq. ft.)	Species	Reproductive Status	Number	
20	12/11/14	61	58	10	100	140	13,000	Unk, VFS	I, A	1,000s	None
	12/20/14	52	53	12	180	150	23,800	VFS	A	1,000s	None
	12/26/14	58	54	12	84	130	10,000	Unk, VFS	I, A	1,000s; 100s	None
	1/19/15	47	60	5	18	70	975	Unk	I	10,000s	CC
	3/2/15	52	55	6	100	180	17,000	Unk	I	1,000s	None
	5/20/15	78	72	1.5	11	21	200	Unk	I	1s	CO, SS, WB, UL, ML
20a	12/11/14	61	58	10	100	140	13,000	Unk, VFS	I, A	1,000s	None
	12/20/14	52	53	12	180	150	25,370	VFS	A	1,000s	None
	12/26/14	58	54	12	84	130	10,000	Unk, VFS	I, A	100s; 1,000s	None
	1/19/15	47	65	2	28	75	1,750	N/A	N/A	N/A	CC
	3/2/15	52	55	6	100	180	17,000	Unk	I	1,000s	None
20b	12/11/14	61	63	2.5	12	9	90	N/A	N/A	N/A	None
	1/19/15	47	65	3	9	44	360	N/A	N/A	N/A	None
	3/2/15	52	55	3	10	14	130	N/A	N/A	N/A	None
20c	12/20/14	53	53	4	6	9	50	VFS	A	100s	S
	1/2/15	50	45	5	10	93	900	N/A	N/A	N/A	MF
	3/2/15	52	55	6	15	160	1600	N/A	N/A	N/A	None
23	12/19/14	64	66	3	16	17	210	N/A	N/A	N/A	None
	3/2/15	64	60	3	15	15	170	N/A	N/A	N/A	None
23a	12/19/14	64	66	3.5	29	53	1400	N/A	N/A	N/A	None
	3/2/15	64	60	4	34	70	2300	N/A	N/A	N/A	None
29	12/11/14	60	62	2	3	3	9	N/A	N/A	N/A	None
	12/19/14	54	49	4.5	9	60	465	N/A	N/A	N/A	None
	2/3/15	78	78	1	4	4	16	N/A	N/A	N/A	None
	3/2/15	54	55	4	10	58	560	N/A	N/A	N/A	None
29a	12/19/14	54	50	1	3	4	12	N/A	N/A	N/A	None

ATTACHMENT B: BASIN CONDITIONS BY SURVEY TABLE

Basin I.D.	Survey Date	Air Temp (°F)	Basin Conditions					Fairy Shrimp			Other Species
			Water Temp (°F)	Actual Depth (in.)	Actual Width (ft.)	Actual Length (ft.)	Max Surface Area (sq. ft.)	Species	Reproductive Status	Number	
29b	12/19/14	54	50	1.25	3	3.5	9	N/A	N/A	N/A	None
30	12/19/14	54	52	3.5	40	141	5560	VFS	A	1,000s	None
30a	12/19/14	54	52	4	13	44	480	VFS	A	100s	None
30a.1	12/11/14	60	60	2	3	3	9	Unk, VFS	I, A	100s	WB
	12/26/14	59	53	2	6	33	180	Unk, VFS	I, A	10s; 100s	UW
30a.2	12/11/14	64	64	2	7	32	210	Unk, VFS	I, A	100s	WB
	12/26/14	59	53	4	13	76	900	Unk, VFS	I, A	100s;	UW
	1/19/15	47	50	2	8	23	160	Unk	I	100's	None
31	12/19/14	54	52	3.5	7	18	100	N/A	N/A	N/A	None
37	12/19/14	54	55	4	9	7	60	N/A	N/A	N/A	None
38	12/19/14	54	60	1.25	11	10	100	N/A	N/A	N/A	None
39a	12/19/14	54	58	6	9	9	80	N/A	N/A	N/A	None
39b	12/19/14	54	58	2	9	8	70	N/A	N/A	N/A	None
39c	12/19/14	54	58	3	9	14	105	N/A	N/A	N/A	None

Key

A = Adult
DL = Dragonfly/Damselfly Larva (Order Odonata)
UB = Unkown Beetle
UW = Unknown Worm
ML = Mosquito larva
I = Immature
N = Nauplii
MF = Mosquito Fish
S= Scud (Order Amphipoda)
SS = Seed Shrimp (Class Ostracoda)
C = Copepod
Unk= Unknown Species
VFS = Versatile Fairy Shrimp (*Branchinecta lindahli*)
WB = Water Boatman (Family Corixidae)
WF = Water Flea (Order Cladocera)

APPENDIX C – BASIN CONDITIONS SUMMARY

ATTACHMENT C: BASIN CONDITIONS SUMMARY TABLE

Basin	Basin Dimensions				Basin Conditions			GPS Coordinate Latitude	GPS Coordinate Longitude
	Actual Maximum Depth (in.)	Estimated Maximum Depth (in.)	Actual Maximum Surface Area (sq. ft.)	Estimated Maximum Surface Area (sq. ft.)	Habitat Condition	Disturbance Type	Disturbance Level		
3	6	6	800	800	D	RD	H	33.932210	-117.604262
3a	5	6	100	115	D	RD	H	33.93194	-117.604350
4c	10	10	4000	4000	D	RD	H	33.931889	-117.606346
4d	2.5	4	125	400	D	RR	H	33.931772	-117.606231
4f	5	5	1440	1440	D	RR	H	33.931767	-117.605503
4g	5	5	1440	1440	D	RR	H	33.931761	-117.605742
4i.1	10	10	4500	4500	D	RD	H	33.931850	-117.605900
4i.2	10	10	4500	4500	D	RD	H	33.931850	-117.605400
5	7	7	1600	1600	D	RR	H	33.93202	-117.610820
5a	6	12	5200	5200	D	RR	H	33.931856	-117.610813
5b	4.5	8	1100	1100	D	RR	H	33.931712	-117.610817
5c	4	6	130	130	D	RR	H	33.93188	-117.610730
5d	4.5	12	1100	1100	D	RR	H	33.931710	-117.610756
5e	9	12	1040	1100	D	RD	H	33.932170	-117.610700
6	3	12	525	525	D	RR	H	33.932063	-117.611020
6a	4	12	540	798	D	RR	H	33.931900	-117.611036
6b	4	12	540	540	D	RR	H	33.931769	-117.611046
6c	4	4	300	300	D	RR	H	33.936951	-117.611058
6d	3	4	240	240	D	RR	H	33.937151	-117.611058
6e	1.5	4	100	100	D	RR	H	33.940388	-117.611062
6f	3	6	100	100	D	RR	H	33.940581	-117.611063
6g	2.5	4	45	60	D	RR	H	33.940637	-117.611056
6h	5	8	125	125	D	RR	H	33.940677	-117.611041
6i	2	5	120	120	D	RR	H	33.940762	-117.611051
7	6	12	2875	2875	D	RD	H	33.931485	-117.611112
8a	3	8	520	800	D	RD	H	33.945886	-117.611249
11	4	4	450	450	D	RR	H	34.011756	-117.559350
12	2.5	3	210	210	D	RR	H	34.011807	-117.560403

ATTACHMENT C: BASIN CONDITIONS SUMMARY TABLE

Basin	Basin Dimensions				Basin Conditions			GPS Coordinate Latitude	GPS Coordinate Longitude
	Actual Maximum Depth (in.)	Estimated Maximum Depth (in.)	Actual Maximum Surface Area (sq. ft.)	Estimated Maximum Surface Area (sq. ft.)	Habitat Condition	Disturbance Type	Disturbance Level		
19d	4	4	420	560	D	MD	H	34.004608	-117.562166
19e	9	12	1530	1600	D	MD	H	34.010390	-117.567240
20	12	12	23800	23800	D	MD	H	34.004747	-117.560540
20a	12	12	25370	25370	D	MD	H	34.004635	-117.560584
20b	3	4	360	360	D	RR	H	34.004428	-117.558638
20c	6	8	1600	1800	D	RR	H	34.004440	-117.561130
23a	4	6	2300	2300	D	RR	H	33.97448	-117.588890
29	4.5	6	560	560	D	RR	H	33.868402	-117.538077
29a	1	3	12	12	D	RR	H	33.86826	-117.538430
29b	1.25	3	9	9	D	RR	H	33.86826	-117.538430
30	3.5	8	5560	5560	D	RR	H	33.874429	-117.543661
30a	4	6	480	480	D	RR	H	33.87450	-117.543880
30a.1	2	4	180	200	D	RR	H	33.87450	-117.543880
30a.2	4	6	900	1000	D	RR	H	33.87450	-117.543880
31	3.5	4	100	100	D	RR	H	33.87450	-117.543880
37	4	9	160	645	D	RR	H	33.906510	-117.580680
38	1.25	11	215	730	D	RR	H	33.906360	-117.580500
39a	6	9	380	2790	D	MD	H	33.907430	-117.581200
39b	2	9	130	2790	D	MD	H	33.907460	-117.581090
39c	3	9	380	2790	D	MD	H	33.907360	-117.581120

Key

D = Disturbed
H = High
MD = Manmade Ditch
RD = Roadside Ditch
RR = Road Rut

APPENDIX D – REPRESENTATIVE SITE PHOTOGRAPHS

Photograph 1. Basin 5e at the intersection of River Road and Hellman Avenue in the central portion of the proposed project survey area
(Facing southeast; taken December 19, 2014)

Photograph 2. Basin 8a at the northern end of the construction zone along Hellman Avenue in the central portion of the proposed project survey area
(Facing southeast; taken December 11, 2014)

Photograph 3. Basin 19e adjacent to and outside the northeastern corner of Mira Loma Substation in the northern portion of the proposed project survey area
(Facing south; taken December 20, 2014)

Photograph 4. Basin 20c adjacent to and outside the southeastern corner of Mira Loma Substation in the northern portion of the proposed project survey area
(Facing west; taken December 20, 2014)

Photograph 5. Basin 30a along east 6th Street in the southern portion of the proposed project survey area
(Facing northeast; taken December 11, 2014)

Photograph 6. Basin 39a along River Road in the southern portion of the proposed project survey area
(Facing southwest; taken December 19, 2014)

APPENDIX E – FIELD DATA FORMS

Date: 12/11/14 **Surveyors:** D. Busby / L. Lina

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: FS#1

Basin #	Temperature (F)		Depth (in)		Width (ft)		Length (ft)		Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
	Air	Water	Act.	Est.	Act.	Est.	Act.	Est.					
20	60.5°F	58°F	10in	12	100ft.	100	140ft	150	D	RR	N/A	H	High turbidity, muddy, 20+20a combined
20A	60.5	58	10	12	100	100	140	150	D	RR	N/A	H	20+2A combined into pool
19, 19bc	Dry												Filled in w/ gravel — Dry
20b	61	63	2.5	12	9		135		D	RR	N/A	H	Fed by gutter, erosional, clear
22a	Dry												Fenced off, no access — Dry
8a	64	69	1.5	3	5	14	43	72	D	RR	N/A	H	Road construction on hillside
5	64	68	5	6	37	40	39	41	D	RR	N/A	H	Turbid, muddy
5a	64	74	3.5	12	13	22	46	45	D	RR	N/A	H	Turbid, muddy
4a	67	70	3		3		32		D	RR	N/A	H	Turbid, muddy.
4f	67	74	2		3		62		D	RR	N/A	H	

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 12/11/14 Surveyors: Darin Busby, Linette Lina

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey #: FS #1

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
20	VFS	I, A	1,000's			20 + 20A combined into 1 pool.
20A	VFS	I, A	1,000's			
8a	VFS	I, A	10's			Hellman under construction, rock pile adjacent
5	VFS	I, A	1,000's			
5a	VFS	I, A	1,000's			
4f	Unk	I	10's			

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg
I =Immature
N = Nauplii
N/A =Not Applicable
S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)
WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 12-11-14 Surveyors: Melissa Busby (Darin Busby = other team) Survey #: 1

Assisted by Laurie Gorman (Assis by Linette Lina)

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Basin #	Temperature (F)		Depth (in)		Width (ft)		Length (ft)		Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
	Air	Water	Act.	Est.	Act.	Est.	Act.	Est.					
29	60°F	62°F	2"	4"	3'	4'	3'	9'	D	RR	N/A	H	
30a1	60	64	2"	4"	7	17	32	60	D	RR	N/A	H	We split #30a into 2
30a2	60	64	3.5	5	15	43	90	97	D	RR	N/A	H	A mound is between 30a1
													and 30a2 so they won't connect
6f	67	—	<1"	4	4	5	2	18	D	RR	N/A	H	too shallow to sample
7	67	73	3.5	4	14	21	76	106	D	RR	N/A	H	
4c	67	74	5	7	5	8	154	183	D	RD	N/A	H	
4i-1	67	78	2	8	3	7	38	350	D	RD	N/A	H	
4i-2	67	75	1.5	12"	2	8	31	350	D	RD	N/A	H	

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 12-11-14 Surveyors: M. Busby, L. Gorman

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2) Survey Type: #1

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
30a1	B. lindahli	I, A	100's			water boatmen
30a2	B. lindahli	I, A	100's			" "
7	UNK	I	1000's			
4c	B. lindahli	A	1000's			aquatic pigtyworm
4i-1	B. lindahli	I, A	1000's			
4i-2	B. lindahli	I, A	1000's			

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg
I =Immature
N = Nauplii
N/A =Not Applicable
S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)
WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Should be 30a1 + a2

Date: 12-19-14 **Surveyors:** D. Busby, L. Lina

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: ~~[illegible]~~ #1 ~~[illegible]~~ (resurveyed several pools early to get on same schedule) 30a1 + a2 combined

Basin #	Temperature (F) Air	Temperature (F) Water	Depth (in) Act.	Depth (in) Est.	Width (ft) Act.	Width (ft) Est.	Length (ft) Act.	Length (ft) Est.	Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
29	54	49	4.5		9		60		D	RR		H	
29a		50	1.0		3		4		D	RR		L	
29b		50	1.25		3.0		3.5		D	RR		H	
30a+a2		52	4		13		44		D	RR		H	
31		52	3.5		7		18		D	RR		H	
30		52	3.5		40		131		D	RR		H	
37		55	4	9	7	15 max	27	45 max	D	RR		H	
38		60	1.25	11	10	24 max	25	35 max	D	RR		H	New basin. Holds water now because of hydroseeding + binder?
39a		58	6	9	9	32 max	49	91 max	D	RR		H	New basin. Same notes as
39b		58	2	9	8	32 max	20	91 max	D	RR		H	for 37 + 38. Was riparian
39c		58	3	9	14	32 max	30	91 max	D	RR		H	wash in 2013. Binder may be main
3a	64	61	3.5		4		27		D	RR		H	reason soil is holding water
3		56	6		6		168		D	RR		H	
4c		56	10		9		510		D	RR		H	
4i1		56	10		9		510		D	RR		H	4c, 4i 1+2 are combined
4i2		56	10		9		510		D	RR		H	" "
4e		58	5		12		130		D	RR		H	" "
4g		58	5		12		130		D	RR		H	4f + 4g combined into
4d		58	2		5		30		D	RR		H	one basin
7		54	7		24		130		D	RR		H	
6a		62	3		17		54		D	RR		H	
6b		62	3		17		54		D	RR		H	6a + 6b are combined
6		69	2.5		15		32		D	RR		H	" "
5		65	6		65		85		D	RR		H	
5a		65	6		65		85		D	RR		H	5 and 5a are
5c		65	4		15		19		D	RR		H	combined to one basin
5b		65	4.5		16		68		D	RR		H	
5d		65	4.5		16		68		D	RR		H	5b + 5d are combined
5e		60	9	12 max	8	11 max	140	185 max	D	RR		H	to one basin
6c		69	4		6		51		D	RR		H	New basin
6d		69	3		8		32		D	RR		H	

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

*Potential basins in southern sub but area is under active construction and do not have access.

Date: 12/19 Surveyors: D. Busby, L. Lina

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2) ~~#1~~

Survey Type: ~~Reservoir~~ FS#1

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
30a + a2	VFS	A	100's			Clear Pool
30	VFS	A	1000's			Clear Pool
4c	VFS	A	1000's			4c, 4:1 + 4:2 are combined into one basin
4:1	VFS	A	1000's			
4:2	VFS	A	1000's			
4f	VFS	A	100's			4f + 4g combined into one basin
4g	VFS	A	100's			" "
7	VFS	I/A	1000's			
6a	Unk./VFS	I/A	100's/10's			6a + 6b are combined
6b	Unk./VFS	I/A	100's/10's			" "
6	Unk./VFS	I/A	100's/10's			
5	Unk./VFS	I/A	1000's/100's			
5a	Unk./VFS	I/A	1000's/100's			
5c	Unk./VFS	I/A	100's/100's			
5b	Unk./VFS	I/A	10's/10's			5b + 5d are combined
5d	Unk./VFS	I/A	10's/10's			" "

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg

I =Immature
N = Nauplii
N/A =Not Applicable

S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)

WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 12/19/14 **Surveyors:** D. Busby / L. Lira

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: #1 (resurveyed several pools early to get on same schedule)

Basin #	Temperature (F)		Depth (in)		Width (ft)		Length (ft)		Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
	Air	Water	Act.	Est.	Act.	Est.	Act.	Est.					
6e	64	69	1.5		5		22		D	RR		H	
6f		68	3		5		20		D	RR		H	
6g		70	2.5		5		9		D	RR		H	
6H		65	5		7		19		D	RR		H	
6i		71	2		7		18		D	RR		H	
8a		67	3		8		68		D	RR		H	
23		66	3		16		17		D	RR		H	
23a		66	3.5		29		53		D	RR		H	
22a													Currently fed by runoff from dairy, poor water quality. Exclude
11		61	3		12		26		D	RR		H	
12		60	2		9		20		D	RR		H	

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 12/19/14 Surveyors: FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2) Survey Type: FS # 1 [illegible]

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
8a	VFS	A	105			

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg
I =Immature
N = Nauplii
N/A =Not Applicable
S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)
WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 12/20/14 **Surveyors:** D. Bushy

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: FS#1 (resurveyed several days early to get on same schedule)

Basin #	Temperature (F) Air	Temperature (F) Water	Depth (in) Act.	Depth (in) Est.	Width (ft) Act.	Width (ft) Est.	Length (ft) Act.	Length (ft) Est.	Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
20	52	53°	12	16	180	190	150	175	D	RR	N/A	H	Basin 20 + 20a connect
20a	52	53	12	16	180	190	150	175	D	RR	N/A	H	muddy water. Actively used by
20c	53	53	4	6	9	15	70	90	D	RR	N/A	H	New Basin, overflow from
19e	53	53	9	12	20	25	90	130	D	RR	N/A	H	20 + 20a. Outside sub.
20b	Dry												New Basin. Outside Sub
													Appears road has
													been graded and basin
													may no longer hold water

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 12/20/14 Surveyors: D. Busby

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey Type: FS # [redacted]

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
20	VFS	A	1,000s		N/A	
20a	VFS	A	1,000s		N/A	
20c	VFS	A	100s		Scud	New Basin
[redacted]						
19e	N/A	N/A	N/A		N/A	N/A

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg
I =Immature
N = Nauplii
N/A =Not Applicable
S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)
WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 12/26/2014 Surveyors: Darin Busby + Corinne Klein

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: FS# 2

Basin #	Temperature (F)		Depth (in)		Width (ft)		Length (ft)		Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
	Air	Water	Act.	Est.	Act.	Est.	Act.	Est.					
30A2	59	53	4		13		76						
30A1	59	53	2		6		33						
4:2	60	55	5		4		136						
4:1	60	54	4		5		110						
4f	60	53	4		8		106						connected to 4g
4g	60	53	4		8		106						connected to 4f
4c	60	53	5		5		150						
5a	60	54	4		15		54						
5	60	54	6		41		42						
7	60	54	5		14		75						
20	58	54	12		84		130						connected to 20a
20a	58	54	12		84		130						connected to 20

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 12/26/14 Surveyors: D. Busby / C. Klein

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey Type: FS #2

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
30A2	VFS	A/I	100/100		little white worm	
30A1	VFS	A/I	10/100		"	
4i2	VFS	A	1000			
4i1	VFS	A	1000		little white worm, SS	
4g	VFS	A	100		backswimmer	connected to 4f
4f	VFS	A	100			connected to 4g
4c	VFS	A	1000s		little WW, SS, WF	
5a	VFS	A/I	100/1000		backswimmer, SS	
5	VFS	A/I	1000/1000		SS	
7	VFS	I	100			
20	VFS	A / I	100s/100s			connected to 20a
20a	VFS	A / I	1000s/100s			connected to 20

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg

I =Immature
N = Nauplii
N/A =Not Applicable

S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)

WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 1/02/15

Surveyors: Silvia Villalobos
Darin

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: 3

Basin #	Temperature (F)		Depth (in)		Width (ft)		Length (ft)		Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
	Air	Water	Act.	Est.	Act.	Est.	Act.	Est.					
5e	43	40	1.5		1.5		29						
20c	50	45	5		10		93						

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 1/02/15 Surveyors: Dawn Silvia Villalobos

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey #: 3

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
29a	Dry					
29b	Dry					
31	Dry					
30	Dry					
37	Dry					
38	Dry					
39a	Dry					
39b	Dry					
39c	Dry					
3	Dry					
39	Dry					
4d	Dry					
6	Dry					
6a	Dry					
6b	Dry					
5b	Dry					
5c	Dry					
5d	Dry					
5e	VFS	A	2		SS	
6c	Dry					
6d	Dry					
x 6e	Dry					
x 6f	Dry					
x 6g	Dry					
x 6h	Dry					
x 6i	Dry					
23	Dry					
23a	Dry					
x 11	Dry					
x 12	Dry					
x 20b	Dry					
20c	none	N/A	N/A		unidentified fish (~4 found)	VFS present on 12/20. Absent now likely from fish
19e	Dry					

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg

I =Immature
N = Nauplii
N/A =Not Applicable

S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)

WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 1/7/15 Surveyors: D. Busby

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: 3

Basin #	Temperature (F)		Depth (in)		Width (ft)		Length (ft)		Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
	Air	Water	Act.	Est.	Act.	Est.	Act.	Est.					
5	60	53	3		13		31						
5a	60	55	1		4		6						

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 1/7/15 Surveyors: D. Busby

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey #: 3

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
5	VFS	A	100s		SS, Copepods	
5a	—	—	—		SS, Copepods	

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg

I =Immature
N = Nauplii
N/A =Not Applicable

S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)

WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 1/19/15 Surveyors: D Busby / S. Villalobos

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: 4

Basin #	Temperature (F) Air	Temperature (F) Water	Depth (in) Act.	Depth (in) Est.	Width (ft) Act.	Width (ft) Est.	Length (ft) Act.	Length (ft) Est.	Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
29,28-b	Dry												
30a2	47°F	50	2		8		23						
2complex	Dry												
37-38	Dry												
39a-c	Dry												
3	Dry												
3a-e	Dry												
4i1		52	5		6		110						
4i2		51	5		5		136						
4e		53	6		6		154						
4f		51	4		8		108						connected to 4g
4g		51	"		"		"						connected to 4f
4a-b	Dry												
4d-e,h	Dry												
6,6a-b	Dry												
7		52	5		19		80						
5		54	7		36		40						
5a		54	5		14		45						
5c		54	3		4		6						
5d		54	1		1		3						
5b	dry												
5e		58	2		2		30						
6c-5	Dry												
8a	Dry												
23+23a	Dry												
11-12	Dry												
19a-e	Dry												
20		60	5		18		70						
20a		65	2		28		75						
20c	Dry												
20b		65	3		9		44						

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 1/19/15 Surveyors: D Busby / S. Villalobos

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey #: 4

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
30A2	unidentified	juveniles	100s			likely VFS
4i1	unidentified	juveniles	1000s		seed shrimp	likely VFS
4i2	unidentified	juveniles	1000s		seed shrimp	likely VFS
4c	unidentified	juveniles	1000s			likely VFS
4f	unidentified	juveniles	1000s		seed shrimp	likely VFS
4g	unidentified	juveniles	1000s		seed shrimp	likely VFS
3	VFS, unidentified juveniles	adults, juveniles	100s/100s		CO, seed shrimp, WF	VFS
5a	VFS, unidentified juveniles	adults, juveniles	10s adult / 1000 juveniles		CO, SS	
5c	unidentified	juveniles	100s			likely VFS
5d	unk	juveniles	10s			likely VFS
7	none				WB	
5e	none				SS	
20	unk	juveniles	10,000s		CC	likely VFS
20A	none				CC	
20B	none					

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg

I =Immature
N = Nauplii
N/A =Not Applicable

S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)

WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

CO= copepod

Date: 2-3-15 Surveyors: Melissa Busby, Laurie Gorman

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #:

Basin #	Temperature (F)		Depth (in)		Width (ft)		Length (ft)		Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
	Air	Water	Act.	Est.	Act.	Est.	Act.	Est.					
29	78	78	1		4		4						
7		78	4.5		10		64						
5		77	4.5		21.5		33						
5a		75	2.75		7.5		25.5						
5e		78	2.5		1.5		30						new pool w/ green algae,
4c		79	4		4		151						inner curve of River Rd
4i1		73	1.5		3.5		18.5						

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 2-3-15 **Surveyors:** Melissa Busby, Laurie Gorman

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey #:

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
5	Branchinecta Sp.	A (female)	1's		SS, insect larvae, mosquito larvae, WF	no males found
5a	VFS	A	10's		SS, CO, WF	
4C	none	—	—	—	SS, unk aquatic beetle, mosquito larvae, unk worm	
4i1	Branchinecta Sp.; unkn	A; I	1; 100's		unk aquatic beetle, insect larvae, SS, WB	One ♀ adult fairy shrimp (Branchinecta Sp.)

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg

I =Immature
N = Nauplii
N/A =Not Applicable

S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)

WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 3/2/15 Surveyors: D. Busby / S. Villalobos

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: Circle City FS# 6

Basin #	Temperature (F) Air	Temperature (F) Water	Depth (in) Act.	Depth (in) Est.	Width (ft) Act.	Width (ft) Est.	Length (ft) Act.	Length (ft) Est.	Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
29	54	55	4		10		58						
3A	54	55	5		5		30						
3	54	55	6		6		140						
4F	54	56	4		5		105						combined to 4G
4G	54	56	4		5		105						Combined to 4F
4I2	54	58	4.5		4		110						
4I1	54	58	4		4		105						
4C	54	56	7		6		135						
4D	54	64	2.5		5		85						
5	64	60	7		24		33						
5A	64	60	4		13		54						
5C	64	60	4		10		14						
5B	64	60	3		20		57						combined to 5D
5D	64	60	3		20		57						Combined to 5B
7	64	60	6		16		82						
6B	64	60	4		10		36						combined w/ 6A
6	64	60	3		15		37						
6A	64	60	4		10		36						combined w/ 6B
5E	64	60	7		4		105						
23	64	60	3		15		15						
23A	64	60	4		34		70						
11	52	60	4		15		33						
12	52	60	2.5		11		22						
19D	52	60	4		13		37						
20	52	55	6		100		180						Combined w/ 20A
20A	52	55	6		100		180						
20B	52	55	3		10		14						
20C	52	55	6		15		160						

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Notes: The construction pipeline project that was along the north section of Hellman Ave has moved south and now the Gilroy basins are under active construction and inaccessible: Basins 6C, d, e, f, g, h, i

Date: March 3, 2015 Surveyors: Darin Busby, Silvia Villalobos

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey #: Circle City FS # 6

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
4F	unk	I	thousands		WB	
4G	unk	I	thousands		WB	
4I 2	unk	I	thousands			
4I 1	unk	I	thousands			
4C	unk	I	thousands			
5	unk	I	thousands			
5A	unk	I	thousands			
5C	unk	I	hundreds			
7	unk	I	hundreds			
6B	unk	I	hundreds			
6A	unk	I	hundreds			
2D	unk	I	thousands			
2DA	unk	I	thousands			

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg

I =Immature
N = Nauplii
N/A =Not Applicable

S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)

WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 5-14-15 **Surveyors:** Laurie Gorman

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: 7

Basin #	Temperature (F)		Depth (in)		Width (ft)		Length (ft)		Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
	Air	Water	Act.	Est.	Act.	Est.	Act.	Est.					
7	66	72	3"	See Survey #1	6	See Survey #1	28	see	survey	#	1	—	

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 5-14-15 **Surveyors:** Laurie Gorman

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey #: 7

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
7	unknown (likely B. lindahli)	I	10's	n/a	unk. white worm, WB	Water slightly murky. Silty bottom.

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg

I =Immature
N = Nauplii
N/A =Not Applicable

S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)

WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

Date: 5-20-15 **Surveyors:** Laurie Gorman

FAIRY SHRIMP DATA SHEET - BASIN CONDITIONS (Sheet 1)

Survey #: 8

Basin #	Temperature (F)		Depth (in)		Width (ft)		Length (ft)		Habitat Condition	Disturbance Type	Grazed Type	Disturbance Amount	Notes
	Air	Water	Act.	Est.	Act.	Est.	Act.	Est.					
4c	78	88	2.5		3		43						
20	78	72	1.5		11		21						

Habitat Condition: Undisturbed (UD); Disturbed (D); Ungrazed (UG); Grazed (G)

Disturbance Type: OHV; Garbage (Gar); Plowing (P); Road Rut (RR); Roadside Ditch (RD); Manmade Depression (MD)

Grazed Type: Cattle (C) ; Horse (H)

Disturbance Amount: Light (L); Moderate (M); Heavy (H)

Date: 5-20-15 **Surveyors:** Laurie Gorman

FAIRY SHRIMP DATA SHEET - SPECIES PRESENT (Sheet 2)

Survey #: 8

Basin #	Fairy Shrimp Detected				Other Species Detected	Notes
	Species	Reproductive Status	Numbers	Accessioned (#/Type)		
4C	VFS	I, A	1,000's, 1's	none		CO, SS, Aquatic beetle, unk larvae, WB, mosquito larvae
20	Unk	I	1's	none	CO, SS, mosquito larvae, unk larvae, WB	

A =Adult
DL =Dragonfly/Damselfly Larva (Order Odonata)
FE =Frog Egg

I =Immature
N = Nauplii
N/A =Not Applicable

S=Scud (Order Amphipoda)
SS =Seed Shrimp (Class Ostracoda)
VFS =Versatile Fairy Shrimp (B. lindahli)

WB =Water Boatman (Family Corixidae)
WF =Water Flea (Order Cladocera)
Unk=Unknown Species

BonTerra CONSULTING
PASADENA COSTA MESA
T: (714) 444-9199 F: (714) 444-9599
www.BonTerraConsulting.com
151 Kalmus Drive, Suite E-200
Costa Mesa, CA 92626

October 27, 2011

Ms. Adelina Muñoz
Southern California Edison
1218 South Fifth Avenue
Monrovia, California 91016

VIA EMAIL
Adelina.Munoz@sce.com

Subject: Results of a Habitat Assessment Survey for Bat Species on a Portion of the Circle City Substation and Mira Loma-Jefferson Subtransmission Line Project, Riverside County, California

Dear Ms. Muñoz:

This Letter Report presents the findings of a habitat assessment conducted by BonTerra Consulting for native bat species (Order: *Chiroptera*) at the proposed Circle City Substation locations, Site 34 and 34S (hereafter referred to as "the Project site"). This substation would be constructed as part of the larger Circle City Substation and Mira Loma-Jefferson Subtransmission Line Project (Project), which extends from the City of Ontario in San Bernardino County south through unincorporated Riverside County, the City of Chino (San Bernardino County), and the City of Norco to the City of Corona, California. The Project site is generally located southeast of the intersection of State Route (SR) 91 and Interstate (I) 15 in the City of Corona in Riverside County, California (Exhibit 1). Specifically, the Project site occurs on two adjacent parcels: Assessor's Parcel Numbers (APN) 107-060-008-4 and 107-060-009-5, both of which are located southeast of Leeson Lane and north of All American Way (Exhibit 2). The area surveyed, hereafter referred to as Survey Area, includes the entirety of both parcels, which fully encompass the Project site. The focus of the survey was the onsite structures, but the remainder of the parcels was also surveyed to assess an appropriate buffer area. The purpose of the survey was to determine the presence of potentially suitable roosting habitat for bat species within the existing structures and vegetation on the Project site.

BACKGROUND

Bats perform various ecological and economical functions, spanning from disease control to agricultural productivity. Given their low reproductive rates and steadily shrinking habitat; however, bats are vulnerable to significant population declines across the United States, especially in California. Efforts to protect bat species within California have largely been ineffective; no bat species that occur in the State are protected by any punitive State or federal laws, such as the Endangered Species Act. Although this Project does not operate under the authority of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), the Western Riverside MSHCP is the regional guide typically implemented to preserve native plant and animal species. Even within this regional document, bats were excluded from protection. The exclusion was likely due to an absence of knowledge about the habitat requirements of the local bat species' (Dudek 2003). Identifying the location of existing bat populations across all potential habitats is a first step toward developing policies to reduce or avoid bat population decline.

Roosts and food are the two most important resources known to influence the distribution and abundance of bats. Food requirements vary across the Order, but in Southern California, most species rely exclusively on either fruit or insects for their diet. In addition to different species that utilize trees and rock crevasses for roosting, several regionally occurring bat species are known to use buildings and man-made structures as maternity roosts, night roosts, bachelor roosts, transient roosts and, occasionally, as sites for hibernating. Of the 46 species of bats known from North America north of Mexico, over half are known to use buildings as roosts at least for part of the year. Buildings offer bats a wide range of roost microhabitats, including spaces beneath floor boards, inside insulation, beneath burlap bags, under hanging pictures, and behind curtains and drapes. Structures located on the exterior of buildings also provide suitable roosting habitat, including crevices between bricks and stones; between vents; behind windows, screens, and shutters; and spaces beneath shingles (Kunz and Reynolds 2003).

Occupied bat habitat can be difficult to determine as some species are essentially solitary, roosting cryptically in foliage while others may aggregate in the millions at predictable locations. Furthermore, bats can frequently change roost locations, both as individuals and as colonies, sometimes on a nearly daily basis (O'Shea et al. 2003). Most North American bats, however, use buildings on a seasonal basis as maternity roosts, night roosts, or transient shelters during migration. Maternity periods occur during the spring and summer months. Buildings are most commonly used during maternity periods, especially when they provide appropriate thermal conditions for rearing young. Darkness, shelter from the wind and rain, proximity to feeding areas, and reduced predation risks are important factors that govern the selection of these shelters. Only rarely do bats use buildings as sites for hibernation (Kunz and Reynolds 2003).

METHODOLOGY

A literature search was conducted using relevant reference publications and databases to determine which species have potential to be present. A list of the reference materials utilized is located in the References section of this report.

BonTerra Consulting Biologist Steve Norton conducted two field surveys in the Survey Area to determine habitat suitability. The survey dates, times, and weather conditions are listed in Table 1.

TABLE 1
FIELD VISIT CONDITIONS

Date	Time	Weather			Additional Comments
		Temp	Cloud Cover	Wind	
July 21, 2011	1130–1230	84–89°F	0%	1–4 mph	None.
September 12, 2011	1900–2000	81–77°F	60%	3–5 mph	Full moon. Sunset at 1900.
°F: degrees Fahrenheit; mph: miles per hour					

The first survey was conducted during the daytime to locate bat sign and/or potential roosting sites. Pedestrian transects were spaced to ensure 100 percent coverage of the existing structures in the Survey Area. The second survey was conducted at sunset to record relevant nocturnal site conditions and to observe incidentally any emerging bat species. No bat detection equipment or other audio recording hardware was utilized during either survey. For both surveys, weather conditions and wildlife species observed were recorded in a notebook, and

suitable roosting habitat was photographed. For a list of all wildlife species observed during the surveys, see Appendix A. These surveys are not intended to determine the confirmed presence or absence of any bat species, but rather to determine if suitable habitat is present and if further focused surveys are warranted.

SURVEY RESULTS

Based on the results of the literature search, 23 bat species were determined to have potential to occur in the greater vicinity of the Survey Area. The Survey Area contains elements of habitat for 11 of those species. Ten of these bat species are California Species of Special Concern. The results of the literature search identifying species potential are listed in Table 2.

TABLE 2
BAT SPECIES KNOWN TO OCCUR
IN THE GREATER PROJECT VICINITY

Species	Status		Habitat	Likelihood to Occur
	USFWS	CDFG		
Vespertilionidae – Evening Bats				
Antrozous pallidus pallid bat	–	SSC	This species prefers open habitats with rocky areas for roosting (Zeiner et al. 1990b). It is common in arid regions with rocky outcroppings, particularly near water (Harvey et al. 1999). Its roosting habitat consists of caves, crevices, mines, and occasionally hollow trees and buildings (Whitaker 1980; Zeiner et al. 1990b), but is very sensitive to disturbance at its roosting sites (Zeiner et al. 1990b). This species feeds on arthropods, insects, lizards, and rodents (Harvey et al. 1999).	Low potential to occur.
Eptesicus fuscus big brown bat	–	–	This species is closely associated with humans and residential areas. Its roosting habitats include attics, barns, bridges, or other man-made structures. It moves into caves, mines, and other underground structures to hibernate (Harvey et al. 1999), and it feeds on a variety of insects.	Low potential to occur.
Euderma maculatum spotted bat	–	SSC	This species forages in subalpine meadows, forest openings, pinyon-juniper woodlands, juniper, sagebrush, along the rims of cliffs, riparian habitat wetlands, meadows, and agricultural fields. Its roosting habitat includes buildings, cliffs, caves, and trees, and it feeds primarily on moths (Luce and Keinath 2004).	Low potential to occur.
Lasionycteris noctivagans silver-haired bat	–	–	This species is considered one of North America's rarest mammals (Zeiner et al. 1990b). It occurs in a range of habitats from arid desert and grasslands through mixed conifer forests (Zeiner et al. 1990b). Its known roosting habitat consists of rock crevices, which limits distribution (Williams 1986). In Southern California, it primarily occurs at a small number of localities in foothills, mountains, and desert regions (Zeiner et al. 1990b). It forages over woodland ponds and streams, and consumes a variety of insects (Harvey et al. 1999).	Not likely to occur.

TABLE 2 (Continued)
BAT SPECIES KNOWN TO OCCUR
IN THE GREATER PROJECT VICINITY

Species	Status		Habitat	Likelihood to Occur
	USFWS	CDFG		
Lasiurus blossevillii western red bat	–	SSC	This species is strongly associated with riparian habitats, particularly mature stands of cottonwood and sycamore, and is also known to occur in orchards (Pierson et al. 2004). Western red bats roost in trees from sea level to the mountains, with preferred roost sites that are protected from above and are open below. This species feeds on a variety of insects in grasslands, shrublands, open woodlands, forests, and agricultural areas. Western red bats are not found in the desert (CDFG BDB 2010).	Not likely to occur.
Lasiurus cinereus hoary bat	–	–	This species spends summer days concealed in the foliage of trees, where they choose a leafy site that is well-covered from above, but open beneath (Harvey et al. 1999). In late summer, it may wander into caves. Hoary bats feed on a variety of insects.	Not likely to occur.
Lasiurus ega southern yellow bat	–	–	Southern yellow bat is a tree-roosting species; it often roosts individually on the bark of trees (Harvey et al. 1999). Palm trees are common roosting sites (Harvey et al. 1999). Small to medium-sized, night-flying insects are the main food items (Harvey et al. 1999).	Not likely to occur.
Lasiurus xanthinus western yellow bat	–	SSC	Little is known about its habitat, but western yellow bats are known to roost in leafy vegetation (Best et al. 1998). This species is associated with dry thorny vegetation of the Mexican Plateau, coastal western Mexico, and the deserts of the southwestern U.S. (Best et al. 1998). It consumes small to medium-sized, night-flying insects (Harvey et al. 1999).	Not likely to occur.
Myotis evotis long-eared myotis	–	–	This species occurs in a variety of habitats over its range in North America, but mostly in forested areas (Harvey et al. 1999). Where suitable roosting sites are available, this species also is found in semi-arid shrublands, sage, chaparral, and agricultural areas (Harvey et al. 1999). Daytime roosts are known to include abandoned buildings, hollow trees, loose slabs of bark, timbers of unused railroad trestles, caves and mines, fissures of cliffs, and sink holes (Harvey et al. 1999). It forages between and within the treetops and over woodland ponds (Harvey et al. 1999). Long-eared myotis feed on a variety of insects.	Low potential to occur.

TABLE 2 (Continued)
BAT SPECIES KNOWN TO OCCUR
IN THE GREATER PROJECT VICINITY

Species	Status		Habitat	Likelihood to Occur
	USFWS	CDFG		
Myotis ciliolabrum small footed dark-nosed myotis	–	–	This species prefers arid habitats where it is associated with cliffs and fields and, in the prairies, with clay buttes and steep riverbanks (Harvey et al. 1999). It roosts in crevices in rock faces and clay banks; it may use the spaces beneath and between boulder in talus fields; and it also has been found roosting beneath and in barns (Harvey et al. 1999). It forages along cliffs and rocky slopes, and it may forage over water when not in association with the California myotis (Harvey et al. 1999). It feeds mainly on small insects.	Not likely to occur.
Myotis thysanodes fringed myotis	–	–	This species occupies a variety of habitats from desert-scrub to fir-pine associations. Roost sites may be in caves, mines, and buildings. It forages close to the vegetative canopy (Harvey et al. 1999), and feeds mainly on beetles and moths.	Not likely to occur.
Myotis volans long-legged myotis	–	–	This species primarily inhabits forested mountain regions, where it roosts in buildings and in trees, rock crevices, cracks, and crevices in stream banks. It may also be found in streamside and arid habitats in some areas. Hibernation sites include caves and mine tunnels. It feeds primarily on moths, although it also consumes other, primarily soft-bodied invertebrates (Harvey et al. 1999).	Not likely to occur.
Myotis californicus California myotis	–	–	In arid regions, this species occurs in the vicinity of water. It roosts in rock crevices, hollow trees, spaces under loose bark, and in buildings. It feeds on small flying insects, primarily flies, moths, and beetles (Harvey et al. 1999).	Low potential to occur.
Myotis leibii eastern small-footed myotis	–	–	This species hibernates in caves or mines. In summer, it often inhabits buildings and caves (Harvey et al. 1999), and it feeds on a variety of insects.	Low potential to occur.
Myotis lucifugus little brown myotis	–	–	This species hibernates in caves and mines. During summer, it often inhabits buildings, usually rather hot attics. Colonies usually are close to a lake or stream. Little brown myotis prefers to forage over water, but also forages among trees in rather open areas (Harvey et al. 1999) and it eats a variety of insects.	Low potential to occur.
Myotis yumanensis Yuma myotis	–	SSC	This species requires the presence of open water nearby. Its roosting sites include buildings, caves, mines, and under bridges. It forages just above the surface of streams and ponds. Its diet includes beetles and relatively soft-bodied insects (Harvey et al. 1999).	Low potential to occur.

TABLE 2 (Continued)
BAT SPECIES KNOWN TO OCCUR
IN THE GREATER PROJECT VICINITY

Species	Status		Habitat	Likelihood to Occur
	USFWS	CDFG		
Pipistrellus hesperus western pipistrelle	–	–	Western pipistrelle is primarily a desert species that inhabits a variety of habitats from rocky canyons, cliffs, and outcroppings to creosote bush flats. Day roosts usually are in rock crevices, but may be beneath rocks, in burrows, in mines, and in buildings (Harvey et al. 1999). This species feeds on a variety of insects.	Not likely to occur.
Corynorhinus [Plecotus] townsendii Townsend's big-eared bat	–	SSC	Townsend's big-eared bat is an uncommon year-round resident throughout much of California (Zeiner et al. 1990b). It occupies a variety of habitats, including oak woodlands, arid deserts, grasslands, and high-elevation forests and meadows (Hall 1981). Known roosting sites in California include mine tunnels, limestone caves, lava tubes, buildings, and other man-made structures (Williams 1986). It is believed to feed entirely on moths (Harvey et al. 1999).	Low potential to occur.
Molossidae – Free-Tailed Bats				
Eumops perotis californicus western mastiff bat	–	SSC	This species is found in many open semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, palm oases, chaparral, desert scrub, and urban areas (Zeiner et al. 1990b). It is a very wide-ranging and high flying insectivore that roosts primarily in rugged, rocky areas with suitable crevices opening downward; they are also known to roost in buildings with similar crevices (Williams 1986).	Low potential to occur.
Nyctinomops femorosaccus pocketed free-tailed bat	–	SSC	This species occurs in rocky desert areas with relatively high cliffs (Williams 1986) such as pinyon-juniper woodland, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oases (Zeiner et al. 1990b). It primarily roosts in crevices in rugged cliffs, slopes, and tall rocky outcrops (Best et al. 1998). Moths are a common prey, but it feeds on a variety of insects (Harvey et al. 1999).	Not likely to occur.
Nyctinomops macrotis big free-tailed bat	–	SSC	This species prefers rugged, rocky terrain and roosts in crevices in high cliffs or rocky outcrops (Zeiner et al. 1990b). In California, it is known from only a few low-lying arid areas (Williams 1986), but probably does not breed in the State (Zeiner et al. 1990b). This species feeds primarily on moths caught while flying over water sources in suitable habitat (Zeiner et al. 1990b).	Not likely to occur.
Tadarida brasiliensis Brazilian free-tailed bat	–	–	In the southwest, Brazilian free-tailed bat is primarily a cave-dweller that migrates long distances into Mexico to winter. This species usually feeds on small moths and beetles (Harvey et al. 1999).	Not likely to occur.

TABLE 2 (Continued)
BAT SPECIES KNOWN TO OCCUR
IN THE GREATER PROJECT VICINITY

Species	Status		Habitat	Likelihood to Occur
	USFWS	CDFG		
Phyllostomidae – Leaf-Nosed Bats				
Macrotus californicus California leaf-nosed bat	–	SSC	This species occurs in a variety of desert habitats, including desert riparian, desert wash, desert scrub, desert succulent scrub, alkali desert scrub, and palm oasis at elevations between sea level and 2,000 feet above msl. It roosts during the day primarily in deep mine tunnels or caves and occasionally in buildings or under bridges. At night, this species may roost in buildings, mines, bridges, rock shelters, or other areas with overhead protection. It forages in nearby flats and washes, and feeds on a variety of insects close to the ground (CDFG BDB 2010).	Low potential to occur.
msl: mean sea level SSC: California Species of Special Concern				

As previously discussed, two components are necessary to support bat populations: roosting habitat and food availability. The Survey Area contains two structures that both contain a variety of crevasses suitable for bat roosting (Exhibit 3). The first structure is a small, two-room, brick office building located at the northern end of the Survey Area (hereafter referred to as "Structure 1"). The second structure is a large, mostly open warehouse occupying the majority of the parcel and is comprised almost exclusively of metal (hereafter referred to as "Structure 2"). Both structures contain different enclosures for bat roosting and representative photographs are located in Appendix B.

Despite the presence of suitable crevasses, the structures may still not qualify as suitable habitat. One factor affecting the overall suitability is the presence of barn owl (*Tyto alba*) nesting and roosting within Structure 2. Research of bat predation by owls in California is limited, but detailed studies of synonymous situations have shown that barn owl do not seek out bats, but will prey on them if the opportunity is present and other prey is sparse (Sommer et al. 2009). Regardless, the presence of barn owl could be a deterrent for bats to occupy the Structure 2.

One tree-of-heaven (*Ailanthus altissima*) with a dense canopy is also located in the central portion of the Survey Area, approximately 150 feet east of Structure 2 (Exhibit 3). The tree, however, is located within a large open field, isolated from similar roosting vegetation, leaving the habitat very exposed to the region's extreme weather conditions. Furthermore, a red-tailed hawk (*Buteo jamaicensis*) was observed roosting in the tree during the survey, and the species has potential to prey on any exposed bat species roosting in the daytime. Therefore, the tree is not considered suitable roosting habitat.

With respect to food availability, no fruit trees or similar fruit-producing vegetation was present on or adjacent to the Survey Area. Therefore, no suitable foraging for fruit-eating bat species was present, and these species are not likely to occur. Approximately 900 feet south of Structure 2 (approximately 1,500 feet south of Structure 1) is an approximate 23-acre body of standing water. This water feature likely provides excellent foraging habitat for insectivorous bat species. Bats are known to roost in areas not directly adjacent to their foraging habitat; however, sufficient roosting opportunities are abundant along the boundary of the water feature and resource proximity is always preferred.

Given the deterrents present within the on-site structures and the distance from preferred foraging habitat, bat species have a low potential to roost in the Survey Area.

CONCLUSIONS

The Project site contains marginally suitable roosting habitat for insectivorous bat species that roost in man-made structures. Those species include pallid bat (*Antrozous pallidus*), big brown bat (*Eptesicus fuscus*), spotted bat (*Euderma maculatum*), long-eared myotis (*Myotis evotis*), California myotis (*Myotis californicus*), eastern small-footed myotis (*Myotis leibii*), little brown myotis (*Myotis lucifugus*), Yuma myotis (*Myotis yumanensis*), Townsend's big-eared bat (*Corynorhinus townsendii*), western mastiff bat (*Eumops perotis californicus*), and California leaf-nosed bat (*Macrotus californicus*); six of which are California Species of Special Concern. Due to the density of predators on the Project site and the distance of the Project site from suitable foraging habitat and drinking water, these bat species have a low potential to occur on site and no further focused surveys are recommended.

Please contact Stacie Tennant at (714) 444-9199 if you have questions or comments.

Sincerely,

BONTERRA CONSULTING

Stacie A. Tennant
Senior Project Manager/Biologist

Steve Norton
Biologist

Attachments: Exhibits 1, 2, and 3
Appendix A – Wildlife Compendium
Appendix B – Site Photographs

R:\Projects\Edison\J045\Bat\Bat Letter-102711.docx

REFERENCES

American Ornithologists' Union (AOU). 1998. *Check-list of North American Birds* (7th ed). Shipman, VA: Buteo Books.

Bat Conservation International (BCI). 2011. Species Profiles. Austin, TX: BCI. http://www.batcon.org/index.php/all-about-bats/species-profiles.html

Best, T.L., J.S. Altenbach, and M.J. Harvey. 1998. Bats of Alabama (Poster, with text). Alabama Agricultural Experiment Station. Montgomery, AL: Alabama Department of Conservation and Natural Resources, State Lands Division.

California Department of Fish and Game, Biogeographic Data Branch (CDFG BDB). 2010. Wildlife Habitats — California Wildlife Habitat Relationships System. Sacramento, CA: CDFG BDB. http://www.dfg.ca.gov/bdb/html/wildlife_habitats.html.

Dudek and Associates, Inc. (Dudek). 2003. Western Riverside County Multiple Species Habitat Conservation Plan (Prepared for the Riverside County Integrated Project). Encinitas, CA: Dudek. http://www.wrc-rca.org/Permits_Docs.html.

Hall, E.R. 1981. *The Mammals of North America* (2nd ed.). New York, NY: John Wiley & Sons.

Harvey, M.J., J.S. Altenbach, and T.L. Best. 1999. *Bats of the United States*. Little Rock, AR: Arkansas Game and Fish Commission in cooperation with the Asheville Field Office, U.S. Fish and Wildlife Service.

Kaufman, K., N. Bowers, and R. Bowers. 2004. *Kaufman Field Guide to Mammals of North America.* Boston, MA: Houghton Mifflin Harcourt

Kunz, T.H., and Reynolds, D.S. 2003. Bat Colonies in Buildings. *Monitoring Trends in Bat Populations of the United States and Territories: Problems and Prospects* (O'Shea, T.J. and M.A. Bogan, Eds.). Springfield, VA: U.S. Geological Survey. http://www.fort.usgs.gov/products/publications/21329/21329.pdf

Luce, R.J. and D.A. Keinath. 2004 (October 31). *Spotted Bat (Euderma maculatum): A Technical Conservation Assessment*. Golden, CO: U.S. Forest Service, Rocky Mountain Region. http://www.fs.fed.us/r2/projects/scp/assessments/spottedbat.pdf.

O'Shea, T.J. and M.A. Bogan (Eds.). 2003. *Monitoring Trends in Bat Populations of the United States and Territories: Problems and Prospects.* Springfield, VA: U.S. Geological Survey. http://www.fort.usgs.gov/products/publications/21329/21329.pdf

O'Shea, T.J., M.A. Bogan, and L.E. Ellison. 2003. Monitoring Trends in Bat Populations of the United States and Territories: Status of the Science and Recommendations for the Future. *Wildlife Society Bulletin* 31(1): 16–29. Bethesda, MD: the Wildlife Society.

Pierson, E.D., W.E. Rainey, and C. Corben. 2004 (April 15*). Distribution and Status of Western Red Bats* (*Lasiurus blossevillii*) *in California* (Prepared for the Species Conservation and Recovery Program, Habitat Conservation Planning Branch). Sacramento, CA: CDFG.

Pierson, E.D. and M.S. Siders. 2005. *Eumops perotis* (Unpublished species account updated by Melissa S. Siders at the 2005 Portland Biennial Meeting of the Western Bat Working Group). Original account developed in 1998 by Elizabeth D. Pierson for the 1998 Reno Biennial Meeting.

Sibley, D.A. 2000. *The Sibley Guide to Birds.* New York, NY: Alfred A. Knopf.

Sommer, R.S., Niederle, M., Labes, R., and Zoller, H. 2009. Bat Predation By The Barn Owl Tyto Alba In A Hibernation Site Of Bats. *Folia Zoology* 58(1): 98–103. Brno, Czech Republic: Institute of Vertebrate Biology.

South Dakota Bat Working Group. 2004 (July). *South Dakota Bat Management Plan.* Pierre, SD: South Dakota Game, Fish and Parks. http://e.library.sd.gov/SodakLIVE-Docs/content/gfp/GFPdoc031.pdf.

Tigner, J. 2002. Bats in Buildings. *South Dakota Conservation Digest* 69(4): 22–23. SD: South Dakota Game, Fish and Parks.

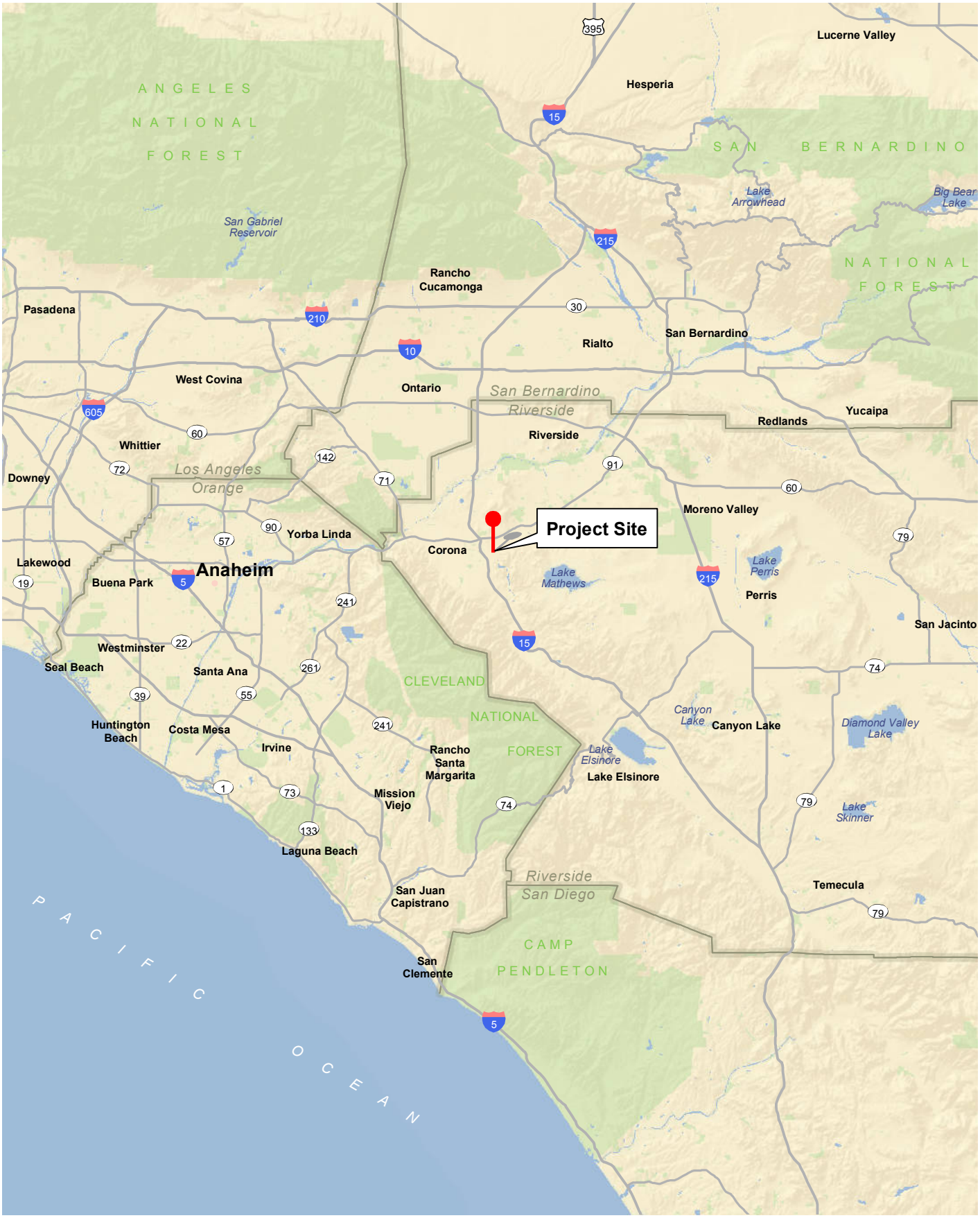
Whitaker, J.O., Jr. 1980. *The Audubon Society Field Guide to North American Mammals.* New York, NY: Alfred A. Knopf, Inc.

Williams, D.F. 1986. *Mammalian Species of Special Concern in California* (Administrative Report 86-1). Sacramento, CA: CDFG.

Wilson D.E., and Ruff, S. 1999. *The Smithsonian Book of North American Mammals*. Vancouver, Canada: UBC Press.

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, M. White (Eds.). 1990a. *California's Wildlife, Vol. 2: Birds.* Sacramento, CA: CDFG, The Resources Agency.

———. 1990b. *California's Wildlife Vol. 3: Mammals.* Sacramento, CA: CDFG, The Resources Agency.



Regional Location

Exhibit 1

Circle City Substation and Mira Loma - Jefferson Subtransmission Line Project

N W E S

10 5 0 10 Miles

BonTerra CONSULTING

(Rev: 10-20-2011 JFG) Projects\Edison\J045\Graphics\Bat\ex1_bat_RL.pdf

D:\Projects\Edison\J045\MXD\ex_bat_RL.mxd

D:\Projects\Edison\J045\MXD\Ex_bat.mxd

Local Vicinity

Exhibit 2

Circle City Substation and Mira Loma - Jefferson Subtransmission Line Project

N W E S

300 150 0 300 Feet

BonTerra CONSULTING

(Rev: 10-20-2011 JFG) Projects\Edison\J045\Graphics\Bat\ex2_LV_aerial.pdf

D:\Projects\Edison\J045\MXD\Ex_bat_roostingareas.mxd

Potential Roosting Habitat

Exhibit 3

Circle City Substation and Mira Loma - Jefferson Subtransmission Line Project

N W E S

300 150 0 300 Feet

BonTerra CONSULTING

(Rev: 10-20-2011 JFG) Projects\Edison\J045\Graphics\Bat\ex3_bat_roosting.pdf

APPENDIX A

WILDLIFE COMPENDIUM

WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species
Birds
ACCIPITRIDAE – HAWKS, KITES, EAGLES, & ALLIES
Buteo jamaicensis red-tailed hawk
COLUMBIDAE – PIGEONS & DOVES
Zenaida macroura mourning dove
TYTONIDAE – BARN OWLS
Tyto alba barn owl
TYRANNIDAE – TYRANT FLYCATCHERS
Tyrannus verticalis western kingbird
CORVIDAE – CROWS & JAYS
Corvus brachyrhynchos American crow
MIMIDAE – THRASHERS
Mimus polyglottos northern mockingbird
FRINGILLIDAE – FINCHES
Spinus [Carduelis] psaltria lesser goldfinch
PASSERIDAE – OLD WORLD SPARROWS
Passer domesticus house sparrow*
Mammals
LEPORIDAE – HARES & RABBITS
Sylvilagus audubonii desert cottontail
* introduced species

APPENDIX B

SITE PHOTOGRAPHS

Photo 1: View facing south from the northern portion of the Survey Area of Structure 1 (small brick office) in front of Structure 2 (large metal warehouse).

Photo 2: View illustrating extent of Structure 2 from the northern portion of the Survey Area facing south.

D:\Projects\Edison\J045\Graphics\AppB_Photos1.ai

Site Photographs

Appendix B

Circle City Substation and Mira Loma - Jefferson Subtransmission Line Project

BonTerra CONSULTING

(102711 JFG) R: Projects\Edison\J045\Graphics\BAT\AppB_Photos1.pdf

Photo 3: View of Structure 1 illustrating crevasses that can be exploited by roosting bat species.

Photo 4: View of tile roofing which can provide suitable roosting habitat.

D:\Projects\Edison\J045\Graphics\AppB_Photos2.ai

Photo 5: Typical view of Structure 2 from the inside. Various roosting opportunities are present in gaps between structure material.

Photo 6: Closer view of suitable roosting habitat. The white wash suggests avian species likely utilized this space for nesting.

D:\Projects\Edison\J045\Graphics\AppB_Photos3.ai

Photo 7: View from within Structure 2 of a separate structure inside. This structure contains insulation material and other roosting opportunities within.

Photo 8: View of the central portion of Structure 2.

D:\Projects\Edison\J045\Graphics\AppB_Photos4.ai

Photo 9: View of the white wash and pellets beneath one of the many barn owl perches within Structure 2.

Photo 10: View of the southern portion of Structure 2. The drain pipe is suitable roosting habitat and is currently also utilized as a roosting site for a pair of American crow.

Photo 11: View of Structure 2 facing north from southern boundary of Survey Area.

Photo 12: View of the Tree of Heaven (on the right side of the photograph) facing north. The southeastern corner of Structure 2 is located on the left side of the photograph.