APPENDIX 5.4 BIG-1

BIOLOGICAL RESOURCES TECHNICAL REPORT

*PART 5

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Min to Max) (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acres	Linear Feet[2]
NWW-80	Unvegetated Streambed[3]	Creosote Bush Scrub[4]	1 – 20	Large, primarily unvegetated, braided and interwoven feature with multiple mainstems fed by various tributaries within creosote bush scrub; originates from National Trails Hwy/Main St and/or feature south of National Trails Hwy (NWW-108); portions of feature display disturbance by off-road vehicle usage; watercourse present throughout some portions of feature. (See Photos 17 and 18 on Figure 5C and Appendix G.)	34.850680, -117.154564	2.02	15,877
	Watercourse[5]	Creosote Bush Scrub	N/A			13.99	–
NWW-81	Unvegetated Streambed[3]	Allscale Scrub[4]	2 – 8	Primarily unvegetated, single-thread feature within allscale scrub.	34.853340, -117.156269	0.12	1,229
NWW-82	Unvegetated Streambed[3]	Creosote Bush Scrub[4]	1 – 15	Primarily unvegetated, braided feature within allscale scrub and creosote bush scrub; heavily eroded where feature runs parallel to railroad tracks. (See Photo 16 on Figure 5C and Appendix G.)	34.854433, -117.152784	0.64	8,328
NWW-83	Unvegetated Streambed[3]	Allscale Scrub[4]	2 – 3	Small, primarily unvegetated, single-thread feature within allscale scrub.	34.856239, -117.153167	0.01	250
NWW-84	Unvegetated Streambed[3]	Creosote Bush Scrub[4]	1 – 1	Primarily unvegetated, single-thread feature within creosote bush scrub.	34.854958, -117.146066	0.02	909
NWW-85	Unvegetated Streambed[3]	Allscale Scrub[4]	1 – 5	Primarily unvegetated feature with multiple tributaries within allscale scrub; originates as runoff from unnamed dirt road. (See Photo 11 on Figure 5C and Appendix G.)	34.857281, -117.149898	0.31	3,921
NWW-86	Unvegetated Streambed[3]	Creosote Bush Scrub[4]	3 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unnamed dirt road.	34.856698, -117.147965	0.02	218
NWW-87	Unvegetated Streambed[3]	Creosote Bush Scrub[4]	2 – 4	Primarily unvegetated, double-thread feature within creosote bush scrub; originates as runoff from unnamed dirt road. (See Photo 13 on Figure 5C and Appendix G.)	34.857936, -117.147949	0.13	2,162

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Min to Max) (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acres	Linear Feet[2]
NWW-88	Unvegetated Streambed[3]	Allscale Scrub[4]	4 – 4	Small, primarily unvegetated, single-thread feature within allscale scrub; originates as runoff from unnamed dirt road.	34.858906, -117.148308	0.04	403
NWW-89	Unvegetated Streambed[3]	Allscale Scrub[4]	1 – 22	Large, primarily unvegetated feature within allscale scrub, creosote bush scrub, and disturbed habitat that consists of two large mainstems with several tributaries; eastern main stem originates south of National Trails Hwy/Main St before traveling through a culvert, western main stem originates as runoff from Mockingbird Rd (dirt road); disturbed by off-road vehicle use and obstructions (tree logs) likely placed by adjacent residential lot residents; heavily eroded downstream near manipulated and heavily used dirt roads adjacent to the railroad tracks; watercourse present throughout some portions of feature. (See Photos 7 – 10, 29, and 32 on Figure 5C and Appendix G.)	34.863711, -117.134655	1.57	12,490
	Watercourse[5]	Allscale Scrub	N/A			1.84	–
NWW-90	Unvegetated Streambed[3]	Allscale Scrub[4]	2 – 6	Primarily unvegetated, single-thread feature within allscale scrub between residential lots; originates as runoff from unnamed dirt road. (See Photo 11 on Figure 5C and Appendix G.)	34.860552, -117.142795	0.08	995
NWW-91	Unvegetated Streambed[3]	Allscale Scrub[4]	2 – 2	Primarily unvegetated, small, single-thread feature within allscale scrub near residential lots; originates as runoff from upstream residential lot and Dundee Street. (See Photo 12 on Figure 5C and Appendix G.)	34.863147, -117.140564	0.01	150
NWW-92	Unvegetated Streambed[3]	Unvegetated Channel	8 – 45	Primarily unvegetated, large, trapezoidal feature (San Bernardino County Flood Control District Channel) within heavily manipulated, unvegetated channel; evidence of off-road vehicle use; originates south of Main St/National Trails Hwy. (See Photo 6 on Figure 5C and Appendix G.)	34.874455, -117.131291	1.77	4,629

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Min to Max) (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acres	Linear Feet[2]
NWW-93	Unvegetated Streambed[3]	Disturbed Habitat[4]	3 – 20	Rip-rap feature within developed and fenced area; originates at culvert outlet near intersection of National Trails Hwy and Lenwood Rd; downstream extent is large, rip-rap, circular, unvegetated drainage area containing a culvert inlet.	34.873485, -117.118709	0.06	409
NWW-94	Unvegetated Streambed[3]	Disturbed Habitat[4]	10 – 10	Primarily unvegetated feature within disturbed habitat; feature initiates from large stormwater concrete channelized structure. (See Photos 4 and 5 on Figure 5C and Appendix G.)	34.874055, -117.117372	0.09	401
NWW-95	Unvegetated Streambed[3]	Disturbed Habitat[4]	2 – 10	Primarily unvegetated, single-thread feature within disturbed habitat that outlets from culvert along National Trails Hwy; manipulation on the eastern slopes. (See Photo 3 on Figure 5C and Appendix G.)	34.877087, -117.110926	0.06	307
NWW-96	Unvegetated Streambed[3]	Disturbed Habitat[4]	5 – 5	Primarily heavily vegetated, disturbed, single-thread feature within disturbed habitat and tamarisk thickets; originates as road runoff from National Trails Hwy. (See Photo 2 on Figure 5C and Appendix G.)	34.878268, -117.108708	0.01	439
	Vegetated Streambed[3]	Disturbed Habitat	5 – 5			0.04	
NWW-97	Unvegetated Streambed[3]	Disturbed Habitat[4]	3 – 3	Primarily unvegetated, single-thread feature generally within disturbed habitat; feature drains through private commercial lots and outputs across a culvert crossing. (See Photo 1 on Figure 5C and Appendix G.)	34.879422, -117.105552	0.03	506
NWW-98	Unvegetated Streambed[3]	Allscale Scrub – Disturbed[4]	5 – 5	Small, unvegetated single-thread feature within allscale scrub – disturbed habitat that originates as runoff from dirt road parallel to the north side of railroad tracks.	34.880017, -117.105950	0.01	124
NWW-99	Vegetated Streambed[3]	Disturbed Habitat	5 – 12	Vegetated, single-thread feature within disturbed habitat that originates at culvert north of Main St/National Trails Hwy.	34.880936, -117.101226	0.07	353

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Min to Max) (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acres	Linear Feet[2]
NWW-100	Unvegetated Streambed[3]	Allscale Scrub[4]	2 – 13	Primarily unvegetated feature within allscale scrub with several tributaries that travels through several culverts; originates as runoff from and at a culvert north of Main St/National Trails Hwy.	34.882602, -117.095407	0.34	2,524
NWW-101	Unvegetated Streambed[3]	Allscale Scrub[4]	3 – 36	Primarily unvegetated feature within allscale scrub with multiple tributaries that travels through several culverts; originates as runoff from and at a culvert north of Main St/National Trails Hwy.	34.883416, -117.092671	0.35	1,003
NWW-102	Unvegetated Streambed[3]	Allscale Scrub[4]	2 – 5	Small, primarily unvegetated feature within allscale scrub that originates as runoff from Main St/National Trails Hwy.	34.883038, -117.091930	0.01	99
NWW-103	Unvegetated Streambed[3]	Allscale Scrub[4]	13 – 17	Primarily unvegetated, single-thread feature within allscale scrub that may continue over Main St/National Trails Hwy during storm events and converge with NWW-27.	34.797426, -117.223080	0.02	43
NWW-104	Unvegetated Streambed[3]	Allscale Scrub[4]	6 - 12	Small, primarily unvegetated, single-thread feature within allscale scrub that may continue over Main St/National Trails Hwy and converge with NWW-27.	34.797510, -117.222886	0.02	70
NWW-105	Unvegetated Streambed[3]	Allscale Scrub[4]	8 – 8	Small, primarily unvegetated, single-thread feature within allscale scrub that may continue over Main St/National Trails Hwy and converge with NWW-44; occurs within watercourse mapped as associated with NWW-106.	34.828712, -117.182373	0.01	29
NWW-106	Unvegetated Streambed[3]	Allscale Scrub[4]	12 – 12	Primarily unvegetated, single-thread feature generally within disturbed habitat; feature drains through private commercial lots and outputs across a culvert crossing.	34.828907, -117.182084	0.01	36
	Watercourse[5]	Allscale Scrub	N/A			0.15	–
NWW-107	Unvegetated Streambed[3]	Creosote Bush Scrub[6]	3 – 5	Small, primarily unvegetated, single-thread feature within creosote bush scrub that may continue over Main St/National Trails Hwy and converge with NWW-59.	34.835555, -117.169501	<0.01	51

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Min to Max) (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acres	Linear Feet[2]
NWW-108	Unvegetated Streambed[3]	Creosote Bush Scrub – Disturbed[6]	16 – 16	Primarily unvegetated, single-thread feature within creosote bush scrub – disturbed that may continue over Main St/National Trails Hwy and converge with NWW-80.	34.847053, -117.151904	0.01	36
NWW-109 (Mojave River)	Unvegetated Streambed[3]	Unvegetated Channel	50 – 3,100	Sparsely vegetated, dry, sandy wash that comprises the on-site extent of the Mojave River; extends into active desert dune habitat; generally flows southwest to northeast before continuing off site. (See Photos 33, 37, 38, and 43 – 45 on Figure 5C and Appendix G.)	34.863277, -117.170128	10.33	22,078
	Vegetated Streambed[3]	Active Desert Dunes				580.02	
Watercourse A	Watercourse[5]	Allscale Scrub	N/A	Watercourse associated with a streambed that occurs off site and upstream.	34.789811, -117.245502	0.94	–
					Total[6]	**669.96**	**195,124**

[1] Corresponds with the approximate stream bank widths observed during delineation. Width range accounts for entirety of streambed delineated, not individual vegetation communities.
[2] Linear feet not calculated for watercourse to avoid redundant linear foot calculation where such areas overlap with streambed.
[3] A "streambed" under CFGC Section 1602 includes the channel of a watercourse that is generally defined to include the depression between the banks worn by the regular and usual flow of water.
[4] Unvegetated streambed within mapped vegetation community; however, no vegetation technically present within the streambed.
[5] A "watercourse" extends beyond the streambed and can consist of associated features such as low-flow, active, and braided channels and banks associated with islands, and secondary channels within the bounds of a larger channel complex (Vyverberg & Brady 2013)
[6] Acreages and linear feet totals were summed using raw numbers provided during GIS analysis (available upon request) and thus, the sum of the total rounded numbers may not directly add up in this table.

APPENDIX I

ORM BULK UPLOAD AQUATIC RESOURCES OR CONSOLIDATED EXCEL SPREADSHEET (PROVIDED AS AN EXCEL FILE TO THE CORPS)

APPENDIX J

LITERATURE CITATIONS AND REFERENCES

APPENDIX J. LITERATURE CITATIONS AND REFERENCES

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APPENDIX K

GIS DATA (PROVIDED ELECTRONICALLY TO AGENCIES)

ATTACHMENT B

JURISDICTIONAL DETERMINATION REQUEST FORMS

(*SUPERSEDES APPENDIX B OF THE 2022 ARDR*)

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: District Name Here

- I am requesting a JD on property located at: south of and within the Mojave River, northwest of National Trails Highway, and south and west of California State Route (CA)-58 (Street Address)
  City/Township/Parish: Barstow/Unincorp County: San Bernardino State: CA
  Acreage of Parcel/Review Area for JD: 5328.2
  Section: Various Township: 8N; 9N Range: 4W & 3W; 3W, 2W, & 1W
  Latitude (decimal degrees): 34.853903 Longitude (decimal degrees): -117.159799
  (For linear projects, please include the center point of the proposed alignment.)
- Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
- ✔ I currently own this property. ✔ I plan to purchase this property.
  ___ I am an agent/consultant acting on behalf of the requestor.
  ✔ Other (please explain): Right-of-entry to Corps staff limited to BNSF-owned properties until other properties purchased by BNSF.
- Reason for request: (check as many as applicable)
  ___ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
  ___ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
  ✔ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
  ___ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
  ___ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
  ___ A Corps JD is required in order to obtain my local/state authorization.
  ___ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
  ___ I believe that the site may be comprised entirely of dry land.
  ___ Other: _____
- Type of determination being requested:
  ___ I am requesting an approved JD.
  ✔ I am requesting a preliminary JD.
  ___ I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
  ___ I am unclear as to which JD I would like to request and require additional information to inform my decision.

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

Note: Right-of-entry to Corps staff limited to BNSF-owned properties until other properties purchased by BNSF.

*Signature: David Rankin Date: 8/16/23

- Typed or printed name: David Rankin

Company name: BNSF Railway Company

Address: 2500 Lou Menk Drive, AOB-3
Forth Worth, TX 76131

Daytime phone no.: 817-352-2383

Email address: David.Rankin@BNSF.com

***Authorities:** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD:

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: David Rankin, BNSF Railway, 2500 Lou Menk Dr, AOB-3, Forth Worth, TX 76131

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Los Angeles District

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: CA County/parish/borough: San Bernardino City: Barstow/Unincorporated

Center coordinates of site (lat/long in degree decimal format):

Lat.: 34.853903 Long.: -117.159799

Universal Transverse Mercator: 11S 485392.2m E 3856853.3m N

Name of nearest waterbody: Mojave River

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
		SEE	ATTACHED		

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- [x] Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
  Map: 2022 ARDR & 2023 ARDR Addendum, prepared by Rocks Biological Consulting.
- [x] Data sheets prepared/submitted by or on behalf of the PJD requestor.
  - [ ] Office concurs with data sheets/delineation report.
  - [ ] Office does not concur with data sheets/delineation report. Rationale: _____.
- [ ] Data sheets prepared by the Corps: _____.
- [ ] Corps navigable waters' study: _____.
- [x] U.S. Geological Survey Hydrologic Atlas: 2022 ARDR & 2023 ARDR Addendum, Figures 2, 2A, 2B; USGS NHD 2020.
  - [x] USGS NHD data.
  - [x] USGS 8 and 12 digit HUC maps.
- [x] U.S. Geological Survey map(s). Cite scale & quad name: 2022 ARDR & 2023 ARDR Addendum, Figures 2, 2A, 2B (1" = 4,500' or 3,000' [Hodge, Hinkley, Barstow SE, Barstow]).
- [x] Natural Resources Conservation Service Soil Survey. Citation: 2022 ARDR & 2023 ARDR Addendum, Figures 4, 4A, 4B; USDA NRCS 2018.
- [x] National wetlands inventory map(s). Cite name: 2022 ARDR & 2023 ARDR Addendum, Figure 4; USFWS NWI 2019.
- [ ] State/local wetland inventory map(s): _____.
- [ ] FEMA/FIRM maps: _____.
- [ ] 100-year Floodplain Elevation is: _____.(National Geodetic Vertical Datum of 1929)
- [x] Photographs: [x] Aerial (Name & Date): See 2022 ARDR & 2023 ARDR Addendum, Figures 1 & 4-6 (Maxar, Esri 2020; San Bernardino County, Esri 2020); Appendix D, Recent and Historic Aerials; Attachment F, Connectivity to Mojave River.
  or [x] Other (Name & Date): See 2022 ARDR, Appendix G; 2023 Addendum, Attachment D.
- [ ] Previous determination(s). File no. and date of response letter: _____.
- [x] Other information (please specify): 2022 ARDR & 2023 ARDR Addendum, prepared by Rocks Biological Consulting.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

_____
Signature and date of
Regulatory staff member
completing PJD

David Rankin 8/10/23
Signature and date of
person requesting PJD
(REQUIRED, unless obtaining
the signature is impracticable)[1]

[1] Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resources (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
NWW-1	34.772787	-117.284653	0.02 ac/123 ln ft	Non-wetland waters	Section 404
NWW-2	34.772847	-117.284610	0.01 ac/121 ln ft	Non-wetland waters	Section 404
NWW-3	34.773221	-117.283817	0.02 ac/132 ln ft	Non-wetland waters	Section 404
NWW-4	34.773653	-117.283036	0.01 ac/113 ln ft	Non-wetland waters	Section 404
NWW-5	34.773734	-117.282869	0.01 ac/109 ln ft	Non-wetland waters	Section 404
NWW-6	34.774652	-117.281701	0.01 ac/126 ln ft	Non-wetland waters	Section 404
NWW-7	34.776674	-117.278786	0.01 ac/119 ln ft	Non-wetland waters	Section 404
NWW-8	34.776786	-117.278705	0.01 ac/96 ln ft	Non-wetland waters	Section 404
NWW-9	34.778794	-117.277384	0.03 ac/107 ln ft	Non-wetland waters	Section 404
NWW-10	34.778399	-117.276743	<0.01 ac/52 ln ft	Non-wetland waters	Section 404
NWW-11	34.778377	-117.276478	0.02 ac/223 ln ft	Non-wetland waters	Section 404
NWW-12	34.778670	-117.276121	0.01 ac/127 ln ft	Non-wetland waters	Section 404
NWW-13	34.778712	-117.276024	0.01 ac/113 ln ft	Non-wetland waters	Section 404
NWW-14	34.778886	-117.275827	0.01 ac/133 ln ft	Non-wetland waters	Section 404
NWW-15	34.778978	-117.275585	0.01 ac/184 ln ft	Non-wetland waters	Section 404
NWW-16	34.784276	-117.262668	0.07 ac/214 ln ft	Non-wetland waters	Section 404
NWW-17	34.784361	-117.262104	0.05 ac/81 ln ft	Non-wetland waters	Section 404
NWW-18	34.786948	-117.252605	0.01 ac/104 ln ft	Non-wetland waters	Section 404
NWW-19	34.787318	-117.251761	0.01 ac/114 ln ft	Non-wetland waters	Section 404
NWW-20	34.791189	-117.241868	0.65 ac/852 ln ft	Non-wetland waters	Section 404
NWW-21	34.795810	-117.228450	0.03 ac/428 ln ft	Non-wetland waters	Section 404
NWW-22	34.796559	-117.227801	0.02 ac/176 ln ft	Non-wetland waters	Section 404
NWW-23	34.795776	-117.228162	0.02 ac/221 ln ft	Non-wetland waters	Section 404
NWW-24	34.797160	-117.227759	0.12 ac/840 ln ft	Non-wetland waters	Section 404
NWW-25	34.796981	-117.225815	0.07 ac/727 ln ft	Non-wetland waters	Section 404
NWW-26	34.797595	-117.225008	0.07 ac/522 ln ft	Non-wetland waters	Section 404
NWW-27	34.798258	-117.223204	0.18 ac/1,155 ln ft	Non-wetland waters	Section 404
NWW-28	34.797819	-117.222127	0.01 ac/109 ln ft	Non-wetland waters	Section 404
NWW-29	34.798766	-117.222983	<0.01 ac/96 ln ft	Non-wetland waters	Section 404
NWW-30	34.798508	-117.221906	0.03 ac/311 ln ft	Non-wetland waters	Section 404
NWW-31	34.798583	-117.221247	0.01 ac/145 ln ft	Non-wetland waters	Section 404
NWW-32	34.798456	-117.220065	<0.01 ac/32 ln ft	Non-wetland waters	Section 404
NWW-33	34.799322	-117.219846	0.02 ac/171 ln ft	Non-wetland waters	Section 404
NWW-34	34.800955	-117.215818	0.03 ac/572 ln ft	Non-wetland waters	Section 404

NWW-35	34.807290	-117.203290	0.01 ac/66 ln ft	Non-wetland waters	Section 404
NWW-36	34.808738	-117.201555	0.01 ac/183 ln ft	Non-wetland waters	Section 404
NWW-37	34.809189	-117.201054	0.01 ac/150 ln ft	Non-wetland waters	Section 404
NWW-38	34.809316	-117.200892	0.01 ac/141 ln ft	Non-wetland waters	Section 404
NWW-39	34.809671	-117.200471	<0.01 ac/182 ln ft	Non-wetland waters	Section 404
NWW-40	34.810099	-117.199975	0.01 ac/155 ln ft	Non-wetland waters	Section 404
NWW-41	34.810323	-117.199718	0.01 ac/172 ln ft	Non-wetland waters	Section 404
NWW-42	34.811425	-117.198424	0.02 ac/175 ln ft	Non-wetland waters	Section 404
NWW-43	34.826693	-117.188511	0.13 ac/475 ln ft	Non-wetland waters	Section 404
NWW-44	34.829248	-117.186429	3.13 ac/5,956 ln ft	Non-wetland waters	Section 404
NWW-45	34.834684	-117.182237	0.21 ac/2,468 ln ft	Non-wetland waters	Section 404
NWW-46	34.835168	-117.181479	0.06 ac/1,172 ln ft	Non-wetland waters	Section 404
NWW-47	34.833706	-117.176283	0.04 ac/580 ln ft	Non-wetland waters	Section 404
NWW-48	34.836991	-117.181122	0.03 ac/481 ln ft	Non-wetland waters	Section 404
NWW-49	34.836110	-117.179064	0.73 ac/7,138 ln ft	Non-wetland waters	Section 404
NWW-50	34.837239	-117.179203	0.02 ac/461 ln ft	Non-wetland waters	Section 404
NWW-51	34.837464	-117.178078	0.04 ac/842 ln ft	Non-wetland waters	Section 404
NWW-52	34.837867	-117.177679	0.04 ac/562 ln ft	Non-wetland waters	Section 404
NWW-53	34.837648	-117.177101	0.07 ac/1,131 ln ft	Non-wetland waters	Section 404
NWW-54	34.835210	-117.172619	0.02 ac/354 ln ft	Non-wetland waters	Section 404
NWW-55	34.835454	-117.171863	0.02 ac/170 ln ft	Non-wetland waters	Section 404
NWW-56	34.835773	-117.172617	0.02 ac/252 ln ft	Non-wetland waters	Section 404
NWW-57	34.836014	-117.172631	0.02 ac/264 ln ft	Non-wetland waters	Section 404
NWW-58	34.838348	-117.176084	0.50 ac/4,358 ln ft	Non-wetland waters	Section 404
NWW-59	34.838248	-117.174160	0.75 ac/8,262 ln ft	Non-wetland waters	Section 404
NWW-60	34.840401	-117.179750	0.17 ac/188 ln ft	Non-wetland waters	Section 404
NWW-61	34.837031	-117.169791	0.05 ac/910 ln ft	Non-wetland waters	Section 404
NWW-62	34.840397	-117.175307	0.14 ac/1,696 ln ft	Non-wetland waters	Section 404
NWW-63	34.840934	-117.174275	0.20 ac/2,174 ln ft	Non-wetland waters	Section 404
NWW-64	34.841711	-117.174418	0.04 ac/538 ln ft	Non-wetland waters	Section 404
NWW-65	34.842293	-117.173643	0.02 ac/482 ln ft	Non-wetland waters	Section 404
NWW-66	34.843147	-117.172457	0.08 ac/1,260 ln ft	Non-wetland waters	Section 404
NWW-67	34.841131	-117.171984	0.22 ac/2,373 ln ft	Non-wetland waters	Section 404
NWW-68	34.839992	-117.170094	0.34 ac/5,708 ln ft	Non-wetland waters	Section 404
NWW-69	34.842933	-117.168625	0.68 ac/6,858 ln ft	Non-wetland waters	Section 404
NWW-70	34.842209	-117.166408	2.09 ac/18,554 ln ft	Non-wetland waters	Section 404
NWW-71	34.844554	-117.165718	0.10 ac/1,128 ln ft	Non-wetland waters	Section 404
NWW-72	34.845370	-117.166236	0.04 ac/427 ln ft	Non-wetland waters	Section 404
NWW-73	34.844453	-117.163545	1.24 ac/13,348 ln ft	Non-wetland waters	Section 404
NWW-74	34.846950	-117.162756	0.17 ac/1,582 ln ft	Non-wetland waters	Section 404
NWW-75	34.845550	-117.159978	0.04 ac/487 ln ft	Non-wetland waters	Section 404
NWW-76	34.848019	-117.159133	0.86 ac/8,649 ln ft	Non-wetland waters	Section 404
NWW-77	34.847129	-117.156396	0.16 ac/1,677 ln ft	Non-wetland waters	Section 404

NWW-78	34.848845	-117.157242	0.01 ac/278 ln ft	Non-wetland waters	Section 404
NWW-79	34.850248	-117.158057	0.13 ac/1,874 ln ft	Non-wetland waters	Section 404
NWW-80	34.850680	-117.154564	2.02 ac/15,877 ln ft	Non-wetland waters	Section 404
NWW-81	34.853340	-117.156269	0.12 ac/1,229 ln ft	Non-wetland waters	Section 404
NWW-82	34.854433	-117.152784	0.64 ac/8,328 ln ft	Non-wetland waters	Section 404
NWW-83	34.856239	-117.153167	0.01 ac/250 ln ft	Non-wetland waters	Section 404
NWW-84	34.854958	-117.146066	0.02 ac/909 ln ft	Non-wetland waters	Section 404
NWW-85	34.857281	-117.149898	0.31 ac/3,921 ln ft	Non-wetland waters	Section 404
NWW-86	34.856698	-117.147965	0.02 ac/218 ln ft	Non-wetland waters	Section 404
NWW-87	34.857936	-117.147949	0.13 ac/2,162 ln ft	Non-wetland waters	Section 404
NWW-88	34.858906	-117.148308	0.04 ac/403 ln ft	Non-wetland waters	Section 404
NWW-89	34.863711	-117.134655	1.43 ac/12,987 ln ft	Non-wetland waters	Section 404
NWW-90	34.860552	-117.142795	0.08 ac/995 ln ft	Non-wetland waters	Section 404
NWW-91	34.863147	-117.140564	0.01 ac/150 ln ft	Non-wetland waters	Section 404
NWW-92	34.874455	-117.131291	8.31 ac/13,518 ln ft	Non-wetland waters	Section 404
NWW-93	34.873485	-117.118709	0.06 ac/409 ln ft	Non-wetland waters	Section 404
NWW-94	34.874055	-117.117372	0.06 ac/401 ln ft	Non-wetland waters	Section 404
NWW-95	34.877087	-117.110926	0.03 ac/307 ln ft	Non-wetland waters	Section 404
NWW-96	34.878268	-117.108708	0.05 ac/439 ln ft	Non-wetland waters	Section 404
NWW-97	34.879422	-117.105552	0.03 ac/506 ln ft	Non-wetland waters	Section 404
NWW-98	34.880017	-117.105950	0.01 ac/124 ln ft	Non-wetland waters	Section 404
NWW-99	34.880936	-117.101226	0.03 ac/353 ln ft	Non-wetland waters	Section 404
NWW-100	34.882602	-117.095407	0.34 ac/2,524 ln ft	Non-wetland waters	Section 404
NWW-101	34.883416	-117.092671	0.29 ac/1,003 ln ft	Non-wetland waters	Section 404
NWW-102	34.883038	-117.091930	0.01 ac/99 ln ft	Non-wetland waters	Section 404
NWW-103	34.797426	-117.223080	0.01 ac/43 ln ft	Non-wetland waters	Section 404
NWW-104	34.797510	-117.222886	0.01 ac/70 ln ft	Non-wetland waters	Section 404
NWW-105	34.828712	-117.182373	0.01 ac/29 ln ft	Non-wetland waters	Section 404
NWW-106	34.828907	-117.182084	0.01 ac/36 ln ft	Non-wetland waters	Section 404
NWW-107	34.835555	-117.169501	<0.01 ac/51 ln ft	Non-wetland waters	Section 404
NWW-108	34.847053	-117.151904	0.01 ac/36 ln ft	Non-wetland waters	Section 404
NWW-109	34.863277	-117.170128	106.87 ac/5,255 ln ft	Non-wetland waters	Section 404
NWW-110	34.862304	-117.029568	0.09 ac/626 ln ft	Non-wetland waters	Section 404
NWW-111	34.862851	-117.029387	0.01 ac/197 ln ft	Non-wetland waters	Section 404
NWW-112	34.862328	-117.030154	0.01 ac/197 ln ft	Non-wetland waters	Section 404
NWW-113	34.863114	-117.031133	0.11 ac/2,234 ln ft	Non-wetland waters	Section 404
NWW-114	34.863906	-117.030060	0.05 ac/735 ln ft	Non-wetland waters	Section 404
NWW-115	34.863948	-117.030548	0.01 ac/180 ln ft	Non-wetland waters	Section 404
NWW-116	34.863745	-117.030843	<0.01 ac/22 ln ft	Non-wetland waters	Section 404
NWW-117	34.863948	-117.031161	0.01 ac/196 ln ft	Non-wetland waters	Section 404
NWW-118	34.863784	-117.031507	<0.01 ac/54 ln ft	Non-wetland waters	Section 404
NWW-119	34.863981	-117.031809	0.05 ac/665 ln ft	Non-wetland waters	Section 404
NWW-120	34.862325	-117.032219	0.07 ac/537 ln ft	Non-wetland waters	Section 404

NWW-121	34.863168	-117.032221	0.01 ac/269 ln ft	Non-wetland waters	Section 404
NWW-122	34.863547	-117.032236	0.01 ac/115 ln ft	Non-wetland waters	Section 404
NWW-123	34.863294	-117.032440	<0.01 ac/103 ln ft	Non-wetland waters	Section 404
NWW-124	34.863374	-117.033400	0.01 ac/140 ln ft	Non-wetland waters	Section 404
NWW-125	34.863847	-117.033290	0.03 ac/232 ln ft	Non-wetland waters	Section 404
NWW-126	34.863806	-117.033928	0.01 ac/132 ln ft	Non-wetland waters	Section 404
NWW-127	34.864203	-117.033791	0.02 ac/307 ln ft	Non-wetland waters	Section 404
NWW-128	34.863964	-117.034043	0.02 ac/280 ln ft	Non-wetland waters	Section 404
NWW-129	34.864078	-117.034199	0.01 ac/128 ln ft	Non-wetland waters	Section 404
NWW-130	34.864243	-117.034403	0.02 ac/294 ln ft	Non-wetland waters	Section 404
NWW-131	34.864655	-117.034310	0.01 ac/121 ln ft	Non-wetland waters	Section 404
NWW-132	34.864770	-117.034393	0.03 ac/305 ln ft	Non-wetland waters	Section 404
NWW-133	34.864415	-117.034695	0.01 ac/129 ln ft	Non-wetland waters	Section 404
NWW-134	34.864537	-117.034800	<0.01 ac/154 ln ft	Non-wetland waters	Section 404
NWW-135	34.865000	-117.034784	0.04 ac/325 ln ft	Non-wetland waters	Section 404
NWW-136	34.864640	-117.034993	0.01 ac/128 ln ft	Non-wetland waters	Section 404
NWW-137	34.865098	-117.035362	<0.01 ac/41 ln ft	Non-wetland waters	Section 404
NWW-138	34.865483	-117.035394	0.01 ac/190 ln ft	Non-wetland waters	Section 404
NWW-139	34.865080	-117.035540	0.01 ac/142 ln ft	Non-wetland waters	Section 404
NWW-140	34.865346	-117.035826	0.03 ac/238 ln ft	Non-wetland waters	Section 404
NWW-141	34.865793	-117.035751	0.02 ac/243 ln ft	Non-wetland waters	Section 404
NWW-142	34.865558	-117.036182	0.01 ac/118 ln ft	Non-wetland waters	Section 404
NWW-143	34.865940	-117.035968	0.02 ac/126 ln ft	Non-wetland waters	Section 404
NWW-144	34.865697	-117.036341	0.02 ac/148 ln ft	Non-wetland waters	Section 404
NWW-145	34.867099	-117.037273	<0.01 ac/69 ln ft	Non-wetland waters	Section 404
NWW-146	34.867280	-117.037889	0.18 ac/272 ln ft	Non-wetland waters	Section 404
NWW-147	34.867479	-117.038380	<0.01 ac/47 ln ft	Non-wetland waters	Section 404
NWW-148	34.868016	-117.038573	0.01 ac/146 ln ft	Non-wetland waters	Section 404
NWW-149	34.867884	-117.039030	0.01 ac/133 ln ft	Non-wetland waters	Section 404
NWW-150	34.867950	-117.039201	0.01 ac/113 ln ft	Non-wetland waters	Section 404
NWW-151	34.868385	-117.038946	0.01 ac/120 ln ft	Non-wetland waters	Section 404
NWW-152	34.868169	-117.039394	0.01 ac/141 ln ft	Non-wetland waters	Section 404
NWW-153	34.868686	-117.039359	0.01 ac/185 ln ft	Non-wetland waters	Section 404
NWW-154	34.868471	-117.039625	<0.01 ac/62 ln ft	Non-wetland waters	Section 404
NWW-155	34.868497	-117.039748	0.01 ac/132 ln ft	Non-wetland waters	Section 404
NWW-156	34.868751	-117.040025	0.01 ac/126 ln ft	Non-wetland waters	Section 404
NWW-157	34.869093	-117.039898	0.01 ac/133 ln ft	Non-wetland waters	Section 404
NWW-158	34.869493	-117.040409	0.01 ac/169 ln ft	Non-wetland waters	Section 404
NWW-159	34.869406	-117.040822	0.01 ac/123 ln ft	Non-wetland waters	Section 404
NWW-160	34.869733	-117.041232	0.01 ac/85 ln ft	Non-wetland waters	Section 404
NWW-161	34.870069	-117.041756	0.01 ac/167 ln ft	Non-wetland waters	Section 404
NWW-162	34.870305	-117.041899	<0.01 ac/55 ln ft	Non-wetland waters	Section 404
NWW-163	34.870368	-117.042117	0.01 ac/169 ln ft	Non-wetland waters	Section 404

NWW-164	34.870510	-117.042262	<0.01 ac/125 ln ft	Non-wetland waters	Section 404
NWW-165	34.870631	-117.042459	0.01 ac/152 ln ft	Non-wetland waters	Section 404
NWW-166	34.870818	-117.042706	0.02 ac/294 ln ft	Non-wetland waters	Section 404
NWW-167	34.870938	-117.042896	0.01 ac/142 ln ft	Non-wetland waters	Section 404
NWW-168	34.871428	-117.042765	0.03 ac/208 ln ft	Non-wetland waters	Section 404
NWW-169	34.871617	-117.042845	0.01 ac/123 ln ft	Non-wetland waters	Section 404
NWW-170	34.871221	-117.043257	0.01 ac/295 ln ft	Non-wetland waters	Section 404
NWW-171	34.871715	-117.043851	0.03 ac/206 ln ft	Non-wetland waters	Section 404
NWW-172	34.872364	-117.043974	0.03 ac/176 ln ft	Non-wetland waters	Section 404
NWW-173	34.872264	-117.044360	<0.01 ac/90 ln ft	Non-wetland waters	Section 404
NWW-174	34.872611	-117.044917	<0.01 ac/210 ln ft	Non-wetland waters	Section 404
NWW-175	34.873081	-117.045449	0.02 ac/155 ln ft	Non-wetland waters	Section 404
NWW-176	34.873274	-117.045677	0.01 ac/173 ln ft	Non-wetland waters	Section 404
NWW-177	34.873893	-117.045930	0.06 ac/571 ln ft	Non-wetland waters	Section 404
NWW-178	34.873797	-117.046218	0.01 ac/84 ln ft	Non-wetland waters	Section 404
NWW-179	34.873847	-117.046343	<0.01 ac/63 ln ft	Non-wetland waters	Section 404
NWW-180	34.873945	-117.046598	0.03 ac/197 ln ft	Non-wetland waters	Section 404
NWW-181	34.874872	-117.046978	<0.01 ac/75 ln ft	Non-wetland waters	Section 404
NWW-182	34.874268	-117.047106	0.07 ac/636 ln ft	Non-wetland waters	Section 404
NWW-183	34.864594	-117.120526	0.06 ac/288 ln ft	Non-wetland waters	Section 404
NWW-184	34.865232	-117.122088	0.02 ac/178 ln ft	Non-wetland waters	Section 404

ATTACHMENT C

ARID WEST WETLAND DETERMINATION DATA FORMS AND EPHEMERAL AND INTERMITTENT STREAMS OHWM DATASHEETS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Barstow International Gateway (BIG) (formerly Big Barstow) City/County: Barstow/San Bernardino Sampling Date: 4/18/2023

Applicant/Owner: BNSF Railway State: CA Sampling Point: WDP 12

Investigator(s): Kelsey Woldt Section, Township, Range: S4, T08N, R03W

Landform (hillslope, terrace, etc.): terrace/near Mojave River Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D - Interior Deserts Lat: 33.834733 Long: -117.190673 Datum: WGS 84

Soil Map Unit Name: Riverwash (soil rated as hydric per the NRCS) NWI classification: Freshwater pond

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology ✔ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Representative sample point taken within area mapped as tamarisk thickets and within close proximity to the Mojave River. Hydrology considered significantly disturbed based on presence of bermed road located directly to the west, redirecting flows from the Mojave River. Originally delineated 8/20/2019; conditions reassessed 4/18/2023.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	N/A	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5-foot radius)			
1. Tamarix ramosissima	5	Yes	FAC
2. Baccharis salicifolia	5	Yes	FAC
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 5-foot radius)			
1. Schismus barbatus	3	Yes	NL/UPL
2. Cryptantha mirantha	2	Yes	NL/UPL
3.			
4.			
5.			
6.			
7.			
8.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	N/A	= Total Cover	

% Bare Ground in Herb Stratum 85% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

Sample point taken within area mapped as tamarisk thickets. Tamarix ramosissima is synonymous with Tamarix chinensis (FAC) per NWPL. Hydric soil and wetland hydrology parameters not met; thus prevalence index worksheet not required/needed.

SOIL

Sampling Point: WDP 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-20	10 YR 4/2	100%	N/A	N/A	N/A	N/A	loamy sand	No evidence of redox observed.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soil Present? Yes _____ No ✔

Remarks:

Soils moistened with spray bottle to record soil color. Uniform soils throughout. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): N/A

Water Table Present? Yes _____ No ✔ Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): N/A

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

N/A

Remarks:

FAC-Neutral test not met. No wetland hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Barstow International Gateway (BIG) (formerly Big Barstow) City/County: Barstow/San Bernardino Sampling Date: 6/27/2023

Applicant/Owner: BNSF Railway State: CA Sampling Point: WDP 13

Investigator(s): Kelsey Woldt, Alec Goodman, Sarah Krejca Section, Township, Range: S13, T09N, R02W

Landform (hillslope, terrace, etc.): within channel Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D - Interior Deserts Lat: 34.867375 Long: -117.037877 Datum: WGS 84

Soil Map Unit Name: Nebona-Cuddeback Complex, 2 to 9 Percent Slopes (soil rated as hydric per the NRCS) NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Representative sample point taken within area mapped as unvegetated channel.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	N/A = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	N/A = Total Cover		
Herb Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	N/A = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	N/A = Total Cover		

% Bare Ground in Herb Stratum 99% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

Sample point taken within area mapped as unvegetated channel. Less than 5% herbaceous cover (approximately 1% Schismus sp.), therefore, per Arid West Manual no herb stratum.

SOIL

Sampling Point: WDP 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10 YR 5/4	100%	N/A	N/A	N/A	N/A	sand	No evidence of redox observed.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: shovel refusal (fill/compacted soil)

Depth (inches): 7 inches

Hydric Soil Present? Yes _____ No ✔

Remarks:

Soils moistened with spray bottle to record soil color. Uniform soils throughout. No hydric soil indicators observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): N/A

Water Table Present? Yes _____ No ✔ Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): N/A

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

N/A

Remarks:

FAC-Neutral test not met (no vegetation). No wetland hydrology indicators observed.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Barstow International Gateway (BIG) (formerly Big Barstow) **Date:** 4/18/2023 **Time:** 0900
Project Number: N/A **Town:** Barstow **State:** CA
Stream: ODP 30 **Photo begin file#:** 49 **Photo end file#:** 49
Investigator(s): Kelsey Woldt

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
BIG Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.846276, -117.113088

Potential anthropogenic influences on the channel system:
Highly manipulated/disturbed (off-road vehicle use and trash dumping) trapezoidal flood-control channel flowing under National Trails Highway and railroad tracks.

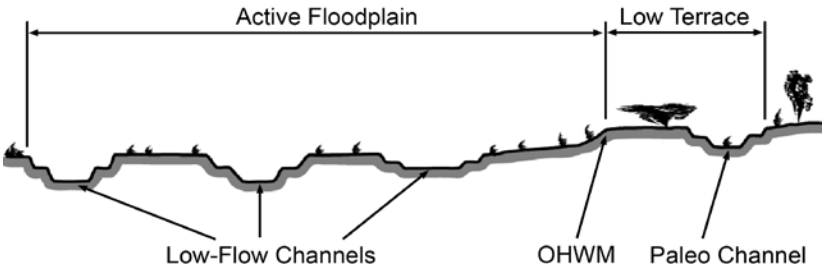
Brief site description:
Site occurs along existing railroad line with some off-site areas south of National Trails Highway; disturbed conditions prevalent.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

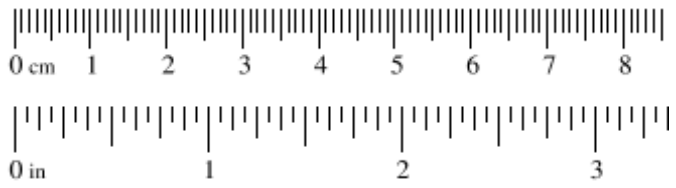


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

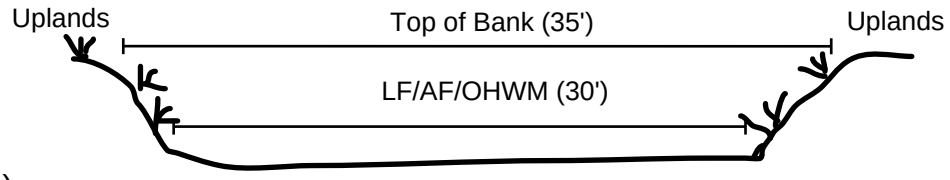
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Barstow **Cross section ID:** ODP 30 **Date:** 4/18/2023 **Time:** 0900

Cross section drawing:



Facing north
(downstream)

OHWM

GPS point: 34.846276, -117.113088

Indicators:

- ☑ Change in average sediment texture
- ☐ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 30-foot wide OHWM defined by a break in bank slope, change in average sediment texture, and change in vegetation cover. Highly manipulated trapezoidal channel; evidence of off-road vehicle use throughout.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low-flow channel (LF) is indistinguishable/cannot be determined from active floodplain (AF).

Project ID: Barstow **Cross section ID:** ODP 30 **Date:** 4/18/2023 **Time:** 0900

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 30-foot wide unvegetated AF with a defined break in bank slope; drift and debris present as trash and dead plant material. Medium sand sediment texture with some granules throughout.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Fine sand

Total veg cover: 20 % Tree: 0 % Shrub: 17 % Herb: 3 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Fine sand sediment texture with some pebbles throughout. Vegetation dominated by Larrea tridentata, Atriplex polycarpa, Hirschfeldia incana, Erodium cicutarium, Schismus barbatus, and Bromus rubens.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Barstow International Gateway (BIG) (formerly Big Barstow)
Date: 4/18/2023
Time: 0930
Project Number: N/A
Town: Barstow
State: CA
Stream: ODP 31
Photo begin file#: 50
Photo end file#: 50
Investigator(s): Kelsey Woldt

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
Big Barstow Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.866015, -117.122899

Potential anthropogenic influences on the channel system:
Highly manipulated/disturbed (off-road vehicle use and trash dumping) trapezoidal flood-control channel flowing under National Trails Highway and railroad tracks.

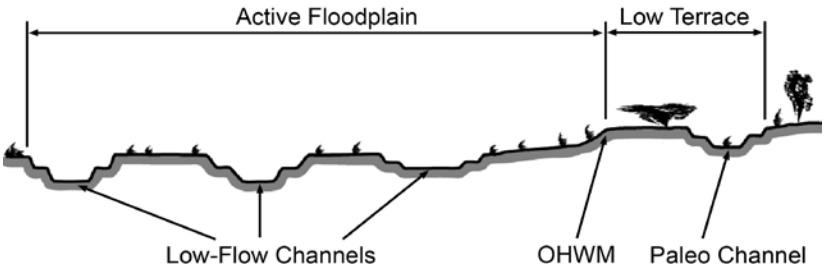
Brief site description:
Site occurs along existing railroad line with some off-site areas south of National Trails Highway; disturbed conditions prevalent.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

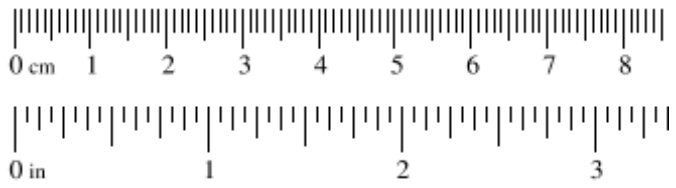


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

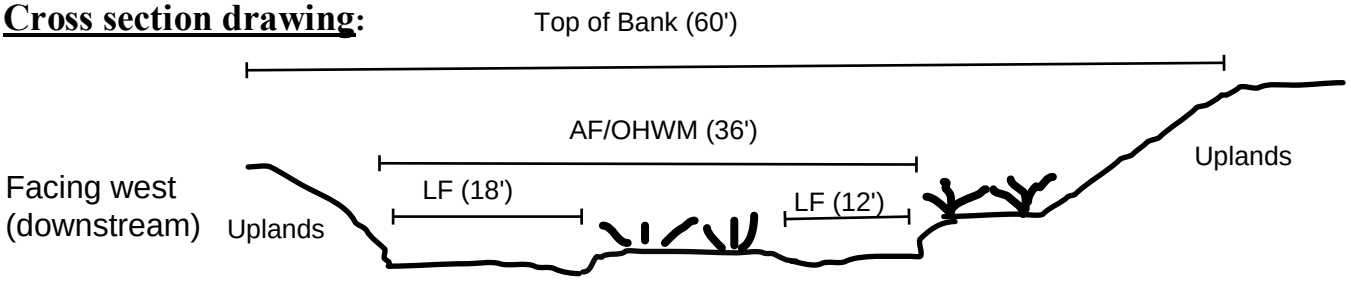
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Barstow **Cross section ID:** ODP 31 **Date:** 4/18/2023 **Time:** 0930

Cross section drawing:



OHWM

GPS point: 34.866015, -117.122899

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [ ] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Approximately 36-foot wide OHWM defined by a break in bank slope, change in average sediment texture, and change in vegetation species.

Floodplain unit:

- [x] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace/Upland

GPS point: Just below AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Fine sand

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- [x] NA
- [ ] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Two unvegetated low-flow channels (LF) (18' southern and 12' northern) with a defined break in slope. Fine sand sediment texture with some pebbles throughout.

Project ID: Barstow **Cross section ID:** ODP 31 **Date:** 4/18/2023 **Time:** 0930

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand

Total veg cover: 5 % Tree: 0 % Shrub: 5 % Herb: 0 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 36-foot wide active floodplain (AF) with a defined break in bank slope; drift and debris present as trash. Medium sand sediment texture with some granules throughout. Vegetation dominated by Atriplex canescens and Atriplex polycarpa.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand

Total veg cover: 5 % Tree: 0 % Shrub: 0 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☑ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Medium sand sediment texture with some pebbles throughout. Vegetation dominated by Schismus barbatus.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Barstow International Gateway (BIG) (formerly Big Barstow)
Date: 4/18/2023
Time: 1615
Project Number: N/A
Town: Barstow
State: CA
Stream: ODP 32
Photo begin file#: 54
Photo end file#: 54
Investigator(s): Kelsey Woldt

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
Big Barstow Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.835258, -117.192358

Potential anthropogenic influences on the channel system:
Area receives upstream runoff/flows from surrounding development and snow melt. Sandy bermed areas resulting from County of San Bernardino flood control measures occur along northern and southern extent of river. Evidence of trash dumping.

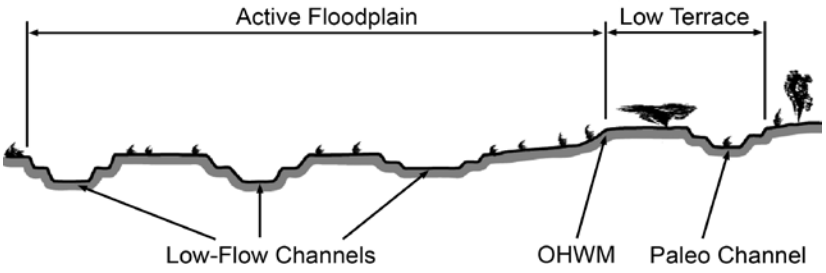
Brief site description:
Within Mojave River adjacent to Hinkley Road; immediate surrounding area generally undeveloped except for Hinkley Road.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

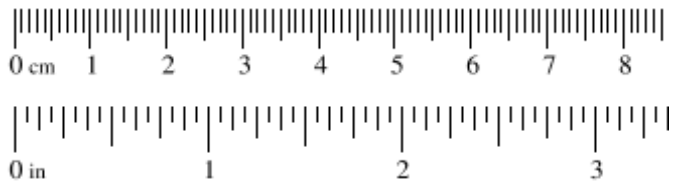


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

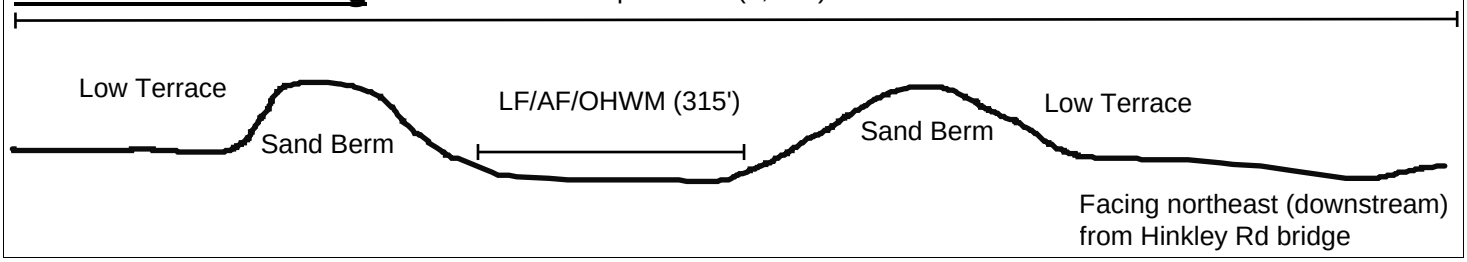
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Barstow **Cross section ID:** ODP 32 **Date:** 4/18/2023 **Time:** 1615

Cross section drawing:



OHWM

GPS point: 34.835258, -117.192358

Indicators:

- ☑ Change in average sediment texture
- ☐ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 315-foot wide OHWM defined by a break in bank slope, change in average sediment texture, and change in vegetation cover.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: Just below AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: unknown

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☑ Other: surface water
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low-flow channels (LF) assumed within areas of active flow during site visit given the low rain/drought year within this intermittent section of the Mojave River. No vegetation occurring within the LF (unvegetated channel). Could not assess sediment texture.

Project ID: Barstow **Cross section ID:** ODP 32 **Date:** 4/18/2023 **Time:** 1615

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Very fine sand

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 315-foot wide AF with a defined break in bank slope; drift and debris present as trash and dead plant material. Very fine sand sediment texture throughout. No vegetation occurring within the AF (unvegetated channel).

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Fine sand

Total veg cover: 35 % Tree: 5 % Shrub: 27 % Herb: 3 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☑ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low terrace present outside of sandy bermed areas created by the County of San Bernardino for flood control purposes. Soil development and surface relief define uplands. Fine sand sediment texture with some cobble throughout. Vegetation dominated by Populus sp., Tamarix ramossisima, Schismus barbatus, and Salix sp.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Barstow International Gateway (BIG) (formerly Big Barstow)
Project Number: N/A
Stream: ODP 33
Investigator(s): Sarah Krejca

Date: 6/27/2023
Town: Barstow
Photo begin file#: 56

Time: 0940
State: CA
Photo end file#: 56

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
BIG Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.864155, -117.030134

Potential anthropogenic influences on the channel system:
Off-road vehicle use and dirt roads throughout the entire area.

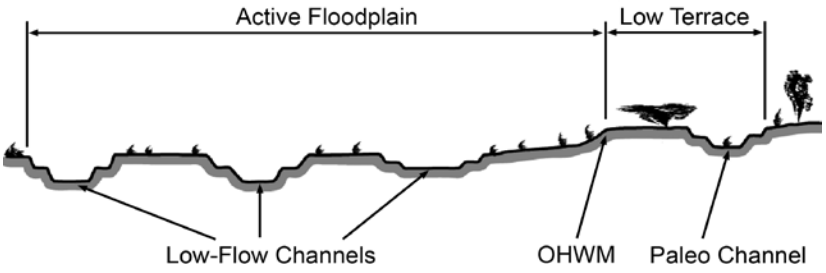
Brief site description:
Site occurs along existing dirt road(s) and substation; disturbed conditions prevalent.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

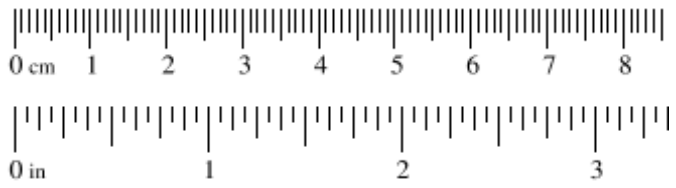


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

Wentworth Size Classes

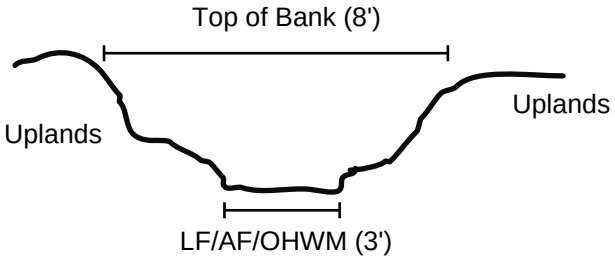
Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Barstow **Cross section ID:** ODP 33 **Date:** 6/27/2023 **Time:** 0940

Cross section drawing:

Facing north (downstream)



OHWM

GPS point: 34.864155, -117.030134

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 3-foot wide OHWM defined by a break in bank slope, change in average sediment texture, and change in vegetation cover and species.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low-flow channel (LF) is indistinguishable/cannot be determined from active floodplain (AF).

Project ID: Barstow **Cross section ID:** ODP 33 **Date:** 6/27/2023 **Time:** 0940

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand

Total veg cover: 1 % Tree: 0 % Shrub: 0 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☑ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 3-foot wide AF with a defined break in bank slope. Medium sand sediment texture throughout. Vegetation dominated by Schismus sp.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Fine sand w/pebbles

Total veg cover: 20 % Tree: 0 % Shrub: 15 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Fine sand sediment texture with some pebbles throughout. Vegetation dominated by Larrea tridentata and Schismus sp.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Barstow International Gateway (BIG) (formerly Big Barstow) **Date:** 6/27/2023 **Time:** 1025
Project Number: N/A **Town:** Barstow **State:** CA
Stream: ODP 34 **Photo begin file#:** 57 **Photo end file#:** 57
Investigator(s): Sarah Krejca

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
BIG Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.862701, -117.031073

Potential anthropogenic influences on the channel system:
Dirt roads throughout the entire area. Concrete v-ditch created to collect and redirect storm water and runoff.

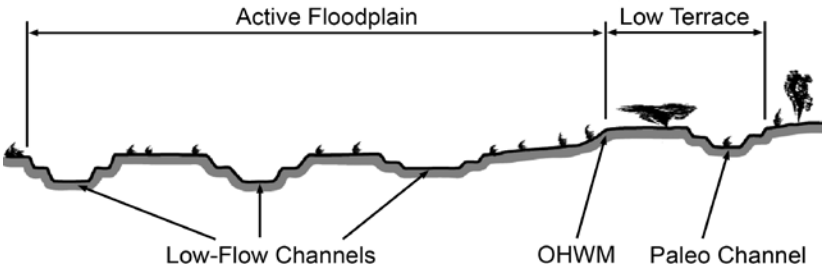
Brief site description:
Concrete v-ditch with areas of accumulated sediment that collects and conveys storm water. Site occurs along existing dirt road(s) and substation; disturbed conditions prevalent. Site occurs along existing dirt road(s) and substation; disturbed conditions prevalent.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

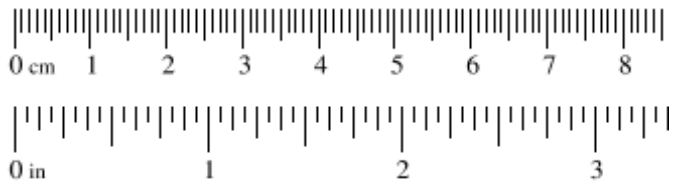


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

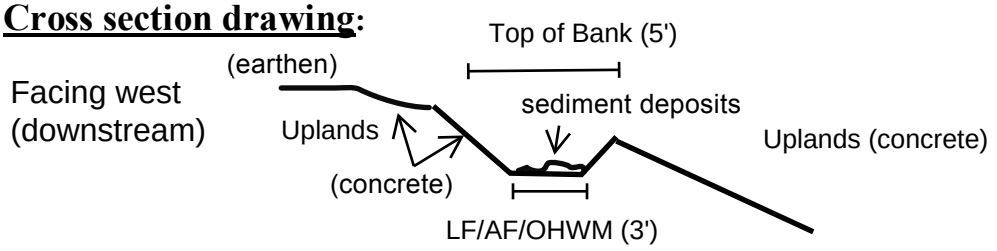
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Barstow **Cross section ID:** ODP 34 **Date:** 6/27/2023 **Time:** 1025

Cross section drawing:



OHWM

GPS point: 34.862701, -117.031073

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☑ Other: water staining
- ☑ Other: sediment deposits

Comments:

Approximately 3-foot wide OHWM within concrete v-ditch. The OHWM was defined by water staining and sediment deposits.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low-flow channel (LF) is indistinguishable/cannot be determined from active floodplain (AF).

Project ID: Barstow **Cross section ID:** ODP 34 **Date:** 6/27/2023 **Time:** 1025

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: concrete w/very coarse sand

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☑ Other: water staining
- ☑ Other: sediment deposits
- ☐ Other: _____

Comments:

Approximately 3-foot wide AF within concrete v-ditch with water staining and sediment deposits composed of very coarse sand sediment texture.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand (southern uplands)

Total veg cover: 5 % Tree: 0 % Shrub: 4 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development (on southern portion) and surface relief define uplands. Southern uplands transition from concrete to earthen with medium sand sediment texture throughout; northern uplands composed entirely of concrete. Vegetation within earthen portion dominated by Larrea tridentata, Schismus sp., and Atriplex sp.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Barstow International Gateway (BIG) (formerly Big Barstow) **Date:** 6/28/2023 **Time:** 0600
Project Number: N/A **Town:** Barstow **State:** CA
Stream: ODP 35 **Photo begin file#:** 58 **Photo end file#:** 58
Investigator(s): Kelsey Woldt, Alec Goodman, Sarah Krejca

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
BIG Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.867343, -117.037853

Potential anthropogenic influences on the channel system:
Off-road vehicle use and dirt roads throughout the entire area; trash and tire tracks within channel.

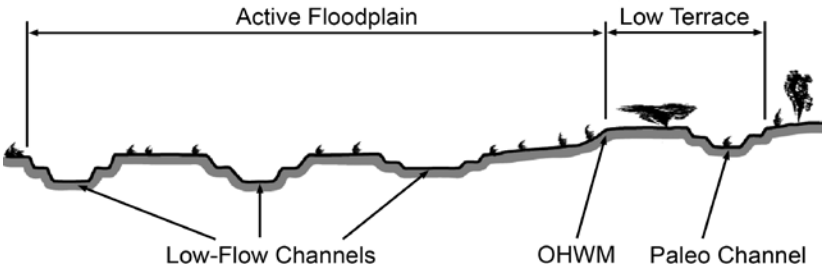
Brief site description:
Site occurs along existing dirt road(s) and substation; disturbed conditions prevalent.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

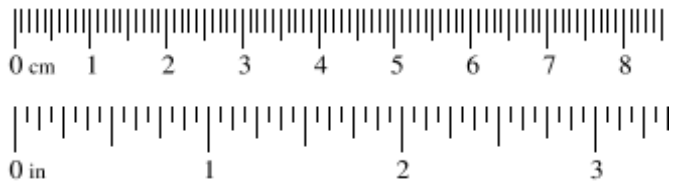


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

Wentworth Size Classes

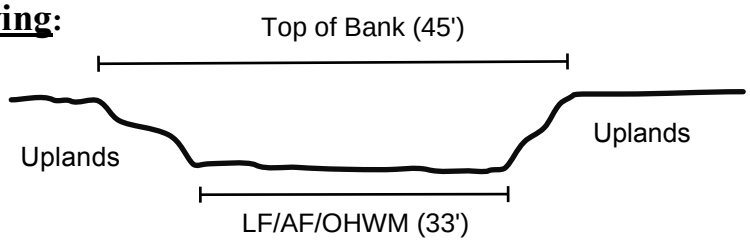
Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Barstow **Cross section ID:** ODP 35 **Date:** 6/28/2023 **Time:** 0600

Cross section drawing:

Facing north (downstream)



OHWM

GPS point: 34.867343, -117.037853

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 33-foot wide OHWM defined by a break in bank slope, change in average sediment texture, and change in vegetation cover and species.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low-flow channel (LF) is indistinguishable/cannot be determined from active floodplain (AF).

Project ID: Barstow **Cross section ID:** ODP 35 **Date:** 6/28/2023 **Time:** 0600

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand

Total veg cover: 2 % Tree: 0 % Shrub: 1 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☑ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 33-foot wide AF with a defined break in bank slope. Medium sand sediment texture with some pebbles throughout. Very sparsely vegetated; vegetation dominated by Larrea tridentata and Malacothrix glabrata.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Fine sand w/cobble

Total veg cover: 8 % Tree: 0 % Shrub: 4 % Herb: 4 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Fine sand sediment texture with some cobble throughout. Vegetation dominated by Ambrosia dumosa, Lepidium fremontii, Stephanomeria sp., Malacothrix glabrata, Erodium cicutarium, Sisymbrium altissimum, and Brassica tournefortii.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Barstow International Gateway (BIG) (formerly Big Barstow) **Date:** 6/28/2023 **Time:** 0645
Project Number: N/A **Town:** Barstow **State:** CA
Stream: ODP 36 **Photo begin file#:** 60 **Photo end file#:** 60
Investigator(s): Kelsey Woldt, Alec Goodman, Sarah Krejca

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
BIG Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.872282, -117.043990

Potential anthropogenic influences on the channel system:
Off-road vehicle use and dirt roads throughout the entire area; tire tracks within channel.

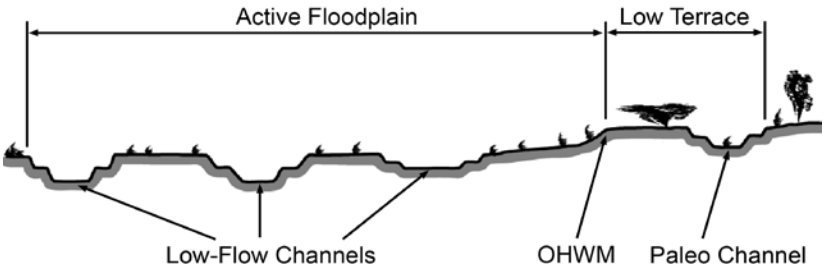
Brief site description:
Site occurs along existing dirt road(s) and substation; disturbed conditions prevalent.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

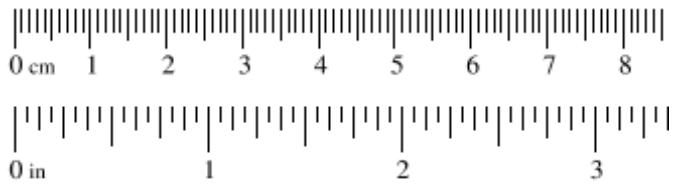


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

Wentworth Size Classes

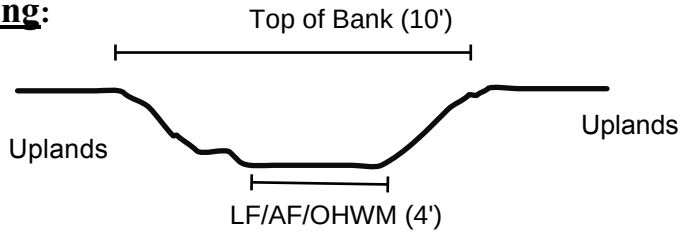
Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Barstow **Cross section ID:** ODP 36 **Date:** 6/28/2023 **Time:** 0645

Cross section drawing:

Facing north (downstream)



OHWM

GPS point: 34.872282, -117.043990

Indicators:

- ☑ Change in average sediment texture
- ☐ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 4-foot wide OHWM defined by a break in bank slope, change in average sediment texture, and change in vegetation cover.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low-flow channel (LF) is indistinguishable/cannot be determined from active floodplain (AF).

Project ID: Barstow **Cross section ID:** ODP 36 **Date:** 6/28/2023 **Time:** 0645

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand w/granules

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 4-foot wide, unvegetated AF with a defined break in bank slope. Medium sand sediment texture with some granules throughout.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand w/pebbles

Total veg cover: 10 % Tree: 0 % Shrub: 3 % Herb: 7 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Medium sand sediment texture with some pebbles throughout. Vegetation dominated by Larrea tridentata,Schismus sp., Malacothrix glabrata, Erodium cicutarium, Sisymbrium irio, and Amsinckia tessellata.

ATTACHMENT D

SITE PHOTOGRAPHS

Attachment D

Site Photographs[1]

Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation – April 18, 2023; June 14, 2023; Jun 27-28, 2023



Photo 49. Upstream view of Ordinary High Water Mark (OHWM) Datasheet Point (ODP) 30 within Non-Wetland Waters (NWW-) 92, facing east, within unvegetated channel. ODP 30 exhibited a break in bank slope, change in average sediment texture, and change in vegetation cover (34.864284, -117.113102). April 18, 2023.



Photo 50. Downstream view of ODP 31 within NWW-92, facing northwest, within unvegetated channel. ODP 31 exhibited a break in bank slope, change in average sediment texture, and change in vegetation species (34.865598 -117.122899). April 18, 2023.



Photo 51. Downstream view of NWW-92, facing north, where the bed and bank becomes less defined and flows begin to dissipate. Although this photo was taken in August 2021, similar conditions were observed in April 2023 (34.873073, -117.135220). August 10, 2021.



Photo 52. View north of NWW-92, facing south, showing no evidence of flows. Although this photo was taken in August 2021, similar conditions were observed in April 2023 (34.876784, -117.136639). August 10, 2021.

[1] See corresponding Figure 5 series for photo point locations. See Aquatic Resources Delineation Report Addendum Sections 1.5 through 1.6 and Attachment E for a discussion of each feature.



Photo 53. View north of NWW-92, facing southwest, showing no evidence of flows. Although this photo was taken in August 2021, similar conditions were observed in April 2023 (34.876731, -117.136782). August 10, 2021.



Photo 54. Downstream view of ODP 32 within NWW-109 (Mojave River), facing north, within unvegetated channel. ODP 32 exhibited a break in bank slope, change in average sediment texture, and change in vegetation cover (34.835602, -117.191856). April 18, 2023.



Photo 55. View of Wetland Data Form Point (WDP) 12 within NWW-109 (Mojave River), facing south, within tamarisk thickets. WDP 12 did not meet any of the three wetland parameters (34.834734, -117.190730). April 18, 2023.



Photo 56. Downstream view of ODP 33 within NWW-114, facing north, within creosote bush scrub. ODP 33 exhibited a break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species (34.864206, -117.030126). June 27, 2023.



Photo 57. Downstream view of ODP 34 within NWW-113, facing west, within a concrete channel. ODP 34 exhibited water staining and sediment deposits (34.862708, -117.031081). June 27, 2023.



Photo 58. Downstream view of ODP 35 within NWW-146, facing north, within unvegetated channel. ODP 35 exhibited a break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species (34.867344 -117.037851). June 28, 2023.



Photo 59. View of WDP 13 within NWW-146, facing south, within unvegetated channel. WDP 13 did not meet any of the three wetland parameters (34.867332, -117.037929). June 28, 2023.



Photo 60. Downstream view of ODP 36 within NWW-172, facing north, within creosote bush scrub. ODP 36 exhibited a break in bank slope, change in average sediment texture, and change in vegetation cover (34.872265, -117.043991). June 28, 2023.



Photo 61. View of dirt road within area where the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) maps a “Stream/River” feature and the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps a “Riverine” feature, facing north, within disturbed habitat; no ordinary high water mark (OHWM) indicators were observed (34.863689, -117.032276). June 27, 2023.



Photo 62. View of dirt road within area where the USGS NHD maps a “Stream/River” feature and the USFWS NWI maps a “Riverine” feature, facing north, within creosote bush scrub and disturbed habitat; no OHWM indicators were observed (34.866621, -117.036994). June 27, 2023.



Photo 63. View of dirt road within developed area where the USGS NHD maps a “Stream/River” feature, facing north; no OHWM indicators were observed (34.874743, -117.047406). June 27, 2023.



Photo 64. Overview of portion of 2023 ARDR review area west of Lenwood Road and south of Main Street, facing southeast, showing no evidence of flows (34.870182, -117.119458). April 18, 2023..

ATTACHMENT E

AQUATIC RESOURCE SUMMARY TABLES FOR 2023 ARDR ADDENDUM REVIEW AREA

Table E-1. Aquatic Resource Summary for 2023 ARDR Addendum Review Area: Corps/RWQCB

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-24 (portion within 2023 ARDR addendum review area)	R6	12 – 12	CAST, CVC, BBS[4]	WH[5]	Yes/No	Allscale Scrub[6]	Primarily unvegetated, single-thread feature within allscale scrub; originates within 2022 review area as runoff from National Trails Hwy/Main St.	34.797875, -117.133117	0.01[7]	39[7]
NWW-89 (portion within 2023 ARDR addendum review area)	R6	4 – 4	CAST, CVC, BBS[4] (See ODP 5, 6, 7, 23, 25 in the 2022 ARDR)	None[5] (See WDP 3 in the 2022 ARDR)	Yes/No	Creosote Bush Scrub[6]	Unvegetated feature within creosote bush scrub that meanders in and out of the 2023 ARDR addendum review area before continuing into the 2022 review area and through a culvert along National Trails Hwy/Main St.	34.860789, -117.133117	0.05[7]	497[7]
NWW-92 (portion within 2023 ARDR addendum review area)	R6	2 – 45	CAST, CVS, CVC, BBS; See ODP 30 and 31 (Also see ODP 4 in the 2022 ARDR)	WH[5]	Yes/No	Unvegetated Channel	Primarily unvegetated, large, trapezoidal feature (San Bernardino County Flood Control District Channel) within heavily manipulated, unvegetated channel; evidence of off-road vehicle use; originates south of Main St/National Trails Hwy and dissipates within northern portion of 2023 ARDR addendum review area. (See Photos 49 – 51 on Figures 5A–5B and Attachment D.)	34.867370, -117.122673	6.99[7]	8,890[7]
NWW-109 (Mojave River) (portion within 2023 ARDR addendum review area)	R4	110 – 375	CAST, CVC, BBS; See ODP 32 (Also see ODP 26 and 28 in the 2022 ARDR)	None; See WDP 12	Yes/No	Unvegetated Channel	Sparsely vegetated, dry, sandy wash that comprises the on-site extent of the Mojave River; generally flows southwest to northeast before continuing off site. (See Photos 54 and 55 on Figures 5A – 5B and Attachment D.)	34.835454, -117.191774	2.57[7]	437[7]
NWW-110	R6	2 – 12	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated feature with multiple small tributaries within creosote bush scrub; originates south	34.862304, -117.029568	0.09	626

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
							of review area and dissipates at unnamed dirt road.			
NWW-111	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.862851, -117.029387	0.01	197
NWW-112	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.862328, -117.030154	0.01	197
NWW-113	R6	1 – 3	WS, SD; See ODP 34	None[5]	Yes/No	Developed	Primarily concrete feature within developed area; conveys flows around Tortilla substation and into NWW-114 through NWW-119. (See Photo 57 on Figures 5A – 5B and Attachment D.)	34.863114, -117.031133	0.11	2,234
NWW-114	R6	1 – 10	CAST, CVS, CVC, BBS; See ODP 33	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated feature with small tributaries within creosote bush scrub. (See Photo 56 on Figures 5A – 5B and Attachment D.)	34.863906, -117.030060	0.05	735
NWW-115	R6	1 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; partially fed by flows from concrete-lined NWW-113.	34.863948, -117.030548	0.01	180
NWW-116	R6	1 – 1	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; fed by flows from concrete-lined NWW-113.	34.863745, -117.030843	<0.01	22
NWW-117	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; fed by flows from concrete-lined NWW-113.	34.863948, -117.031161	0.01	196
NWW-118	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; fed by flows from concrete-lined NWW-113.	34.863784, -117.031507	<0.01	54
NWW-119	R6	2 – 5	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub;	34.863981, -117.031809	0.05	665

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
							partially fed by flows from concrete-lined NWW-113.			
NWW-120	R6	4 – 6	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.862325, -117.032219	0.07	537
NWW-121	R6	2 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, double-thread feature within creosote bush scrub.	34.863168, -117.032221	0.01	269
NWW-122	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unnamed dirt road.	34.863547, -117.032236	0.01	115
NWW-123	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unnamed dirt road.	34.863294, -117.032440	<0.01	103
NWW-124	R6	2 – 5	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.863374, -117.033400	0.01	140
NWW-125	R6	5 – 5	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.863847, -117.033290	0.03	232
NWW-126	R6	3 – 4	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.863806, -117.033928	0.01	132
NWW-127	R6	1 – 6	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, multi-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-126.	34.864203, -117.033791	0.02	307

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-128	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.863964, -117.034043	0.02	280
NWW-129	R6	2 – 4	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.864078, -117.034199	0.01	128
NWW-130	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.864243, -117.034403	0.02	294
NWW-131	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-130.	34.864655, -117.034310	0.01	121
NWW-132	R6	2 – 5	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, multi-thread feature within creosote bush scrub; originates as runoff from Bonanza Rd.	34.864770, -117.034393	0.03	305
NWW-133	R6	3 – 6	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.864415, -117.034695	0.01	129
NWW-134	R6	1 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.864537, -117.034800	<0.01	154
NWW-135	R6	1 – 12	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-134 and NWW-136.	34.865000, -117.034784	0.04	325
NWW-136	R6	2 – 5	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush	34.864640, -117.034993	0.01	128

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
							scrub; originates south/southwest of review area.			
NWW-137	R6	1 – 1	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.865098, -117.035362	<0.01	41
NWW-138	R6	2 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-137.	34.865483, -117.035394	0.01	190
NWW-139	R6	1 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.865080, -117.035540	0.01	142
NWW-140	R6	4 – 6	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.865346, -117.035826	0.03	238
NWW-141	R6	3 – 5	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-140.	34.865793, -117.035751	0.02	243
NWW-142	R6	3 – 6	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.865558, -117.036182	0.01	118
NWW-143	R6	7 – 7	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-142.	34.865940, -117.035968	0.02	126
NWW-144	R6	5 – 7	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub;	34.865697, -117.036341	0.02	148

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
							originates south/southwest of review area.			
NWW-145	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.867099, -117.037273	<0.01	69
NWW-146	R6	30 – 30	CAST, CVS, CVC, BBS; See ODP 35	None; see WDP 13	Yes/No	Unvegetated Channel	Large, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area. (See Photos 58 and 59 on Figures 5A – 5B and Attachment D.)	34.867280, -117.037889	0.18	272
NWW-147	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.867479, -117.038380	<0.01	47
NWW-148	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.868016, -117.038573	0.01	146
NWW-149	R6	2 – 4	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.867884, -117.039030	0.01	133
NWW-150	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.867950, -117.039201	0.01	113
NWW-151	R6	2 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.868385, -117.038946	0.01	120
NWW-152	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.868169, -117.039394	0.01	141

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-153	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-152.	34.868686, -117.039359	0.01	185
NWW-154	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.868471, -117.039625	<0.01	62
NWW-155	R6	2 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.868497, -117.039748	0.01	132
NWW-156	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, double-thread feature within creosote bush scrub.	34.868751, -117.040025	0.01	126
NWW-157	R6	4 – 4	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-156.	34.869093, -117.039898	0.01	133
NWW-158	R6	2 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.869493, -117.040409	0.01	169
NWW-159	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.869406, -117.040822	0.01	123
NWW-160	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.869733, -117.041232	0.01	85
NWW-161	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.870069, -117.041756	0.01	167

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-162	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.870305, -117.041899	<0.01	55
NWW-163	R6	2 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub.	34.870368, -117.042117	0.01	169
NWW-164	R6	1 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.870510, -117.042262	<0.01	125
NWW-165	R6	2 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.870631, -117.042459	0.01	152
NWW-166	R6	2 – 5	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.870818, -117.042706	0.02	294
NWW-167	R6	2 – 4	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.870938, -117.042896	0.01	142
NWW-168	R6	3 – 6	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-167.	34.871428, -117.042765	0.03	208
NWW-169	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.871617, -117.042845	0.01	123
NWW-170	R6	1 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.871221, -117.043257	0.01	295
NWW-171	R6	4 – 7	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub that	34.871715, -117.043851	0.03	206

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
							exhibits signs of off-road vehicle usage; originates south of review area.			
NWW-172	R6	4 – 8	CAST, CVC, BBS; See ODP 36	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub that exhibits signs of off-road vehicle usage; originates as runoff from the unpaved Bonanza Road and downstream of NWW-171. (See Photo 60 on Figures 5A – 5B and Attachment D.)	34.872364, -117.043974	0.03	176
NWW-173	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.872264, -117.044360	<0.01	90
NWW-174	R6	1 – 1	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.872611, -117.044917	<0.01	210
NWW-175	R6	2 – 5	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates from unnamed dirt road.	34.873081, -117.045449	0.02	155
NWW-176	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.873274, -117.045677	0.01	173
NWW-177	R6	2 – 12	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, multi-thread feature within creosote bush scrub; originates as runoff from the unpaved Bonanza Road and downstream of NWW-176.	34.873893, -117.045930	0.06	571
NWW-178	R6	3 – 3	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.873797, -117.046218	0.01	84
NWW-179	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.873847, -117.046343	<0.01	63

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-180	R6	3 – 10	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.873945, -117.046598	0.03	197
NWW-181	R6	2 – 2	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.874872, -117.046978	<0.01	75
NWW-182	R6	3 – 7	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, multi-thread feature within creosote bush scrub; originates south/southwest of review area.	34.874268, -117.047106	0.07	636
NWW-183	R6	4 – 10	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south of review area.	34.864594, -117.120526	0.06	288
NWW-184	R6	5 – 5	CAST, CVC, BBS[4]	WH[5]	Yes/No	Creosote Bush Scrub[6]	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south of review area.	34.865232, -117.122088	0.02	178
								Total[8]	11.10	26,855

[1] OHWM Indicators: CAST = Change in average sediment texture; CVS = Change in vegetation species; CVC = Change in vegetation cover; BBS = Break in bank slope; WS = Water staining; SD = Sediment deposits

[2] Wetland Indicators: WH = Wetland Hydrology

[3] See Figure 6 for all vegetation communities present within/around each aquatic resource.

[4] Based on a representative ODP taken within an aquatic resource with similar conditions.

[5] Based on a representative WDP taken within an aquatic resource with similar conditions.

[6] Unvegetated within mapped vegetation community; however, no vegetation technically present within the OHWM.

[7] Acreage and linear feet only provided for portion of aquatic resource located within the 2023 ARDR addendum review area.

[8] Acreages and linear feet totals were summed using raw numbers provided during GIS analysis (available upon request) and thus, the sum of the total rounded numbers may not directly add up in this table.

Table E-2. Aquatic Resource Summary for 2023 ARDR Addendum Review Area: CDFW

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-24 (portion within 2023 ARDR addendum review area)	Unvegetated Streambed[2]	Allscale Scrub[3]	20 – 20	Primarily unvegetated, single-thread feature within allscale scrub; originates within 2022 review area as runoff from National Trails Hwy/Main St.	34.797875, -117.133117	0.02[4]	39[4]
NWW-89 (portion within 2023 ARDR addendum review area)	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	4 – 5	Unvegetated feature within creosote bush scrub that meanders in and out of the 2023 ARDR addendum review area before continuing into the 2022 review area and through a culvert along National Trails Hwy/Main St.	34.860789, -117.133117	0.05[4]	497[4]
NWW-92 (portion within 2023 ARDR addendum review area)	Unvegetated Streambed[2]	Unvegetated Channel	2 – 60	Primarily unvegetated, large, trapezoidal feature (San Bernardino County Flood Control District Channel) within heavily manipulated, unvegetated channel; evidence of off-road vehicle use; originates south of Main St/National Trails Hwy and dissipates within northern portion of 2023 ARDR addendum review area. (See Photos 49 – 51 on Figure 5C and Attachment D.)	34.867370, -117.122673	10.08[4]	8,890[4]
NWW-109 (Mojave River) (portion within 2023 ARDR addendum review area)	Unvegetated Streambed[2]	Unvegetated Channel	1,450 – 2,115	Sparsely vegetated, sandy wash that comprises the on-site extent of the Mojave River; extends into tamarisk thickets habitat; generally flows southwest to northeast before continuing off site. (See Photos 54 and 55 on Figure 5C and Attachment D.)	34.835454, -117.191774	2.57[4]	437[4]
	Vegetated Streambed[2]	Tamarisk Thickets				14.13[4]	
NWW-110	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 12	Primarily unvegetated feature with multiple small tributaries within creosote bush scrub; originates south of review area and dissipates at unnamed dirt road.	34.862304, -117.029568	0.10	626
NWW-111	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.862851, -117.029387	0.01	197
NWW-112	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.862328, -117.030154	0.01	197
NWW-113	Unvegetated Streambed[2]	Developed	2 – 12	Primarily concrete feature within developed area; conveys flows around Tortilla substation and into NWW-114 through NWW-119. (See Photo 57 on Figure 5C and Attachment D.)	34.863114, -117.031133	0.27	2,234
		Disturbed Habitat[3]				0.02	
NWW-114	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 12	Primarily unvegetated feature with small tributaries within creosote bush scrub. (See Photo 56 on Figure 5C and Attachment D.)	34.863906, -117.030060	0.08	735

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-115	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	1 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub; partially fed by flows from concrete-lined NWW-113.	34.863948, -117.030548	0.01	180
NWW-116	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub; fed by flows from concrete-lined NWW-113.	34.863745, -117.030843	<0.01	22
NWW-117	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub; fed by flows from concrete-lined NWW-113.	34.863948, -117.031161	0.01	196
NWW-118	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub; fed by flows from concrete-lined NWW-113.	34.863784, -117.031507	<0.01	54
NWW-119	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 7	Primarily unvegetated, double-thread feature within creosote bush scrub; partially fed by flows from concrete-lined NWW-113.	34.863981, -117.031809	0.06	665
NWW-120	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	5 – 8	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.862325, -117.032219	0.09	537
NWW-121	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 3	Small, primarily unvegetated, double-thread feature within creosote bush scrub.	34.863168, -117.032221	0.01	269
NWW-122	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	5 – 5	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unnamed dirt road.	34.863547, -117.032236	0.01	115
NWW-123	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unnamed dirt road.	34.863294, -117.032440	<0.01	103
NWW-124	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 5	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.863374, -117.033400	0.01	140
NWW-125	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	5 – 5	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.863847, -117.033290	0.03	232
NWW-126	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 5	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.863806, -117.033928	0.01	132
NWW-127	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	1 – 6	Primarily unvegetated, multi-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-126.	34.864203, -117.033791	0.02	307
NWW-128	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.863964, -117.034043	0.02	280
NWW-129	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 4	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.864078, -117.034199	0.01	128
NWW-130	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.864243, -117.034403	0.02	294

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-131	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-130.	34.864655, -117.034310	0.01	121
NWW-132	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 5	Primarily unvegetated, multi-thread feature within creosote bush scrub; originates as runoff from Bonanza Rd.	34.864770, -117.034393	0.03	305
NWW-133	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 8	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.864415, -117.034695	0.01	129
NWW-134	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.864537, -117.034800	0.01	154
NWW-135	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	1 – 12	Primarily unvegetated, double-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-134 and NWW-136.	34.865000, -117.034784	0.04	325
NWW-136	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 6	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.864640, -117.034993	0.01	128
NWW-137	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.865098, -117.035362	<0.01	41
NWW-138	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-137.	34.865483, -117.035394	0.01	190
NWW-139	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.865080, -117.035540	0.01	142
NWW-140	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	4 – 6	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.865346, -117.035826	0.03	238
NWW-141	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 5	Primarily unvegetated, double-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-140.	34.865793, -117.035751	0.02	243
NWW-142	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 8	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.865558, -117.036182	0.02	118
NWW-143	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	7 – 7	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-142.	34.865940, -117.035968	0.02	126
NWW-144	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	7 – 9	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.865697, -117.036341	0.03	148
NWW-145	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 4	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.867099, -117.037273	0.01	69

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-146	Unvegetated Streambed[2]	Unvegetated Channel	45 – 45	Large, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area. (See Photos 58 and 59 on Figures 5A – 5B and Attachment D.)	34.867280, -117.037889	0.26	272
NWW-147	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.867479, -117.038380	<0.01	47
NWW-148	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 4	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.868016, -117.038573	0.01	146
NWW-149	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 5	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.867884, -117.039030	0.01	133
NWW-150	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.867950, -117.039201	0.01	113
NWW-151	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 5	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.868385, -117.038946	0.01	120
NWW-152	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.868169, -117.039394	0.01	141
NWW-153	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-152.	34.868686, -117.039359	0.01	185
NWW-154	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.868471, -117.039625	<0.01	62
NWW-155	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.868497, -117.039748	0.01	132
NWW-156	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Small, primarily unvegetated, double-thread feature within creosote bush scrub.	34.868751, -117.040025	0.01	126
NWW-157	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	4 – 7	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-156.	34.869093, -117.039898	0.02	133
NWW-158	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 4	Primarily unvegetated, single-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd.	34.869493, -117.040409	0.01	169
NWW-159	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.869406, -117.040822	0.01	123
NWW-160	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.869733, -117.041232	0.01	85
NWW-161	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.870069, -117.041756	0.01	167

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-162	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	4 – 4	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.870305, -117.041899	0.01	55
NWW-163	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 4	Primarily unvegetated, double-thread feature within creosote bush scrub.	34.870368, -117.042117	0.01	169
NWW-164	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.870510, -117.042262	0.01	125
NWW-165	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 4	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.870631, -117.042459	0.01	152
NWW-166	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 5	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.870818, -117.042706	0.02	294
NWW-167	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 5	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.870938, -117.042896	0.01	142
NWW-168	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	4 – 7	Primarily unvegetated, double-thread feature within creosote bush scrub; originates as runoff from unpaved Bonanza Rd and downstream of NWW-167.	34.871428, -117.042765	0.03	208
NWW-169	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.871617, -117.042845	0.01	123
NWW-170	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 3	Primarily unvegetated, double-thread feature within creosote bush scrub; originates south/southwest of review area.	34.871221, -117.043257	0.02	295
NWW-171	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	5 – 9	Primarily unvegetated, single-thread feature within creosote bush scrub that exhibits signs of off-road vehicle usage; originates south of review area.	34.871715, -117.043851	0.04	206
NWW-172	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	5 – 10	Primarily unvegetated, single-thread feature within creosote bush scrub that exhibits signs of off-road vehicle usage; originates as runoff from the unpaved Bonanza Road and downstream of NWW-171. (See Photo 60 on Figure 5C and Attachment D.)	34.872364, -117.043974	0.04	176
NWW-173	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.872264, -117.044360	<0.01	90
NWW-174	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	1 – 1	Small, primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.872611, -117.044917	<0.01	210
NWW-175	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 5	Primarily unvegetated, single-thread feature within creosote bush scrub; originates from unnamed dirt road.	34.873081, -117.045449	0.02	155
NWW-176	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.873274, -117.045677	0.01	173

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-177	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 12	Primarily unvegetated, multi-thread feature within creosote bush scrub; originates as runoff from the unpaved Bonanza Road and downstream of NWW-176.	34.873893, -117.045930	0.06	571
NWW-178	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	4 – 4	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.873797, -117.046218	0.01	84
NWW-179	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 3	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.873847, -117.046343	<0.01	63
NWW-180	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 12	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south/southwest of review area.	34.873945, -117.046598	0.04	197
NWW-181	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	2 – 2	Small, primarily unvegetated, single-thread feature within creosote bush scrub.	34.874872, -117.046978	<0.01	75
NWW-182	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	3 – 9	Primarily unvegetated, multi-thread feature within creosote bush scrub; originates south/southwest of review area.	34.874268, -117.047106	0.07	636
NWW-183	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	6 – 15	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south of review area.	34.864594, -117.120526	0.07	288
NWW-184	Unvegetated Streambed[2]	Creosote Bush Scrub[3]	5 – 5	Primarily unvegetated, single-thread feature within creosote bush scrub; originates south of review area.	34.865232, -117.122088	0.02	178
					Total[4]	28.82	26,855

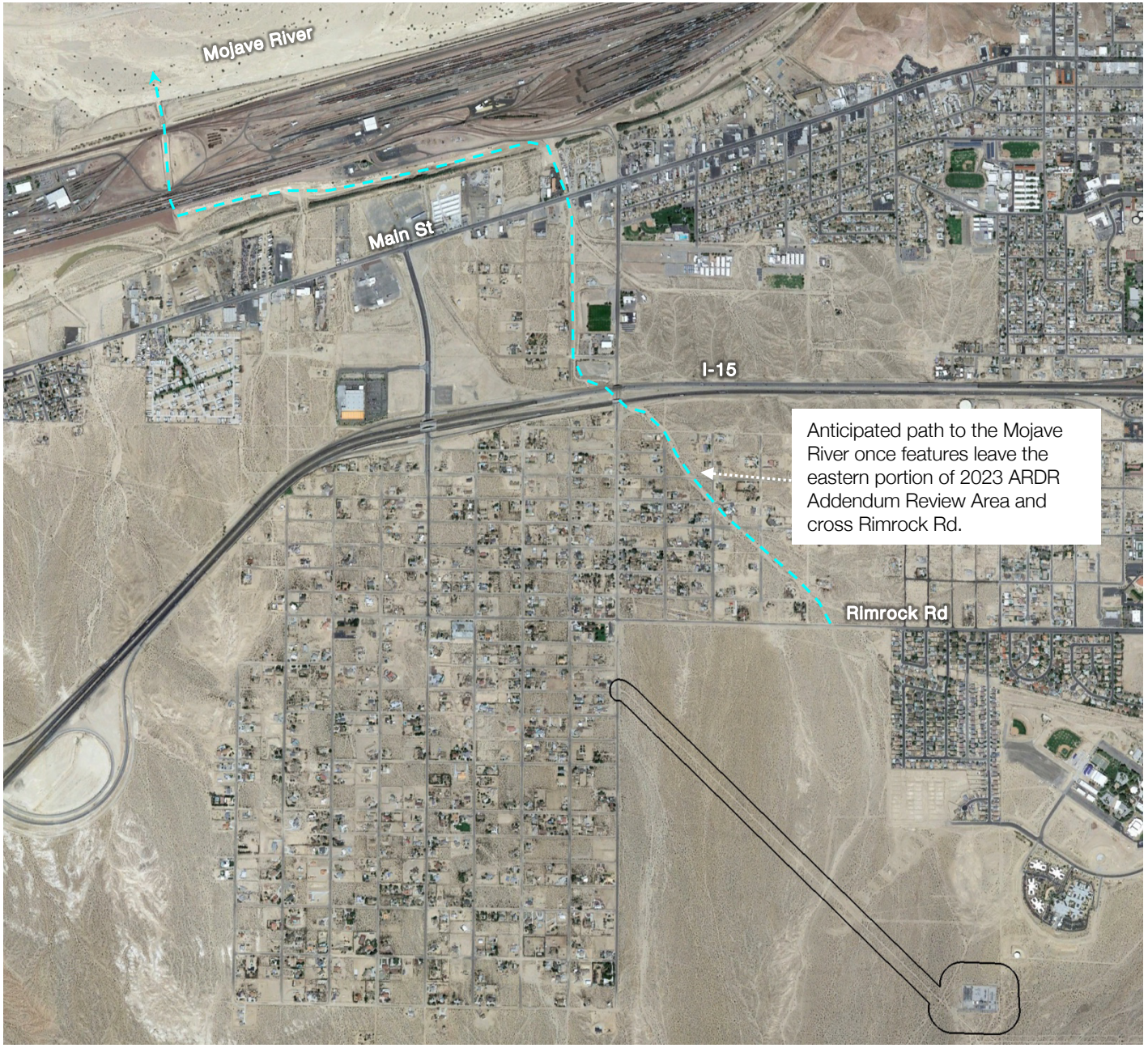
[1] Corresponds with the approximate stream bank widths observed during delineation. Width range accounts for entirety of streambed delineated, not individual vegetation communities.
[2] A "streambed" under CFGC Section 1602 includes the channel of a watercourse that is generally defined to include the depression between the banks worn by the regular and usual flow of water.
[3] Unvegetated streambed within mapped vegetation community; however, no vegetation technically present within the streambed.
[4] Acreage and linear feet only provided for portion of aquatic resource located within the 2023 ARDR addendum review area.
[5] Acreages and linear feet totals were summed using raw numbers provided during GIS analysis (available upon request) and thus, the sum of the total rounded numbers may not directly add up in this table.

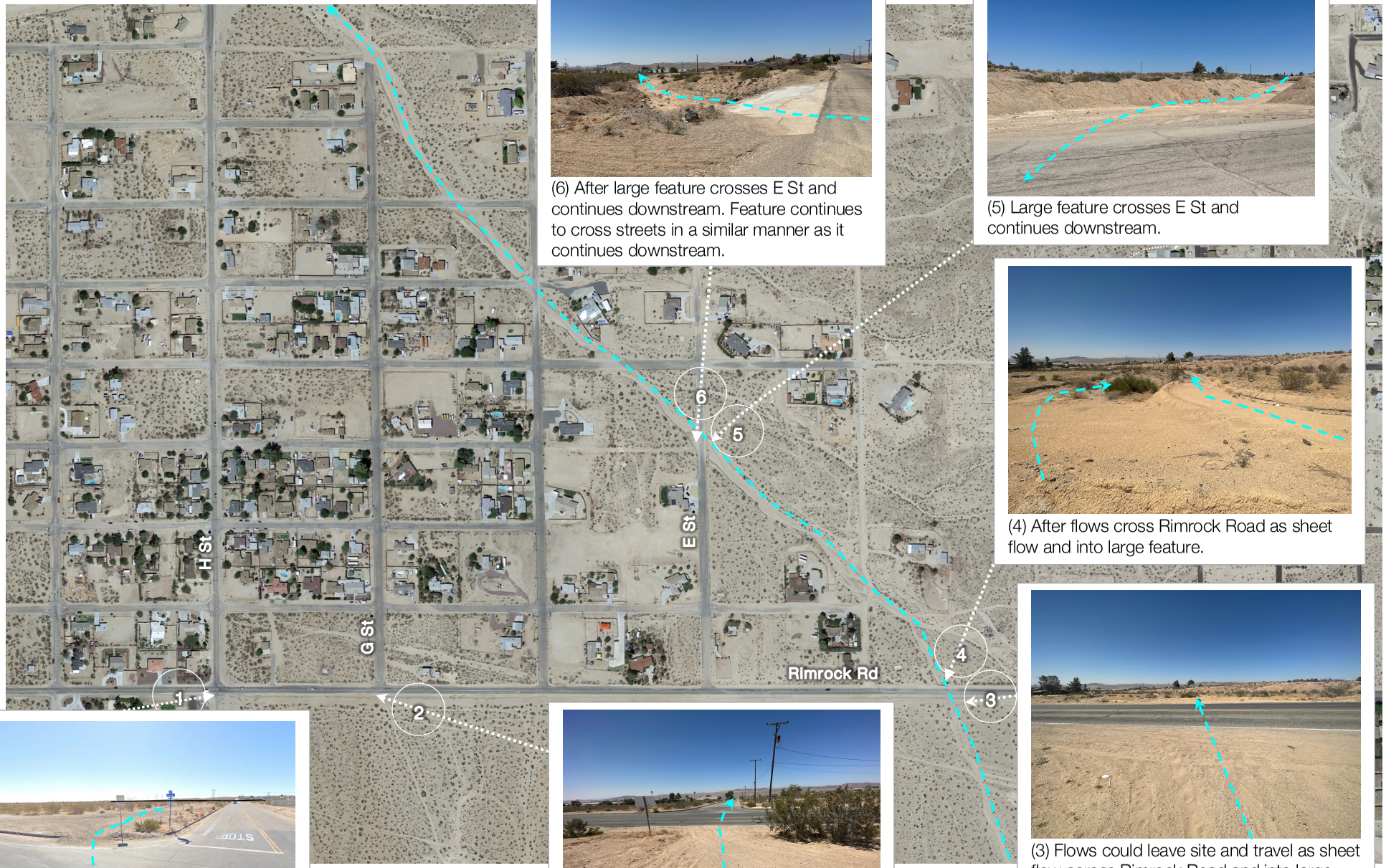
ATTACHMENT F

CONNECTIVY TO MOJAVE RIVER

Attachment F

Connectivity to Mojave River





(1) Flows could leave site and travel as sheet flow across Rimrock Road and down H Street towards large feature.

(2) Flows could leave site and travel as sheet flow across Rimrock Road and down G Street towards large feature.

(3) Flows could leave site and travel as sheet flow across Rimrock Road and into large feature.

(4) After flows cross Rimrock Road as sheet flow and into large feature.

(5) Large feature crosses E St and continues downstream.

(6) After large feature crosses E St and continues downstream. Feature continues to cross streets in a similar manner as it continues downstream.

Attachment F-2



(14) Flows continue to the Mojave River.

(12) Facing upstream within large feature.

(11) Feature continues through culvert under Main St.

(8) Feature continues through culvert under the I-15.

(7) Facing southeast/upstream as feature continues towards I-15.

(10) Facing south/upstream as feature continues towards Main St.

(13) Feature continues through railroad crossing towards Mojave River.

(9) Feature daylights north of I-15 before continuing downstream.

Attachment F-3

ATTACHMENT G

ORM BULK UPLOAD AQUATIC RESOURCES OR CONSOLIDATED EXCEL SPREADSHEET

(*SUPERSEDES APPENDIX I OF THE 2022 ARDR*)

Wetlnk_Name	State	Covered0c_Code	HGM_Code	Meas_Type	Amount	Units	Wetlnk_Type	Latitude	Longitude	Local_Waterway
NWW-1	CALIFORNIA	RS		Area	0.0163	ACRE	DELINEAT-404	34.77278668	-117.28465332	Mojave River
NWW-2	CALIFORNIA	RS		Area	0.0114	ACRE	DELINEAT-404	34.77284665	-117.28460962	Mojave River
NWW-3	CALIFORNIA	RS		Area	0.0185	ACRE	DELINEAT-404	34.77322097	-117.28381670	Mojave River
NWW-4	CALIFORNIA	RS		Area	0.013	ACRE	DELINEAT-404	34.77365286	-117.28363575	Mojave River
NWW-5	CALIFORNIA	RS		Area	0.0108	ACRE	DELINEAT-404	34.77373358	-117.28286858	Mojave River
NWW-6	CALIFORNIA	RS		Area	0.0125	ACRE	DELINEAT-404	34.77465215	-117.28170142	Mojave River
NWW-7	CALIFORNIA	RS		Area	0.0102	ACRE	DELINEAT-404	34.77667409	-117.27878631	Mojave River
NWW-8	CALIFORNIA	RS		Area	0.0071	ACRE	DELINEAT-404	34.77676580	-117.27870544	Mojave River
NWW-9	CALIFORNIA	RS		Area	0.0255	ACRE	DELINEAT-404	34.77879412	-117.27736386	Mojave River
NWW-10	CALIFORNIA	RS		Area	0.0038	ACRE	DELINEAT-404	34.77839910	-117.27674330	Mojave River
NWW-11	CALIFORNIA	RS		Area	0.0155	ACRE	DELINEAT-404	34.77837729	-117.27647789	Mojave River
NWW-12	CALIFORNIA	RS		Area	0.0059	ACRE	DELINEAT-404	34.77867006	-117.27612138	Mojave River
NWW-13	CALIFORNIA	RS		Area	0.0088	ACRE	DELINEAT-404	34.77971240	-117.27602421	Mojave River
NWW-14	CALIFORNIA	RS		Area	0.0093	ACRE	DELINEAT-404	34.77888594	-117.27582686	Mojave River
NWW-15	CALIFORNIA	RS		Area	0.014	ACRE	DELINEAT-404	34.77997755	-117.27558467	Mojave River
NWW-16	CALIFORNIA	RS		Area	0.075	ACRE	DELINEAT-404	34.78427382	-117.26266834	Mojave River
NWW-17	CALIFORNIA	RS		Area	0.0493	ACRE	DELINEAT-404	34.78436063	-117.26210438	Mojave River
NWW-18	CALIFORNIA	RS		Area	0.0073	ACRE	DELINEAT-404	34.78694821	-117.25260514	Mojave River
NWW-19	CALIFORNIA	RS		Area	0.0087	ACRE	DELINEAT-404	34.78731771	-117.25176124	Mojave River
NWW-20	CALIFORNIA	RS		Area	0.6493	ACRE	DELINEAT-404	34.79118942	-117.24188771	Mojave River
NWW-21	CALIFORNIA	RS		Area	0.0309	ACRE	DELINEAT-404	34.76580995	-117.22844984	Mojave River
NWW-22	CALIFORNIA	RS		Area	0.013	ACRE	DELINEAT-404	34.76635915	-117.22780117	Mojave River
NWW-23	CALIFORNIA	RS		Area	0.017	ACRE	DELINEAT-404	34.76577560	-117.22816166	Mojave River
NWW-24	CALIFORNIA	RS		Area	0.1208	ACRE	DELINEAT-404	34.76716045	-117.22775874	Mojave River
NWW-25	CALIFORNIA	RS		Area	0.0674	ACRE	DELINEAT-404	34.76668107	-117.22581535	Mojave River
NWW-26	CALIFORNIA	RS		Area	0.068	ACRE	DELINEAT-404	34.76759457	-117.22500834	Mojave River
NWW-27	CALIFORNIA	RS		Area	0.1808	ACRE	DELINEAT-404	34.76825817	-117.22320368	Mojave River
NWW-28	CALIFORNIA	RS		Area	0.0087	ACRE	DELINEAT-404	34.76781859	-117.22312717	Mojave River
NWW-29	CALIFORNIA	RS		Area	0.0022	ACRE	DELINEAT-404	34.76870557	-117.22298274	Mojave River
NWW-30	CALIFORNIA	RS		Area	0.0239	ACRE	DELINEAT-404	34.76805836	-117.22160550	Mojave River
NWW-31	CALIFORNIA	RS		Area	0.0092	ACRE	DELINEAT-404	34.76858276	-117.22124688	Mojave River
NWW-32	CALIFORNIA	RS		Area	0.0022	ACRE	DELINEAT-404	34.76845614	-117.22066550	Mojave River
NWW-33	CALIFORNIA	RS		Area	0.0202	ACRE	DELINEAT-404	34.76932170	-117.21984578	Mojave River
NWW-34	CALIFORNIA	RS		Area	0.0263	ACRE	DELINEAT-404	34.76995511	-117.21581825	Mojave River
NWW-35	CALIFORNIA	RS		Area	0.0062	ACRE	DELINEAT-404	34.80729017	-117.20328971	Mojave River
NWW-36	CALIFORNIA	RS		Area	0.0084	ACRE	DELINEAT-404	34.80873818	-117.20154472	Mojave River
NWW-37	CALIFORNIA	RS		Area	0.0108	ACRE	DELINEAT-404	34.80918874	-117.20105374	Mojave River
NWW-38	CALIFORNIA	RS		Area	0.0083	ACRE	DELINEAT-404	34.80931564	-117.20089181	Mojave River
NWW-39	CALIFORNIA	RS		Area	0.0042	ACRE	DELINEAT-404	34.80967074	-117.20047139	Mojave River
NWW-40	CALIFORNIA	RS		Area	0.011	ACRE	DELINEAT-404	34.81009911	-117.19987547	Mojave River
NWW-41	CALIFORNIA	RS		Area	0.006	ACRE	DELINEAT-404	34.81032263	-117.19971940	Mojave River
NWW-42	CALIFORNIA	RS		Area	0.0166	ACRE	DELINEAT-404	34.81142304	-117.19842438	Mojave River
NWW-43	CALIFORNIA	RS		Area	0.1323	ACRE	DELINEAT-404	34.82665287	-117.18851109	Mojave River
NWW-44	CALIFORNIA	RS		Area	1.1309	ACRE	DELINEAT-404	34.82924770	-117.18642872	Mojave River
NWW-45	CALIFORNIA	RS		Area	0.209	ACRE	DELINEAT-404	34.83468444	-117.18223737	Mojave River
NWW-46	CALIFORNIA	RS		Area	0.0624	ACRE	DELINEAT-404	34.83516795	-117.18147873	Mojave River
NWW-47	CALIFORNIA	RS		Area	0.0405	ACRE	DELINEAT-404	34.83370557	-117.17828314	Mojave River
NWW-48	CALIFORNIA	RS		Area	0.0346	ACRE	DELINEAT-404	34.83699055	-117.18112184	Mojave River
NWW-49	CALIFORNIA	RS		Area	0.7268	ACRE	DELINEAT-404	34.83611047	-117.17906427	Mojave River
NWW-50	CALIFORNIA	RS		Area	0.0213	ACRE	DELINEAT-404	34.83723900	-117.17600300	Mojave River
NWW-51	CALIFORNIA	RS		Area	0.0388	ACRE	DELINEAT-404	34.83746355	-117.17607757	Mojave River
NWW-52	CALIFORNIA	RS		Area	0.0389	ACRE	DELINEAT-404	34.83786733	-117.17767859	Mojave River
NWW-53	CALIFORNIA	RS		Area	0.0664	ACRE	DELINEAT-404	34.83764824	-117.17710118	Mojave River
NWW-54	CALIFORNIA	RS		Area	0.0191	ACRE	DELINEAT-404	34.83920967	-117.17351512	Mojave River
NWW-55	CALIFORNIA	RS		Area	0.0206	ACRE	DELINEAT-404	34.83545384	-117.17186322	Mojave River
NWW-56	CALIFORNIA	RS		Area	0.0179	ACRE	DELINEAT-404	34.83577343	-117.17261881	Mojave River
NWW-57	CALIFORNIA	RS		Area	0.0232	ACRE	DELINEAT-404	34.83601382	-117.17263063	Mojave River
NWW-58	CALIFORNIA	RS		Area	0.4961	ACRE	DELINEAT-404	34.83834849	-117.17068358	Mojave River
NWW-59	CALIFORNIA	RS		Area	0.7472	ACRE	DELINEAT-404	34.83824813	-117.17416093	Mojave River
NWW-60	CALIFORNIA	RS		Area	0.1663	ACRE	DELINEAT-404	34.84040894	-117.17974662	Mojave River
NWW-61	CALIFORNIA	RS		Area	0.0459	ACRE	DELINEAT-404	34.83703132	-117.18576074	Mojave River
NWW-62	CALIFORNIA	RS		Area	0.1367	ACRE	DELINEAT-404	34.84039716	-117.17530721	Mojave River
NWW-63	CALIFORNIA	RS		Area	0.1953	ACRE	DELINEAT-404	34.84093356	-117.17427517	Mojave River
NWW-64	CALIFORNIA	RS		Area	0.0372	ACRE	DELINEAT-404	34.84171085	-117.17441834	Mojave River
NWW-65	CALIFORNIA	RS		Area	0.0222	ACRE	DELINEAT-404	34.84229327	-117.17364316	Mojave River
NWW-66	CALIFORNIA	RS		Area	0.079	ACRE	DELINEAT-404	34.84314736	-117.17245700	Mojave River
NWW-67	CALIFORNIA	RS		Area	0.2163	ACRE	DELINEAT-404	34.84113135	-117.17196414	Mojave River
NWW-68	CALIFORNIA	RS		Area	0.3381	ACRE	DELINEAT-404	34.83999196	-117.17093080	Mojave River
NWW-69	CALIFORNIA	RS		Area	0.6778	ACRE	DELINEAT-404	34.84293392	-117.16892452	Mojave River
NWW-70	CALIFORNIA	RS		Area	2.0876	ACRE	DELINEAT-404	34.84220858	-117.16840869	Mojave River
NWW-71	CALIFORNIA	RS		Area	0.1039	ACRE	DELINEAT-404	34.84455410	-117.16571821	Mojave River
NWW-72	CALIFORNIA	RS		Area	0.0395	ACRE	DELINEAT-404	34.84536977	-117.16823561	Mojave River
NWW-73	CALIFORNIA	RS		Area	1.2398	ACRE	DELINEAT-404	34.84445324	-117.16354480	Mojave River
NWW-74	CALIFORNIA	RS		Area	0.1663	ACRE	DELINEAT-404	34.84694969	-117.16275562	Mojave River
NWW-75	CALIFORNIA	RS		Area	0.0387	ACRE	DELINEAT-404	34.84554977	-117.15997821	Mojave River
NWW-76	CALIFORNIA	RS		Area	0.8616	ACRE	DELINEAT-404	34.84801880	-117.15913332	Mojave River
NWW-77	CALIFORNIA	RS		Area	0.1663	ACRE	DELINEAT-404	34.84712930	-117.15636616	Mojave River
NWW-78	CALIFORNIA	RS		Area	0.0128	ACRE	DELINEAT-404	34.84884536	-117.15724220	Mojave River
NWW-79	CALIFORNIA	RS		Area	0.1343	ACRE	DELINEAT-404	34.85024761	-117.15850737	Mojave River
NWW-80	CALIFORNIA	RS		Area	2.0242	ACRE	DELINEAT-404	34.85068017	-117.15456372	Mojave River
NWW-81	CALIFORNIA	RS		Area	0.1195	ACRE	DELINEAT-404	34.85333976	-117.15826891	Mojave River
NWW-82	CALIFORNIA	RS		Area	0.6418	ACRE	DELINEAT-404	34.85443320	-117.15278385	Mojave River
NWW-83	CALIFORNIA	RS		Area	0.0145	ACRE	DELINEAT-404	34.85623980	-117.15316685	Mojave River
NWW-84	CALIFORNIA	RS		Area	0.0209	ACRE	DELINEAT-404	34.85495794	-117.14606648	Mojave River
NWW-85	CALIFORNIA	RS		Area	0.3106	ACRE	DELINEAT-404	34.85726358	-117.14689756	Mojave River
NWW-86	CALIFORNIA	RS		Area	0.0151	ACRE	DELINEAT-404	34.85669782	-117.14796479	Mojave River
NWW-87	CALIFORNIA	RS		Area	0.1324	ACRE	DELINEAT-404	34.85793592	-117.14794868	Mojave River
NWW-88	CALIFORNIA	RS		Area	0.0373	ACRE	DELINEAT-404	34.85890624	-117.14830839	Mojave River
NWW-89	CALIFORNIA	RS		Area	1.4338	ACRE	DELINEAT-404	34.86371081	-117.13465496	Mojave River
NWW-90	CALIFORNIA	RS		Area	0.0798	ACRE	DELINEAT-404	34.86055151	-117.14279481	Mojave River
NWW-91	CALIFORNIA	RS		Area	0.007	ACRE	DELINEAT-404	34.86214731	-117.14563368	Mojave River
NWW-92	CALIFORNIA	RS		Area	8.3081	ACRE	DELINEAT-404	34.87445540	-117.13129081	Mojave River
NWW-93	CALIFORNIA	RS		Area	0.0587	ACRE	DELINEAT-404	34.87548322	-117.11870897	Mojave River
NWW-94	CALIFORNIA	RS		Area	0.0559	ACRE	DELINEAT-404	34.87405511	-117.11737186	Mojave River
NWW-95	CALIFORNIA	RS		Area	0.0318	ACRE	DELINEAT-404	34.87708727	-117.11592655	Mojave River
NWW-96	CALIFORNIA	RS		Area	0.0559	ACRE	DELINEAT-404	34.87826790	-117.10870766	Mojave River
NWW-97	CALIFORNIA	RS		Area	0.0346	ACRE	DELINEAT-404	34.87942249	-117.10555181	Mojave River
NWW-98	CALIFORNIA	RS		Area	0.0115	ACRE	DELINEAT-404	34.88001687	-117.10595039	Mojave River
NWW-99	CALIFORNIA	RS		Area	0.0278	ACRE	DELINEAT-404	34.88093572	-117.10122600	Mojave River
NWW-100	CALIFORNIA	RS		Area	0.3415	ACRE	DELINEAT-404	34.88260220	-117.09540682	Mojave River
NWW-101	CALIFORNIA	RS		Area	0.2884	ACRE	DELINEAT-404	34.88041575	-117.09367139	Mojave River
NWW-102	CALIFORNIA	RS		Area	0.0089	ACRE	DELINEAT-404	34.88303805	-117.09193037	Mojave River
NWW-103	CALIFORNIA	RS		Area	0.0112	ACRE	DELINEAT-404	34.76742582	-117.22308011	Mojave River
NWW-104	CALIFORNIA	RS		Area	0.0101	ACRE	DELINEAT-404	34.76750974	-117.22288568	Mojave River
NWW-105	CALIFORNIA	RS		Area	0.0059	ACRE	DELINEAT-404	34.62871305	-117.18237252	Mojave River
NWW-106	CALIFORNIA	RS		Area	0.0112	ACRE	DELINEAT-404	34.62866709	-117.18208446	Mojave River
NWW-107	CALIFORNIA	RS		Area	0.0049	ACRE	DELINEAT-404	34.83555520	-117.16850138	Mojave River
NWW-108	CALIFORNIA	RS		Area	0.0131	ACRE	DELINEAT-404	34.84705328	-117.15190438	Mojave River
NWW-109	CALIFORNIA	54		Area	166.87	ACRE	DELINEAT-404	34.86227700	-117.17012850	Mojave River
NWW-110	CALIFORNIA	RS		Area	0.0968	ACRE	DELINEAT-404	34.86285093	-117.02938746	Mojave River
NWW-111	CALIFORNIA	RS		Area	0.0091	ACRE	DELINEAT-404	34.86232778	-117.03015419	Mojave River
NWW-112	CALIFORNIA	RS		Area	0.0091	ACRE	DELINEAT-404	34.86311432	-117.03112286	Mojave River
NWW-113	CALIFORNIA	RS		Area	0.1086	ACRE	DELINEAT-404	34.86302125	-117.03027808	Mojave River
NWW-114	CALIFORNIA	RS		Area	0.0532	ACRE	DELINEAT-404	34.86390622	-117.03005976	Mojave River
NWW-115	CALIFORNIA	RS		Area	0.0059	ACRE	DELINEAT-404	34.86284839	-117.03054830	Mojave River
NWW-116	CALIFORNIA	RS		Area	0.0005	ACRE	DELINEAT-404	34.86374504	-117.03084293	Mojave River
NWW-117	CALIFORNIA	RS		Area	0.009	ACRE	DELINEAT-404	34.86284805	-117.03116052	Mojave River
NWW-118	CALIFORNIA	RS		Area	0.0025	ACRE	DELINEAT-404	34.86378427	-117.03150743	Mojave River
NWW-119	CALIFORNIA	RS		Area	0.046	ACRE	DELINEAT-404	34.86398094	-117.03180903	Mojave River
NWW-120	CALIFORNIA	RS		Area	0.0663	ACRE	DELINEAT-404	34.86232486	-117.03221879	Mojave River
NWW-121	CALIFORNIA	RS		Area	0.0134	ACRE	DELINEAT-404	34.86216775	-117.03222142	Mojave River
NWW-122	CALIFORNIA	RS		Area	0.0081	ACRE	DELINEAT-404	34.86354669	-117.03223616	Mojave River
NWW-123	CALIFORNIA	RS		Area	0.0048	ACRE	DELINEAT-404	34.86333369	-117.03334001	Mojave River
NWW-124	CALIFORNIA	RS		Area	0.0107	ACRE	DELINEAT-404	34.86337381	-117.03339888	Mojave River
NWW-125	CALIFORNIA	RS		Area	0.0268	ACRE	DELINEAT-404	34.86384743	-117.03326897	Mojave River
NWW-126	CALIFORNIA	RS		Area	0.0102	ACRE	DELINEAT-404	34.86380595	-117.03392799	Mojave River
NWW-127	CALIFORNIA	RS		Area	0.0202	ACRE	DELINEAT-404	34.86402319	-117.03376697	Mojave River
NWW-128	CALIFORNIA	RS		Area	0.0193	ACRE	DELINEAT-404	34.86396381	-117.03404283	Mojave River
NWW-129	CALIFORNIA	RS		Area	0.0078	ACRE	DELINEAT-404	34.86407838	-117.03419885	Mojave River
NWW-130	CALIFORNIA	RS		Area	0.0204	ACRE	DELINEAT-404	34.86424316	-117.03440393	Mojave River
NWW-131	CALIFORNIA	RS		Area	0.0084	ACRE	DELINEAT-404	34.86462469	-117.03431928	Mojave River
NWW-132	CALIFORNIA	RS		Area	0.025	ACRE	DELINEAT-404	34.86477011	-117.03439272	Mojave River
NWW-133	CALIFORNIA	RS		Area	0.0113	ACRE	DELINEAT-404	34.86441457	-117.03466498	Mojave River
NWW-134	CALIFORNIA	RS		Area	0.0044	ACRE	DELINEAT-404	34.86453460	-117.03480019	Mojave River
NWW-135	CALIFORNIA	RS		Area	0.0378	ACRE	DELINEAT-404	34.86469956	-117.03478208	Mojave River
NWW-136	CALIFORNIA	RS		Area	0.0102	ACRE	DELINEAT-404	34.86463979	-117.03499287	Mojave River
NWW-137	CALIFORNIA	RS		Area	0.0009	ACRE	DELINEAT-404	34.86509751	-117.03536249	Mojave River
NWW-138	CALIFORNIA	RS		Area	0.0102	ACRE	DELINEAT-404	34.86548343	-117.03539444	Mojave River
NWW-139	CALIFORNIA	RS		Area	0.0051	ACRE	DELINEAT-404	34.86508324	-117.03554022	Mojave River
NWW-140	CALIFORNIA	RS		Area	0.0275	ACRE	DELINEAT-404	34.86534520	-117.03592513	Mojave River
NWW-141	CALIFORNIA	RS		Area	0.0191	ACRE	DELINEAT-404	34.86579265	-117.03575124	Mojave River
NWW-142	CALIFORNIA	RS		Area	0.0138	ACRE	DELINEAT-404	34.86555899	-117.03616176	Mojave River
NWW-143	CALIFORNIA	RS		Area	0.0212	ACRE	DELINEAT-404	34.86583998	-117.03596790	Mojave River
NWW-144	CALIFORNIA	RS		Area	0.02	ACRE	DELINEAT-404	34.86566679	-117.03634080	Mojave River
NWW-145	CALIFORNIA	RS		Area	0.0049	ACRE	DELINEAT-404	34.86709850	-117.03727300	Mojave River
NWW-146	CALIFORNIA	RS		Area	0.1804	ACRE	DELINEAT-404	34.86727959	-117.03788910	Mojave River
NWW-147	CALIFORNIA	RS		Area	0.0034	ACRE	DELINEAT-404	34.86747948	-117.03838012	Mojave River
NWW-148	CALIFORNIA	RS		Area	0.0101	ACRE	DELINEAT-404	34.86801633	-117.03857236	Mojave River
NWW-149	CALIFORNIA	RS		Area	0.0094	ACRE	DELINEAT-404	34.86788447	-117.03903021	Mojave River
NWW-150	CALIFORNIA	RS		Area	0.0053	ACRE	DELINEAT-404	34.86794967	-117.03920062	Mojave River
NWW-151	CALIFORNIA	RS		Area	0.0068	ACRE	DELINEAT-404	34.86838474	-117.03894621	Mojave River
NWW-152	CALIFORNIA	RS		Area	0.0065	ACRE	DELINEAT-404	34.86816874	-117.03939449	Mojave River
NWW-153	CALIFORNIA	RS		Area	0.0086	ACRE	DELINEAT-404	34.86868576	-117.03935877	Mojave River
NWW-154	CALIFORNIA	RS		Area	0.0029	ACRE	DELINEAT-404	34.86847558	-117.03962488	Mojave River
NWW-155	CALIFORNIA	RS		Area	0.0084	ACRE	DELINEAT-404	34.86849729	-117.03974763	Mojave River
NWW-156	CALIFORNIA	RS		Area	0.0039	ACRE	DELINEAT-404	34.86875078	-117.04002497	Mojave River
NWW-157	CALIFORNIA	RS		Area	0.0125	ACRE	DELINEAT-404	34.86909280	-117.03980785	Mojave River
NWW-158	CALIFORNIA	RS		Area	0.0091	ACRE	DELINEAT-404	34.86949292	-117.04040865	Mojave River
NWW-159	CALIFORNIA	RS		Area	0.0057	ACRE	DELINEAT-404	34.86940616	-117.04082180	Mojave River
NWW-160	CALIFORNIA	RS		Area	0.008	ACRE	DELINEAT-404	34.86973346	-117.04121198	Mojave River
NWW-161	CALIFORNIA	RS		Area	0.0116	ACRE	DELINEAT-404	34.87006933	-117.04175598	Mojave River
NWW-162	CALIFORNIA	RS		Area	0.0039	ACRE	DELINEAT-404	34.87030472	-117.04188898	Mojave River
NWW-163	CALIFORNIA	RS		Area	0.0108	ACRE	DELINEAT-404	34.87036850	-117.04211737	Mojave River
NWW-164	CALIFORNIA	RS		Area	0.0048	ACRE	DELINEAT-404	34.87051044	-117.04228228	Mojave River
NWW-165	CALIFORNIA	RS		Area	0.0084	ACRE	DELINEAT-404	34.87063092	-117.04245875	Mojave River
NWW-166	CALIFORNIA	RS		Area	0.0191	ACRE	DELINEAT-404	34.87081795	-117.04270644	Mojave River
NWW-167	CALIFORNIA	RS		Area	0.0094	ACRE	DELINEAT-404	34.87093772	-117.04288578	Mojave River
NWW-168	CALIFORNIA	RS		Area	0.0232	ACRE	DELINEAT-404	34.87142900	-117.04276550	Mojave River
NWW-169	CALIFORNIA	RS		Area	0.0057	ACRE	DELINEAT-404	34.87161700	-117.04284500	Mojave River
NWW-170	CALIFORNIA	RS		Area	0.0108	ACRE	DELINEAT-404	34.87122106	-117.04325722	Mojave River
NWW-171	CALIFORNIA	RS		Area	0.0308	ACRE	DELINEAT-404	34.87171480	-117.04385135	Mojave River
NWW-172	CALIFORNIA	RS		Area	0.027	ACRE	DELINEAT-404	34.87236404	-117.04397368	Mojave River
NWW-173	CALIFORNIA	RS		Area	0.0042	ACRE	DELINEAT-404	34.87226418	-117.04436040	Mojave River
NWW-174	CALIFORNIA	RS		Area	0.0048	ACRE	DELINEAT-404	34.87261139	-117.04491681	Mojave River
NWW-175	CALIFORNIA	RS		Area	0.0161	ACRE	DELINEAT-404	34.87308077	-117.04544880	Mojave River
NWW-176	CALIFORNIA	RS		Area	0.008	ACRE	DELINEAT-404	34.87327389	-117.04567735	Mojave River
NWW-177	CALIFORNIA	RS		Area	0.0571	ACRE	DELINEAT-404	34.87389305	-117.04593049	Mojave River
NWW-178	CALIFORNIA	RS		Area	0.008	ACRE	DELINEAT-404	34.87379653	-117.04621767	Mojave River
NWW-179	CALIFORNIA	RS		Area	0.003	ACRE	DELINEAT-404	34.87384688	-117.04634308	Mojave River
NWW-180	CALIFORNIA	RS		Area	0.0307	ACRE	DELINEAT-404	34.87394468	-117.04658956	Mojave River
NWW-181	CALIFORNIA	RS		Area	0.0035	ACRE	DELINEAT-404	34.87487166	-117.04697816	Mojave River
NWW-182	CALIFORNIA	RS		Area	0.068	ACRE	DELINEAT-404	34.87428778	-117.04719033	Mojave River
NWW-183	CALIFORNIA	RS		Area	0.0562	ACRE	DELINEAT-404	34.86459438	-117.12052353	Mojave River
NWW-184	CALIFORNIA	RS		Area	0.0297	ACRE	DELINEAT-404	34.86523317	-117.12008767	Mojave River

ATTACHMENT H

GIS DATA

(PROVIDED ELECTRONICALLY TO AGENCIES)

ATTACHMENT C

JURISDICTIONAL DETERMINATION REQUEST FORMS

(*SUPERSEDES ATTACHMENT B OF THE 2023 ARDR ADDENDUM AND APPENDIX B OF THE 2022 ARDR*)

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: District Name Here

- I am requesting a JD on property located at: south of and within the Mojave River, northwest of National Trails Highway, and south and west of California State Route (CA)-58
  (Street Address)
  City/Township/Parish: Barstow/Unincorp County: San Bernardino State: CA
  Acreage of Parcel/Review Area for JD: 5,104.49 acres
  Section: Various Township: 8N; 9N Range: 4W & 3W; 3W & 2W
  Latitude (decimal degrees): 34.853903 Longitude (decimal degrees): -117.159799
  (For linear projects, please include the center point of the proposed alignment.)
- Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
- ✓ I currently own this property. ✓ I plan to purchase this property.
  ___ I am an agent/consultant acting on behalf of the requestor.
  ✓ Other (please explain): Right-of-entry to Corps staff limited to BNSF-owned properties until other properties purchased by BNSF.
- Reason for request: (check as many as applicable)
  ___ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
  ___ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
  ✓ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
  ___ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
  ___ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
  ___ A Corps JD is required in order to obtain my local/state authorization.
  ___ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
  ___ I believe that the site may be comprised entirely of dry land.
  ___ Other: _____
- Type of determination being requested:
  ___ I am requesting an approved JD.
  ✓ I am requesting a preliminary JD.
  ___ I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
  ___ I am unclear as to which JD I would like to request and require additional information to inform my decision.

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

Note: Right-of-entry to Corps staff limited to BNSF-owned properties until other properties purchased by BNSF.

*Signature: David Rankin Date: 9/22/22

- Typed or printed name: David Rankin

Company name: BNSF Railway Company

Address: 2500 Lou Menk Drive, AOB-3
Forth Worth, TX 76131

Daytime phone no.: 817-352-2383

Email address: David.Rankin@BNSF.com

*Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD:

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: David Rankin, BNSF Railway, 2500 Lou Menk Dr, AOB-3, Forth Worth, TX 76131

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Los Angeles District

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: CA County/parish/borough: San Bernardino City: Barstow/Unincorporated

Center coordinates of site (lat/long in degree decimal format):

Lat.: 34.853903 Long.: -117.159799

Universal Transverse Mercator: 11S 485392.2m E 3856853.3m N

Name of nearest waterbody: Mojave River

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
		SEE	ATTACHED		

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- [x] Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
  Map: 2022 ARDR, prepared by Rocks Biological Consulting.
- [x] Data sheets prepared/submitted by or on behalf of the PJD requestor.
  - [ ] Office concurs with data sheets/delineation report.
  - [ ] Office does not concur with data sheets/delineation report. Rationale: _____.
- [ ] Data sheets prepared by the Corps: _____.
- [ ] Corps navigable waters' study: _____.
- [x] U.S. Geological Survey Hydrologic Atlas: 2022 ARDR, Figure 2; USGS NHD 2020.
  - [x] USGS NHD data.
  - [x] USGS 8 and 12 digit HUC maps.
- [x] U.S. Geological Survey map(s). Cite scale & quad name: 2022 ARDR, Figure 2; 1" = 4,500'; USGS 7.5' Quads (Hodge, Hinkley, Barstow SE, Barstow).
- [x] Natural Resources Conservation Service Soil Survey. Citation: 2022 ARDR, Figure 4; USDA NRCS 2018.
- [x] National wetlands inventory map(s). Cite name: 2022 ARDR, Figure 4; USFWS NWI 2019.
- [ ] State/local wetland inventory map(s): _____.
- [ ] FEMA/FIRM maps: _____.
- [ ] 100-year Floodplain Elevation is: _____.(National Geodetic Vertical Datum of 1929)
- [x] Photographs: [x] Aerial (Name & Date): See 2022 ARDR, Figures 1 & 4-6 (Maxar, Esri 2020; San Bernardino County, Esri 2020); Appendix D, Recent and Historic Aerials.
  or [x] Other (Name & Date): See 2022 ARDR Appendix G, Site Photographs.
- [ ] Previous determination(s). File no. and date of response letter: _____.
- [x] Other information (please specify): 2022 ARDR, prepared by Rocks Biological Consulting.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

_____	David Rambo 9/22/2022
Signature and date of Regulatory staff member completing PJD	Signature and date of person requesting PJD (REQUIRED, unless obtaining the signature is impracticable)[1]

[1] Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resources (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
NWW-1	34.772787	-117.284653	0.02 ac/123 ln ft	Non-wetland waters	Section 404
NWW-2	34.772847	-117.284610	0.01 ac/121 ln ft	Non-wetland waters	Section 404
NWW-3	34.773221	-117.283817	0.02 ac/132 ln ft	Non-wetland waters	Section 404
NWW-4	34.773653	-117.283036	0.01 ac/113 ln ft	Non-wetland waters	Section 404
NWW-5	34.773734	-117.282869	0.01 ac/109 ln ft	Non-wetland waters	Section 404
NWW-6	34.774652	-117.281701	0.01 ac/126 ln ft	Non-wetland waters	Section 404
NWW-7	34.776674	-117.278786	0.01 ac/119 ln ft	Non-wetland waters	Section 404
NWW-8	34.776786	-117.278705	0.01 ac/96 ln ft	Non-wetland waters	Section 404
NWW-9	34.778794	-117.277384	0.03 ac/107 ln ft	Non-wetland waters	Section 404
NWW-10	34.778399	-117.276743	<0.01 ac/52 ln ft	Non-wetland waters	Section 404
NWW-11	34.778377	-117.276478	0.02 ac/223 ln ft	Non-wetland waters	Section 404
NWW-12	34.778670	-117.276121	0.01 ac/127 ln ft	Non-wetland waters	Section 404
NWW-13	34.778712	-117.276024	0.01 ac/113 ln ft	Non-wetland waters	Section 404
NWW-14	34.778886	-117.275827	0.01 ac/133 ln ft	Non-wetland waters	Section 404
NWW-15	34.778978	-117.275585	0.01 ac/184 ln ft	Non-wetland waters	Section 404
NWW-16	34.784276	-117.262668	0.07 ac/214 ln ft	Non-wetland waters	Section 404
NWW-17	34.784361	-117.262104	0.05 ac/81 ln ft	Non-wetland waters	Section 404
NWW-18	34.786948	-117.252605	0.01 ac/104 ln ft	Non-wetland waters	Section 404
NWW-19	34.787318	-117.251761	0.01 ac/114 ln ft	Non-wetland waters	Section 404
NWW-20	34.791189	-117.241868	0.65 ac/852 ln ft	Non-wetland waters	Section 404
NWW-21	34.795810	-117.228450	0.03 ac/428 ln ft	Non-wetland waters	Section 404

NWW-22	34.796559	-117.227801	0.02 ac/176 ln ft	Non-wetland waters	Section 404
NWW-23	34.795776	-117.228162	0.02 ac/221 ln ft	Non-wetland waters	Section 404
NWW-24	34.797160	-117.227759	0.12 ac/840 ln ft	Non-wetland waters	Section 404
NWW-25	34.796981	-117.225815	0.07 ac/727 ln ft	Non-wetland waters	Section 404
NWW-26	34.797595	-117.225008	0.07 ac/522 ln ft	Non-wetland waters	Section 404
NWW-27	34.798258	-117.223204	0.18 ac/1,155 ln ft	Non-wetland waters	Section 404
NWW-28	34.797819	-117.222127	0.01 ac/109 ln ft	Non-wetland waters	Section 404
NWW-29	34.798766	-117.222983	<0.01 ac/96 ln ft	Non-wetland waters	Section 404
NWW-30	34.798508	-117.221906	0.03 ac/311 ln ft	Non-wetland waters	Section 404
NWW-31	34.798583	-117.221247	0.01 ac/145 ln ft	Non-wetland waters	Section 404
NWW-32	34.798456	-117.220065	<0.01 ac/32 ln ft	Non-wetland waters	Section 404
NWW-33	34.799322	-117.219846	0.02 ac/171 ln ft	Non-wetland waters	Section 404
NWW-34	34.800955	-117.215818	0.03 ac/572 ln ft	Non-wetland waters	Section 404
NWW-35	34.807290	-117.203290	0.01 ac/66 ln ft	Non-wetland waters	Section 404
NWW-36	34.808738	-117.201555	0.01 ac/183 ln ft	Non-wetland waters	Section 404
NWW-37	34.809189	-117.201054	0.01 ac/150 ln ft	Non-wetland waters	Section 404
NWW-38	34.809316	-117.200892	0.01 ac/141 ln ft	Non-wetland waters	Section 404
NWW-39	34.809671	-117.200471	<0.01 ac/182 ln ft	Non-wetland waters	Section 404
NWW-40	34.810099	-117.199975	0.01 ac/155 ln ft	Non-wetland waters	Section 404
NWW-41	34.810323	-117.199718	0.01 ac/172 ln ft	Non-wetland waters	Section 404
NWW-42	34.811425	-117.198424	0.02 ac/175 ln ft	Non-wetland waters	Section 404
NWW-43	34.826693	-117.188511	0.13 ac/475 ln ft	Non-wetland waters	Section 404
NWW-44	34.829248	-117.186429	3.13 ac/5,956 ln ft	Non-wetland waters	Section 404
NWW-45	34.834684	-117.182237	0.21 ac/2,468 ln ft	Non-wetland waters	Section 404
NWW-46	34.835168	-117.181479	0.06 ac/1,172 ln ft	Non-wetland waters	Section 404
NWW-47	34.833706	-117.176283	0.04 ac/580 ln ft	Non-wetland waters	Section 404

NWW-48	34.836991	-117.181122	0.03 ac/481 ln ft	Non-wetland waters	Section 404
NWW-49	34.836110	-117.179064	0.73 ac/7,138 ln ft	Non-wetland waters	Section 404
NWW-50	34.837239	-117.179203	0.02 ac/461 ln ft	Non-wetland waters	Section 404
NWW-51	34.837464	-117.178078	0.04 ac/842 ln ft	Non-wetland waters	Section 404
NWW-52	34.837867	-117.177679	0.04 ac/562 ln ft	Non-wetland waters	Section 404
NWW-53	34.837648	-117.177101	0.07 ac/1,131 ln ft	Non-wetland waters	Section 404
NWW-54	34.835210	-117.172619	0.02 ac/354 ln ft	Non-wetland waters	Section 404
NWW-55	34.835454	-117.171863	0.02 ac/170 ln ft	Non-wetland waters	Section 404
NWW-56	34.835773	-117.172617	0.02 ac/252 ln ft	Non-wetland waters	Section 404
NWW-57	34.836014	-117.172631	0.02 ac/264 ln ft	Non-wetland waters	Section 404
NWW-58	34.838348	-117.176084	0.50 ac/4,358 ln ft	Non-wetland waters	Section 404
NWW-59	34.838248	-117.174160	0.75 ac/8,262 ln ft	Non-wetland waters	Section 404
NWW-60	34.840401	-117.179750	0.17 ac/188 ln ft	Non-wetland waters	Section 404
NWW-61	34.837031	-117.169791	0.05 ac/910 ln ft	Non-wetland waters	Section 404
NWW-62	34.840397	-117.175307	0.14 ac/1,696 ln ft	Non-wetland waters	Section 404
NWW-63	34.840934	-117.174275	0.20 ac/2,174 ln ft	Non-wetland waters	Section 404
NWW-64	34.841711	-117.174418	0.04 ac/538 ln ft	Non-wetland waters	Section 404
NWW-65	34.842293	-117.173643	0.02 ac/482 ln ft	Non-wetland waters	Section 404
NWW-66	34.843147	-117.172457	0.08 ac/1,260 ln ft	Non-wetland waters	Section 404
NWW-67	34.841131	-117.171984	0.22 ac/2,373 ln ft	Non-wetland waters	Section 404
NWW-68	34.839992	-117.170094	0.34 ac/5,708 ln ft	Non-wetland waters	Section 404
NWW-69	34.842933	-117.168625	0.68 ac/6,858 ln ft	Non-wetland waters	Section 404
NWW-70	34.842209	-117.166408	2.09 ac/18,554 ln ft	Non-wetland waters	Section 404
NWW-71	34.844554	-117.165718	0.10 ac/1,128 ln ft	Non-wetland waters	Section 404
NWW-72	34.845370	-117.166236	0.04 ac/427 ln ft	Non-wetland waters	Section 404
NWW-73	34.844453	-117.163545	1.24 ac/13,348 ln ft	Non-wetland waters	Section 404

NWW-74	34.846950	-117.162756	0.17 ac/1,582 ln ft	Non-wetland waters	Section 404
NWW-75	34.845550	-117.159978	0.04 ac/487 ln ft	Non-wetland waters	Section 404
NWW-76	34.848019	-117.159133	0.86 ac/8,649 ln ft	Non-wetland waters	Section 404
NWW-77	34.847129	-117.156396	0.16 ac/1,677 ln ft	Non-wetland waters	Section 404
NWW-78	34.848845	-117.157242	0.01 ac/278 ln ft	Non-wetland waters	Section 404
NWW-79	34.850248	-117.158057	0.13 ac/1,874 ln ft	Non-wetland waters	Section 404
NWW-80	34.850680	-117.154564	2.02 ac/15,877 ln ft	Non-wetland waters	Section 404
NWW-81	34.853340	-117.156269	0.12 ac/1,229 ln ft	Non-wetland waters	Section 404
NWW-82	34.854433	-117.152784	0.64 ac/8,328 ln ft	Non-wetland waters	Section 404
NWW-83	34.856239	-117.153167	0.01 ac/250 ln ft	Non-wetland waters	Section 404
NWW-84	34.854958	-117.146066	0.02 ac/909 ln ft	Non-wetland waters	Section 404
NWW-85	34.857281	-117.149898	0.31 ac/3,921 ln ft	Non-wetland waters	Section 404
NWW-86	34.856698	-117.147965	0.02 ac/218 ln ft	Non-wetland waters	Section 404
NWW-87	34.857936	-117.147949	0.13 ac/2,162 ln ft	Non-wetland waters	Section 404
NWW-88	34.858906	-117.148308	0.04 ac/403 ln ft	Non-wetland waters	Section 404
NWW-89	34.860010	-117.133547	1.89 ac/16,466 ln ft	Non-wetland waters	Section 404
NWW-90	34.860552	-117.142795	0.08 ac/995 ln ft	Non-wetland waters	Section 404
NWW-91	34.863147	-117.140564	0.01 ac/150 ln ft	Non-wetland waters	Section 404
NWW-92	34.874455	-117.131291	8.31 ac/13,518 ln ft	Non-wetland waters	Section 404
NWW-93	34.873485	-117.118709	0.06 ac/409 ln ft	Non-wetland waters	Section 404
NWW-94	34.874055	-117.117372	0.06 ac/401 ln ft	Non-wetland waters	Section 404
NWW-95	34.877087	-117.110926	0.03 ac/307 ln ft	Non-wetland waters	Section 404
NWW-96	34.878268	-117.108708	0.05 ac/439 ln ft	Non-wetland waters	Section 404
NWW-97	34.879422	-117.105552	0.03 ac/506 ln ft	Non-wetland waters	Section 404
NWW-98	34.880017	-117.105950	0.01 ac/124 ln ft	Non-wetland waters	Section 404
NWW-99	34.880936	-117.101226	0.03 ac/353 ln ft	Non-wetland waters	Section 404

NWW-100	34.882602	-117.095407	0.34 ac/2,524 ln ft	Non-wetland waters	Section 404
NWW-101	34.883416	-117.092671	0.29 ac/1,003 ln ft	Non-wetland waters	Section 404
NWW-102	34.883038	-117.091930	0.01 ac/99 ln ft	Non-wetland waters	Section 404
NWW-103	34.797426	-117.223080	0.01 ac/43 ln ft	Non-wetland waters	Section 404
NWW-104	34.797510	-117.222886	0.01 ac/70 ln ft	Non-wetland waters	Section 404
NWW-105	34.828712	-117.182373	0.01 ac/29 ln ft	Non-wetland waters	Section 404
NWW-106	34.828907	-117.182084	0.01 ac/36 ln ft	Non-wetland waters	Section 404
NWW-107	34.835555	-117.169501	<0.01 ac/51 ln ft	Non-wetland waters	Section 404
NWW-108	34.847053	-117.151904	0.01 ac/36 ln ft	Non-wetland waters	Section 404
NWW-109	34.863277	-117.170128	106.87 ac/5,255 ln ft	Non-wetland waters	Section 404
NWW-110	34.862304	-117.029568	0.09 ac/626 ln ft	Non-wetland waters	Section 404
NWW-111	34.862851	-117.029387	0.01 ac/197 ln ft	Non-wetland waters	Section 404
NWW-112	34.862328	-117.030154	0.01 ac/197 ln ft	Non-wetland waters	Section 404
NWW-113	34.863114	-117.031133	0.11 ac/2,234 ln ft	Non-wetland waters	Section 404
NWW-114	34.863906	-117.030060	0.05 ac/735 ln ft	Non-wetland waters	Section 404
NWW-115	34.863948	-117.030548	0.01 ac/180 ln ft	Non-wetland waters	Section 404
NWW-116	34.863745	-117.030843	<0.01 ac/22 ln ft	Non-wetland waters	Section 404
NWW-117	34.863948	-117.031161	0.01 ac/196 ln ft	Non-wetland waters	Section 404
NWW-118	34.863784	-117.031507	<0.01 ac/54 ln ft	Non-wetland waters	Section 404
NWW-119	34.863981	-117.031809	0.05 ac/665 ln ft	Non-wetland waters	Section 404
NWW-120	34.862325	-117.032219	0.07 ac/537 ln ft	Non-wetland waters	Section 404
NWW-121	34.863168	-117.032221	0.01 ac/269 ln ft	Non-wetland waters	Section 404
NWW-122	34.863547	-117.032236	0.01 ac/115 ln ft	Non-wetland waters	Section 404
NWW-123	34.863294	-117.032440	<0.01 ac/103 ln ft	Non-wetland waters	Section 404
NWW-124	34.863374	-117.033400	0.01 ac/140 ln ft	Non-wetland waters	Section 404
NWW-125	34.863847	-117.033290	0.03 ac/232 ln ft	Non-wetland waters	Section 404

NWW-126	34.863806	-117.033928	0.01 ac/132 ln ft	Non-wetland waters	Section 404
NWW-127	34.864203	-117.033791	0.02 ac/307 ln ft	Non-wetland waters	Section 404
NWW-128	34.863964	-117.034043	0.02 ac/280 ln ft	Non-wetland waters	Section 404
NWW-129	34.864078	-117.034199	0.01 ac/128 ln ft	Non-wetland waters	Section 404
NWW-130	34.864243	-117.034403	0.02 ac/294 ln ft	Non-wetland waters	Section 404
NWW-131	34.864655	-117.034310	0.01 ac/121 ln ft	Non-wetland waters	Section 404
NWW-132	34.864770	-117.034393	0.03 ac/305 ln ft	Non-wetland waters	Section 404
NWW-133	34.864415	-117.034695	0.01 ac/129 ln ft	Non-wetland waters	Section 404
NWW-134	34.864537	-117.034800	<0.01 ac/154 ln ft	Non-wetland waters	Section 404
NWW-135	34.865000	-117.034784	0.04 ac/325 ln ft	Non-wetland waters	Section 404
NWW-136	34.864640	-117.034993	0.01 ac/128 ln ft	Non-wetland waters	Section 404
NWW-137	34.865098	-117.035362	<0.01 ac/41 ln ft	Non-wetland waters	Section 404
NWW-138	34.865483	-117.035394	0.01 ac/190 ln ft	Non-wetland waters	Section 404
NWW-139	34.865080	-117.035540	0.01 ac/142 ln ft	Non-wetland waters	Section 404
NWW-140	34.865346	-117.035826	0.03 ac/238 ln ft	Non-wetland waters	Section 404
NWW-141	34.865793	-117.035751	0.02 ac/243 ln ft	Non-wetland waters	Section 404
NWW-142	34.865558	-117.036182	0.01 ac/118 ln ft	Non-wetland waters	Section 404
NWW-143	34.865940	-117.035968	0.02 ac/126 ln ft	Non-wetland waters	Section 404
NWW-144	34.865697	-117.036341	0.02 ac/148 ln ft	Non-wetland waters	Section 404
NWW-145	34.867099	-117.037273	<0.01 ac/69 ln ft	Non-wetland waters	Section 404
NWW-146	34.867280	-117.037889	0.18 ac/272 ln ft	Non-wetland waters	Section 404
NWW-147	34.867479	-117.038380	<0.01 ac/47 ln ft	Non-wetland waters	Section 404
NWW-148	34.868016	-117.038573	0.01 ac/146 ln ft	Non-wetland waters	Section 404
NWW-149	34.867884	-117.039030	0.01 ac/133 ln ft	Non-wetland waters	Section 404
NWW-150	34.867950	-117.039201	0.01 ac/113 ln ft	Non-wetland waters	Section 404
NWW-151	34.868385	-117.038946	0.01 ac/120 ln ft	Non-wetland waters	Section 404

NWW-152	34.868169	-117.039394	0.01 ac/141 ln ft	Non-wetland waters	Section 404
NWW-153	34.868686	-117.039359	0.01 ac/185 ln ft	Non-wetland waters	Section 404
NWW-154	34.868471	-117.039625	<0.01 ac/62 ln ft	Non-wetland waters	Section 404
NWW-155	34.868497	-117.039748	0.01 ac/132 ln ft	Non-wetland waters	Section 404
NWW-156	34.868751	-117.040025	0.01 ac/126 ln ft	Non-wetland waters	Section 404
NWW-157	34.869093	-117.039898	0.01 ac/133 ln ft	Non-wetland waters	Section 404
NWW-158	34.869493	-117.040409	0.01 ac/169 ln ft	Non-wetland waters	Section 404
NWW-159	34.869406	-117.040822	0.01 ac/123 ln ft	Non-wetland waters	Section 404
NWW-160	34.869733	-117.041232	0.01 ac/85 ln ft	Non-wetland waters	Section 404
NWW-161	34.870069	-117.041756	0.01 ac/167 ln ft	Non-wetland waters	Section 404
NWW-162	34.870305	-117.041899	<0.01 ac/55 ln ft	Non-wetland waters	Section 404
NWW-163	34.870368	-117.042117	0.01 ac/169 ln ft	Non-wetland waters	Section 404
NWW-164	34.870510	-117.042262	<0.01 ac/125 ln ft	Non-wetland waters	Section 404
NWW-165	34.870631	-117.042459	0.01 ac/152 ln ft	Non-wetland waters	Section 404
NWW-166	34.870818	-117.042706	0.02 ac/294 ln ft	Non-wetland waters	Section 404
NWW-167	34.870938	-117.042896	0.01 ac/142 ln ft	Non-wetland waters	Section 404
NWW-168	34.871428	-117.042765	0.03 ac/208 ln ft	Non-wetland waters	Section 404
NWW-169	34.871617	-117.042845	0.01 ac/123 ln ft	Non-wetland waters	Section 404
NWW-170	34.871221	-117.043257	0.01 ac/295 ln ft	Non-wetland waters	Section 404
NWW-171	34.871715	-117.043851	0.03 ac/206 ln ft	Non-wetland waters	Section 404
NWW-172	34.872364	-117.043974	0.03 ac/176 ln ft	Non-wetland waters	Section 404
NWW-173	34.872264	-117.044360	<0.01 ac/90 ln ft	Non-wetland waters	Section 404
NWW-174	34.872611	-117.044917	<0.01 ac/210 ln ft	Non-wetland waters	Section 404
NWW-175	34.873081	-117.045449	0.02 ac/155 ln ft	Non-wetland waters	Section 404
NWW-176	34.873274	-117.045677	0.01 ac/173 ln ft	Non-wetland waters	Section 404
NWW-177	34.873893	-117.045930	0.06 ac/571 ln ft	Non-wetland waters	Section 404

NWW-178	34.873797	-117.046218	0.01 ac/84 ln ft	Non-wetland waters	Section 404
NWW-179	34.873847	-117.046343	<0.01 ac/63 ln ft	Non-wetland waters	Section 404
NWW-180	34.873945	-117.046598	0.03 ac/197 ln ft	Non-wetland waters	Section 404
NWW-181	34.874872	-117.046978	<0.01 ac/75 ln ft	Non-wetland waters	Section 404
NWW-182	34.874268	-117.047106	0.07 ac/636 ln ft	Non-wetland waters	Section 404
NWW-183	34.864594	-117.120526	0.06 ac/288 ln ft	Non-wetland waters	Section 404
NWW-184	34.865232	-117.122088	0.02 ac/178 ln ft	Non-wetland waters	Section 404
NWW-185	34.853009	-117.132656	<0.01 ac/92 ln ft	Non-wetland waters	Section 404
NWW-186	34.853376	-117.132648	0.01 ac/143 ln ft	Non-wetland waters	Section 404
NWW-187	34.853977	-117.132836	0.03 ac/396 ln ft	Non-wetland waters	Section 404
NWW-188	34.856810	-117.131280	0.31 ac/1,952 ln ft	Non-wetland waters	Section 404

ATTACHMENT D

ARID WEST WETLAND DETERMINATION DATA FORMS AND EPHEMERAL AND INTERMITTENT STREAMS OHWM DATASHEETS

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 37
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 4/12/2024 **Time:** 1000
Town: San Bernardino County **State:** CA
Photo begin file#: 9 **Photo end file#:** 10

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.860906, -117.132480

Potential anthropogenic influences on the channel system:
Off road vehicle use and trash dumping. Located within and adjacent to residential development.

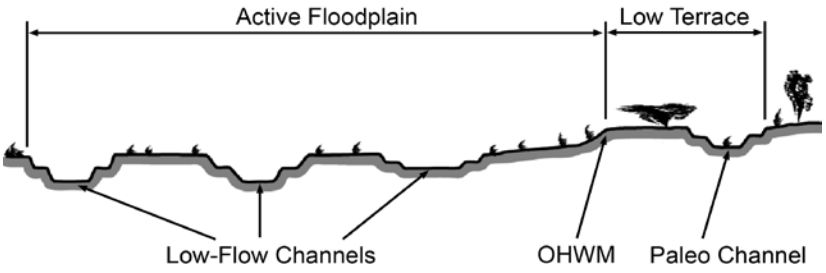
Brief site description:
Within NHD- and NWI-mapped feature southeast of Main Street in area mapped as Larrea tridentata - Ambrosia dumosa shrubland alliance. Primarily undeveloped site.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

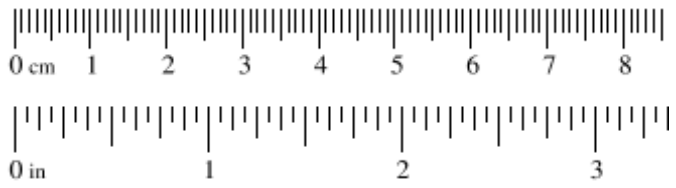


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

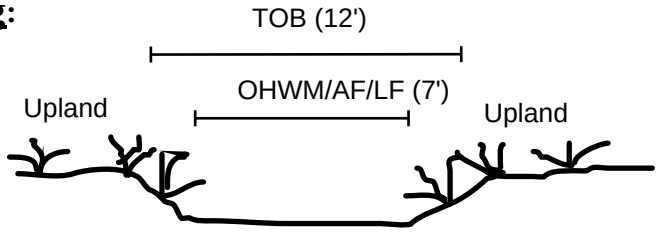
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 37 **Date:** 04/11/2024 **Time:** 1000

Cross section drawing:



Facing east (downstream)

OHWM

GPS point: 34.860906, -117.132480

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 7-foot wide OHWM defined by a clear break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low flow (LF) indistinguishable from active floodplain (AF).

Project ID: Big Barstow **Cross section ID:** ODP 37 **Date:** 4/11/24 **Time:** 1000

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Coarse sand with pebbles

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 7-foot wide unvegetated active floodplain (AF) with a clear break in bank slope. Coarse sand sediment texture with some pebbles throughout.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Fine sand

Total veg cover: 80 % Tree: 0 % Shrub: 25 % Herb: 55 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Fine sand sediment texture throughout. Vegetation included: Larrea tridentata, Ambrosia dumosa, Atriplex lentiformis, Chaenactis fremontii, & Ephedra viridis

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 38
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 4/11/2024 **Time:** 0930
Town: San Bernardino County **State:** CA
Photo begin file#: 7 **Photo end file#:** 8

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.855797, -117.132946

Potential anthropogenic influences on the channel system:
Off road vehicle use and trash dumping. Located within and adjacent to residential development.

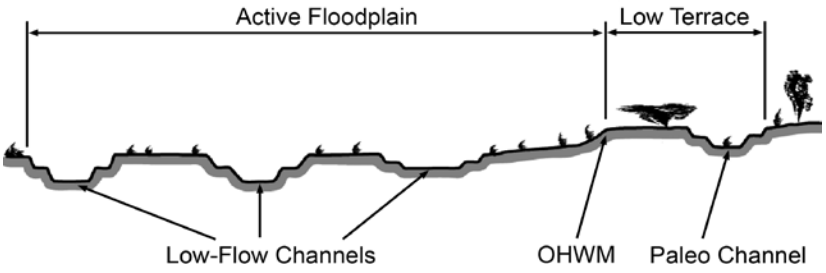
Brief site description:
Drainage within area mapped as Larrea tridentata - Ambrosia dumosa shrubland alliance. Primarily undeveloped site located southeast of Main Street.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

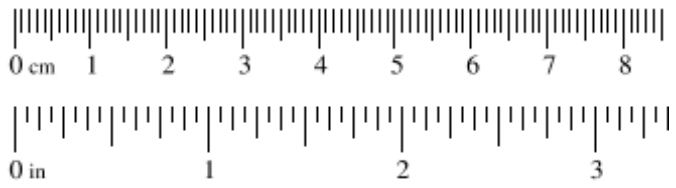


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

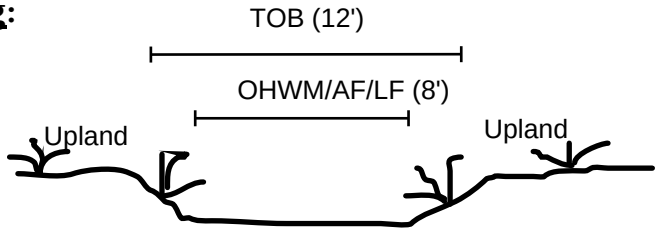
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 38 **Date:** 04/11/2024 **Time:** 0930

Cross section drawing:



OHWM

GPS point: 34.855797, -117.132946

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 8-foot wide OHWM defined by a clear break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: 1 % Tree: 0 % Shrub: 0 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low flow (LF) indistinguishable from active floodplain (AF).

Project ID: Big Barstow **Cross section ID:** ODP 38 **Date:** 4/11/2024 **Time:** 0930

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand with granules

Total veg cover: 1 % Tree: 0 % Shrub: 0 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☑ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 8-foot wide unvegetated active floodplain (AF) with a clear break in bank slope. Medium sand sediment texture with some granules throughout.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand with pebbles

Total veg cover: 75 % Tree: 0 % Shrub: 10 % Herb: 65 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Fine sand sediment texture throughout. Vegetation included: Larrea tridentata, Brassica nigra, Schismus barbatus, Erodium cicutarium, Malacothrix glabrata, Ambrosia dumosa, Amsinckia menziesii, Atriplex lentiformis

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 39
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 4/11/2024 **Time:** 0945
Town: San Bernardino County **State:** CA
Photo begin file#: 23 **Photo end file#:** 24

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.856216, -117.132251

Potential anthropogenic influences on the channel system:
Off road vehicle use and trash dumping. Located within and adjacent to residential development.

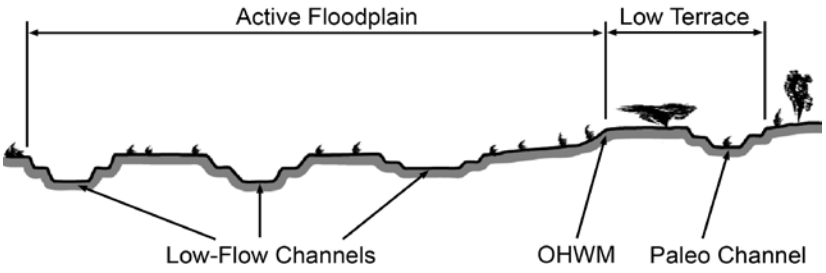
Brief site description:
Highly incised erosional feature within area mapped as Larrea tridentata - Ambrosia dumosa shrubland alliance. Primarily undeveloped site located southeast of Main Street.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

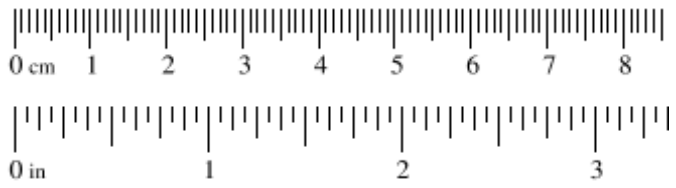


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

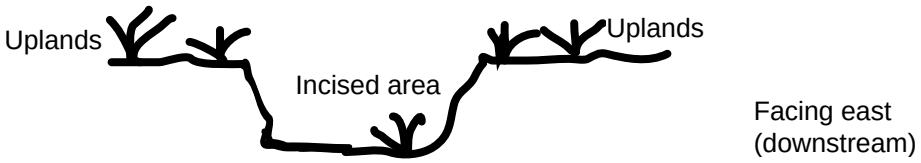
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 39 **Date:** 04/11/2024 **Time:** 0945

Cross section drawing:



OHWM

GPS point: 34.856216, -117.132251

Indicators:

- ☑ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Erosional feature that exhibited an abrupt/highly incised break in bank slope and a slight change in average sediment texture but did not exhibit a distinctive change in vegetation species, vegetation cover, or any other OHWM indicators. Erosional feature with similar vegetation (Larrea tridentata - Ambrosia dumosa shrubland alliance) and plant cover as surrounding uplands.

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Project ID: Big Barstow **Cross section ID:** ODP 39 **Date:** 4/11/24 **Time:** 0945

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 40
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 4/11/2024 **Time:** 1045
Town: San Bernardino County **State:** CA
Photo begin file#: 13 **Photo end file#:** 13

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.854671, -117.132999

Potential anthropogenic influences on the channel system:
Off road vehicle use and trash dumping. Located within and adjacent to residential development.

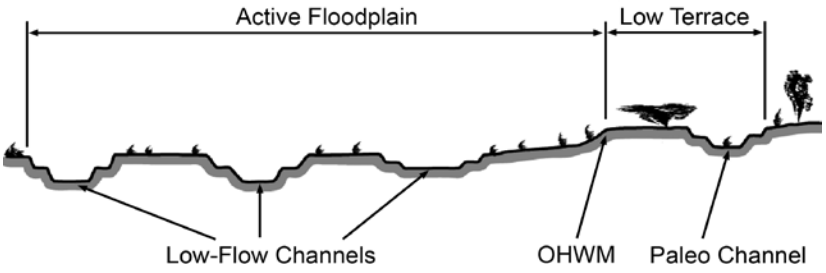
Brief site description:
Swale-like feature within area mapped as Larrea tridentata - Ambrosia dumosa shrubland alliance. Primarily undeveloped site located southeast of Main Street.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

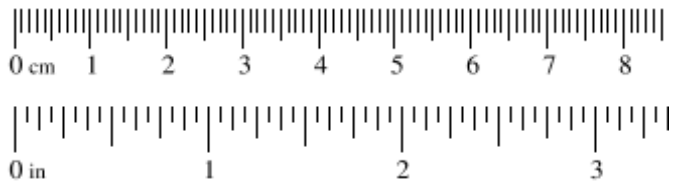


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

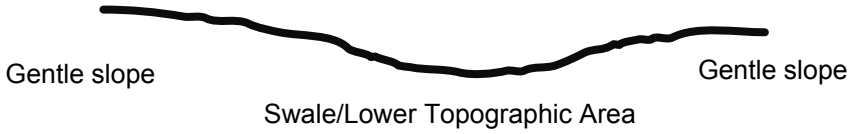
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 40 **Date:** 4/11/24 **Time:** 1045

Cross section drawing:



OHWM

GPS point: 34.854671, -117.132999

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Project ID: Big Barstow **Cross section ID:** ODP 40 **Date:** 4/11/2024 **Time:** 10:45

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

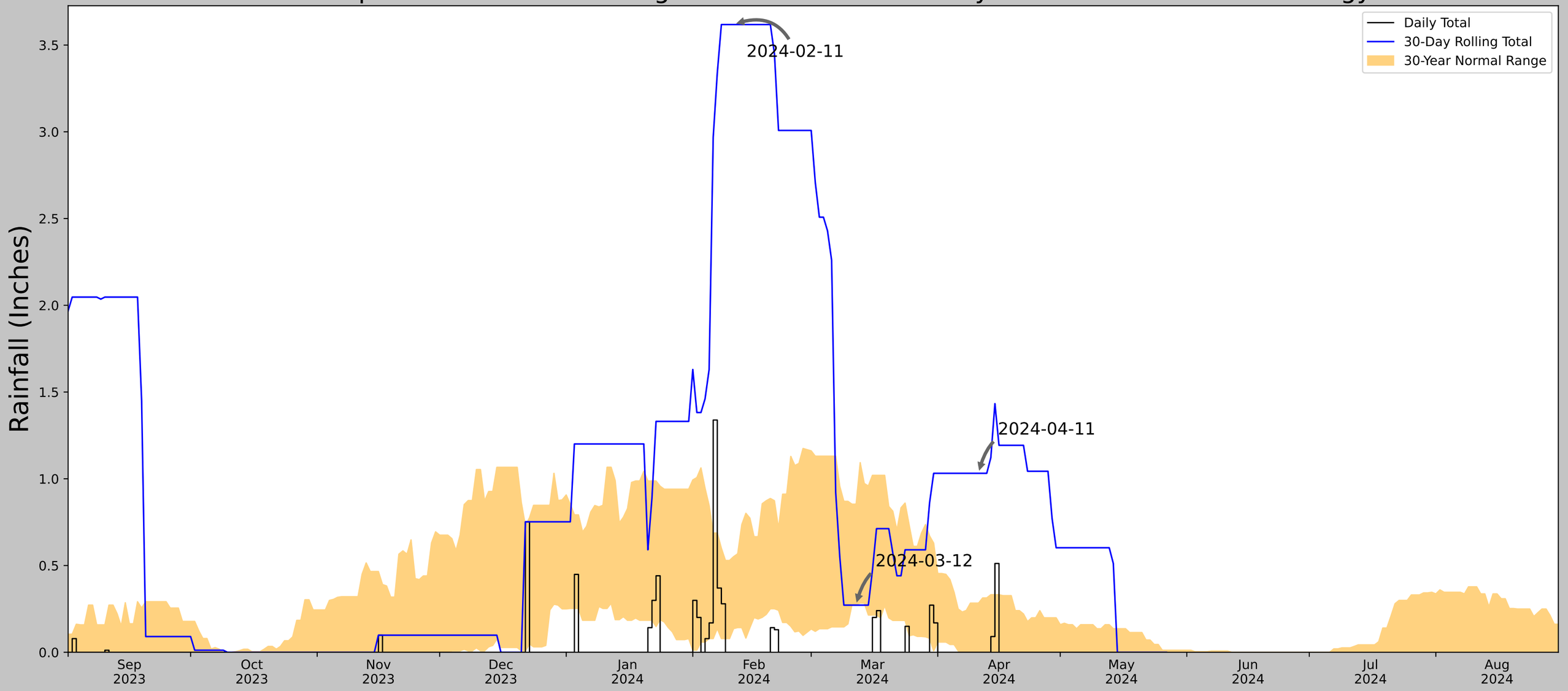
- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

ATTACHMENT E

ANTECEDENT PRECIPITATION TOOL OUTPUT

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.857333, -117.133992
Observation Date	2024-04-11
Elevation (ft)	2295.026
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-11	0.0	0.283465	1.031496	Wet	3	3	9
2024-03-12	0.275197	0.853543	0.271654	Dry	1	2	2
2024-02-11	0.136614	0.551181	3.61811	Wet	3	1	3
Result							Normal Conditions - 14

US Army Corps of Engineers

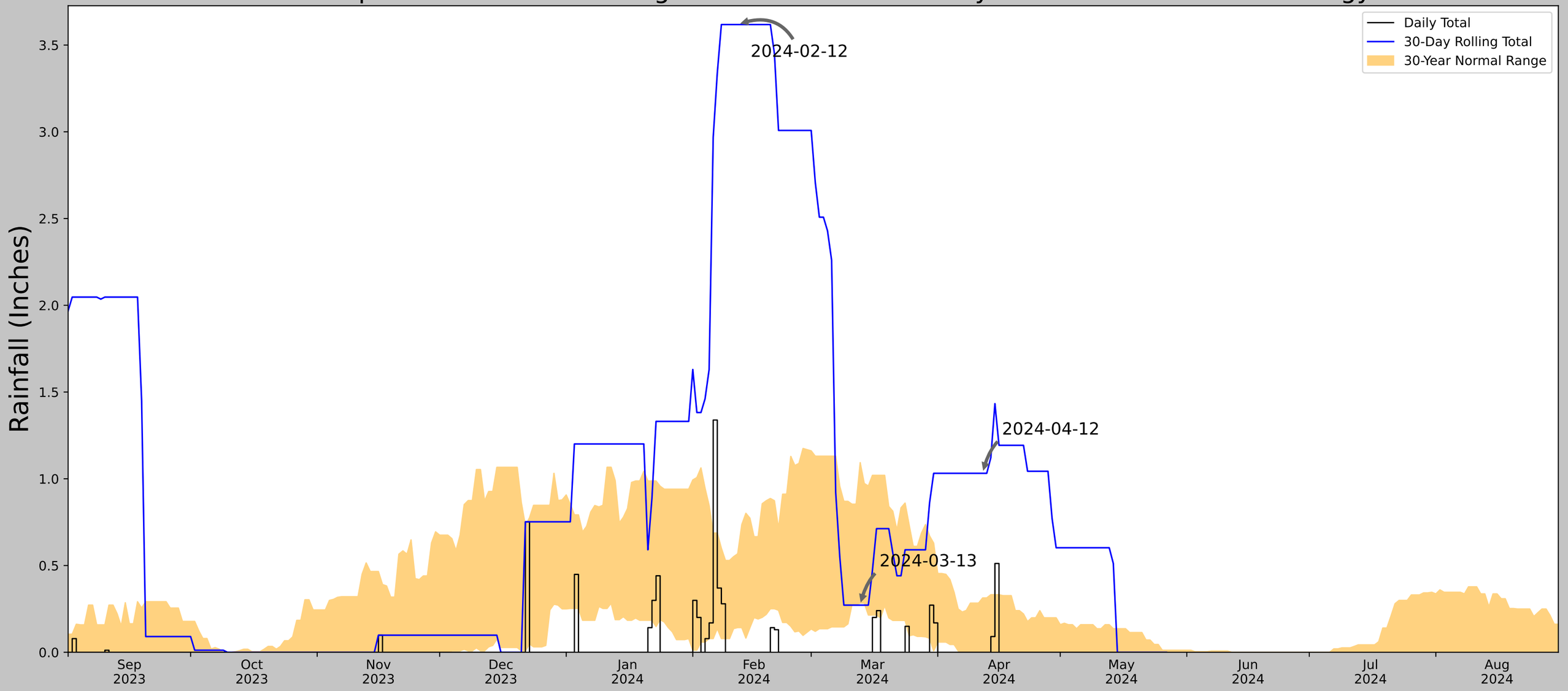
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BARSTOW	34.8928, -117.0219	2220.144	6.81	74.882	3.574	11099	90
BARSTOW 4.2 NE	34.9237, -117.0177	2169.948	2.148	50.196	1.074	9	0
BARSTOW 3.0 W	34.88, -117.118	2229.003	5.518	8.859	2.532	1	0
BARSTOW-DAGGETT AP	34.8536, -116.7869	1918.963	13.594	301.181	10.212	243	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.857333, -117.133992
Observation Date	2024-04-12
Elevation (ft)	2295.026
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-12	0.0	0.313386	1.031496	Wet	3	3	9
2024-03-13	0.283465	1.093307	0.271654	Dry	1	2	2
2024-02-12	0.142126	0.567717	3.61811	Wet	3	1	3
Result							Normal Conditions - 14

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BARSTOW	34.8928, -117.0219	2220.144	6.81	74.882	3.574	11099	90
BARSTOW 4.2 NE	34.9237, -117.0177	2169.948	2.148	50.196	1.074	9	0
BARSTOW 3.0 W	34.88, -117.118	2229.003	5.518	8.859	2.532	1	0
BARSTOW-DAGGETT AP	34.8536, -116.7869	1918.963	13.594	301.181	10.212	243	0

ATTACHMENT F

SITE PHOTOGRAPHS

Attachment F

Site Photographs[1]

Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum – April 11 & 12, 2024



Photo 1. Downstream view of Non-Wetland Water (NWW)-185 facing east, within disturbed habitat. (34.852989, -117.132702). April 11, 2024.



Photo 2. Upstream view of NWW-185 facing south, within disturbed habitat (34.853017, -117132712).



Photo 3. Downstream view of NWW-186, facing north, within disturbed land (34.853157, -117132587). April 11, 2024.



Photo 4. Upstream view of NWW-186, facing south, within disturbed land (34.853541, -117.132696). April 11, 2024.

[1] See corresponding Figure 5 series for photo point locations. See Aquatic Resources Delineation Report Addendum Sections 1.5 and Attachment G for a discussion of each feature.



Photo 5. Downstream view of NWW-187, facing north, within disturbed land (34.853721, -117.132747). April 11, 2024.



Photo 6. Upstream view of NWW-187 facing west. (34.853695, -117132781). April 11, 2024.



Photo 7. Upstream view Ordinary High Water Mark (OHWM) Datasheet Point (ODP) 38 within NWW-188, facing west, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. ODP 1 exhibited a break in bank slope, change in average sediment texture, change in vegetation species, and change in vegetation cover. (34.855828, -117.132941). April 11, 2024.



Photo 8. Downstream view of ODP 38 within NWW-188, facing east, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. (34.855821, -117.132946). April 11, 2024.



Photo 9. Downstream view of ODP 37 within NWW-89, facing east, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. ODP 4 exhibited a break in bank slope, change in average sediment texture, change in vegetation species, and change in vegetation cover. (34.860938, -117.13248). April 12, 2024.



Photo 10. Upstream view of ODP 37 within NWW-89, facing west, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. (34.860921, -117.132493). April 12, 2024.



Photo 11. View of WDP 14 within Swale (S)-3, facing north, within Larrea tridentata - Ambrosia dumosa shrubland alliance. WDP 14 did not meet the hydrophytic vegetation, hydric soils, or wetland hydrology parameters. (34.854653, -117.133046). April 11, 2024.



Photo 12. View of WDP 15 within NWW-89, facing east, within Larrea tridentata - Ambrosia dumosa shrubland alliance. WDP 15 met the wetland hydrology parameter; however, it did not meet the hydrophytic vegetation or hydric soils parameters. (34.860738, -117.133166). April 11, 2024.



Photo 13. Downstream view of ODP 40 within S-3, facing south, within *Larrea tridentata* - *Ambrosia dumosa* shrubland alliance. ODP 40 did not exhibit a distinctive break in bank slope, change in average sediment texture, change in vegetation species, change in vegetation cover, or any other OHWM indicators (34.85466, -117.123992). April 11, 2024.



Photo 14. View of corrugated metal pipe (CMP) culvert within NWW-89, beneath Main Street, facing north, within developed land. (34.862505, -117.131221). April 12, 2024.



Photo 15. View of CMP culvert within NWW-89, beneath Main Street, facing south, within developed land. (34.862647, -117.131404). April 12, 2024.



Photo 16. View of metal culvert within NWW-89, facing east, within developed land. (34.857257, -117.136959). April 12, 2024.



Photo 17. Downstream view of Watercourse B, facing north, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. (34.856455, -117.137971). April 12, 2024.



Photo 18. View of CMP culvert (yellow arrow) within NWW-89, facing west, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. (34.857435 -117.136588). April 12, 2024.



Photo 19. View of CMP culvert within NWW-89, facing north, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. (34.857747, -117.136174). April 12, 2024.



Photo 20. View of metal culvert within NWW-89, facing west, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. (34.857839, -117.135967). April 12, 2024.



Photo 21. Downstream view of Watercourse C, facing north, within Larrea tridentata - Ambrosia dumosa shrubland alliance. (34.85788, -117.135936). April 12, 2024.



Photo 22. View of metal culvert within NWW-89, facing west, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. (34.857353, -117.136575). April 12, 2024.



Photo 23. Upstream view of ODP 39 within Erosional Feature (EF)-6, facing north, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. EF-6 exhibited a hard break in slope and slight change in average sediment texture but did not exhibit a distinctive change in vegetation species, change in vegetation cover, or any other OHWM indicators (34.856211, -117.132235). April 12, 2024.



Photo 24. Upstream view of ODP 39 within EF-6, facing south, within *Larrea tridentata - Ambrosia dumosa* shrubland alliance. (34.856184, -117.132245). April 12, 2024.

ATTACHMENT G

AQUATIC RESOURCE SUMMARY TABLES FOR 2024 ARDR ADDENDUM REVIEW AREA

Table G-1. Aquatic Resource Summary for 2024 ARDR Addendum Review Area: Corps/RWQCB

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-89	R6	1 - 14	CAST, CVS, CVC, BBS; See ODP 37 (as well as ODP 7 and ODP 23 from the 2022 ARDR)	WH (See WDP 15)	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Primarily unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; meanders in and out of the 2023 ARDR addendum review area before continuing into the 2022 review area and through a culvert along National Trails Hwy/Main St into the 2024 ARDR Addendum review area (See Photos 9-10 on Figures 5A-5B and Attachment E).	34.860010, -117.133547	0.54[7]	44,407[7]
NWW-185	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 37 and 40[4]	None[5] (See WDP 14)	Yes/No	Disturbed Land	Unvegetated, single-thread feature within disturbed land; originates and terminates within the 2024 ARDR Addendum review area. (See Photos 1 and 2 on Figures 5A – 5B and Attachment E.)	34.853009, -117.132657	<0.01	92
NWW-186	R6	2 - 4	CAST, CVS, CVC, BBS; See ODP 37 and 40[4]	None[5] (See WDP 14)	Yes/No	Disturbed Land	Unvegetated, single-thread feature within disturbed land; originates and terminates within the 2024 ARDR Addendum review area. (See Photos 3 and 4 on Figures 5A – 5B and Attachment E.)	34.853376, -117.132649	0.01	143
NWW-187	R6	2 - 4	CAST, CVS, CVC, BBS; See ODP 37 and 40[4]	None[5] (See WDP 14)	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, double-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; originates and terminates within the 2024 ARDR Addendum review area. (See Photos 5 and 6 on Figures 5A – 5B and Attachment E.)	34.853977, -117.132836	0.03	396
NWW-188	R4	1 - 8	CAST, CVS, CVC, BBS;	None[5] (See WDP 14)	Yes/No	*Larrea tridentata –*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia*	34.856810, -117.131280	0.31	1,952

			See ODP 37 and 40[4]			*Ambrosia dumosa* Shrubland Alliance[6]	*dumosa* Shrubland Alliance; originates and terminates within the 2024 ARDR Addendum review area. (See Photos 7 and 8 on Figures 5A – 5B and Attachment E.)			
								Total[8]	0.89	7,023

[1] OHWM Indicators: CAST = Change in average sediment texture; CVS = Change in vegetation species; CVC = Change in vegetation cover; BBS = Break in bank slope
[2] Wetland Parameters: HV = Hydrophytic vegetation; HS = Hydric soils; WH = Wetland hydrology
[3] See Figure 6 for all vegetation communities present within/around each aquatic resource.
[4] Based on a representative ODP taken within an aquatic resource with similar conditions.
[5] Based on a representative WDP taken within an aquatic resource with similar conditions.
[6] Unvegetated within mapped vegetation community; however, no vegetation technically present within the OHWM.
[7] Acreage and linear feet only provided for portion of aquatic resource located within the 2024 ARDR addendum review area.
[8] Acreages and linear feet totals were summed using raw numbers provided during GIS analysis (available upon request) and thus, the sum of the total rounded numbers may not directly add up in this table.

Table G-2. Aquatic Resource Summary for 2024 ARDR Addendum Review Area: CDFW

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-89	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 13	Primarily unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; meanders in and out of the 2023 ARDR addendum review area before continuing into the 2022 review area and through a culvert along National Trails Hwy/Main St into the 2024 ARDR Addendum review area (See Photos 9-10 on Figures 5A-5B and Attachment E).	34.860010, -117.133547	0.91[4]	4,400[4]
NWW-185	Unvegetated Streambed[2]	Disturbed Land	2 - 4	Unvegetated, single-thread feature within disturbed land; originates and terminates within the 2024 ARDR Addendum review area. (See Photos 1 and 2 on Figures 5A – 5B and Attachment E).	34.853009, -117.132657	0.01	92
NWW-186	Unvegetated Streambed[2]	Disturbed Land	2 - 4	Unvegetated, single-thread feature within disturbed land; originates and terminates within the 2024 ARDR Addendum review area. (See Photos 3 and 4 on Figures 5A – 5B and Attachment E).	34.853376, -117.132649	0.01	143
NWW-187	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 5	Unvegetated, double-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; originates and terminates within the 2024 ARDR Addendum review area. (See Photos 5 and 6 on Figures 5A – 5B and Attachment E).	34.853977, -117.132836	0.03	396
NWW-188	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 12	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; originates and terminates within the 2024 ARDR Addendum review area. (See Photos 7 and 8 on Figures 5A – 5B and Attachment E).	34.856810, -117.131280	0.47	1,952
Watercourse B	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Low-flow, active, and braided channels within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; originates as runoff from Mockingbird Street, includes a multi-thread portion of NWW-89 as well as EF-11 through EF-13, and terminates as sheet flow on Delaney Road (See Photo 17 on Figure 5C and Appendix E).	34.856758, -117.137516	1.56	N/A[7]

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
Watercourse C	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Low-flow, active, and braided channels within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; originates as runoff from Waverly Avenue, includes a multi-thread portion of NWW-89 and terminates by re-channelizing into a single thread region of NWW-89. (See Photo 21 on Figure 5C and Appendix E).	34.858062, -117.135899	0.12	N/A[7]
					Total[5]	3.11	7,023

[1] Corresponds with the approximate stream bank widths observed during delineation. Width range accounts for entirety of streambed delineated, not individual vegetation communities.
[2] A "streambed" under CFGC Section 1602 includes the channel of a watercourse that is generally defined to include the depression between the banks worn by the regular and usual flow of water.
[3] Unvegetated streambed within mapped vegetation community; however, no vegetation technically present within the streambed.
[4] Acreage and linear feet only provided for portion of aquatic resource located within the 2024 ARDR addendum review area.
[5] Acreages and linear feet totals were summed using raw numbers provided during GIS analysis (available upon request) and thus, the sum of the total rounded numbers may not directly add up in this table.
[6] A "watercourse" extends beyond the streambed and can consist of associated features such as low-flow, active, and braided channels and banks associated with islands, and secondary channels within the bounds of a larger channel complex (Vyverberg & Brady 2013)
[7] Linear feet not calculated for watercourse to avoid redundant linear foot calculation where such areas overlap with streambed. 3 A "streambed" under CFGC Section 1602 includes the channel of a watercourse that is generally defined to include the depression between the banks worn by the regular and usual flow of water.

ATTACHMENT H

ORM BULK UPLOAD AQUATIC RESOURCES OR CONSOLIDATED EXCEL SPREADSHEET

(***SUPERSEDES ATTACHMENT G OF THE 2023 ARDR ADDENDUM AND APPENDIX I OF THE 2022 ARDR***)

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	NWPR_Determine_Code	Latitude	Longitude	Local_Waterway
NWW-1	CALIFORNIA	R6	RIVERINE	Area	0.016278341	ACRE	DELIN.PJD-404		34.77278668	-117.28465332	Mojave River
NWW-2	CALIFORNIA	R6	RIVERINE	Area	0.01141841	ACRE	DELIN.PJD-404		34.77284665	-117.28460962	Mojave River
NWW-3	CALIFORNIA	R6	RIVERINE	Area	0.018531401	ACRE	DELIN.PJD-404		34.77322097	-117.28381670	Mojave River
NWW-4	CALIFORNIA	R6	RIVERINE	Area	0.012990956	ACRE	DELIN.PJD-404		34.77365286	-117.28303575	Mojave River
NWW-5	CALIFORNIA	R6	RIVERINE	Area	0.010801573	ACRE	DELIN.PJD-404		34.77373358	-117.28286858	Mojave River
NWW-6	CALIFORNIA	R6	RIVERINE	Area	0.01251526	ACRE	DELIN.PJD-404		34.77465215	-117.28170142	Mojave River
NWW-7	CALIFORNIA	R6	RIVERINE	Area	0.010214497	ACRE	DELIN.PJD-404		34.77667409	-117.27878631	Mojave River
NWW-8	CALIFORNIA	R6	RIVERINE	Area	0.007110064	ACRE	DELIN.PJD-404		34.77678560	-117.27870544	Mojave River
NWW-9	CALIFORNIA	R6	RIVERINE	Area	0.025525472	ACRE	DELIN.PJD-404		34.77879412	-117.27738386	Mojave River
NWW-10	CALIFORNIA	R6	RIVERINE	Area	0.00258676	ACRE	DELIN.PJD-404		34.77839910	-117.27674330	Mojave River
NWW-11	CALIFORNIA	R6	RIVERINE	Area	0.015518389	ACRE	DELIN.PJD-404		34.77837729	-117.27647789	Mojave River
NWW-12	CALIFORNIA	R6	RIVERINE	Area	0.005914291	ACRE	DELIN.PJD-404		34.77867006	-117.27612138	Mojave River
NWW-13	CALIFORNIA	R6	RIVERINE	Area	0.008761386	ACRE	DELIN.PJD-404		34.77871240	-117.27602421	Mojave River
NWW-14	CALIFORNIA	R6	RIVERINE	Area	0.009298952	ACRE	DELIN.PJD-404		34.77888564	-117.27582686	Mojave River
NWW-15	CALIFORNIA	R6	RIVERINE	Area	0.013955216	ACRE	DELIN.PJD-404		34.77897755	-117.27558467	Mojave River
NWW-16	CALIFORNIA	R6	RIVERINE	Area	0.074980734	ACRE	DELIN.PJD-404		34.78427582	-117.26266824	Mojave River
NWW-17	CALIFORNIA	R6	RIVERINE	Area	0.049261711	ACRE	DELIN.PJD-404		34.78436063	-117.26210438	Mojave River
NWW-18	CALIFORNIA	R6	RIVERINE	Area	0.007276247	ACRE	DELIN.PJD-404		34.78694821	-117.25260514	Mojave River
NWW-19	CALIFORNIA	R6	RIVERINE	Area	0.008749993	ACRE	DELIN.PJD-404		34.78731771	-117.25176124	Mojave River
NWW-20	CALIFORNIA	R6	RIVERINE	Area	0.649327705	ACRE	DELIN.PJD-404		34.79118942	-117.24186771	Mojave River
NWW-21	CALIFORNIA	R6	RIVERINE	Area	0.030927581	ACRE	DELIN.PJD-404		34.79580995	-117.22844984	Mojave River
NWW-22	CALIFORNIA	R6	RIVERINE	Area	0.015264922	ACRE	DELIN.PJD-404		34.79655915	-117.22780117	Mojave River
NWW-23	CALIFORNIA	R6	RIVERINE	Area	0.016980246	ACRE	DELIN.PJD-404		34.79577560	-117.22816166	Mojave River
NWW-24	CALIFORNIA	R6	RIVERINE	Area	0.120820824	ACRE	DELIN.PJD-404		34.79716045	-117.22775874	Mojave River
NWW-25	CALIFORNIA	R6	RIVERINE	Area	0.067415158	ACRE	DELIN.PJD-404		34.79698107	-117.22581535	Mojave River
NWW-26	CALIFORNIA	R6	RIVERINE	Area	0.065951913	ACRE	DELIN.PJD-404		34.79759457	-117.22500824	Mojave River
NWW-27	CALIFORNIA	R6	RIVERINE	Area	0.180558056	ACRE	DELIN.PJD-404		34.79825817	-117.22320368	Mojave River
NWW-28	CALIFORNIA	R6	RIVERINE	Area	0.008685874	ACRE	DELIN.PJD-404		34.79781859	-117.22212717	Mojave River
NWW-29	CALIFORNIA	R6	RIVERINE	Area	0.00222605	ACRE	DELIN.PJD-404		34.79876557	-117.22298274	Mojave River
NWW-30	CALIFORNIA	R6	RIVERINE	Area	0.025568832	ACRE	DELIN.PJD-404		34.79850826	-117.22190550	Mojave River
NWW-31	CALIFORNIA	R6	RIVERINE	Area	0.009244953	ACRE	DELIN.PJD-404		34.79858276	-117.22124669	Mojave River
NWW-32	CALIFORNIA	R6	RIVERINE	Area	0.002273815	ACRE	DELIN.PJD-404		34.79845614	-117.22006550	Mojave River
NWW-33	CALIFORNIA	R6	RIVERINE	Area	0.020177257	ACRE	DELIN.PJD-404		34.79932170	-117.21984578	Mojave River
NWW-34	CALIFORNIA	R6	RIVERINE	Area	0.026346639	ACRE	DELIN.PJD-404		34.80095511	-117.21581825	Mojave River
NWW-35	CALIFORNIA	R6	RIVERINE	Area	0.006240112	ACRE	DELIN.PJD-404		34.80729017	-117.20328971	Mojave River
NWW-36	CALIFORNIA	R6	RIVERINE	Area	0.008374707	ACRE	DELIN.PJD-404		34.80873818	-117.20155472	Mojave River
NWW-37	CALIFORNIA	R6	RIVERINE	Area	0.010649336	ACRE	DELIN.PJD-404		34.80918874	-117.20105374	Mojave River
NWW-38	CALIFORNIA	R6	RIVERINE	Area	0.008335707	ACRE	DELIN.PJD-404		34.80931564	-117.20089181	Mojave River
NWW-39	CALIFORNIA	R6	RIVERINE	Area	0.004211966	ACRE	DELIN.PJD-404		34.80967074	-117.20047139	Mojave River
NWW-40	CALIFORNIA	R6	RIVERINE	Area	0.011020279	ACRE	DELIN.PJD-404		34.81009911	-117.19997547	Mojave River
NWW-41	CALIFORNIA	R6	RIVERINE	Area	0.005998602	ACRE	DELIN.PJD-404		34.81032263	-117.19971840	Mojave River
NWW-42	CALIFORNIA	R6	RIVERINE	Area	0.016624394	ACRE	DELIN.PJD-404		34.81142504	-117.19842435	Mojave River
NWW-43	CALIFORNIA	R6	RIVERINE	Area	0.132283244	ACRE	DELIN.PJD-404		34.82669287	-117.18851109	Mojave River
NWW-44	CALIFORNIA	R6	RIVERINE	Area	3.13091042	ACRE	DELIN.PJD-404		34.82924770	-117.18642872	Mojave River
NWW-45	CALIFORNIA	R6	RIVERINE	Area	0.209015758	ACRE	DELIN.PJD-404		34.83468444	-117.18223737	Mojave River
NWW-46	CALIFORNIA	R6	RIVERINE	Area	0.062388071	ACRE	DELIN.PJD-404		34.83516795	-117.18147873	Mojave River
NWW-47	CALIFORNIA	R6	RIVERINE	Area	0.04048341	ACRE	DELIN.PJD-404		34.83370557	-117.17628314	Mojave River
NWW-48	CALIFORNIA	R6	RIVERINE	Area	0.034591479	ACRE	DELIN.PJD-404		34.83699055	-117.18112184	Mojave River
NWW-49	CALIFORNIA	R6	RIVERINE	Area	0.726772781	ACRE	DELIN.PJD-404		34.83611047	-117.17906427	Mojave River
NWW-50	CALIFORNIA	R6	RIVERINE	Area	0.021279698	ACRE	DELIN.PJD-404		34.83723900	-117.17920300	Mojave River
NWW-51	CALIFORNIA	R6	RIVERINE	Area	0.038764831	ACRE	DELIN.PJD-404		34.83746355	-117.17807757	Mojave River
NWW-52	CALIFORNIA	R6	RIVERINE	Area	0.038923469	ACRE	DELIN.PJD-404		34.83786733	-117.17767859	Mojave River
NWW-53	CALIFORNIA	R6	RIVERINE	Area	0.066434864	ACRE	DELIN.PJD-404		34.83764824	-117.17710118	Mojave River
NWW-54	CALIFORNIA	R6	RIVERINE	Area	0.019129796	ACRE	DELIN.PJD-404		34.83520967	-117.17261912	Mojave River
NWW-55	CALIFORNIA	R6	RIVERINE	Area	0.020592088	ACRE	DELIN.PJD-404		34.83545384	-117.17186322	Mojave River
NWW-56	CALIFORNIA	R6	RIVERINE	Area	0.01789333	ACRE	DELIN.PJD-404		34.83577343	-117.17261681	Mojave River
NWW-57	CALIFORNIA	R6	RIVERINE	Area	0.023183732	ACRE	DELIN.PJD-404		34.83601382	-117.17263063	Mojave River
NWW-58	CALIFORNIA	R6	RIVERINE	Area	0.496140759	ACRE	DELIN.PJD-404		34.83834849	-117.17608356	Mojave River
NWW-59	CALIFORNIA	R6	RIVERINE	Area	0.74721611	ACRE	DELIN.PJD-404		34.83824813	-117.17416003	Mojave River
NWW-60	CALIFORNIA	R6	RIVERINE	Area	0.166348296	ACRE	DELIN.PJD-404		34.84040084	-117.17974962	Mojave River
NWW-61	CALIFORNIA	R6	RIVERINE	Area	0.045607722	ACRE	DELIN.PJD-404		34.83703132	-117.16979074	Mojave River
NWW-62	CALIFORNIA	R6	RIVERINE	Area	0.136690644	ACRE	DELIN.PJD-404		34.84039716	-117.17530721	Mojave River
NWW-63	CALIFORNIA	R6	RIVERINE	Area	0.195265841	ACRE	DELIN.PJD-404		34.84093356	-117.17427517	Mojave River
NWW-64	CALIFORNIA	R6	RIVERINE	Area	0.037176669	ACRE	DELIN.PJD-404		34.84171085	-117.17441834	Mojave River
NWW-65	CALIFORNIA	R6	RIVERINE	Area	0.022213123	ACRE	DELIN.PJD-404		34.84229327	-117.17364316	Mojave River
NWW-66	CALIFORNIA	R6	RIVERINE	Area	0.078989769	ACRE	DELIN.PJD-404		34.84314736	-117.17245700	Mojave River
NWW-67	CALIFORNIA	R6	RIVERINE	Area	0.219301464	ACRE	DELIN.PJD-404		34.84113135	-117.17198414	Mojave River
NWW-68	CALIFORNIA	R6	RIVERINE	Area	0.338062922	ACRE	DELIN.PJD-404		34.83999196	-117.17009380	Mojave River
NWW-69	CALIFORNIA	R6	RIVERINE	Area	0.677821776	ACRE	DELIN.PJD-404		34.84293300	-117.16862452	Mojave River
NWW-70	CALIFORNIA	R6	RIVERINE	Area	2.087638087	ACRE	DELIN.PJD-404		34.84220858	-117.16640809	Mojave River
NWW-71	CALIFORNIA	R6	RIVERINE	Area	0.103867289	ACRE	DELIN.PJD-404		34.84455410	-117.16571821	Mojave River
NWW-72	CALIFORNIA	R6	RIVERINE	Area	0.039455635	ACRE	DELIN.PJD-404		34.84536977	-117.16623561	Mojave River
NWW-73	CALIFORNIA	R6	RIVERINE	Area	1.239925523	ACRE	DELIN.PJD-404		34.84445324	-117.16354495	Mojave River
NWW-74	CALIFORNIA	R6	RIVERINE	Area	0.166295534	ACRE	DELIN.PJD-404		34.84694969	-117.16275562	Mojave River
NWW-75	CALIFORNIA	R6	RIVERINE	Area	0.038744915	ACRE	DELIN.PJD-404		34.84554977	-117.15997825	Mojave River
NWW-76	CALIFORNIA	R6	RIVERINE	Area	0.861637745	ACRE	DELIN.PJD-404		34.84801880	-117.15913332	Mojave River
NWW-77	CALIFORNIA	R6	RIVERINE	Area	0.160267403	ACRE	DELIN.PJD-404		34.84712950	-117.15639618	Mojave River
NWW-78	CALIFORNIA	R6	RIVERINE	Area	0.012846397	ACRE	DELIN.PJD-404		34.84884536	-117.15724225	Mojave River
NWW-79	CALIFORNIA	R6	RIVERINE	Area	0.134344187	ACRE	DELIN.PJD-404		34.85024761	-117.15805737	Mojave River
NWW-80	CALIFORNIA	R6	RIVERINE	Area	2.024165545	ACRE	DELIN.PJD-404		34.85068017	-117.15456372	Mojave River
NWW-81	CALIFORNIA	R6	RIVERINE	Area	0.119515834	ACRE	DELIN.PJD-404		34.85333976	-117.15626891	Mojave River
NWW-82	CALIFORNIA	R6	RIVERINE	Area	0.641763198	ACRE	DELIN.PJD-404		34.85443320	-117.15278385	Mojave River
NWW-83	CALIFORNIA	R6	RIVERINE	Area	0.01445635	ACRE	DELIN.PJD-404		34.85623860	-117.15316665	Mojave River
NWW-84	CALIFORNIA	R6	RIVERINE	Area	0.020877849	ACRE	DELIN.PJD-404		34.85495794	-117.14606648	Mojave River
NWW-85	CALIFORNIA	R6	RIVERINE	Area	0.310567715	ACRE	DELIN.PJD-404		34.85728058	-117.14989756	Mojave River
NWW-86	CALIFORNIA	R6	RIVERINE	Area	0.015149523	ACRE	DELIN.PJD-404		34.85669782	-117.14796479	Mojave River
NWW-87	CALIFORNIA	R6	RIVERINE	Area	0.132380603	ACRE	DELIN.PJD-404		34.85793592	-117.14794895	Mojave River
NWW-88	CALIFORNIA	R6	RIVERINE	Area	0.037291294	ACRE	DELIN.PJD-404		34.85890624	-117.14830839	Mojave River
NWW-89	CALIFORNIA	R6	RIVERINE	Area	1.891732793	ACRE	DELIN.PJD-404		34.86371081	-117.13465496	Mojave River
NWW-90	CALIFORNIA	R6	RIVERINE	Area	0.079602313	ACRE	DELIN.PJD-404		34.86055151	-117.14279481	Mojave River
NWW-91	CALIFORNIA	R6	RIVERINE	Area	0.006952585	ACRE	DELIN.PJD-404		34.86314731	-117.14056368	Mojave River
NWW-92	CALIFORNIA	R6	RIVERINE	Area	8.308098646	ACRE	DELIN.PJD-404		34.87445540	-117.13129081	Mojave River
NWW-93	CALIFORNIA	R6	RIVERINE	Area	0.058704783	ACRE	DELIN.PJD-404		34.87348522	-117.11870897	Mojave River
NWW-94	CALIFORNIA	R6	RIVERINE	Area	0.0559	ACRE	DELIN.PJD-404		34.87405511	-117.11737186	Mojave River
NWW-95	CALIFORNIA	R6	RIVERINE	Area	0.03178225	ACRE	DELIN.PJD-404		34.87708727	-117.11092605	Mojave River
NWW-96	CALIFORNIA	R6	RIVERINE	Area	0.050860685	ACRE	DELIN.PJD-404		34.87826790	-117.10870766	Mojave River
NWW-97	CALIFORNIA	R6	RIVERINE	Area	0.034648103	ACRE	DELIN.PJD-404		34.87942249	-117.10555181	Mojave River
NWW-98	CALIFORNIA	R6	RIVERINE	Area	0.011527437	ACRE	DELIN.PJD-404		34.88001687	-117.10595039	Mojave River
NWW-99	CALIFORNIA	R6	RIVERINE	Area	0.027752881	ACRE	DELIN.PJD-404		34.88093572	-117.10122600	Mojave River
NWW-100	CALIFORNIA	R6	RIVERINE	Area	0.341549191	ACRE	DELIN.PJD-404		34.88260220	-117.09540682	Mojave River
NWW-101	CALIFORNIA	R6	RIVERINE	Area	0.286640572	ACRE	DELIN.PJD-404		34.88341575	-117.09267129	Mojave River
NWW-102	CALIFORNIA	R6	RIVERINE	Area	0.008948492	ACRE	DELIN.PJD-404		34.88303805	-117.09193037	Mojave River
NWW-103	CALIFORNIA	R6	RIVERINE	Area	0.011154835	ACRE	DELIN.PJD-404		34.79742562	-117.22308011	Mojave River
NWW-104	CALIFORNIA	R6	RIVERINE	Area	0.010103612	ACRE	DELIN.PJD-404		34.79750974	-117.22288568	Mojave River
NWW-105	CALIFORNIA	R6	RIVERINE	Area	0.005920278	ACRE	DELIN.PJD-404		34.82871205	-117.18237252	Mojave River
NWW-106	CALIFORNIA	R6	RIVERINE	Area	0.011246819	ACRE	DELIN.PJD-404		34.82890709	-117.18208448	Mojave River
NWW-107	CALIFORNIA	R6	RIVERINE	Area	0.004889903	ACRE	DELIN.PJD-404		34.83555520	-117.16950120	Mojave River
NWW-108	CALIFORNIA	R6	RIVERINE	Area	0.013087895	ACRE	DELIN.PJD-404		34.84705328	-117.15190438	Mojave River
NWW-109	CALIFORNIA	R6	RIVERINE	Area	106.8706822	ACRE	DELIN.PJD-404		34.86327700	-117.17012800	Mojave River
NWW-110	CALIFORNIA	R6	RIVERINE	Area	0.09059778	ACRE	DELIN.PJD-404		34.86285093	-117.02938746	Mojave River
NWW-111	CALIFORNIA	R6	RIVERINE	Area	0.009110204	ACRE	DELIN.PJD-404		34.86232779	-117.03015416	Mojave River

NWW-112	CALIFORNIA	R6	RIVERINE	Area	0.009124609	ACRE	DELIN.PJD-404	34.86311432	-117.03113286	Mojave River
NWW-113	CALIFORNIA	R6	RIVERINE	Area	0.108621536	ACRE	DELIN.PJD-404	34.86302125	-117.03037808	Mojave River
NWW-114	CALIFORNIA	R6	RIVERINE	Area	0.053164862	ACRE	DELIN.PJD-404	34.86390622	-117.03005978	Mojave River
NWW-115	CALIFORNIA	R6	RIVERINE	Area	0.005908986	ACRE	DELIN.PJD-404	34.86394839	-117.03054830	Mojave River
NWW-116	CALIFORNIA	R6	RIVERINE	Area	0.000514915	ACRE	DELIN.PJD-404	34.86374504	-117.03084293	Mojave River
NWW-117	CALIFORNIA	R6	RIVERINE	Area	0.009033346	ACRE	DELIN.PJD-404	34.86394805	-117.03116052	Mojave River
NWW-118	CALIFORNIA	R6	RIVERINE	Area	0.002508759	ACRE	DELIN.PJD-404	34.86378427	-117.03150743	Mojave River
NWW-119	CALIFORNIA	R6	RIVERINE	Area	0.046043131	ACRE	DELIN.PJD-404	34.86398084	-117.03180905	Mojave River
NWW-120	CALIFORNIA	R6	RIVERINE	Area	0.066264712	ACRE	DELIN.PJD-404	34.86232486	-117.03221879	Mojave River
NWW-121	CALIFORNIA	R6	RIVERINE	Area	0.013367733	ACRE	DELIN.PJD-404	34.86316775	-117.03222142	Mojave River
NWW-122	CALIFORNIA	R6	RIVERINE	Area	0.008105374	ACRE	DELIN.PJD-404	34.86354669	-117.03223616	Mojave River
NWW-123	CALIFORNIA	R6	RIVERINE	Area	0.004805313	ACRE	DELIN.PJD-404	34.86329369	-117.03244001	Mojave River
NWW-124	CALIFORNIA	R6	RIVERINE	Area	0.010675353	ACRE	DELIN.PJD-404	34.86337381	-117.03339989	Mojave River
NWW-125	CALIFORNIA	R6	RIVERINE	Area	0.026801959	ACRE	DELIN.PJD-404	34.86384743	-117.03328967	Mojave River
NWW-126	CALIFORNIA	R6	RIVERINE	Area	0.010158732	ACRE	DELIN.PJD-404	34.86380595	-117.03392799	Mojave River
NWW-127	CALIFORNIA	R6	RIVERINE	Area	0.020189897	ACRE	DELIN.PJD-404	34.86420319	-117.03379067	Mojave River
NWW-128	CALIFORNIA	R6	RIVERINE	Area	0.019269448	ACRE	DELIN.PJD-404	34.86396381	-117.03404283	Mojave River
NWW-129	CALIFORNIA	R6	RIVERINE	Area	0.007771455	ACRE	DELIN.PJD-404	34.86407838	-117.03419885	Mojave River
NWW-130	CALIFORNIA	R6	RIVERINE	Area	0.020389453	ACRE	DELIN.PJD-404	34.86424316	-117.03440303	Mojave River
NWW-131	CALIFORNIA	R6	RIVERINE	Area	0.008419538	ACRE	DELIN.PJD-404	34.86465469	-117.03431020	Mojave River
NWW-132	CALIFORNIA	R6	RIVERINE	Area	0.025007022	ACRE	DELIN.PJD-404	34.86477011	-117.03439272	Mojave River
NWW-133	CALIFORNIA	R6	RIVERINE	Area	0.011296452	ACRE	DELIN.PJD-404	34.86441457	-117.03469498	Mojave River
NWW-134	CALIFORNIA	R6	RIVERINE	Area	0.004391014	ACRE	DELIN.PJD-404	34.86453660	-117.03480019	Mojave River
NWW-135	CALIFORNIA	R6	RIVERINE	Area	0.037859437	ACRE	DELIN.PJD-404	34.86499956	-117.03478356	Mojave River
NWW-136	CALIFORNIA	R6	RIVERINE	Area	0.010230011	ACRE	DELIN.PJD-404	34.86463979	-117.03499287	Mojave River
NWW-137	CALIFORNIA	R6	RIVERINE	Area	0.000947841	ACRE	DELIN.PJD-404	34.86509751	-117.03536249	Mojave River
NWW-138	CALIFORNIA	R6	RIVERINE	Area	0.012173225	ACRE	DELIN.PJD-404	34.86548343	-117.03539444	Mojave River
NWW-139	CALIFORNIA	R6	RIVERINE	Area	0.005076476	ACRE	DELIN.PJD-404	34.86508024	-117.03554022	Mojave River
NWW-140	CALIFORNIA	R6	RIVERINE	Area	0.027517879	ACRE	DELIN.PJD-404	34.86534620	-117.03582613	Mojave River
NWW-141	CALIFORNIA	R6	RIVERINE	Area	0.019071863	ACRE	DELIN.PJD-404	34.86579265	-117.03575124	Mojave River
NWW-142	CALIFORNIA	R6	RIVERINE	Area	0.013609689	ACRE	DELIN.PJD-404	34.86555806	-117.03618176	Mojave River
NWW-143	CALIFORNIA	R6	RIVERINE	Area	0.021211013	ACRE	DELIN.PJD-404	34.86593998	-117.03596793	Mojave River
NWW-144	CALIFORNIA	R6	RIVERINE	Area	0.020014693	ACRE	DELIN.PJD-404	34.86569679	-117.03634085	Mojave River
NWW-145	CALIFORNIA	R6	RIVERINE	Area	0.004926167	ACRE	DELIN.PJD-404	34.86709850	-117.03727300	Mojave River
NWW-146	CALIFORNIA	R6	RIVERINE	Area	0.180392144	ACRE	DELIN.PJD-404	34.86727959	-117.03788910	Mojave River
NWW-147	CALIFORNIA	R6	RIVERINE	Area	0.003398032	ACRE	DELIN.PJD-404	34.86747948	-117.03838012	Mojave River
NWW-148	CALIFORNIA	R6	RIVERINE	Area	0.010120624	ACRE	DELIN.PJD-404	34.86801633	-117.03857326	Mojave River
NWW-149	CALIFORNIA	R6	RIVERINE	Area	0.00940416	ACRE	DELIN.PJD-404	34.86788447	-117.03903021	Mojave River
NWW-150	CALIFORNIA	R6	RIVERINE	Area	0.005265728	ACRE	DELIN.PJD-404	34.86794967	-117.03920062	Mojave River
NWW-151	CALIFORNIA	R6	RIVERINE	Area	0.006929175	ACRE	DELIN.PJD-404	34.86838474	-117.03894621	Mojave River
NWW-152	CALIFORNIA	R6	RIVERINE	Area	0.006536435	ACRE	DELIN.PJD-404	34.86816874	-117.03939449	Mojave River
NWW-153	CALIFORNIA	R6	RIVERINE	Area	0.008568596	ACRE	DELIN.PJD-404	34.86868576	-117.03935877	Mojave River
NWW-154	CALIFORNIA	R6	RIVERINE	Area	0.002923272	ACRE	DELIN.PJD-404	34.86847058	-117.03962488	Mojave River
NWW-155	CALIFORNIA	R6	RIVERINE	Area	0.008395214	ACRE	DELIN.PJD-404	34.86849729	-117.03974763	Mojave River
NWW-156	CALIFORNIA	R6	RIVERINE	Area	0.005831885	ACRE	DELIN.PJD-404	34.86875078	-117.04002497	Mojave River
NWW-157	CALIFORNIA	R6	RIVERINE	Area	0.012470315	ACRE	DELIN.PJD-404	34.86909280	-117.03989785	Mojave River
NWW-158	CALIFORNIA	R6	RIVERINE	Area	0.009109469	ACRE	DELIN.PJD-404	34.86949292	-117.04040865	Mojave River
NWW-159	CALIFORNIA	R6	RIVERINE	Area	0.00573387	ACRE	DELIN.PJD-404	34.86940616	-117.04082180	Mojave River
NWW-160	CALIFORNIA	R6	RIVERINE	Area	0.005981813	ACRE	DELIN.PJD-404	34.86973346	-117.04123198	Mojave River
NWW-161	CALIFORNIA	R6	RIVERINE	Area	0.011565417	ACRE	DELIN.PJD-404	34.87006933	-117.04175596	Mojave River
NWW-162	CALIFORNIA	R6	RIVERINE	Area	0.003918529	ACRE	DELIN.PJD-404	34.87030472	-117.04189896	Mojave River
NWW-163	CALIFORNIA	R6	RIVERINE	Area	0.010570904	ACRE	DELIN.PJD-404	34.87036850	-117.04211737	Mojave River
NWW-164	CALIFORNIA	R6	RIVERINE	Area	0.004842582	ACRE	DELIN.PJD-404	34.87051044	-117.04226228	Mojave River
NWW-165	CALIFORNIA	R6	RIVERINE	Area	0.008399198	ACRE	DELIN.PJD-404	34.87063092	-117.04245875	Mojave River
NWW-166	CALIFORNIA	R6	RIVERINE	Area	0.019133207	ACRE	DELIN.PJD-404	34.87081795	-117.04270644	Mojave River
NWW-167	CALIFORNIA	R6	RIVERINE	Area	0.009385435	ACRE	DELIN.PJD-404	34.87093772	-117.04289578	Mojave River
NWW-168	CALIFORNIA	R6	RIVERINE	Area	0.025214	ACRE	DELIN.PJD-404	34.87142800	-117.04276500	Mojave River
NWW-169	CALIFORNIA	R6	RIVERINE	Area	0.005672	ACRE	DELIN.PJD-404	34.87161700	-117.04284500	Mojave River
NWW-170	CALIFORNIA	R6	RIVERINE	Area	0.010558729	ACRE	DELIN.PJD-404	34.87122106	-117.04325722	Mojave River
NWW-171	CALIFORNIA	R6	RIVERINE	Area	0.030767042	ACRE	DELIN.PJD-404	34.87171480	-117.04385135	Mojave River
NWW-172	CALIFORNIA	R6	RIVERINE	Area	0.026992632	ACRE	DELIN.PJD-404	34.87236404	-117.04397368	Mojave River
NWW-173	CALIFORNIA	R6	RIVERINE	Area	0.004208607	ACRE	DELIN.PJD-404	34.87226418	-117.04436040	Mojave River
NWW-174	CALIFORNIA	R6	RIVERINE	Area	0.004828192	ACRE	DELIN.PJD-404	34.87261139	-117.04491681	Mojave River
NWW-175	CALIFORNIA	R6	RIVERINE	Area	0.016060467	ACRE	DELIN.PJD-404	34.87308077	-117.04544880	Mojave River
NWW-176	CALIFORNIA	R6	RIVERINE	Area	0.008026398	ACRE	DELIN.PJD-404	34.87327389	-117.04567735	Mojave River
NWW-177	CALIFORNIA	R6	RIVERINE	Area	0.057147141	ACRE	DELIN.PJD-404	34.87389305	-117.04593049	Mojave River
NWW-178	CALIFORNIA	R6	RIVERINE	Area	0.005979178	ACRE	DELIN.PJD-404	34.87379653	-117.04621767	Mojave River
NWW-179	CALIFORNIA	R6	RIVERINE	Area	0.002959895	ACRE	DELIN.PJD-404	34.87384688	-117.04634308	Mojave River
NWW-180	CALIFORNIA	R6	RIVERINE	Area	0.030730131	ACRE	DELIN.PJD-404	34.87394468	-117.04659806	Mojave River
NWW-181	CALIFORNIA	R6	RIVERINE	Area	0.003487565	ACRE	DELIN.PJD-404	34.87487166	-117.04697816	Mojave River
NWW-182	CALIFORNIA	R6	RIVERINE	Area	0.067979027	ACRE	DELIN.PJD-404	34.87426778	-117.04710632	Mojave River
NWW-183	CALIFORNIA	R6	RIVERINE	Area	0.056202796	ACRE	DELIN.PJD-404	34.86459438	-117.12052553	Mojave River
NWW-184	CALIFORNIA	R6	RIVERINE	Area	0.020651092	ACRE	DELIN.PJD-404	34.86523217	-117.12208767	Mojave River
NWW-185	CALIFORNIA	R6	RIVERINE	Area	0.004124309	ACRE	DELIN.PJD-404	34.85300850	-117.13265695	Mojave River
NWW-186	CALIFORNIA	R6	RIVERINE	Area	0.009129134	ACRE	DELIN.PJD-404	34.85337643	-117.13264855	Mojave River
NWW-187	CALIFORNIA	R6	RIVERINE	Area	0.026921385	ACRE	DELIN.PJD-404	34.85397730	-117.13283624	Mojave River
NWW-188	CALIFORNIA	R6	RIVERINE	Area	0.312152162	ACRE	DELIN.PJD-404	34.85681032	-117.13128038	Mojave River

ATTACHMENT I

GIS DATA

(PROVIDED ELECTRONICALLY TO AGENCIES)

ATTACHMENT D

JURISDICTIONAL DETERMINATION REQUEST FORMS

(*SUPERSEDES APPENDIX B OF THE 2022 ARDR, ATTACHMENT B OF THE 2023 ARDR ADDENDUM, AND ATTACHMENT C OF THE 2024 ARDR ADDENDUM*)

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: District Name Here

- I am requesting a JD on property located at: south of and abutting Mojave River, along National Trails Hwy between Helendale and CA-247
  (Street Address)
  City/Township/Parish: Unincorporated County: San Bernardino State: CA
  Acreage of Parcel/Review Area for JD: 5,758.1 acres
  Section: Various Township: 8N; 9 N Range: 2W, 3W & 4W
  Latitude (decimal degrees): 34.853903 Longitude (decimal degrees): -117.159799
  (For linear projects, please include the center point of the proposed alignment.)
- Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
- ✓ I currently own this property. ✓ I plan to purchase this property.
  ___ I am an agent/consultant acting on behalf of the requestor.
  ✓ Other (please explain): Right-of-entry to Corps staff may be coordinated with BNSF and property owners until properties purchased by BNSF.
- Reason for request: (check as many as applicable)
  ___ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
  ___ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
  ✓ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
  ___ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
  ___ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
  ___ A Corps JD is required in order to obtain my local/state authorization.
  ___ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
  ___ I believe that the site may be comprised entirely of dry land.
  ___ Other: _____
- Type of determination being requested:
  ___ I am requesting an approved JD.
  ✓ I am requesting a preliminary JD.
  ___ I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
  ___ I am unclear as to which JD I would like to request and require additional information to inform my decision.

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

Note: Right-of-entry to Corps staff may be coordinated with BNSF and property owners until properties purchased by BNSF.

*Signature: David Rankin Date: 3/4/25

- Typed or printed name: David Rankin

Company name: BNSF Railway Company

Address: 2500 Lou Menk Drive, AOB-3
Fort Worth, TX 76131

Daytime phone no.: 817-352-2383

Email address: David.Rankin@BNSF.com

*Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD:

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: David Rankin, BNSF Railway, 2500 Lou Menk Dr, AOB-3, Forth Worth, TX 76131

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Los Angeles District

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: CA County/parish/borough: San Bernardino City: Barstow/Unincorporated

Center coordinates of site (lat/long in degree decimal format):

Lat.: 34.853903 Long.: -117.159799

Universal Transverse Mercator: 11S 485392.2m E 3856853.3m N

Name of nearest waterbody: Mojave River

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
		See	Attached		

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- [x] Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
  Map: 2025 ARDR Addendum, prepared by Rocks Biological Consulting.
- [x] Data sheets prepared/submitted by or on behalf of the PJD requestor.
  - [ ] Office concurs with data sheets/delineation report.
  - [ ] Office does not concur with data sheets/delineation report. Rationale: _____.
- [ ] Data sheets prepared by the Corps: _____.
- [ ] Corps navigable waters' study: _____.
- [x] U.S. Geological Survey Hydrologic Atlas: 2025 ARDR Addendum, Figure 2; USGS NHD 2020.
  - [x] USGS NHD data.
  - [x] USGS 8 and 12 digit HUC maps.
- [x] U.S. Geological Survey map(s). Cite scale & quad name: 2025 ARDR Addendum, Figure 2; 1" = 4,500'; USGS 7.5' Quads.
- [x] Natural Resources Conservation Service Soil Survey. Citation: 2025 ARDR Addendum, Figure 4; USDA NRCS 2018.
- [x] National wetlands inventory map(s). Cite name: 2025 ARDR Addendum, Figure 4; USFWS NWI 2019.
- [ ] State/local wetland inventory map(s): _____.
- [ ] FEMA/FIRM maps: _____.
- [ ] 100-year Floodplain Elevation is: _____.(National Geodetic Vertical Datum of 1929)
- [x] Photographs: [x] Aerial (Name & Date): 2025 ARDR Addendum, Figures 1 & 4-6 (Maxar, Esri 2020).
  or [x] Other (Name & Date): 2025 ARDR Addendum Attachment G, Site Photographs.
- [ ] Previous determination(s). File no. and date of response letter: _____.
- [x] Other information (please specify): 2025 ARDR Addendum, prepared by Rocks Biological Consulting.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

_____
Signature and date of
Regulatory staff member
completing PJD

Dave Rankin 3/4/25
_____
Signature and date of
person requesting PJD
(REQUIRED, unless obtaining
the signature is impracticable)[1]

[1] Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resources (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
NWW-1	34.772787	-117.284653	0.02 ac/123 ln ft	Non-wetland waters	Section 404
NWW-2	34.772847	-117.284610	0.01 ac/121 ln ft	Non-wetland waters	Section 404
NWW-3	34.773221	-117.283817	0.02 ac/132 ln ft	Non-wetland waters	Section 404
NWW-4	34.773653	-117.283036	0.01 ac/113 ln ft	Non-wetland waters	Section 404
NWW-5	34.773734	-117.282869	0.01 ac/109 ln ft	Non-wetland waters	Section 404
NWW-6	34.774652	-117.281701	0.01 ac/126 ln ft	Non-wetland waters	Section 404
NWW-7	34.776674	-117.278786	0.01 ac/119 ln ft	Non-wetland waters	Section 404
NWW-8	34.776786	-117.278705	0.01 ac/96 ln ft	Non-wetland waters	Section 404
NWW-9	34.778794	-117.277384	0.03 ac/107 ln ft	Non-wetland waters	Section 404
NWW-10	34.778399	-117.276743	<0.01 ac/52 ln ft	Non-wetland waters	Section 404
NWW-11	34.778377	-117.276478	0.02 ac/223 ln ft	Non-wetland waters	Section 404
NWW-12	34.778670	-117.276121	0.01 ac/127 ln ft	Non-wetland waters	Section 404
NWW-13	34.778712	-117.276024	0.01 ac/113 ln ft	Non-wetland waters	Section 404
NWW-14	34.778886	-117.275827	0.01 ac/133 ln ft	Non-wetland waters	Section 404
NWW-15	34.778978	-117.275585	0.01 ac/184 ln ft	Non-wetland waters	Section 404
NWW-16	34.784276	-117.262668	0.07 ac/214 ln ft	Non-wetland waters	Section 404
NWW-17	34.784361	-117.262104	0.05 ac/81 ln ft	Non-wetland waters	Section 404
NWW-18	34.786948	-117.252605	0.01 ac/104 ln ft	Non-wetland waters	Section 404
NWW-19	34.787318	-117.251761	0.01 ac/114 ln ft	Non-wetland waters	Section 404
NWW-20	34.791189	-117.241868	0.65 ac/852 ln ft	Non-wetland waters	Section 404
NWW-21	34.795810	-117.228450	0.03 ac/428 ln ft	Non-wetland waters	Section 404
NWW-22	34.796559	-117.227801	0.02 ac/176 ln ft	Non-wetland waters	Section 404
NWW-23	34.795776	-117.228162	0.02 ac/221 ln ft	Non-wetland waters	Section 404
NWW-24	34.797160	-117.227759	0.12 ac/840 ln ft	Non-wetland waters	Section 404
NWW-25	34.796981	-117.225815	0.07 ac/727 ln ft	Non-wetland waters	Section 404
NWW-26	34.797595	-117.225008	0.07 ac/522 ln ft	Non-wetland waters	Section 404
NWW-27	34.798258	-117.223204	0.18 ac/1,155 ln ft	Non-wetland waters	Section 404
NWW-28	34.797819	-117.222127	0.01 ac/109 ln ft	Non-wetland waters	Section 404
NWW-29	34.798766	-117.222983	<0.01 ac/96 ln ft	Non-wetland waters	Section 404
NWW-30	34.798508	-117.221906	0.03 ac/311 ln ft	Non-wetland waters	Section 404
NWW-31	34.798583	-117.221247	0.01 ac/145 ln ft	Non-wetland waters	Section 404
NWW-32	34.798456	-117.220065	<0.01 ac/32 ln ft	Non-wetland waters	Section 404
NWW-33	34.799322	-117.219846	0.02 ac/171 ln ft	Non-wetland waters	Section 404
NWW-34	34.800955	-117.215818	0.03 ac/572 ln ft	Non-wetland waters	Section 404

NWW-35	34.807290	-117.203290	0.01 ac/66 ln ft	Non-wetland waters	Section 404
NWW-36	34.808738	-117.201555	0.01 ac/183 ln ft	Non-wetland waters	Section 404
NWW-37	34.809189	-117.201054	0.01 ac/150 ln ft	Non-wetland waters	Section 404
NWW-38	34.809316	-117.200892	0.01 ac/141 ln ft	Non-wetland waters	Section 404
NWW-39	34.809671	-117.200471	<0.01 ac/182 ln ft	Non-wetland waters	Section 404
NWW-40	34.810099	-117.199975	0.01 ac/155 ln ft	Non-wetland waters	Section 404
NWW-41	34.810323	-117.199718	0.01 ac/172 ln ft	Non-wetland waters	Section 404
NWW-42	34.811425	-117.198424	0.02 ac/175 ln ft	Non-wetland waters	Section 404
NWW-43	34.826693	-117.188511	0.13 ac/475 ln ft	Non-wetland waters	Section 404
NWW-44	34.829248	-117.186429	3.13 ac/5,956 ln ft	Non-wetland waters	Section 404
NWW-45	34.834684	-117.182237	0.21 ac/2,468 ln ft	Non-wetland waters	Section 404
NWW-46	34.835168	-117.181479	0.06 ac/1,172 ln ft	Non-wetland waters	Section 404
NWW-47	34.833706	-117.176283	0.04 ac/580 ln ft	Non-wetland waters	Section 404
NWW-48	34.836991	-117.181122	0.03 ac/481 ln ft	Non-wetland waters	Section 404
NWW-49	34.836110	-117.179064	0.73 ac/7,138 ln ft	Non-wetland waters	Section 404
NWW-50	34.837239	-117.179203	0.02 ac/461 ln ft	Non-wetland waters	Section 404
NWW-51	34.837464	-117.178078	0.04 ac/842 ln ft	Non-wetland waters	Section 404
NWW-52	34.837867	-117.177679	0.04 ac/562 ln ft	Non-wetland waters	Section 404
NWW-53	34.837648	-117.177101	0.07 ac/1,131 ln ft	Non-wetland waters	Section 404
NWW-54	34.835210	-117.172619	0.02 ac/354 ln ft	Non-wetland waters	Section 404
NWW-55	34.835454	-117.171863	0.02 ac/170 ln ft	Non-wetland waters	Section 404
NWW-56	34.835773	-117.172617	0.02 ac/252 ln ft	Non-wetland waters	Section 404
NWW-57	34.836014	-117.172631	0.02 ac/264 ln ft	Non-wetland waters	Section 404
NWW-58	34.838348	-117.176084	0.50 ac/4,358 ln ft	Non-wetland waters	Section 404
NWW-59	34.838248	-117.174160	0.75 ac/8,262 ln ft	Non-wetland waters	Section 404
NWW-60	34.840401	-117.179750	0.17 ac/188 ln ft	Non-wetland waters	Section 404
NWW-61	34.837031	-117.169791	0.05 ac/910 ln ft	Non-wetland waters	Section 404
NWW-62	34.840397	-117.175307	0.14 ac/1,696 ln ft	Non-wetland waters	Section 404
NWW-63	34.840934	-117.174275	0.20 ac/2,174 ln ft	Non-wetland waters	Section 404
NWW-64	34.841711	-117.174418	0.04 ac/538 ln ft	Non-wetland waters	Section 404
NWW-65	34.842293	-117.173643	0.02 ac/482 ln ft	Non-wetland waters	Section 404
NWW-66	34.843147	-117.172457	0.08 ac/1,260 ln ft	Non-wetland waters	Section 404
NWW-67	34.841131	-117.171984	0.22 ac/2,373 ln ft	Non-wetland waters	Section 404
NWW-68	34.839992	-117.170094	0.34 ac/5,708 ln ft	Non-wetland waters	Section 404
NWW-69	34.842933	-117.168625	0.68 ac/6,858 ln ft	Non-wetland waters	Section 404
NWW-70	34.842209	-117.166408	2.09 ac/18,554 ln ft	Non-wetland waters	Section 404
NWW-71	34.844554	-117.165718	0.10 ac/1,128 ln ft	Non-wetland waters	Section 404
NWW-72	34.845370	-117.166236	0.04 ac/427 ln ft	Non-wetland waters	Section 404
NWW-73	34.844453	-117.163545	1.24 ac/13,348 ln ft	Non-wetland waters	Section 404
NWW-74	34.846950	-117.162756	0.17 ac/1,582 ln ft	Non-wetland waters	Section 404
NWW-75	34.845550	-117.159978	0.04 ac/487 ln ft	Non-wetland waters	Section 404
NWW-76	34.848019	-117.159133	0.86 ac/8,649 ln ft	Non-wetland waters	Section 404
NWW-77	34.847129	-117.156396	0.16 ac/1,677 ln ft	Non-wetland waters	Section 404

NWW-78	34.848845	-117.157242	0.01 ac/278 ln ft	Non-wetland waters	Section 404
NWW-79	34.850248	-117.158057	0.13 ac/1,874 ln ft	Non-wetland waters	Section 404
NWW-80	34.850680	-117.154564	2.02 ac/15,877 ln ft	Non-wetland waters	Section 404
NWW-81	34.853340	-117.156269	0.12 ac/1,229 ln ft	Non-wetland waters	Section 404
NWW-82	34.854433	-117.152784	0.64 ac/8,328 ln ft	Non-wetland waters	Section 404
NWW-83	34.856239	-117.153167	0.01 ac/250 ln ft	Non-wetland waters	Section 404
NWW-84	34.854958	-117.146066	0.02 ac/909 ln ft	Non-wetland waters	Section 404
NWW-85	34.857281	-117.149898	0.31 ac/3,921 ln ft	Non-wetland waters	Section 404
NWW-86	34.856698	-117.147965	0.02 ac/218 ln ft	Non-wetland waters	Section 404
NWW-87	34.857936	-117.147949	0.13 ac/2,162 ln ft	Non-wetland waters	Section 404
NWW-88	34.858906	-117.148308	0.04 ac/403 ln ft	Non-wetland waters	Section 404
NWW-89	34.863711	-117.134655	1.97 ac/57,394 ln ft	Non-wetland waters	Section 404
NWW-90	34.860552	-117.142795	0.08 ac/995 ln ft	Non-wetland waters	Section 404
NWW-91	34.863147	-117.140564	0.01 ac/150 ln ft	Non-wetland waters	Section 404
NWW-92	34.874455	-117.131291	8.31 ac/13,518 ln ft	Non-wetland waters	Section 404
NWW-93	34.873485	-117.118709	0.06 ac/409 ln ft	Non-wetland waters	Section 404
NWW-94	34.874055	-117.117372	0.06 ac/401 ln ft	Non-wetland waters	Section 404
NWW-95	34.877087	-117.110926	0.03 ac/307 ln ft	Non-wetland waters	Section 404
NWW-96	34.878268	-117.108708	0.05 ac/439 ln ft	Non-wetland waters	Section 404
NWW-97	34.879422	-117.105552	0.03 ac/506 ln ft	Non-wetland waters	Section 404
NWW-98	34.880017	-117.105950	0.02 ac/183 ln ft	Non-wetland waters	Section 404
NWW-99	34.880936	-117.101226	0.03 ac/353 ln ft	Non-wetland waters	Section 404
NWW-100	34.882602	-117.095407	0.34 ac/2,524 ln ft	Non-wetland waters	Section 404
NWW-101	34.883416	-117.092671	0.29 ac/1,003 ln ft	Non-wetland waters	Section 404
NWW-102	34.883038	-117.091930	0.01 ac/99 ln ft	Non-wetland waters	Section 404
NWW-103	34.797426	-117.223080	0.01 ac/43 ln ft	Non-wetland waters	Section 404
NWW-104	34.797510	-117.222886	0.01 ac/70 ln ft	Non-wetland waters	Section 404
NWW-105	34.828712	-117.182373	0.01 ac/29 ln ft	Non-wetland waters	Section 404
NWW-106	34.828907	-117.182084	0.01 ac/36 ln ft	Non-wetland waters	Section 404
NWW-107	34.835555	-117.169501	<0.01 ac/51 ln ft	Non-wetland waters	Section 404
NWW-108	34.847053	-117.151904	0.01 ac/36 ln ft	Non-wetland waters	Section 404
NWW-109	34.863277	-117.170128	106.87 ac/5,255 ln ft	Non-wetland waters	Section 404
NWW-110	34.862304	-117.029568	0.09 ac/626 ln ft	Non-wetland waters	Section 404
NWW-111	34.862851	-117.029387	0.01 ac/197 ln ft	Non-wetland waters	Section 404
NWW-112	34.862328	-117.030154	0.01 ac/197 ln ft	Non-wetland waters	Section 404
NWW-113	34.863114	-117.031133	0.11 ac/2,234 ln ft	Non-wetland waters	Section 404
NWW-114	34.863906	-117.030060	0.05 ac/735 ln ft	Non-wetland waters	Section 404
NWW-115	34.863948	-117.030548	0.01 ac/180 ln ft	Non-wetland waters	Section 404
NWW-116	34.863745	-117.030843	<0.01 ac/22 ln ft	Non-wetland waters	Section 404
NWW-117	34.863948	-117.031161	0.01 ac/196 ln ft	Non-wetland waters	Section 404
NWW-118	34.863784	-117.031507	<0.01 ac/54 ln ft	Non-wetland waters	Section 404
NWW-119	34.863981	-117.031809	0.05 ac/665 ln ft	Non-wetland waters	Section 404
NWW-120	34.862325	-117.032219	0.07 ac/537 ln ft	Non-wetland waters	Section 404

NWW-121	34.863168	-117.032221	0.01 ac/269 ln ft	Non-wetland waters	Section 404
NWW-122	34.863547	-117.032236	0.01 ac/115 ln ft	Non-wetland waters	Section 404
NWW-123	34.863294	-117.032440	<0.01 ac/103 ln ft	Non-wetland waters	Section 404
NWW-124	34.863374	-117.033400	0.01 ac/140 ln ft	Non-wetland waters	Section 404
NWW-125	34.863847	-117.033290	0.03 ac/232 ln ft	Non-wetland waters	Section 404
NWW-126	34.863806	-117.033928	0.01 ac/132 ln ft	Non-wetland waters	Section 404
NWW-127	34.864203	-117.033791	0.02 ac/307 ln ft	Non-wetland waters	Section 404
NWW-128	34.863964	-117.034043	0.02 ac/280 ln ft	Non-wetland waters	Section 404
NWW-129	34.864078	-117.034199	0.01 ac/128 ln ft	Non-wetland waters	Section 404
NWW-130	34.864243	-117.034403	0.02 ac/294 ln ft	Non-wetland waters	Section 404
NWW-131	34.864655	-117.034310	0.01 ac/121 ln ft	Non-wetland waters	Section 404
NWW-132	34.864770	-117.034393	0.03 ac/305 ln ft	Non-wetland waters	Section 404
NWW-133	34.864415	-117.034695	0.01 ac/129 ln ft	Non-wetland waters	Section 404
NWW-134	34.864537	-117.034800	<0.01 ac/154 ln ft	Non-wetland waters	Section 404
NWW-135	34.865000	-117.034784	0.04 ac/325 ln ft	Non-wetland waters	Section 404
NWW-136	34.864640	-117.034993	0.01 ac/128 ln ft	Non-wetland waters	Section 404
NWW-137	34.865098	-117.035362	<0.01 ac/41 ln ft	Non-wetland waters	Section 404
NWW-138	34.865483	-117.035394	0.01 ac/190 ln ft	Non-wetland waters	Section 404
NWW-139	34.865080	-117.035540	0.01 ac/142 ln ft	Non-wetland waters	Section 404
NWW-140	34.865346	-117.035826	0.03 ac/238 ln ft	Non-wetland waters	Section 404
NWW-141	34.865793	-117.035751	0.02 ac/243 ln ft	Non-wetland waters	Section 404
NWW-142	34.865558	-117.036182	0.01 ac/118 ln ft	Non-wetland waters	Section 404
NWW-143	34.865940	-117.035968	0.02 ac/126 ln ft	Non-wetland waters	Section 404
NWW-144	34.865697	-117.036341	0.02 ac/148 ln ft	Non-wetland waters	Section 404
NWW-145	34.867099	-117.037273	<0.01 ac/69 ln ft	Non-wetland waters	Section 404
NWW-146	34.867280	-117.037889	0.18 ac/272 ln ft	Non-wetland waters	Section 404
NWW-147	34.867479	-117.038380	<0.01 ac/47 ln ft	Non-wetland waters	Section 404
NWW-148	34.868016	-117.038573	0.01 ac/146 ln ft	Non-wetland waters	Section 404
NWW-149	34.867884	-117.039030	0.01 ac/133 ln ft	Non-wetland waters	Section 404
NWW-150	34.867950	-117.039201	0.01 ac/113 ln ft	Non-wetland waters	Section 404
NWW-151	34.868385	-117.038946	0.01 ac/120 ln ft	Non-wetland waters	Section 404
NWW-152	34.868169	-117.039394	0.01 ac/141 ln ft	Non-wetland waters	Section 404
NWW-153	34.868686	-117.039359	0.01 ac/185 ln ft	Non-wetland waters	Section 404
NWW-154	34.868471	-117.039625	<0.01 ac/62 ln ft	Non-wetland waters	Section 404
NWW-155	34.868497	-117.039748	0.01 ac/132 ln ft	Non-wetland waters	Section 404
NWW-156	34.868751	-117.040025	0.01 ac/126 ln ft	Non-wetland waters	Section 404
NWW-157	34.869093	-117.039898	0.01 ac/133 ln ft	Non-wetland waters	Section 404
NWW-158	34.869493	-117.040409	0.01 ac/169 ln ft	Non-wetland waters	Section 404
NWW-159	34.869406	-117.040822	0.01 ac/123 ln ft	Non-wetland waters	Section 404
NWW-160	34.869733	-117.041232	0.01 ac/85 ln ft	Non-wetland waters	Section 404
NWW-161	34.870069	-117.041756	0.01 ac/167 ln ft	Non-wetland waters	Section 404
NWW-162	34.870305	-117.041899	<0.01 ac/55 ln ft	Non-wetland waters	Section 404
NWW-163	34.870368	-117.042117	0.01 ac/169 ln ft	Non-wetland waters	Section 404

NWW-164	34.870510	-117.042262	<0.01 ac/125 ln ft	Non-wetland waters	Section 404
NWW-165	34.870631	-117.042459	0.01 ac/152 ln ft	Non-wetland waters	Section 404
NWW-166	34.870818	-117.042706	0.02 ac/294 ln ft	Non-wetland waters	Section 404
NWW-167	34.870938	-117.042896	0.01 ac/142 ln ft	Non-wetland waters	Section 404
NWW-168	34.871428	-117.042765	0.03 ac/208 ln ft	Non-wetland waters	Section 404
NWW-169	34.871617	-117.042845	0.01 ac/123 ln ft	Non-wetland waters	Section 404
NWW-170	34.871221	-117.043257	0.01 ac/295 ln ft	Non-wetland waters	Section 404
NWW-171	34.871715	-117.043851	0.03 ac/206 ln ft	Non-wetland waters	Section 404
NWW-172	34.872364	-117.043974	0.03 ac/176 ln ft	Non-wetland waters	Section 404
NWW-173	34.872264	-117.044360	<0.01 ac/90 ln ft	Non-wetland waters	Section 404
NWW-174	34.872611	-117.044917	<0.01 ac/210 ln ft	Non-wetland waters	Section 404
NWW-175	34.873081	-117.045449	0.02 ac/155 ln ft	Non-wetland waters	Section 404
NWW-176	34.873274	-117.045677	0.01 ac/173 ln ft	Non-wetland waters	Section 404
NWW-177	34.873893	-117.045930	0.06 ac/571 ln ft	Non-wetland waters	Section 404
NWW-178	34.873797	-117.046218	0.01 ac/84 ln ft	Non-wetland waters	Section 404
NWW-179	34.873847	-117.046343	<0.01 ac/63 ln ft	Non-wetland waters	Section 404
NWW-180	34.873945	-117.046598	0.03 ac/197 ln ft	Non-wetland waters	Section 404
NWW-181	34.874872	-117.046978	0.01 ac/174 ln ft	Non-wetland waters	Section 404
NWW-182	34.874268	-117.047106	0.07 ac/636 ln ft	Non-wetland waters	Section 404
NWW-183	34.864594	-117.120526	0.06 ac/288 ln ft	Non-wetland waters	Section 404
NWW-184	34.865232	-117.122088	0.02 ac/178 ln ft	Non-wetland waters	Section 404
NWW-185	34.853009	-117.132656	<0.01 ac/92 ln ft	Non-wetland waters	Section 404
NWW-186	34.853376	-117.132648	0.01 ac/143 ln ft	Non-wetland waters	Section 404
NWW-187	34.853977	-117.132836	0.03 ac/396 ln ft	Non-wetland waters	Section 404
NWW-188	34.856810	-117.131280	0.31 ac/1,952 ln ft	Non-wetland waters	Section 404
NWW-189	34.885498	-117.078289	<0.01 ac/94 ln ft	Non-wetland waters	Section 404
NWW-190	34.884869	-117.078609	0.04 ac /102 ln ft	Non-wetland waters	Section 404
NWW-191	34.884831	-117.078050	0.05 ac /337 ln ft	Non-wetland waters	Section 404
NWW-192	34.884968	-117.077919	0.03 ac /295 ln ft	Non-wetland waters	Section 404
NWW-193	34.884776	-117.077758	<0.01 ac/118 ln ft	Non-wetland waters	Section 404
NWW-194	34.884688	-117.077350	<0.01 ac/27 ln ft	Non-wetland waters	Section 404
NWW-195	34.884717	-117.077159	<0.01 ac/73 ln ft	Non-wetland waters	Section 404
NWW-196	34.884661	-117.076737	0.01 ac /107 ln ft	Non-wetland waters	Section 404
NWW-197	34.884897	-117.076800	0.02 ac /273 ln ft	Non-wetland waters	Section 404
NWW-198	34.884888	-117.076324	0.01 ac /167 ln ft	Non-wetland waters	Section 404
NWW-199	34.884712	-117.076351	<0.01 ac/137 ln ft	Non-wetland waters	Section 404
NWW-200	34.884642	-117.075370	0.01 ac /340 ln ft	Non-wetland waters	Section 404
NWW-201	34.884591	-117.073655	0.01 ac /79 ln ft	Non-wetland waters	Section 404
NWW-202	34.884926	-117.071902	0.01 ac /178 ln ft	Non-wetland waters	Section 404
NWW-203	34.884840	-117.071088	0.40 ac /911 ln ft	Non-wetland waters	Section 404
NWW-204	34.885061	-117.070693	<0.01 ac/59 ln ft	Non-wetland waters	Section 404
NWW-205	34.884956	-117.070522	0.01 ac /174 ln ft	Non-wetland waters	Section 404
NWW-206	34.884739	-117.070669	<0.01 ac/56 ln ft	Non-wetland waters	Section 404

NWW-207	34.884798	-117.070198	0.02 ac /327 ln ft	Non-wetland waters	Section 404
NWW-208	34.884886	-117.070015	0.01 ac /228 ln ft	Non-wetland waters	Section 404
NWW-209	34.884793	-117.069783	0.01 ac /247 ln ft	Non-wetland waters	Section 404
NWW-210	34.884693	-117.069564	0.03 ac /329 ln ft	Non-wetland waters	Section 404
NWW-211	34.884832	-117.069430	<0.01 ac/32 ln ft	Non-wetland waters	Section 404
NWW-212	34.884602	-117.069361	0.01 ac /127 ln ft	Non-wetland waters	Section 404
NWW-213	34.884852	-117.068194	0.04 ac /938 ln ft	Non-wetland waters	Section 404
NWW-213	34.884881	-117.069146	<0.01 ac/10 ln ft	Non-wetland waters	Section 404
NWW-213	34.884787	-117.066721	0.02 ac /97 ln ft	Non-wetland waters	Section 404
NWW-214	34.884638	-117.069049	0.01 ac /208 ln ft	Non-wetland waters	Section 404
NWW-215	34.884583	-117.068791	0.01 ac /124 ln ft	Non-wetland waters	Section 404
NWW-216	34.884597	-117.068755	0.01 ac /111 ln ft	Non-wetland waters	Section 404
NWW-217	34.884557	-117.068637	<0.01 ac/79 ln ft	Non-wetland waters	Section 404
NWW-218	34.884569	-117.068415	0.01 ac /134 ln ft	Non-wetland waters	Section 404
NWW-219	34.884627	-117.067639	0.59 ac /139 ln ft	Non-wetland waters	Section 404
NWW-220	34.884544	-117.066951	0.01 ac /119 ln ft	Non-wetland waters	Section 404
NWW-221	34.884588	-117.066829	0.01 ac /175 ln ft	Non-wetland waters	Section 404
NWW-222	34.884531	-117.066373	0.01 ac /141 ln ft	Non-wetland waters	Section 404
NWW-223	34.884593	-117.066264	0.01 ac /148 ln ft	Non-wetland waters	Section 404
NWW-224	34.884630	-117.066111	0.02 ac /170 ln ft	Non-wetland waters	Section 404
NWW-225	34.884508	-117.065440	<0.01 ac/79 ln ft	Non-wetland waters	Section 404
NWW-226	34.884721	-117.064866	0.41 ac /238 ln ft	Non-wetland waters	Section 404
NWW-227	34.884991	-117.064414	0.01 ac /144 ln ft	Non-wetland waters	Section 404
NWW-228	34.884539	-117.064175	0.03 ac /410 ln ft	Non-wetland waters	Section 404
NWW-229	34.884760	-117.063677	0.02 ac /383 ln ft	Non-wetland waters	Section 404
NWW-230	34.884420	-117.063052	0.01 ac /309 ln ft	Non-wetland waters	Section 404
NWW-231	34.884969	-117.062850	0.40 ac /884 ln ft	Non-wetland waters	Section 404
NWW-232	34.883227	-117.063127	<0.01 ac/100 ln ft	Non-wetland waters	Section 404
NWW-233	34.883705	-117.062238	0.03 ac /633 ln ft	Non-wetland waters	Section 404
NWW-234	34.884074	-117.062543	0.01 ac /249 ln ft	Non-wetland waters	Section 404
NWW-235	34.884239	-117.062363	0.01 ac /364 ln ft	Non-wetland waters	Section 404
NWW-236	34.884548	-117.062380	<0.01 ac/76 ln ft	Non-wetland waters	Section 404
NWW-237	34.884321	-117.062043	0.01 ac /575 ln ft	Non-wetland waters	Section 404
NWW-238	34.884345	-117.061771	0.03 ac /569 ln ft	Non-wetland waters	Section 404
NWW-239	34.884598	-117.061691	<0.01 ac/50 ln ft	Non-wetland waters	Section 404
NWW-240	34.884439	-117.061486	0.01 ac /464 ln ft	Non-wetland waters	Section 404
NWW-241	34.883138	-117.060674	0.02 ac /109 ln ft	Non-wetland waters	Section 404
NWW-242	34.882765	-117.060334	0.01 ac /97 ln ft	Non-wetland waters	Section 404
NWW-243	34.880389	-117.060463	0.03 ac /282 ln ft	Non-wetland waters	Section 404
NWW-244	34.879697	-117.060927	0.03 ac /197 ln ft	Non-wetland waters	Section 404
NWW-245	34.878571	-117.057288	0.01 ac /111 ln ft	Non-wetland waters	Section 404
NWW-246	34.876196	-117.060476	0.01 ac /273 ln ft	Non-wetland waters	Section 404
NWW-247	34.877256	-117.056142	<0.01 ac/57 ln ft	Non-wetland waters	Section 404

NWW-248	34.875996	-117.056427	0.03 ac /612 ln ft	Non-wetland waters	Section 404
NWW-249	34.874694	-117.057062	<0.01 ac/122 ln ft	Non-wetland waters	Section 404
NWW-250	34.874781	-117.052983	<0.01 ac/47 ln ft	Non-wetland waters	Section 404
NWW-251	34.874348	-117.050660	<0.01 ac/61 ln ft	Non-wetland waters	Section 404
NWW-252	34.874419	-117.047069	<0.01 ac/74 ln ft	Non-wetland waters	Section 404
NWW-253	34.881799	-117.055947	<0.01 ac/89 ln ft	Non-wetland waters	Section 404
NWW-254	34.887671	-117.056116	0.05 ac /737 ln ft	Non-wetland waters	Section 404
NWW-255	34.888721	-117.056772	0.07 ac /959 ln ft	Non-wetland waters	Section 404
NWW-256	34.891279	-117.058014	<0.01 ac/48 ln ft	Non-wetland waters	Section 404
NWW-257	34.891637	-117.058161	0.01 ac /95 ln ft	Non-wetland waters	Section 404
NWW-258	34.891579	-117.058509	0.02 ac /154 ln ft	Non-wetland waters	Section 404
NWW-259	34.887627	-117.072095	0.04 ac /83 ln ft	Non-wetland waters	Section 404
NWW-260	34.888100	-117.072300	0.06 ac /108 ln ft	Non-wetland waters	Section 404
NWW-261	34.887744	-117.073630	<0.01 ac/170 ln ft	Non-wetland waters	Section 404
NWW-262	34.887419	-117.074868	0.01 ac /125 ln ft	Non-wetland waters	Section 404
NWW-263	34.886994	-117.074752	<0.01 ac/46 ln ft	Non-wetland waters	Section 404
NWW-264	34.885348	-117.083007	0.03 ac /131 ln ft	Non-wetland waters	Section 404
NWW-265	34.885237	-117.083076	0.01 ac /181 ln ft	Non-wetland waters	Section 404
NWW-266	34.885251	-117.083836	<0.01 ac/72 ln ft	Non-wetland waters	Section 404
NWW-267	34.885135	-117.084387	<0.01 ac/42 ln ft	Non-wetland waters	Section 404
NWW-268	34.884128	-117.085431	0.10 ac /101 ln ft	Non-wetland waters	Section 404
NWW-269	34.884738	-117.085298	0.09 ac /549 ln ft	Non-wetland waters	Section 404
NWW-270	34.884729	-117.085938	<0.01 ac/54 ln ft	Non-wetland waters	Section 404
NWW-271	34.884689	-117.086055	<0.01 ac/78 ln ft	Non-wetland waters	Section 404
NWW-272	34.884613	-117.086163	<0.01 ac/78 ln ft	Non-wetland waters	Section 404
NWW-273	34.884640	-117.086270	<0.01 ac/57 ln ft	Non-wetland waters	Section 404
NWW-274	34.884610	-117.086443	<0.01 ac/51 ln ft	Non-wetland waters	Section 404
NWW-275	34.884494	-117.086801	0.01 ac /162 ln ft	Non-wetland waters	Section 404
NWW-276	34.884272	-117.086785	0.01 ac /159 ln ft	Non-wetland waters	Section 404
NWW-277	34.884446	-117.087007	0.01 ac /70 ln ft	Non-wetland waters	Section 404
NWW-278	34.884327	-117.087043	0.02 ac /139 ln ft	Non-wetland waters	Section 404
NWW-279	34.884199	-117.087560	0.03 ac /141 ln ft	Non-wetland waters	Section 404
NWW-280	34.883666	-117.087345	0.01 ac /117 ln ft	Non-wetland waters	Section 404
NWW-281	34.883950	-117.088824	0.01 ac /107 ln ft	Non-wetland waters	Section 404
NWW-282	34.883009	-117.090400	0.02 ac /272 ln ft	Non-wetland waters	Section 404
NWW-283	34.883674	-117.098065	0.01 ac /174 ln ft	Non-wetland waters	Section 404
NWW-284	34.883250	-117.098655	0.04 ac /524 ln ft	Non-wetland waters	Section 404
NWW-285	34.872564	-117.117449	0.01 ac /480 ln ft	Non-wetland waters	Section 404
NWW-286	34.871958	-117.118477	0.01 ac /354 ln ft	Non-wetland waters	Section 404
NWW-287	34.854108	-117.142024	0.08 ac /1316 ln ft	Non-wetland waters	Section 404
NWW-288	34.854483	-117.141306	<0.01 ac/114 ln ft	Non-wetland waters	Section 404
NWW-289	34.844585	-117.155166	<0.01 ac/132 ln ft	Non-wetland waters	Section 404
NWW-290	34.844433	-117.155339	0.02 ac /518 ln ft	Non-wetland waters	Section 404

NWW-291	34.844047	-117.155674	<0.01 ac/122 ln ft	Non-wetland waters	Section 404
NWW-292	34.843834	-117.156240	0.02 ac /106 ln ft	Non-wetland waters	Section 404
NWW-293	34.843595	-117.156397	<0.01 ac/32 ln ft	Non-wetland waters	Section 404
NWW-294	34.843525	-117.156712	0.01 ac /143 ln ft	Non-wetland waters	Section 404
NWW-295	34.843014	-117.157466	0.01 ac /91 ln ft	Non-wetland waters	Section 404
NWW-296	34.841284	-117.159778	<0.01 ac/50 ln ft	Non-wetland waters	Section 404
NWW-297	34.840126	-117.161545	0.01 ac /152 ln ft	Non-wetland waters	Section 404
NWW-298	34.838553	-117.163668	0.01 ac /123 ln ft	Non-wetland waters	Section 404
NWW-299	34.838167	-117.164441	0.01 ac 139 ln ft	Non-wetland waters	Section 404
NWW-300	34.838016	-117.164823	<0.01 ac/55 ln ft	Non-wetland waters	Section 404
NWW-301	34.837816	-117.164980	0.01 ac /191 ln ft	Non-wetland waters	Section 404
NWW-302	34.837379	-117.165542	<0.01 ac/108 ln ft	Non-wetland waters	Section 404
NWW-303	34.837119	-117.165941	0.01 ac/119 ln ft	Non-wetland waters	Section 404
NWW-304	34.836963	-117.166359	0.01 ac /136 ln ft	Non-wetland waters	Section 404
NWW-305	34.836611	-117.166625	0.03 ac /471 ln ft	Non-wetland waters	Section 404
NWW-306	34.834855	-117.171162	<0.01 ac/18 ln ft	Non-wetland waters	Section 404
NWW-307	34.834780	-117.171605	<0.01 ac/24 ln ft	Non-wetland waters	Section 404
NWW-308	34.834691	-117.171406	<0.01 ac/82 ln ft	Non-wetland waters	Section 404
NWW-309	34.834497	-117.171743	<0.01 ac/32 ln ft	Non-wetland waters	Section 404
NWW-310	34.834497	-117.172199	<0.01 ac/76 ln ft	Non-wetland waters	Section 404
NWW-311	34.833845	-117.173741	<0.01 ac/61 ln ft	Non-wetland waters	Section 404
NWW-312	34.833836	-117.173783	<0.01 ac/44 ln ft	Non-wetland waters	Section 404
NWW-313	34.831780	-117.173876	<0.01 ac/88 ln ft	Non-wetland waters	Section 404
NWW-314	34.831725	-117.173709	<0.01 ac/35 ln ft	Non-wetland waters	Section 404
NWW-315	34.827790	-117.181687	0.15 ac /959 ln ft	Non-wetland waters	Section 404
NWW-316	34.809750	-117.199844	0.02 ac /173 ln ft	Non-wetland waters	Section 404

ATTACHMENT E

ARID WEST WETLAND DETERMINATION DATA FORMS AND EPHEMERAL AND INTERMITTENT STREAMS OHWM DATASHEETS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Big Barstow City/County: San Bernardino Sampling Date: 1/22/25

Applicant/Owner: BNSF Railway State: CA Sampling Point: WDP 16

Investigator(s): Kelsey Woldt & Travis Whitney Section, Township, Range: 09N, 03W, 24 & 09N, 02W, 19

Landform (hillslope, terrace, etc.): Depressional area Local relief (concave, convex, none): concave Slope (%): 0-1%

Subregion (LRR): LRR D - Interior Deserts Lat: 34.794223 Long: -117.239576 Datum: WGS 84

Soil Map Unit Name: Victorville Sandy Loam (Soil rated as hydric per the NCRS) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Sample point taken in area mapped as disturbed land. Vegetation significantly disturbed (vegetation clearing, trash dumping, and OHV use). Climatic/hydrological conditions atypical; severe drought reported per Antecedent Precipitation Tool.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5-foot radius)			
1. Schismus barbatus	15%	Y	NL/UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 85% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

Sample point taken in area mapped as disturbed land. Hydric soil and wetland hydrology parameters not met; thus, prevalence index worksheet not required/needed.

SOIL

Sampling Point: WDP 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-14	10 YR 4/3	100%	N/A	N/A	N/A	N/A	Sandy clay loam	No evidence of redox observed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Compacted soils (see remarks)

Depth (inches): at 14 inches

Hydric Soil Present? Yes _____ No ✔

Remarks:

Uniform soils throughout. Dry soils; soils moistened with spray bottle to record color. Could not dig deeper than 14 inches; compacted soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): N/A

Water Table Present? Yes _____ No ✔ Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): N/A

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

N/A

Remarks:

Did not meet FAC-neutral test. No wetland hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Big Barstow City/County: San Bernardino Sampling Date: 2/19/25

Applicant/Owner: BNSF Railway State: CA Sampling Point: WDP 17

Investigator(s): Kelsey Woldt & Travis Whitney Section, Township, Range: 09N, 03W, 24 & 09N, 02W, 19

Landform (hillslope, terrace, etc.): Depressional area Local relief (concave, convex, none): Concave Slope (%): 0-1%

Subregion (LRR): LRR D - Interior Deserts Lat: 34.891212 Long: -117.057971 Datum: WGS 84

Soil Map Unit Name: Cajon Sand, 2 to 9 Percent Slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Sample point taken in area mapped as Atriplex polycarpa shrubland alliance. Climatic/hydrological conditions atypical; severe drought reported per Antecedent Precipitation Tool.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5-foot radius)			
1. Parkinsonia aculeata	18%	Y	FAC
2.			
3.			
4.			
5.			
	18% = Total Cover		
Herb Stratum (Plot size: 5-foot radius)			
1. Schismus barbatus	70%	Y	NL/UPL
2. Tribulus terrestris	5%	N	NL/UPL
3. Avena barbata	10%	N	NL/UPL
4. Brassica nigra	2%	N	NL/UPL
5.			
6.			
7.			
8.			
	77% = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

Sample point taken in area mapped as Atriplex polycarpa shrubland alliance. Hydric soil parameter not met; thus, prevalence index worksheet not required/needed.

SOIL

Sampling Point: WDP 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-14	10 YR 3/2	100%	N/A	N/A	N/A	N/A	Sandy clay loam	No evidence of redox observed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Compacted soils (see remarks)

Depth (inches): at 14 inches

Hydric Soil Present? Yes ___ No ✔

Remarks:

Uniform soils throughout; moist soils. Could not dig deeper than 14 inches; compacted soils.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ✔ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): N/A

Water Table Present? Yes ___ No ✔ Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): N/A

Wetland Hydrology Present? Yes ✔ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

N/A

Remarks:

Primary wetland hydrology indicator observed; drift deposits (nonriverine) present as trash

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 41
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 1/22/25 **Time:** 11:41
Town: San Bernardino County **State:** CA
Photo begin file#: 1 **Photo end file#:** 2

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report 2025 Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.794036, -117.239989

Potential anthropogenic influences on the channel system:
Off road vehicle use and trash dumping.

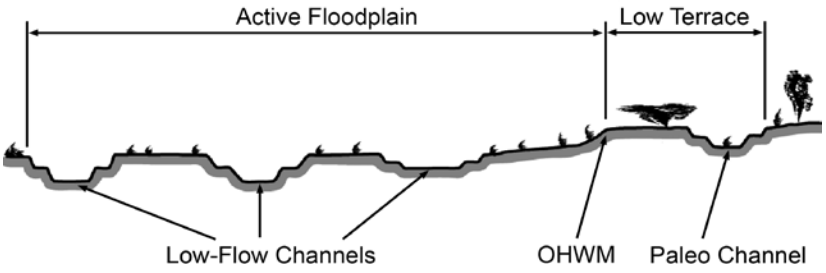
Brief site description:
Swale-like feature within area mapped as Atriplex polycarpa shrubland alliance; borrow site east of Wild Wash and north of BNSF Railroad.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

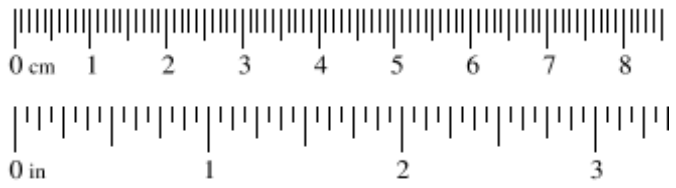


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

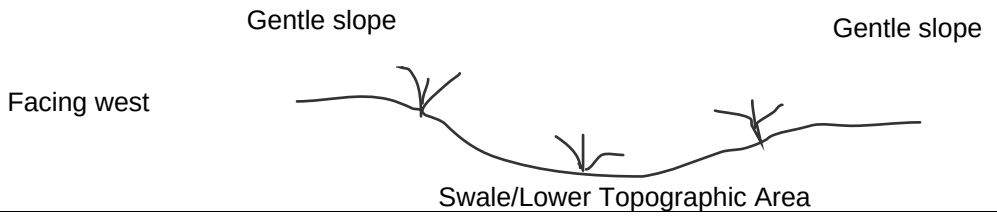
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 41 **Date:** 1/22/25 **Time:** 11:41

Cross section drawing:



OHWM

GPS point: 34.794036, -117.239989

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☐ Change in vegetation cover
- ☐ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Project ID: Big Barstow **Cross section ID:** ODP 41 **Date:** 1/22/25 **Time:** 11:41

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 42
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 1/22/25 **Time:** 12:00
Town: San Bernardino County **State:** CA
Photo begin file#: 4 **Photo end file#:** 5

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.792508, -117.241562

Potential anthropogenic influences on the channel system:
Off road vehicle use and trash dumping; man-made concrete basin

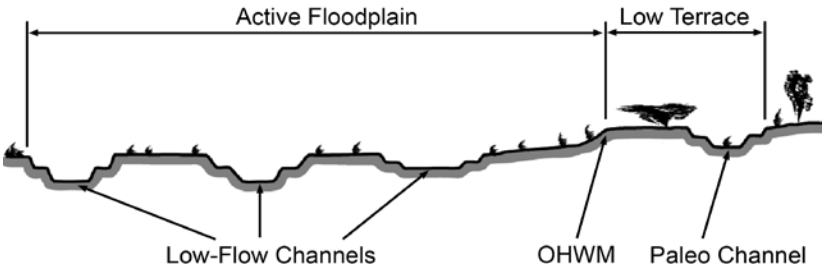
Brief site description:
Within concrete basin east of Wild Wash and north of BNSF Railroad in area mapped as developed land.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

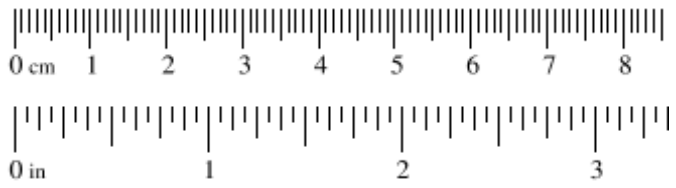


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

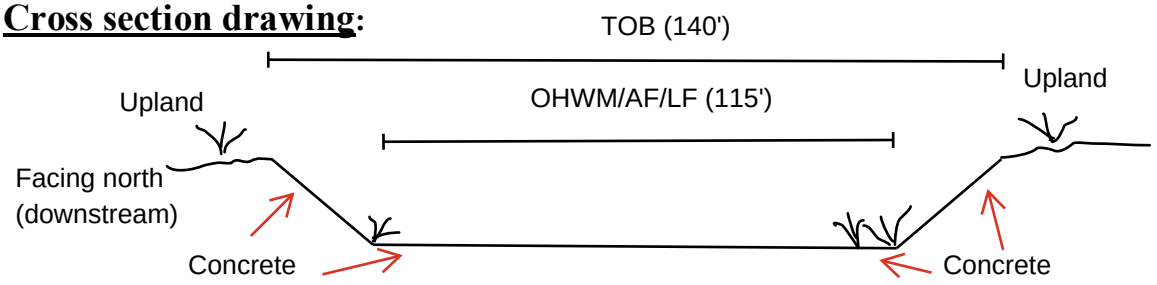
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 42 **Date:** 11/22/25 **Time:** 12:00

Cross section drawing:



OHWM

GPS point: 34.792508, -117.241562

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 115-foot wide OHWM defined by a clear break in bank slope, change in average sediment texture, and change in vegetation cover. Data was collected during a drought year; however, indicators still observed and consistent with anticipated extent of OHWM based on site conditions/topography.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low flow (LF) indistinguishable from active floodplain (AF).

Project ID: Big Barstow **Cross section ID:** ODP 42 **Date:** 1/22/25 **Time:** 12:00

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Concrete with some medium silt with pebbles

Total veg cover: 5 % Tree: 0 % Shrub: 1 % Herb: 4 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 115-foot wide sparsely vegetated active floodplain (AF) with a clear break in bank slope. Primarily concrete; medium silt with some pebbles throughout corners and along edges. Vegetation: Schismus barbatus, Sisimbrium irio, Salsola tragus, Atriplex polycarpa

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Concrete banks; Medium silt with cobble uplands

Total veg cover: 30 % Tree: 0 % Shrub: 10 % Herb: 20 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Concrete banks; medium silt with some cobble throughout earthen uplands. Vegetation: Schismus barbatus, Sisimbrium irio, Salsola tragus, Atriplex polycarpa

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 43
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 1/28/25 **Time:** 0815
Town: San Bernardino County **State:** CA
Photo begin file#: 6 **Photo end file#:** 7

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.885461, -117.078421

Potential anthropogenic influences on the channel system:
Man-made concrete drainage. Located within and adjacent to industrial development.

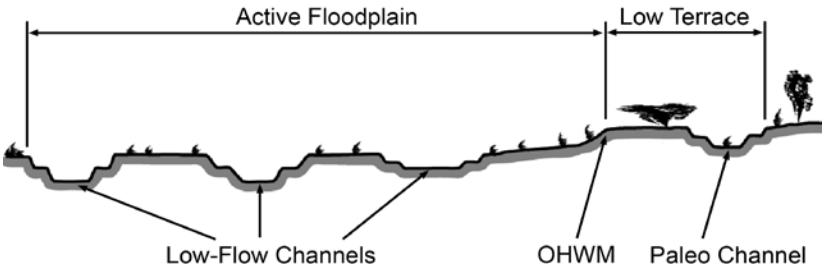
Brief site description:
Concrete drainage within area mapped as developed land. South of Main Street within/outletting from fenced lot.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

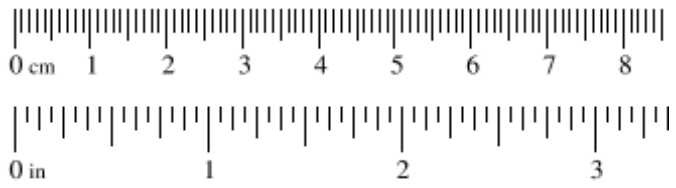


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

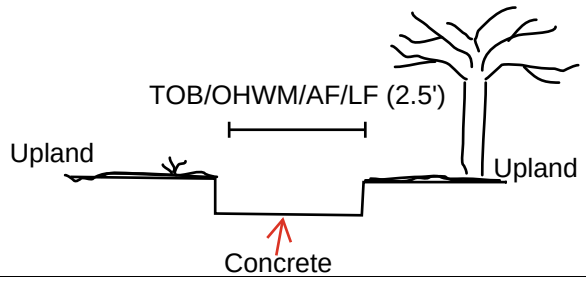
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 43 **Date:** 1/28/25 **Time:** 0915

Cross section drawing:



Facing east
(Upstream)

OHWM

GPS point: 34.885461, -117.078421

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 2.5-foot wide OHWM defined by a clear break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. Data was collected during a drought year; however, indicators still observed and consistent with anticipated extent of OHWM based on site conditions/topography.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low flow (LF) indistinguishable from active floodplain (AF).

Project ID: Big Barstow **Cross section ID:** ODP 43 **Date:** 1/28/25 **Time:** 0815

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Concrete

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 2.5-foot wide concrete active floodplain (AF) with a clear break in bank slope. Drift and debris present as sediment and trash.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand with cobble

Total veg cover: 10 % Tree: 9 % Shrub: 0 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☑ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Medium sand sediment texture with some cobble throughout. Vegetation: Chilopsis linearis, Eriogonum deflexum, Ambrosia acanthacarpa, Salsola tragus

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 44
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 1/28/25 **Time:** 1040
Town: San Bernardino County **State:** CA
Photo begin file#: 8 **Photo end file#:** 9

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.884971, -117.071179

Potential anthropogenic influences on the channel system:
Off road vehicle use, urban runoff, and trash dumping. Located adjacent to residential development.

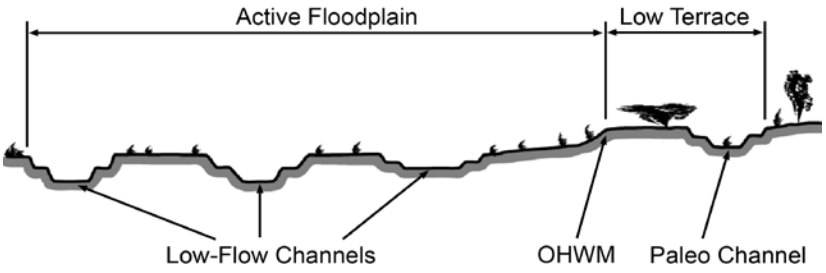
Brief site description:
Large drainage within area mapped as Larrea tridentata - Ambrosia dumosa shrubland alliance. Primarily undeveloped area south of Main Street.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

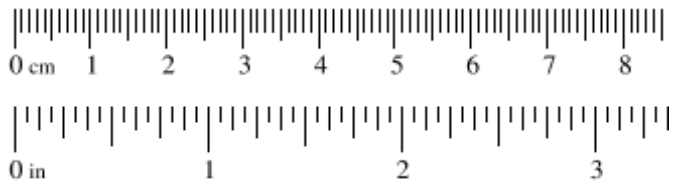


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

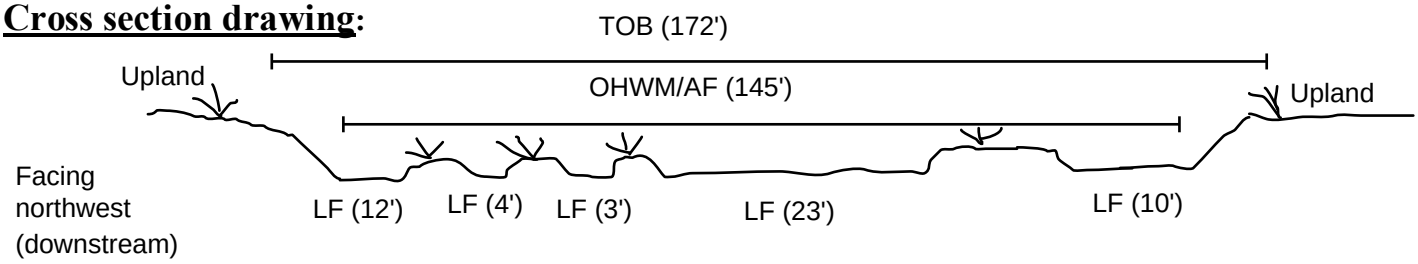
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 44 **Date:** 1/28/25 **Time:** 10:40

Cross section drawing:



OHWM

GPS point: 34.884971, -117.071179

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 145-foot wide OHWM defined by a clear break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. Data was collected during a drought year; however, indicators still observed and consistent with anticipated extent of OHWM based on site conditions/topography.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: Below OHWM (multiple)

Characteristics of the floodplain unit:

Average sediment texture: Coarse sand

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Five unvegetated low flow (LF) channels distinguished by a visible break in bank slope and varying in width (12', 4', 3', 23', and 10') are present within the active floodplain (AF). Coarse sand sediment texture throughout.

Project ID: Big Barstow **Cross section ID:** ODP 44 **Date:** 1/25/28 **Time:** 10:40

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand

Total veg cover: 10 % Tree: 0 % Shrub: 9 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 145-foot wide unvegetated active floodplain (AF) with a clear break in bank slope. Medium sand sediment texture throughout. Vegetation: Atriplex polycarpa, Euphorbia sp., Psorothamnus arborescens, Senna armata, Ephedra sp., Schismus barbatus

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand with cobble

Total veg cover: 15 % Tree: 0 % Shrub: 14 % Herb: 1 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Medium sand sediment texture with some cobble. Vegetation: Larrea tridentata, Atriplex polycarpa, Ephedra sp., Schismus barbatus, Stephanomeria pauciflora

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 45
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 1/28/25 **Time:** 11:15
Town: San Bernardino County **State:** CA
Photo begin file#: 10 **Photo end file#:** 11

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.884934, -117.069740

Potential anthropogenic influences on the channel system:
Off road vehicle use, urban runoff, and trash dumping. Located adjacent to residential development.

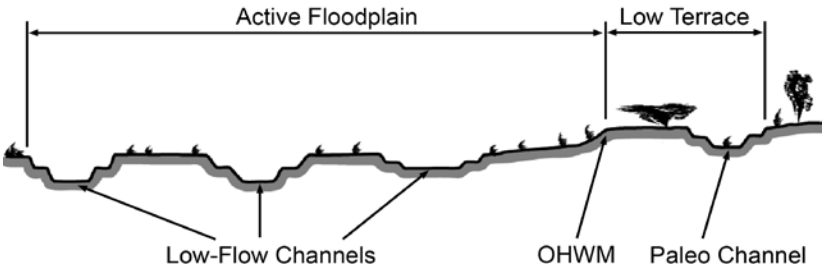
Brief site description:
Highly incised drainage within area mapped as Larrea tridentata - Ambrosia dumosa shrubland alliance. Primarily undeveloped site located south of Main Street.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

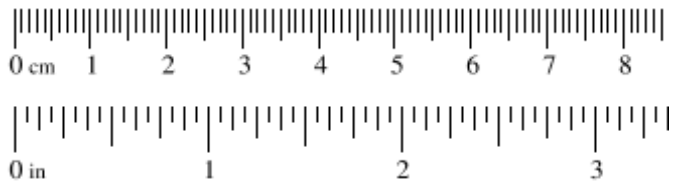


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

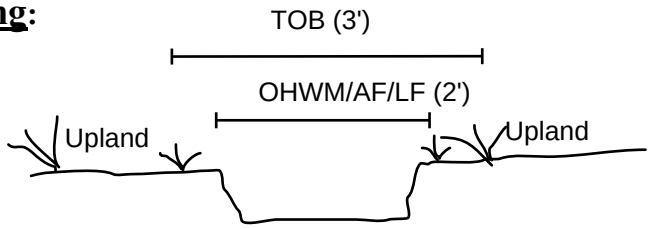
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 45 **Date:** 1/28/25 **Time:** 11:15

Cross section drawing:



Facing north (downstream)

OHWM

GPS point: 34.884934, -117.069740

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 2-foot wide OHWM defined by a clear break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. Data was collected during a drought year; however, indicators still observed and consistent with anticipated extent of OHWM based on site conditions/topography.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low flow (LF) indistinguishable from active floodplain (AF).

Project ID: Big Barstow **Cross section ID:** ODP 45 **Date:** 1/28/25 **Time:** 11:15

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 2-foot wide unvegetated active floodplain (AF) with a clear break in bank slope. Medium sand sediment texture throughout. Drift and debris present as dead plant matter.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand with pebbles

Total veg cover: 8 % Tree: 0 % Shrub: 3 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Medium sand sediment texture with some pebbles throughout. Vegetation: Larrea tridentata, Schismus barbatus, Ambrosia dumosa

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 46
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 1/28/25 **Time:** 12:15
Town: San Bernardino County **State:** CA
Photo begin file#: 12 **Photo end file#:** 13

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.884513, -117.067798

Potential anthropogenic influences on the channel system:
Off road vehicle use, urban runoff, and trash dumping. Located adjacent to residential development.

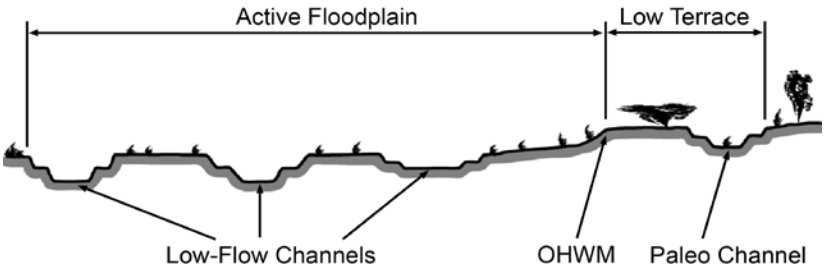
Brief site description:
Braided drainage system within area mapped as Larrea tridentata - Ambrosia dumosa shrubland alliance. Primarily undeveloped site located south of residential development and Main Street.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

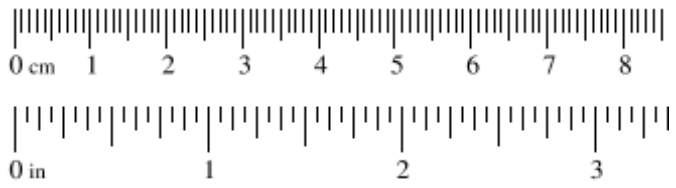


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

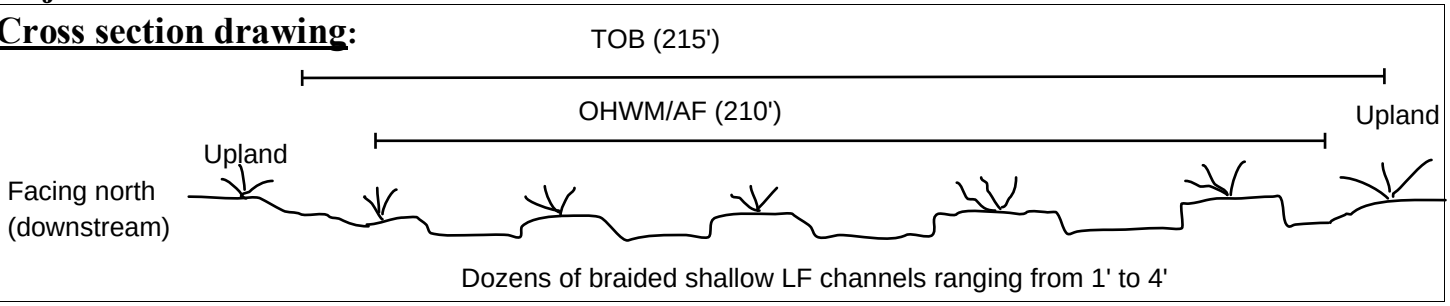
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 46 **Date:** 1/28/25 **Time:** 12:15

Cross section drawing:



Dozens of braided shallow LF channels ranging from 1' to 4'

OHWM

GPS point: 34.884513, -117.067798

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 210-foot wide OHWM defined by a gradual break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. Data was collected during a drought year; however, indicators still observed and consistent with anticipated extent of OHWM based on site conditions/topography.

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: Below OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Dozens of shallow, braided low flow (LF) channels ranging in width from 1' to 4' present within active floodplain (AF). Medium sand sediment texture throughout.

Project ID: Big Barstow **Cross section ID:** ODP 46 **Date:** 1/28/25 **Time:** 12:15

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand with cobble

Total veg cover: 25 % Tree: 0 % Shrub: 17 % Herb: 8 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 210-foot wide active floodplain (AF) with a gradual break in bank slope. Medium sand sediment texture with some cobble throughout. Drift and debris present as trash, dead plant matter, and sediment. Vegetation: Larrea tridentata, Schismus barbatus, Thamnosma montana, Eriogonum deflexum, Atriplex polycarpa

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand with cobble

Total veg cover: 25 % Tree: 0 % Shrub: 17 % Herb: 8 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Medium sand sediment texture with some cobble throughout. Vegetation: Larrea tridentata, Schismus barbatus, Thamnosma montana, Eriogonum deflexum, Atriplex polycarpa

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 47
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 2/19/25 **Time:** 11:40
Town: San Bernardino County **State:** CA
Photo begin file#: 14 **Photo end file#:** 15

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.891258, -117.058022

Potential anthropogenic influences on the channel system:
Urban runoff and trash dumping. Located adjacent to Main Street.

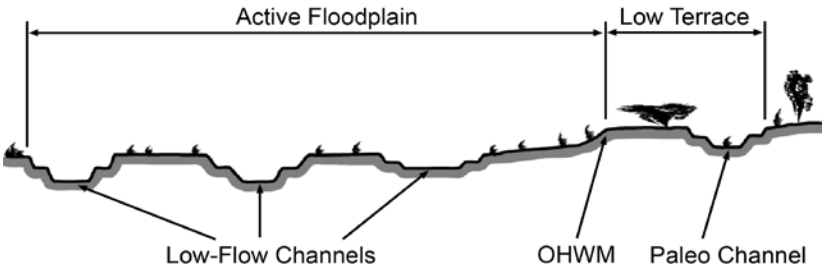
Brief site description:
Within roadside asphalt and earthen drainage South of Main Street in area mapped as Atriplex polycarpa shrubland alliance.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

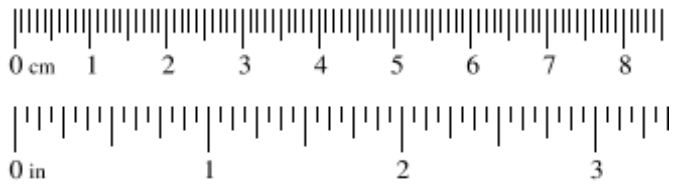


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

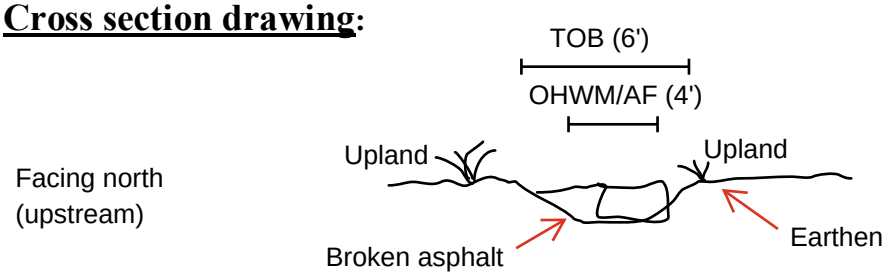
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 47 **Date:** 2/19/25 **Time:** 11:40

Cross section drawing:



OHWM

GPS point: 34.891258, -117.058022

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 4-foot wide OHWM defined by a break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. Data was collected during a drought year; however, indicators still observed and consistent with anticipated extent of OHWM based on site conditions/topography.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low flow (LF) channel indistinguishable from active floodplain (AF).

Project ID: Big Barstow **Cross section ID:** ODP 47 **Date:** 2/19/25 **Time:** 11:40

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: Same as OHWM

Characteristics of the floodplain unit:

Average sediment texture: Asphalt with some medium silt

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 4-foot wide active floodplain (AF) with an abrubt break in bank slope. Broken asphalt with some medium silt sediment texture. Drift and debris present as trash, dead plant matter, and sediment.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Above AF/OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium silt with cobble

Total veg cover: 70 % Tree: 0 % Shrub: 45 % Herb: 25 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to upland. Soil development and surface relief define uplands. Medium silt sediment texture with some granules throughout. Vegetation: Salsola tragus, Schismus barbatus, Sisymbrium irio, Avena barbata, Atriplex polycarpa

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Big Barstow
Project Number: N/A
Stream: ODP 48
Investigator(s): Kelsey Woldt & Travis Whitney

Date: 2/19/25 **Time:** 11:50
Town: San Bernardino County **State:** CA
Photo begin file#: 16 **Photo end file#:** 17

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:
Big Barstow (Barstow International Gateway Project) Aquatic Resources Delineation Report 2025 Addendum Review Area

Projection: NAD 83 **Datum:** WGS 84
Coordinates: 34.891193, -117058078

Potential anthropogenic influences on the channel system:
Off road vehicle use and trash dumping.

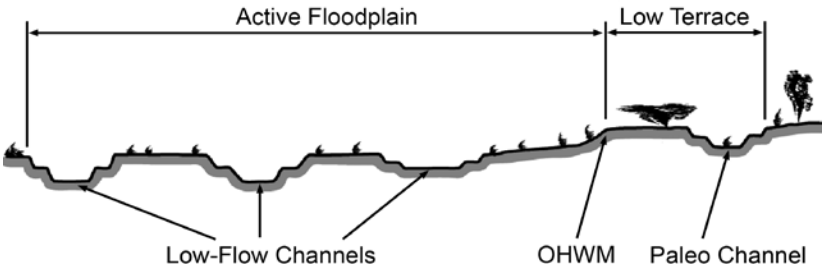
Brief site description:
Highly incised erosional feature within area mapped as Atriplex polycarpa shrubland alliance. Undeveloped area south of Main Street.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

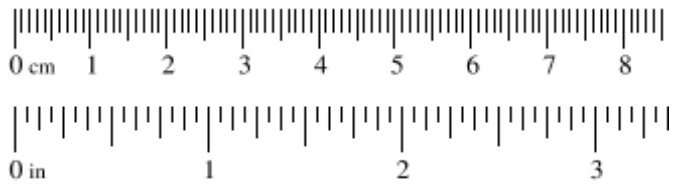


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

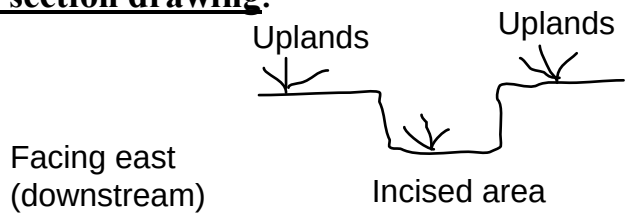
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



Project ID: Big Barstow **Cross section ID:** ODP 48 **Date:** 2/19/25 **Time:** 11:50

Cross section drawing:



OHWM

GPS point: 34.891193, -117058078

Indicators:

- ☐ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Erosional feature that exhibited an abrupt/highly incised break in bank slope and a slight change in vegetation species and cover but did not exhibit a distinctive change in average sediment texture or any other OHWM indicators. Erosional feature with similar vegetation (Atriplex polycarpa shrubland alliance) and sediment texture as surrounding uplands. Data was collected during a drought year; however, indicators still observed and consistent with anticipated extent of OHWM based on site conditions/topography.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Project ID: Big Barstow **Cross section ID:** ODP 48 **Date:** 2/19/25 **Time:** 11:50

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

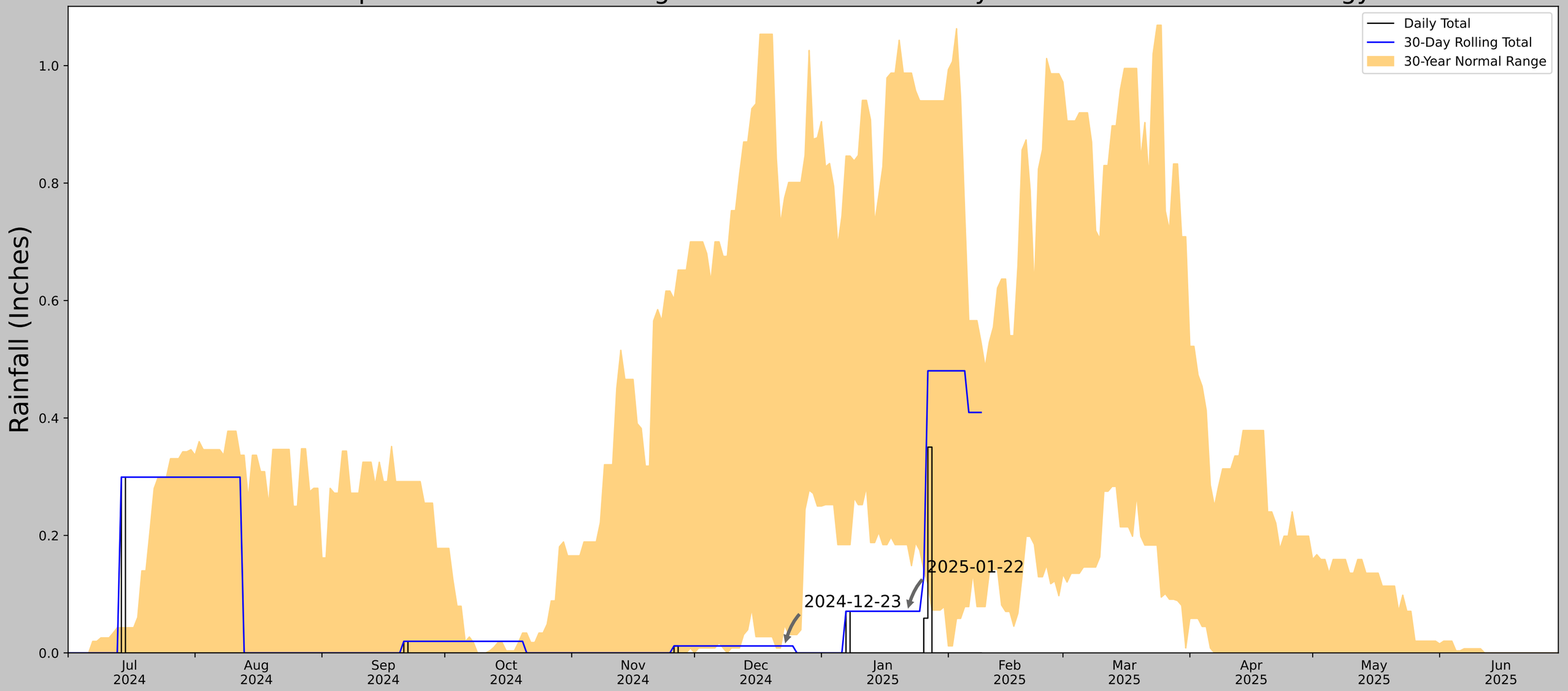
- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

ATTACHMENT F

ANTECEDENT PRECIPITATION TOOL OUTPUT

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.793625, -117.239289
Observation Date	2025-01-22
Elevation (ft)	2350.731
Drought Index (PDSI)	Severe drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-01-22	0.184252	0.987402	0.070866	Dry	1	3	3
2024-12-23	0.047638	0.775197	0.011811	Dry	1	2	2
2024-11-23	0.0	0.565354	0.0	Normal	2	1	2
Result							Drier than Normal - 7

US Army Corps of Engineers

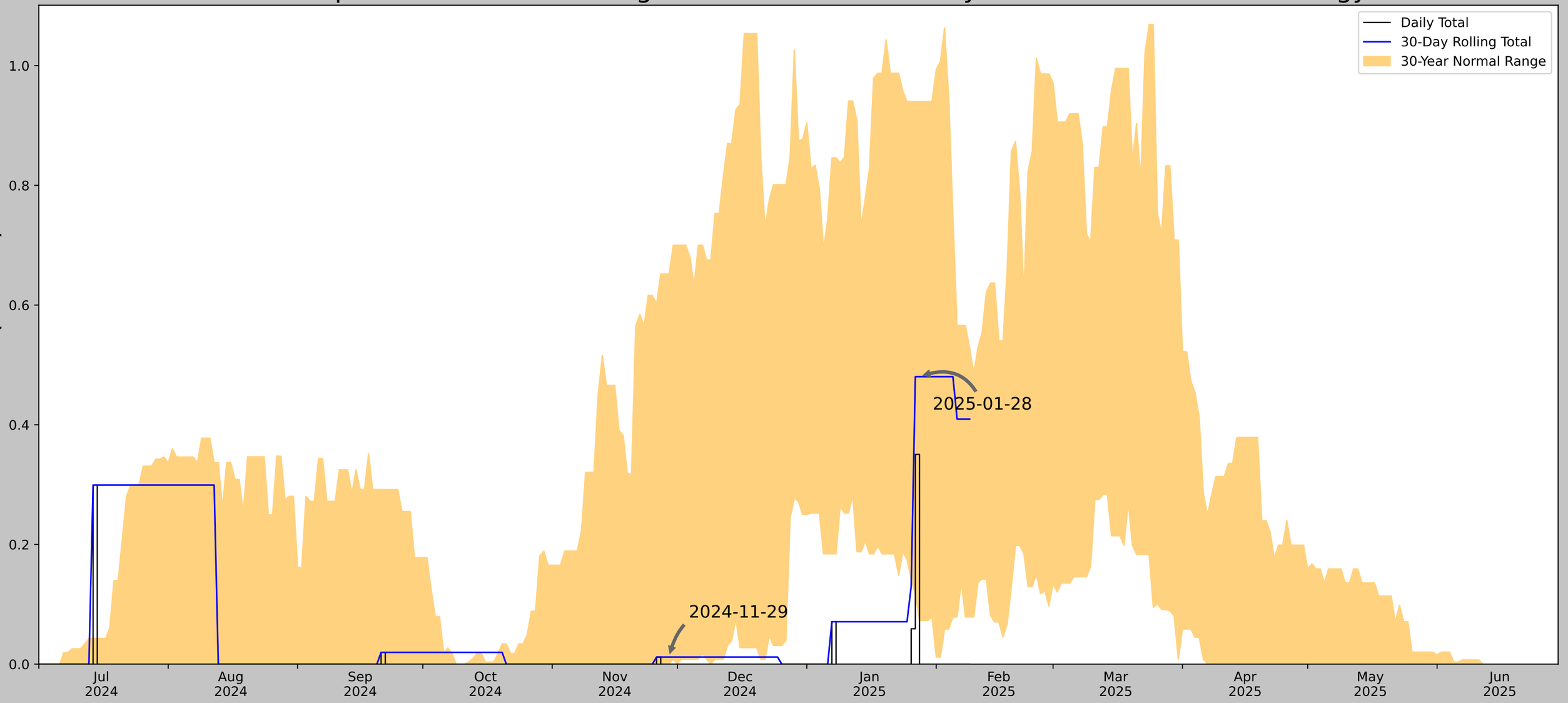
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BARSTOW	34.8928, -117.0219	2220.144	14.104	130.587	8.188	11100	90
BARSTOW 4.2 NE	34.9237, -117.0177	2169.948	2.148	50.196	1.074	9	0
BARSTOW 3.0 W	34.88, -117.118	2229.003	5.518	8.859	2.532	1	0
BARSTOW-DAGGETT AP	34.8536, -116.7869	1918.963	13.594	301.181	10.212	243	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.881719, -117.065683
Observation Date	2025-01-28
Elevation (ft)	2319.513
Drought Index (PDSI)	Severe drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-01-28	0.072835	0.940158	0.480315	Normal	2	3	6
2024-12-29	0.277165	1.025984	0.0	Dry	1	2	2
2024-11-29	0.0	0.651969	0.011811	Normal	2	1	2
Result							Normal Conditions - 10

US Army Corps of Engineers

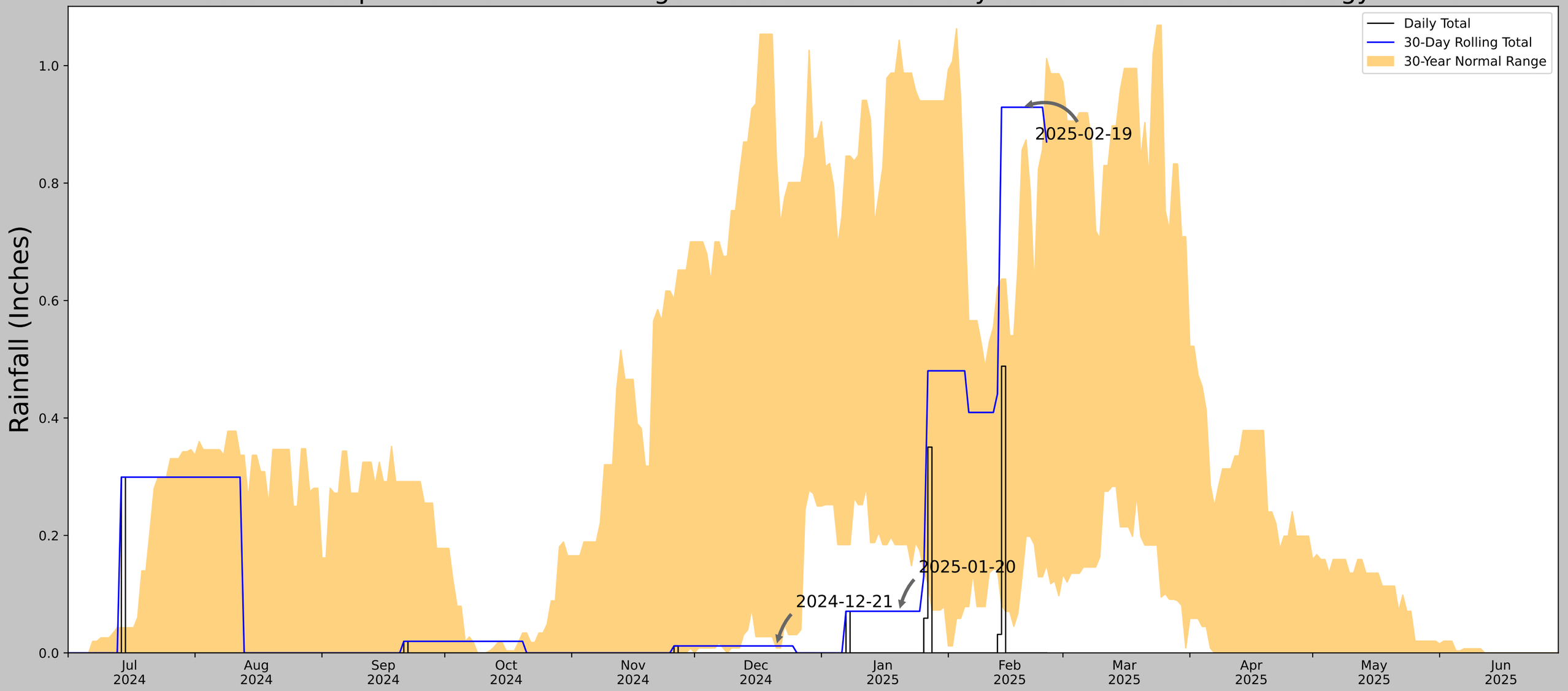
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BARSTOW	34.8928, -117.0219	2220.144	2.597	99.369	1.427	11100	90
BARSTOW 4.2 NE	34.9237, -117.0177	2169.948	2.148	50.196	1.074	9	0
BARSTOW 3.0 W	34.88, -117.118	2229.003	5.518	8.859	2.532	1	0
BARSTOW-DAGGETT AP	34.8536, -116.7869	1918.963	13.594	301.181	10.212	243	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.88401, -117.066768
Observation Date	2025-02-19
Elevation (ft)	2280.193
Drought Index (PDSI)	Severe drought (2025-01)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-02-19	0.129528	0.856299	0.929134	Wet	3	3	9
2025-01-20	0.184252	1.043307	0.070866	Dry	1	2	2
2024-12-21	0.008268	0.84252	0.011811	Normal	2	1	2
Result							Normal Conditions - 13

US Army Corps of Engineers

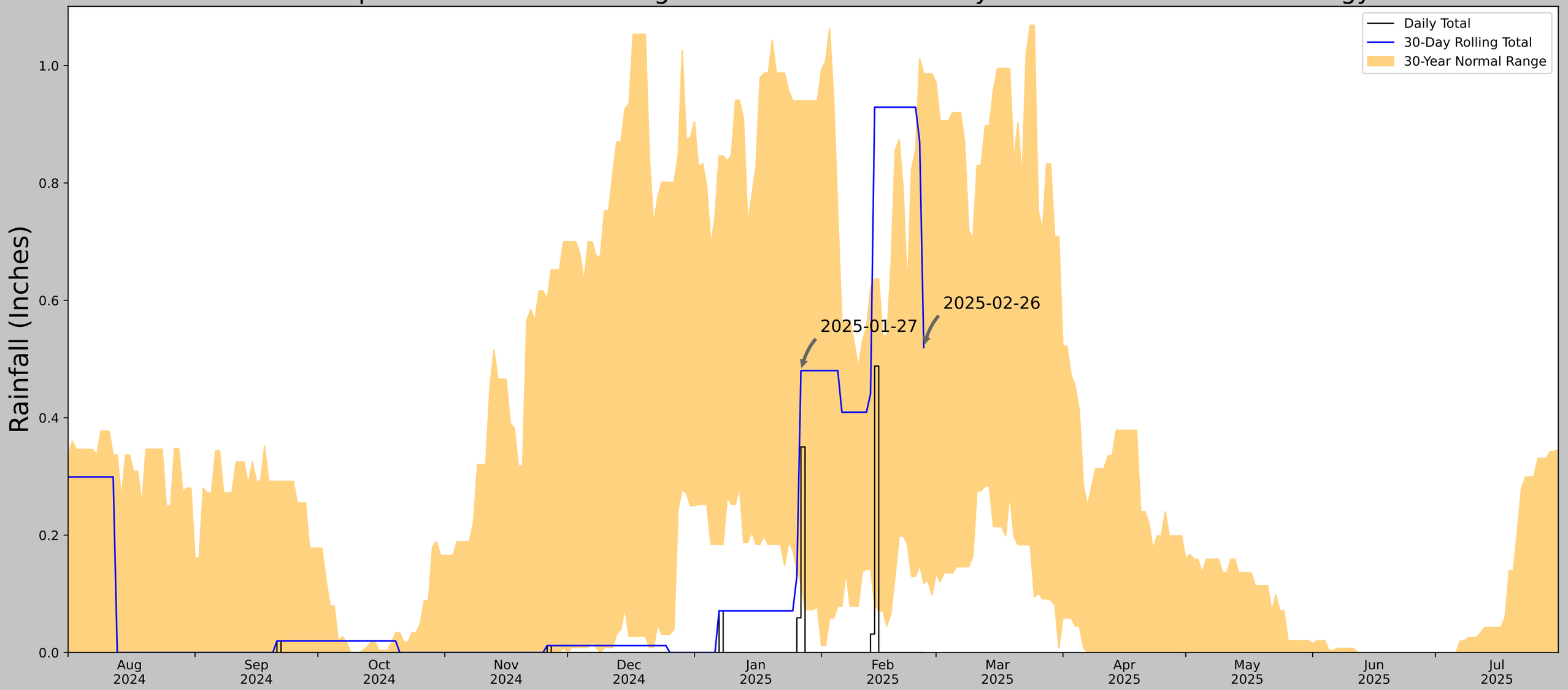
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BARSTOW	34.8928, -117.0219	2220.144	2.614	60.049	1.333	11100	90
BARSTOW 4.2 NE	34.9237, -117.0177	2169.948	2.148	50.196	1.074	9	0
BARSTOW 3.0 W	34.88, -117.118	2229.003	5.518	8.859	2.532	1	0
BARSTOW-DAGGETT AP	34.8536, -116.7869	1918.963	13.594	301.181	10.212	243	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.88401, -117.066768
Observation Date	2025-02-26
Elevation (ft)	2280.193
Drought Index (PDSI)	Severe drought (2025-01)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-02-26	0.117717	0.986221	0.519685	Normal	2	3	6
2025-01-27	0.117323	0.940158	0.480315	Normal	2	2	4
2024-12-28	0.244094	0.847244	0.0	Dry	1	1	1
Result							Normal Conditions - 11

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BARSTOW	34.8928, -117.0219	2220.144	2.614	60.049	1.333	11100	90
BARSTOW 4.2 NE	34.9237, -117.0177	2169.948	2.148	50.196	1.074	9	0
BARSTOW 3.0 W	34.88, -117.118	2229.003	5.518	8.859	2.532	1	0
BARSTOW-DAGGETT AP	34.8536, -116.7869	1918.963	13.594	301.181	10.212	243	0

ATTACHMENT G

SITE PHOTOGRAPHS

Appendix F

Site Photographs[1]

Barstow International Gateway 2025 Aquatic Resources Delineation Report Addendum– January 22, 2025, January 28, 2025, February 19, 2025, and February 26, 2025



Photo 1. Upstream view of Ordinary High Water Mark (OHWM) Datasheet Point (ODP) 41 within Swale (S)-10 facing south, within *Atriplex polycarpa* shrubland alliance. ODP 41 exhibited a slight break in bank slope; however, it did not exhibit a distinctive change in average sediment texture, change in vegetation species or cover, or any other OHWM indicators (34.794109, -117.240073). January 22, 2025.



Photo 2. Downstream view of ODP 41 within S-10, facing west toward S-13, within *Atriplex polycarpa* shrubland alliance. (34.794018, -117.239957). January 22, 2025.



Photo 3. View of Wetland Data Form Point (WDP) 16, facing north within disturbed land. WDP 16 did not meet any of the three wetland parameters (34.794213, -117.239585). January 22, 2025.



Photo 4. Downslope view of ODP 42 and Basin (B)-3, facing north, within disturbed land. ODP 42 exhibited a break in bank slope, change in average sediment texture, and change in vegetation cover. (34.792208, -117.241461). January 22, 2025.

[1] See corresponding Figure 5 series for photo point locations. See 2025 Aquatic Resources Delineation Report Sections 1.5 and 1.6 and Attachment H for a discussion of each feature.



Photo 5. Upslope view of ODP 42, within developed land in B-3, facing south. (34.792385, -117.241526). January 22, 2025.



Photo 7. Upstream view of ODP 43 within NWW-189, facing east, within developed land. (34.885460, -117.078451). January 28, 2025.



Photo 6. Downstream view of ODP 43, within NWW-189, facing west, within developed land. ODP 43 exhibited a break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. (34.885473, -117.078408). January 28, 2025.



Photo 8. Upstream view of ODP 44, within NWW-203, facing south, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance. ODP 44 exhibited a break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. (34.884977, -117.071183). January 28, 2025.



Photo 9. Downstream view of ODP 44 within NWW-203, facing north, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance (34.884967, -117.071193). January 28, 2025.



Photo 10. Downstream view of ODP 45, within NWW-209, facing north, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance. ODP 45 exhibited a break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. (34.884930, -117.069755). January 28, 2025.



Photo 11. Upstream view of ODP 45, within NWW-209, facing south, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance. (34.884924, -117.069752). January 28, 2025.



Photo 12. Downstream view of ODP 46, within NWW-219, facing north, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance. ODP 46 exhibited a break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. (34.884486, -117.067708). January 28, 2025.



Photo 13. Upstream view of ODP 46, within NWW-219, facing south, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance. (34.884486, -117.067714). January 28, 2025.



Photo 14. Downstream view of ODP 47, within NWW-256, facing east, within *Atriplex polycarpa* shrubland alliance, ODP 47 exhibited a break in bank slope, change in average sediment texture, change in vegetation cover, and change in vegetation species. (34.891249, -117058062). February 19, 2025.



Photo 15. Upstream view of ODP 47, within NWW-256, facing north, within *Atriplex polycarpa* shrubland alliance. (34.89123, -117.058054). February 19, 2025.



Photo 16. Downstream view of ODP 48, within Erosion Feature (EF)-22, facing east, within *Atriplex polycarpa* shrubland alliance. ODP 48 exhibited an abrupt break in bank slope, slight change in vegetation cover, and slight change in vegetation species; however, it did not exhibit a change in average sediment texture, was highly incised, and lacked a significant change in vegetation between the active floodplain and the uplands. (34.891195, -117.058083). February 19, 2025.



Photo 17. Upstream view of ODP 48, within EF-22, facing west, within *Atriplex polycarpa* shrubland alliance. (34.891190, -117.058064). February 19, 2025.



Photo 18. View of Wetland Data Form Point (WDP) 17, facing north, within *Atriplex polycarpa* shrubland alliance. WDP 17 met the wetland hydrology parameter; however, it did not meet the hydrophytic vegetation nor hydric soils parameters. 34.891195, -117057959). February 19, 2025.



Photo 19. View of Watercourse H, facing north, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance. (34.839599, -117.162198). February 26, 2026.

ATTACHMENT H

AQUATIC RESOURCE SUMMARY TABLES FOR 2025 ARDR ADDENDUM REVIEW AREA

Table H-1. Aquatic Resource Summary for 2025 ARDR Addendum Review Area: Corps/RWQCB

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-98*	R6	4 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Atriplex polycarpa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Atriplex polycarpa* Shrubland Alliance; discharges to unpaved road. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.880240, -117.106039	0.01	59
NWW-181*	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.874740, -117.046924	0.01	99
NWW-189	R6	1 – 1	CAST, CVS, CVC, BBS; See ODP 43[4]	None[5] (concrete channel)	Yes/No	Developed Land	Unvegetated, concrete channel within developed land; discharges to Sandstone Court (See Photos 6-7 on Figures 5A-5B and Attachment G).	34.885499, -117.078290	<0.01	94
NWW-190	R6	16 - 16	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Developed Land	Unvegetated, single-thread feature within developed land; discharges to Sandstone Court. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884869, -117.078609	0.04	102
NWW-191	R6	4 - 12	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Sandstone Court. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884831, -117.078050	0.05	337
NWW-192	R6	1 - 10	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to	34.884968, -117.077919	0.03	295

						Shrubland Alliance[6]	Sandstone Court. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-193	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884776, -117.077759	<0.01	118
NWW-194	R6	2 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884688, -117.077351	<0.01	27
NWW-195	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area at EF-19. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884718, -117.077159	<0.01	73
NWW-196	R6	2 - 5	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884662, -117.076738	<0.01	107
NWW-197	R6	2 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884898, -117.076800	0.02	273
NWW-198	R6	1 - 8	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884888, -117.076325	0.01	167

NWW-199	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884713, -117.076351	<0.01	137
NWW-200	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884642, -117.075371	0.01	340
NWW-201	R6	3 - 8	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884591, -117.073655	0.01	79
NWW-202	R6	1 - 5	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884926, -117.071903	0.01	178
NWW-203	R6	1 - 40	CAST, CVS, CVC, BBS; See ODP 44[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 8 and 9 on Figures 5A – 5B and Attachment G.)	34.884840, -117.071089	0.40	911
NWW-204	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.885061, -117.070693	<0.01	59

NWW-205	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884957, -117.070523	0.01	174
NWW-206	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884739, -117.070669	<0.01	56
NWW-207	R6	1 - 5	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884798, -117.070199	0.02	327
NWW-208	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884886, -117.070016	0.01	228
NWW-209	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884793, -117.069784	0.01	247
NWW-210	R6	1 - 6	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside 2025 ARDR	34.884694, -117.069564	0.03	329

						Shrubland Alliance[6]	addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-211	R6	3 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884832, -117.069431	<0.01	32
NWW-212	R6	2 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884603, -117.069362	0.01	127
NWW-213	R6	1 - 12	CAST, CVS, CVC, BBS; See ODP 43 and 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6] and Developed Land	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance draining to concrete channel; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884852, -117.068194	0.05	1,044
NWW-214	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884638, -117.069050	<0.01	208
NWW-215	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884584, -117.068791	0.01	124

NWW-216	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884598, -117.068755	0.01	111
NWW-217	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884557, -117.068637	<0.01	79
NWW-218	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884570, -117.068415	0.01	134
NWW-219	R6	150 - 215	CAST, CVS, CVC, BBS; See ODP 46[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photo 12 on Figures 5A – 5B and Attachment G.)	34.884627, -117.067639	0.59	139
NWW-220	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884544, -117.066951	0.01	119
NWW-221	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos	34.884589, -117.066829	<0.01	175

							10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-222	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884531, -117.066373	0.01	141
NWW-223	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884594, -117.066264	0.01	148
NWW-224	R6	3 - 5	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884631, -117.066111	0.02	170
NWW-225	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884508, -117.065441	<0.01	79
NWW-226	R6	50 - 113	CAST, CVS, CVC, BBS; See ODP 44[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 8 and 9 on Figures 5A – 5B and Attachment G.)	34.884722, -117.064866	0.41	238
NWW-227	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside 2025 ARDR	34.884991, -117.064414	0.01	144

						Shrubland Alliance[6]	addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-228	R6	1 - 6	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884539, -117.064176	0.03	410
NWW-229	R6	2 - 6	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884760, -117.063677	0.02	383
NWW-230	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884420, -117.063052	0.01	309
NWW-231	R6	1 - 27	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6], Disturbed and Developed Land	Multiple unvegetated, single-thread features within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance draining to Santa Cruz Street (unpaved road); begins within and ends outside 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884970, -117.062850	0.40	884
NWW-232	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.883227, -117.063127	<0.01	100

NWW-233	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.883705, -117.062238	0.03	633
NWW-234	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884074, -117.062543	0.01	249
NWW-235	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884240, -117.062364	0.01	364
NWW-236	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884548, -117.062380	<0.01	76
NWW-237	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884322, -117.062044	0.01	575
NWW-238	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR	34.884346, -117.061772	0.03	569

						Shrubland Alliance[6]	addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-239	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884599, -117.061692	<0.01	50
NWW-240	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884439, -117.061487	0.01	464
NWW-241	R6	6 - 6	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Developed Land	Unvegetated, single-thread feature within Developed Land; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.883139, -117.060675	0.02	109
NWW-242	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, diverging features within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.882766, -117.060334	0.01	97
NWW-243	R6	2 - 8	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.880389, -117.060464	0.03	282
NWW-244	R6	2 - 10	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and	34.879697, -117.060464	0.03	197

						Shrubland Alliance[6]	ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-245	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.878572, -117.057288	0.01	111
NWW-246	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.876197, -117.060476	0.01	273
NWW-247	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Developed Land	Unvegetated, single-thread feature within developed land; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.877256, -117.056143	<0.01	57
NWW-248	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.875996, -117.056428	0.03	612
NWW-249	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.874694, -117.057062	<0.01	122
NWW-250	R6	2 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Developed Land	Unvegetated, single-thread feature within developed land; begins and ends within 2025 ARDR addendum	34.874781, -117.052983	<0.01	47

							review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-251	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.874348, -117.050661	<0.01	61
NWW-252	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.874419, -117.047069	<0.01	74
NWW-253	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.881800, -117.055948	<0.01	89
NWW-254	R6	3 - 3	CAST, CVS, CVC, BBS; See ODP 43[4]	None[5] (concrete channel)	Yes/No	Disturbed Land	Unvegetated, concrete channel within disturbed land; discharges to storm sewer system (See Photos 6-7 on Figures 5A-5B and Attachment G).	34.887671, -117.056117	0.05	737
NWW-255	R6	3 - 3	CAST, CVS, CVC, BBS; See ODP 43[4]	None[5] (concrete channel)	Yes/No	Disturbed Land	Unvegetated, concrete channel within disturbed land; discharges to storm sewer system (See Photos 6-7 on Figures 5A-5B and Attachment G).	34.888721, -117.056772	0.07	959
NWW-256	R6	2 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Atriplex polycarpa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Atriplex polycarpa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area, discharging to Basin (B)-4. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.891279, -117.058014	<0.01	48
NWW-257	R6	4 - 20	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins	34.891638, -117.058161	0.01	95

						dumosa Shrubland Alliance[6]	within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-258	R6	5 - 5	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.891580, -117.058509	0.02	154
NWW-259	R6	12 - 26	CAST, CVS, CVC, BBS; See ODP 44[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 8 and 9 on Figures 5A – 5B and Attachment G.)	34.887628, -117.072095	0.04	83
NWW-260	R6	14 - 30	CAST, CVS, CVC, BBS; See ODP 44[4]	WH[5]	Yes/No	Disturbed Land	Unvegetated, multi-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 8 and 9 on Figures 5A – 5B and Attachment G.)	34.888101, -117.072300	0.06	108
NWW-261	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Atriplex polycarpa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Atriplex polycarpa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area, (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.887744, -117.073630	<0.01	170
NWW-262	R6	3 - 10	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Atriplex polycarpa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Atriplex polycarpa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.887420, -117.074868	0.01	125
NWW-263	R6	3 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Developed Land	Unvegetated, single-thread feature within developed land; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.886994, -117.074753	<0.01	46

NWW-264	R6	5 - 12	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Disturbed Land	Unvegetated, single-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.885349, -117.083007	0.03	131
NWW-265	R6	2 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Disturbed Land	Unvegetated, single-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.885238, -117.083076	0.01	181
NWW-266	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.885251, -117.083837	<0.01	72
NWW-267	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Disturbed Land	Unvegetated, single-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.885136, -117.084387	<0.01	42
NWW-268	R6	32 - 52	CAST, CVS, CVC, BBS; See ODP 44[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 8 and 9 on Figures 5A – 5B and Attachment G.)	34.884128, -117.085431	0.10	101
NWW-269	R6	1 - 36	CAST, CVS, CVC, BBS; See ODP 44[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 8 and 9 on Figures 5A – 5B and Attachment G.)	34.884739, -117.085298	0.09	549

NWW-270	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884730, -117.085938	<0.01	54
NWW-271	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884689, -117.086056	<0.01	78
NWW-272	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884613, -117.086163	<0.01	78
NWW-273	R6	4 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884641, -117.086270	0.01	57
NWW-274	R6	3 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884611, -117.086443	<0.01	51
NWW-275	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos	34.884494, -117.086801	0.01	162

							10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-276	R6	2 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884272, -117.086785	0.01	159
NWW-277	R6	2 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884447, -117.087008	0.01	70
NWW-278	R6	3 - 6	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884328, -117.087043	0.02	139
NWW-279	R6	6 - 20	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.884200, -117.087561	0.03	141
NWW-280	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.883667, -117.087345	0.01	117
NWW-281	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR	34.883951, -117.088825	0.01	107

						Shrubland Alliance[6]	addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-282	R6	3 - 3	CAST, CVS, CVC, BBS; See ODP 43[4]	None[5] (concrete channel)	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, concrete channel within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to storm sewer system along State Route (SR)-58 (See Photos 6-7 on Figures 5A-5B and Attachment G).	34.883010, -117.090401	0.02	272
NWW-283	R6	1 - 5	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.883675, -117.098066	0.01	174
NWW-284	R6	2 - 6	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.883251, -117.098655	0.04	525
NWW-285	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 43[4]	None[5] (concrete channel)	Yes/No	Developed Land	Unvegetated, concrete channel within Developed Land; discharges to storm sewer system along Main Street (See Photos 6-7 on Figures 5A-5B and Attachment G).	34.872564, -117.117449	0.01	480
NWW-286	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 43[4]	None[5] (concrete channel)	Yes/No	Developed Land	Unvegetated, concrete channel within Developed Land; discharges to storm sewer system along Main Street (See Photos 6-7 on Figures 5A-5B and Attachment G).	34.871959, -117.118477	0.01	354
NWW-287	R6	2 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature to parallel diverging features within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos	34.854108, -117.142025	0.08	1,316

							10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-288	R6	2 - 6	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.854484, -117.141307	<0.01	114
NWW-289	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.844585, -117.155167	<0.01	132
NWW-290	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.844434, -117.155340	0.02	518
NWW-291	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.844047, -117.155675	<0.01	122
NWW-292	R6	3 - 16	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Disturbed Land	Unvegetated, single-thread feature within disturbed land; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.843835, -117.156241	0.02	106
NWW-293	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Disturbed Land	Unvegetated, single-thread feature within disturbed land; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.843595, -117.155397	<0.01	32

NWW-294	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, double-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.843526, -117.156713	0.01	143
NWW-295	R6	4 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.843014, -117.157466	0.01	91
NWW-296	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.841284, -117.159788	<0.01	50
NWW-297	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, converging feature to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.841284, -117.159788	0.01	152
NWW-298	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.838554, -117.163668	0.01	123
NWW-299	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos	34.838168, -117.164441	0.01	139

						Shrubland Alliance[6]	10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-300	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.838016, -117.164824	<0.01	55
NWW-301	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, diverging to converging feature to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.837817, -117.164981	0.01	191
NWW-302	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.837379, -117.165543	<0.01	108
NWW-303	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.837119, -117.165941	0.01	119
NWW-304	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.836963, -117.166360	0.01	136
NWW-305	R6	1 - 5	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, converging feature to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends	34.836611, -117.166625	0.03	471

						Shrubland Alliance[6]	outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-306	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.834856, -117.171163	<0.01	18
NWW-307	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.834780, -117.171605	<0.01	24
NWW-308	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.834692, -117.171406	<0.01	82
NWW-309	R6	3 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.834498, -117.171743	<0.01	32
NWW-310	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.834497, -117.172199	<0.01	76
NWW-311	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins	34.833845, -117.173741	<0.01	61

						dumosa Shrubland Alliance[6]	within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)			
NWW-312	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	Disturbed Land	Unvegetated, single-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.833837, -117.173783	<0.01	44
NWW-313	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.831780, -117.173876	<0.01	88
NWW-314	R6	2 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.831725, -117.173709	<0.01	35
NWW-315	R6	2 - 12	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.827791, -117.181688	0.15	959
NWW-316	R6	4 - 4	CAST, CVS, CVC, BBS; See ODP 45[4]	WH[5]	Yes/No	*Atriplex polycarpa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Atriplex polycarpa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.809751, -117.199844	0.02	173
								Total[7]	3.55	27,409

[1] OHWM Indicators: CAST = Change in average sediment texture; CVS = Change in vegetation species; CVC = Change in vegetation cover; BBS = Break in bank slope
[2] Wetland Parameters: HV = Hydrophytic vegetation; HS = Hydric soils; WH = Wetland hydrology

[3] See Figure 6 for all vegetation communities present within/around each aquatic resource.
[4] Based on a representative ODP taken within an aquatic resource with similar conditions.
[5] Based on a representative WDP taken within an aquatic resource with similar conditions.
[6] Unvegetated within mapped vegetation community; however, no vegetation technically present within the OHWM.
[7] Acreages and linear feet totals were summed using raw numbers provided during GIS analysis (available upon request) and thus, the sum of the total rounded numbers may not directly add up in this table.
*Reflects additional acreage and linear footage delineated during the 2025 ARDR field survey only. See Attachment D for full dimensions.

Table H-2. Aquatic Resource Summary for 2025 ARDR Addendum Review Area: CDFW

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-98*	Unvegetated Streambed[2]	*Atriplex polycarpa* Shrubland Alliance[3]	5 - 5	Unvegetated, single-thread feature within *Atriplex polycarpa* Shrubland Alliance; discharges to unpaved road. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.880240, -117.106039	0.01	59
NWW-181*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.874740, -117.046924	0.01	99
NWW-189	Unvegetated Streambed[2]	Developed Land	2 - 2	Unvegetated, concrete channel within developed land; discharges to Sandstone Court (See Photos 6-7 on Figure 5C and Attachment G).	34.885499, -117.078290	<0.01	94
NWW-190	Unvegetated Streambed[2]	Developed Land	25 - 25	Unvegetated, single-thread feature within developed land; discharges to Sandstone Court. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884869, -117.078609	0.06	102
NWW-191	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 12	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Sandstone Court. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884831, -117.078050	0.06	337
NWW-192	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 13	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Sandstone Court. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884968, -117.077919	0.04	295
NWW-193	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884776, -117.077759	<0.01	118

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-194	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884688, -117.077351	<0.01	27
NWW-195	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area at EF-19. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884718, -117.077159	<0.01	73
NWW-196	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 7	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5C and Attachment G.)	34.884662, -117.076738	0.01	107
	Watercourse[6]		N/A			0.05	
NWW-197	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 4	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884898, -117.076800	0.02	273
NWW-198	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 8	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884888, -117.076325	0.02	167
NWW-199	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884713, -117.076351	<0.01	137

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-200	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 3	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884642, -117.075371	0.02	340
NWW-201	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 8	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884591, -117.073655	0.01	79
NWW-202	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 7	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884926, -117.071903	0.01	178
NWW-203	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 185	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 8 and 9 on Figure 5C and Attachment G.)	34.884840, -117.071089	0.77	911
NWW-204	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.885061, -117.070693	<0.01	59
NWW-205	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	2 - 3	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884957, -117.070523	0.01	174

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-206	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884739, -117.070669	<0.01	56
NWW-207	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 7	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884798, -117.070199	0.03	327
NWW-208	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 3	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884886, -117.070016	0.01	228
NWW-209	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884793, -117.069784	0.01	247
NWW-210	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 9	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884694, -117.069564	0.04	329
NWW-211	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	3 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884832, -117.069431	<0.01	32

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-212	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884603, -117.069362	0.01	127
NWW-213	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3] and Developed Land	2 -12	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance draining to concrete channel; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884852, -117.068194	0.09	1,044
NWW-214	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884638, -117.069050	<0.01	208
NWW-215	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884584, -117.068791	0.01	124
NWW-216	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884598, -117.068755	0.01	111
NWW-217	Unvegetated Streambed[2]	*Larrea tridentata* –	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends	34.884557, -117.068637	<0.01	79

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Ambrosia dumosa Shrubland Alliance[3]		within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)			
NWW-218	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 9	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884570, -117.068415	0.01	134
NWW-219	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	215 - 215	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photo 12 on Figure 5C and Attachment G.)	34.884627, -117.067639	0.59	139
NWW-220	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884544, -117.066951	0.01	119
NWW-221	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884589, -117.066829	0.01	175
NWW-222	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884531, -117.066373	0.01	141
NWW-223	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia*	1 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends	34.884594, -117.066264	0.01	148

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		dumosa Shrubland Alliance[3]		within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)			
NWW-224	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884631, -117.066111	0.02	170
NWW-225	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884508, -117.065441	<0.01	79
NWW-226	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	80 -150	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 8 and 9 on Figure 5C and Attachment G.)	34.884722, -117.064866	0.61	238
NWW-227	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884991, -117.064414	0.01	144
NWW-228	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 6	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884539, -117.064176	0.03	410
NWW-229	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	2 -15	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884760, -117.063677	0.07	383

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-230	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884420, -117.063052	0.01	309
NWW-231	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3], Disturbed and Developed Land	1 - 30	Multiple unvegetated, single-thread features within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance draining to Santa Cruz Street (unpaved road); begins within and ends outside 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884970, -117.062850	0.40	884
NWW-232	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.883227, -117.063127	<0.01	100
NWW-233	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 6	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.883705, -117.062238	0.04	633
NWW-234	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884074, -117.062543	0.02	249

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-235	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884240, -117.062364	0.01	364
NWW-236	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884548, -117.062380	<0.01	76
NWW-237	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 2	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures Figure 5C and Attachment G.)	34.884322, -117.062044	0.02	575
NWW-238	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 4	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884346, -117.061772	0.04	569
NWW-239	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884599, -117.061692	<0.01	50
NWW-240	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 5	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884439, -117.061487	0.03	464

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-241	Unvegetated Streambed[2]	Developed Land	65 - 65	Unvegetated, single-thread feature within Developed Land; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.883139, -117.060675	0.16	109
NWW-242	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, diverging features within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.882766, -117.060334	0.01	97
NWW-243	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 12	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.880389, -117.060464	0.03	282
NWW-244	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 10	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.879697, -117.060464	0.03	197
NWW-245	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.878572, -117.057288	0.01	111
NWW-246	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.876197, -117.060476	0.01	273
NWW-247	Unvegetated Streambed[2]	Developed Land	1 - 1	Unvegetated, single-thread feature within developed land; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.877256, -117.056143	<0.01	57

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-248	Unvegetated Streambed[2]	*Larrea tridentata* Shrubland Alliance[3]	1 - 4	Unvegetated, converging features to single-thread feature within *Larrea tridentata* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.875996, -117.056428	0.03	612
NWW-249	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.874694, -117.057062	<0.01	122
NWW-250	Unvegetated Streambed[2]	Developed Land	5 - 7	Unvegetated, single-thread feature within developed land; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.874781, -117.052983	0.01	47
NWW-251	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.874348, -117.050661	<0.01	61
NWW-252	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.874419, -117.047069	<0.01	74
NWW-253	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.881800, -117.055948	<0.01	89
NWW-254	Unvegetated Streambed[2]	Disturbed Land	17 - 17	Unvegetated, concrete channel within disturbed land; discharges to storm sewer system (See Photos 6-7 on Figure 5C and Attachment G).	34.887671, -117.056117	0.29	737
NWW-255	Unvegetated Streambed[2]	Disturbed Land	17 - 17	Unvegetated, concrete channel within disturbed land; discharges to storm sewer system (See Photos 6-7 on Figure 5C and Attachment G).	34.888721, -117.056772	0.38	959

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-256	Unvegetated Streambed[2]	*Atriplex polycarpa* Shrubland Alliance[3]	2 - 6	Unvegetated, converging features to single-thread feature within *Atriplex polycarpa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area, discharging to Basin (B)-4. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.891279, -117.058014	<0.01	48
NWW-257	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	6 - 30	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.891638, -117.058161	0.02	95
NWW-258	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	12 - 12	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.891580, -117.058509	0.04	154
NWW-259	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	10 - 31	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 8 and 9 on Figure 5C and Attachment G.)	34.887628, -117.072095	0.05	83
NWW-260	Unvegetated Streambed[2]	Disturbed Land	37 - 48	Unvegetated, multi-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 8 and 9 on Figure 5C and Attachment G.)	34.888101, -117.072300	0.10	108
NWW-261	Unvegetated Streambed[2]	*Atriplex polycarpa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Atriplex polycarpa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area, (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.887744, -117.073630	<0.01	170
NWW-262	Unvegetated Streambed[2]	*Atriplex polycarpa* Shrubland Alliance[3]	6 - 12	Unvegetated, single-thread feature within *Atriplex polycarpa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 Figure 5C and Attachment G.)	34.887420, -117.074868	0.02	125
NWW-263	Unvegetated Streambed[2]	Developed Land	3 - 3	Unvegetated, single-thread feature within developed land; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.886994, -117.074753	<0.01	46

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
NWW-264	Unvegetated Streambed[2]	Disturbed Land	15 - 20	Unvegetated, single-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figures 5A – 5B and Attachment G.)	34.885349, -117.083007	0.05	131
NWW-265	Unvegetated Streambed[2]	Disturbed Land	3 - 3	Unvegetated, single-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.885238, -117.083076	0.01	181
NWW-266	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	4 - 4	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.885251, -117.083837	0.01	72
NWW-267	Unvegetated Streambed[2]	Disturbed Land	2 - 2	Unvegetated, single-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.885136, -117.084387	<0.01	42
NWW-268	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	55 - 55	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 8 and 9 on Figure 5C and Attachment G.)	34.884128, -117.085431	0.57	101
NWW-269	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	1 - 48	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; begins outside and ends within 2025 ARDR addendum review area. (See Photos 8 and 9 on Figure 5C and Attachment G.)	34.884739, -117.085298	0.13	549
NWW-270	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	4 - 4	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884730, -117.085938	0.01	54
NWW-271	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa*	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884689, -117.086056	<0.01	78

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-272	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884613, -117.086163	<0.01	78
NWW-273	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	6 - 6	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884641, -117.086270	0.01	57
NWW-274	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884611, -117.086443	0.01	51
NWW-275	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884494, -117.086801	0.01	162
NWW-276	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884272, -117.086785	0.01	159
NWW-277	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	4 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884447, -117.087008	0.01	70

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-278	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 7	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884328, -117.087043	0.02	139
NWW-279	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	13 - 25	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.884200, -117.087561	0.06	141
NWW-280	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.883667, -117.087345	0.01	117
NWW-281	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.883951, -117.088825	0.01	107
NWW-282	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	12 - 12	Unvegetated, concrete channel within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to storm sewer system along State Route (SR)-58 (See Photos 6-7 on Figure 5C and Attachment G).	34.883010, -117.090401	0.07	272
NWW-283	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	2 - 8	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.883675, -117.098066	0.01	174

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-284	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 6	Unvegetated, converging features to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.883251, -117.098655	0.05	525
	Watercourse[6]		N/A			0.03	
NWW-285	Unvegetated Streambed[2]	Developed Land	3 - 3	Unvegetated, concrete channel within Developed Land; discharges to storm sewer system along Main Street (See Photos 6-7 on Figure 5C and Attachment G).	34.872564, -117.117449	0.03	480
NWW-286	Unvegetated Streambed[2]	Developed Land	3 - 3	Unvegetated, concrete channel within Developed Land; discharges to storm sewer system along Main Street (See Photos 6-7 on Figure 5C and Attachment G).	34.871959, -117.118477	0.03	354
NWW-287	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 5	Unvegetated, single-thread feature to parallel diverging features within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.854108, -117.142025	0.13	1,316
	Watercourse[6]		N/A			0.26	
NWW-288	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.854484, -117.141307	<0.01	114
NWW-289	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.844585, -117.155167	<0.01	132
NWW-290	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	1 - 5	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.844434, -117.155340	0.02	518

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-291	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.844047, -117.155675	<0.01	122
NWW-292	Unvegetated Streambed[2]	Disturbed Land	3 - 18	Unvegetated, single-thread feature within disturbed land; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.843835, -117.156241	0.03	106
NWW-293	Unvegetated Streambed[2]	Disturbed Land	4 - 4	Unvegetated, single-thread feature within disturbed land; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.843595, -117.155397	<0.01	32
	Watercourse[6]		N/A			0.02	
NWW-294	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 2	Unvegetated, double-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.843526, -117.156713	0.01	143
NWW-295	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	5 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.843014, -117.157466	0.01	91
NWW-296	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.841284, -117.159788	<0.01	50
NWW-297	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	1 - 3	Unvegetated, converging feature to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.841284, -117.159788	0.01	152

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-298	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.838554, -117.163668	0.01	123
	Watercourse[6]		N/A			0.18	
NWW-299	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.838168, -117.164441	0.01	139
	Watercourse[6]		N/A			0.09	
NWW-300	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.838016, -117.164824	<0.01	55
NWW-301	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 3	Unvegetated, diverging to converging feature to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.837817, -117.164981	0.01	191
	Watercourse[6]		N/A			0.32	
NWW-302	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.837379, -117.165543	0.01	108
NWW-303	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.837119, -117.165941	0.01	119

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-304	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.836963, -117.166360	0.01	136
NWW-305	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 9	Unvegetated, converging feature to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.836611, -117.166625	0.05	471
	Watercourse[6]		42 - 120			0.15	
NWW-306	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.834856, -117.171163	<0.01	18
NWW-307	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.834780, -117.171605	<0.01	24
NWW-308	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.834692, -117.171406	<0.01	82
NWW-309	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.834498, -117.171743	<0.01	32

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
NWW-310	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.834497, -117.172199	<0.01	76
NWW-311	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.833845, -117.173741	<0.01	61
NWW-312	Unvegetated Streambed[2]	Disturbed Land	2 - 2	Unvegetated, single-thread feature within disturbed land; begins within and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.833837, -117.173783	<0.01	44
NWW-313	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins outside of and ends within 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.831780, -117.173876	<0.01	88
NWW-314	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.831725, -117.173709	<0.01	35
NWW-315	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 14	Unvegetated, multi-thread to single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; begins and ends outside of 2025 ARDR addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)	34.827791, -117.181688	0.19	959
	Watercourse[6]		5 - 85			0.71	
NWW-316	Unvegetated Streambed[2]	*Atriplex polycarpa*	6 - 6	Unvegetated, single-thread feature within *Atriplex polycarpa* Shrubland Alliance; begins and ends outside of 2025 ARDR	34.809751, -117.199844	0.02	173

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]		addendum review area. (See Photos 10 and 11 on Figure 5C and Attachment G.)			
Watercourse D	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.842718, -117.157915	0.06	N/A
Watercourse E	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.841824, -117.159145	0.19	N/A
Watercourse F	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.841666, -117.159546	0.02	N/A
Watercourse G	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.840091, -117.161560	0.07	N/A
Watercourse H	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.839922, -117.161920	0.03	N/A
Watercourse I	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa*	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.839738, -117.162234	0.04	N/A

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
		Shrubland Alliance[3]					
Watercourse J	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.839596, -117.162459	0.01	N/A
Watercourse K	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.833463, -117.173675	0.02	N/A
Watercourse L	Watercourse[6]	Disturbed Land	N/A	Watercourse independent of any unvegetated streambed flowing through disturbed land surrounded by *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.809751, -117.199844	0.05	N/A
Watercourse M	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.827792, -117.182833	0.09	N/A
Watercourse N	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.809918, -117.199889	0.04	N/A
Watercourse O	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.809683, -117.200211	0.01	N/A

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)	Linear Feet
Watercourse P	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.809502, -117.200189	0.03	N/A
Watercourse Q	Watercourse[6]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	N/A	Watercourse independent of any unvegetated streambed flowing through *Larrea tridentata – Ambrosia dumosa* shrubland alliance. See representative Photo 19 in Attachment G.	34.809145, -117.200450	0.44	N/A
					Total[5]	6.90	27,409

[1] Corresponds with the approximate stream bank widths observed during delineation. Width range accounts for entirety of streambed delineated, not individual vegetation communities.
[2] A "streambed" under CFGC Section 1602 includes the channel of a watercourse that is generally defined to include the depression between the banks worn by the regular and usual flow of water.
[3] Unvegetated streambed within mapped vegetation community; however, no vegetation technically present within the streambed.
[4] Acreage and linear feet only provided for portion of aquatic resource located within the 2025 ARDR addendum review area.
[5] Acreages and linear feet totals were summed using raw numbers provided during GIS analysis (available upon request) and thus, the sum of the total rounded numbers may not directly add up in this table.
[6] A "watercourse" extends beyond the streambed and can consist of associated features such as low-flow, active, and braided channels and banks associated with islands, and secondary channels within the bounds of a larger channel complex (Vyverberg & Brady 2013)
[7] Linear feet not calculated for watercourse to avoid redundant linear foot calculation where such areas overlap with streambed. 3 A "streambed" under CFGC Section 1602 includes the channel of a watercourse that is generally defined to include the depression between the banks worn by the regular and usual
flow of water.
*Reflects additional acreage and linear footage delineated during the 2025 ARDR field survey only. See Attachment D for full dimensions.

ATTACHMENT I

ORM BULK UPLOAD AQUATIC RESOURCES OR CONSOLIDATED EXCEL SPREADSHEET

(*SUPERSEDES APPENDIX I OF THE 2022 ARDR, ATTACHMENT G OF THE 2023 ARDR ADDENDUM, AND ATTACHMENT I OF THE 2024 ARDR ADDENDUM*)

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
NWW-1	CALIFORNIA	R6	RIVERINE	Area	0.0163	ACRE	DELIN.PJD-404	34.77278668	-117.28465332	Mojave River
NWW-2	CALIFORNIA	R6	RIVERINE	Area	0.0114	ACRE	DELIN.PJD-404	34.77284665	-117.28460962	Mojave River
NWW-3	CALIFORNIA	R6	RIVERINE	Area	0.0185	ACRE	DELIN.PJD-404	34.77322097	-117.28381670	Mojave River
NWW-4	CALIFORNIA	R6	RIVERINE	Area	0.013	ACRE	DELIN.PJD-404	34.77365286	-117.28303575	Mojave River
NWW-5	CALIFORNIA	R6	RIVERINE	Area	0.0108	ACRE	DELIN.PJD-404	34.77373358	-117.28286858	Mojave River
NWW-6	CALIFORNIA	R6	RIVERINE	Area	0.0125	ACRE	DELIN.PJD-404	34.77465215	-117.28170142	Mojave River
NWW-7	CALIFORNIA	R6	RIVERINE	Area	0.0102	ACRE	DELIN.PJD-404	34.77667409	-117.27878631	Mojave River
NWW-8	CALIFORNIA	R6	RIVERINE	Area	0.0071	ACRE	DELIN.PJD-404	34.77678560	-117.27870544	Mojave River
NWW-9	CALIFORNIA	R6	RIVERINE	Area	0.0255	ACRE	DELIN.PJD-404	34.77879412	-117.27738386	Mojave River
NWW-10	CALIFORNIA	R6	RIVERINE	Area	0.0026	ACRE	DELIN.PJD-404	34.77839910	-117.27674330	Mojave River
NWW-11	CALIFORNIA	R6	RIVERINE	Area	0.0155	ACRE	DELIN.PJD-404	34.77837729	-117.27647789	Mojave River
NWW-12	CALIFORNIA	R6	RIVERINE	Area	0.0059	ACRE	DELIN.PJD-404	34.77867006	-117.27612138	Mojave River
NWW-13	CALIFORNIA	R6	RIVERINE	Area	0.0088	ACRE	DELIN.PJD-404	34.77871240	-117.27602421	Mojave River
NWW-14	CALIFORNIA	R6	RIVERINE	Area	0.0093	ACRE	DELIN.PJD-404	34.77888564	-117.27582686	Mojave River
NWW-15	CALIFORNIA	R6	RIVERINE	Area	0.014	ACRE	DELIN.PJD-404	34.77897755	-117.27558467	Mojave River
NWW-16	CALIFORNIA	R6	RIVERINE	Area	0.075	ACRE	DELIN.PJD-404	34.78427582	-117.26266824	Mojave River
NWW-17	CALIFORNIA	R6	RIVERINE	Area	0.0493	ACRE	DELIN.PJD-404	34.78436063	-117.26210438	Mojave River
NWW-18	CALIFORNIA	R6	RIVERINE	Area	0.0073	ACRE	DELIN.PJD-404	34.78694821	-117.25260514	Mojave River
NWW-19	CALIFORNIA	R6	RIVERINE	Area	0.0087	ACRE	DELIN.PJD-404	34.78731771	-117.25176124	Mojave River
NWW-20	CALIFORNIA	R6	RIVERINE	Area	0.6493	ACRE	DELIN.PJD-404	34.79118942	-117.24186771	Mojave River
NWW-21	CALIFORNIA	R6	RIVERINE	Area	0.0309	ACRE	DELIN.PJD-404	34.79580995	-117.22844984	Mojave River
NWW-22	CALIFORNIA	R6	RIVERINE	Area	0.0153	ACRE	DELIN.PJD-404	34.79655915	-117.22780117	Mojave River
NWW-23	CALIFORNIA	R6	RIVERINE	Area	0.017	ACRE	DELIN.PJD-404	34.79577560	-117.22816166	Mojave River
NWW-24	CALIFORNIA	R6	RIVERINE	Area	0.1208	ACRE	DELIN.PJD-404	34.79716045	-117.22775874	Mojave River
NWW-25	CALIFORNIA	R6	RIVERINE	Area	0.0674	ACRE	DELIN.PJD-404	34.79698107	-117.22581535	Mojave River
NWW-26	CALIFORNIA	R6	RIVERINE	Area	0.066	ACRE	DELIN.PJD-404	34.79759457	-117.22500824	Mojave River
NWW-27	CALIFORNIA	R6	RIVERINE	Area	0.1806	ACRE	DELIN.PJD-404	34.79825817	-117.22320368	Mojave River
NWW-28	CALIFORNIA	R6	RIVERINE	Area	0.0087	ACRE	DELIN.PJD-404	34.79781859	-117.22212717	Mojave River
NWW-29	CALIFORNIA	R6	RIVERINE	Area	0.0022	ACRE	DELIN.PJD-404	34.79876557	-117.22298274	Mojave River
NWW-30	CALIFORNIA	R6	RIVERINE	Area	0.0256	ACRE	DELIN.PJD-404	34.79850826	-117.22190550	Mojave River
NWW-31	CALIFORNIA	R6	RIVERINE	Area	0.0092	ACRE	DELIN.PJD-404	34.79858276	-117.22124669	Mojave River
NWW-32	CALIFORNIA	R6	RIVERINE	Area	0.0023	ACRE	DELIN.PJD-404	34.79845614	-117.22006550	Mojave River
NWW-33	CALIFORNIA	R6	RIVERINE	Area	0.0202	ACRE	DELIN.PJD-404	34.79932170	-117.21984578	Mojave River
NWW-34	CALIFORNIA	R6	RIVERINE	Area	0.0263	ACRE	DELIN.PJD-404	34.80095511	-117.21581825	Mojave River
NWW-35	CALIFORNIA	R6	RIVERINE	Area	0.0062	ACRE	DELIN.PJD-404	34.80729017	-117.20328971	Mojave River
NWW-36	CALIFORNIA	R6	RIVERINE	Area	0.0084	ACRE	DELIN.PJD-404	34.80873818	-117.20155472	Mojave River
NWW-37	CALIFORNIA	R6	RIVERINE	Area	0.0106	ACRE	DELIN.PJD-404	34.80918874	-117.20105374	Mojave River
NWW-38	CALIFORNIA	R6	RIVERINE	Area	0.0083	ACRE	DELIN.PJD-404	34.80931564	-117.20089181	Mojave River
NWW-39	CALIFORNIA	R6	RIVERINE	Area	0.0042	ACRE	DELIN.PJD-404	34.80967074	-117.20047139	Mojave River
NWW-40	CALIFORNIA	R6	RIVERINE	Area	0.011	ACRE	DELIN.PJD-404	34.81009911	-117.19997547	Mojave River
NWW-41	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.81032263	-117.19971840	Mojave River
NWW-42	CALIFORNIA	R6	RIVERINE	Area	0.0166	ACRE	DELIN.PJD-404	34.81142504	-117.19842435	Mojave River
NWW-43	CALIFORNIA	R6	RIVERINE	Area	0.1323	ACRE	DELIN.PJD-404	34.82669287	-117.18851109	Mojave River
NWW-44	CALIFORNIA	R6	RIVERINE	Area	3.1309	ACRE	DELIN.PJD-404	34.82924770	-117.18642872	Mojave River
NWW-45	CALIFORNIA	R6	RIVERINE	Area	0.209	ACRE	DELIN.PJD-404	34.83468444	-117.18223737	Mojave River
NWW-46	CALIFORNIA	R6	RIVERINE	Area	0.0624	ACRE	DELIN.PJD-404	34.83516795	-117.18147873	Mojave River
NWW-47	CALIFORNIA	R6	RIVERINE	Area	0.0405	ACRE	DELIN.PJD-404	34.83370557	-117.17628314	Mojave River

NWW-48	CALIFORNIA	R6	RIVERINE	Area	0.0346	ACRE	DELIN.PJD-404	34.83699055	-117.18112184	Mojave River
NWW-49	CALIFORNIA	R6	RIVERINE	Area	0.7268	ACRE	DELIN.PJD-404	34.83611047	-117.17906427	Mojave River
NWW-50	CALIFORNIA	R6	RIVERINE	Area	0.0213	ACRE	DELIN.PJD-404	34.83723900	-117.17920300	Mojave River
NWW-51	CALIFORNIA	R6	RIVERINE	Area	0.0388	ACRE	DELIN.PJD-404	34.83746355	-117.17807757	Mojave River
NWW-52	CALIFORNIA	R6	RIVERINE	Area	0.0389	ACRE	DELIN.PJD-404	34.83786733	-117.17767859	Mojave River
NWW-53	CALIFORNIA	R6	RIVERINE	Area	0.0664	ACRE	DELIN.PJD-404	34.83764824	-117.17710118	Mojave River
NWW-54	CALIFORNIA	R6	RIVERINE	Area	0.0191	ACRE	DELIN.PJD-404	34.83520967	-117.17261912	Mojave River
NWW-55	CALIFORNIA	R6	RIVERINE	Area	0.0206	ACRE	DELIN.PJD-404	34.83545384	-117.17186322	Mojave River
NWW-56	CALIFORNIA	R6	RIVERINE	Area	0.0179	ACRE	DELIN.PJD-404	34.83577343	-117.17261681	Mojave River
NWW-57	CALIFORNIA	R6	RIVERINE	Area	0.0232	ACRE	DELIN.PJD-404	34.83601382	-117.17263063	Mojave River
NWW-58	CALIFORNIA	R6	RIVERINE	Area	0.4961	ACRE	DELIN.PJD-404	34.83834849	-117.17608356	Mojave River
NWW-59	CALIFORNIA	R6	RIVERINE	Area	0.7472	ACRE	DELIN.PJD-404	34.83824813	-117.17416003	Mojave River
NWW-60	CALIFORNIA	R6	RIVERINE	Area	0.1663	ACRE	DELIN.PJD-404	34.84040084	-117.17974962	Mojave River
NWW-61	CALIFORNIA	R6	RIVERINE	Area	0.0456	ACRE	DELIN.PJD-404	34.83703132	-117.16979074	Mojave River
NWW-62	CALIFORNIA	R6	RIVERINE	Area	0.1367	ACRE	DELIN.PJD-404	34.84039716	-117.17530721	Mojave River
NWW-63	CALIFORNIA	R6	RIVERINE	Area	0.1953	ACRE	DELIN.PJD-404	34.84093356	-117.17427517	Mojave River
NWW-64	CALIFORNIA	R6	RIVERINE	Area	0.0372	ACRE	DELIN.PJD-404	34.84171085	-117.17441834	Mojave River
NWW-65	CALIFORNIA	R6	RIVERINE	Area	0.0222	ACRE	DELIN.PJD-404	34.84229327	-117.17364316	Mojave River
NWW-66	CALIFORNIA	R6	RIVERINE	Area	0.079	ACRE	DELIN.PJD-404	34.84314736	-117.17245700	Mojave River
NWW-67	CALIFORNIA	R6	RIVERINE	Area	0.2193	ACRE	DELIN.PJD-404	34.84113135	-117.17198414	Mojave River
NWW-68	CALIFORNIA	R6	RIVERINE	Area	0.3381	ACRE	DELIN.PJD-404	34.83999196	-117.17009380	Mojave River
NWW-69	CALIFORNIA	R6	RIVERINE	Area	0.6778	ACRE	DELIN.PJD-404	34.84293300	-117.16862452	Mojave River
NWW-70	CALIFORNIA	R6	RIVERINE	Area	2.0876	ACRE	DELIN.PJD-404	34.84220858	-117.16640809	Mojave River
NWW-71	CALIFORNIA	R6	RIVERINE	Area	0.1039	ACRE	DELIN.PJD-404	34.84455410	-117.16571821	Mojave River
NWW-72	CALIFORNIA	R6	RIVERINE	Area	0.0395	ACRE	DELIN.PJD-404	34.84536977	-117.16623561	Mojave River
NWW-73	CALIFORNIA	R6	RIVERINE	Area	1.2399	ACRE	DELIN.PJD-404	34.84445324	-117.16354495	Mojave River
NWW-74	CALIFORNIA	R6	RIVERINE	Area	0.1663	ACRE	DELIN.PJD-404	34.84694969	-117.16275562	Mojave River
NWW-75	CALIFORNIA	R6	RIVERINE	Area	0.0387	ACRE	DELIN.PJD-404	34.84554977	-117.15997825	Mojave River
NWW-76	CALIFORNIA	R6	RIVERINE	Area	0.8616	ACRE	DELIN.PJD-404	34.84801880	-117.15913332	Mojave River
NWW-77	CALIFORNIA	R6	RIVERINE	Area	0.1603	ACRE	DELIN.PJD-404	34.84712950	-117.15639618	Mojave River
NWW-78	CALIFORNIA	R6	RIVERINE	Area	0.0128	ACRE	DELIN.PJD-404	34.84884536	-117.15724225	Mojave River
NWW-79	CALIFORNIA	R6	RIVERINE	Area	0.1343	ACRE	DELIN.PJD-404	34.85024761	-117.15805737	Mojave River
NWW-80	CALIFORNIA	R6	RIVERINE	Area	2.0242	ACRE	DELIN.PJD-404	34.85068017	-117.15456372	Mojave River
NWW-81	CALIFORNIA	R6	RIVERINE	Area	0.1195	ACRE	DELIN.PJD-404	34.85333976	-117.15626891	Mojave River
NWW-82	CALIFORNIA	R6	RIVERINE	Area	0.6418	ACRE	DELIN.PJD-404	34.85443320	-117.15278385	Mojave River
NWW-83	CALIFORNIA	R6	RIVERINE	Area	0.0145	ACRE	DELIN.PJD-404	34.85623860	-117.15316665	Mojave River
NWW-84	CALIFORNIA	R6	RIVERINE	Area	0.0209	ACRE	DELIN.PJD-404	34.85495794	-117.14606648	Mojave River
NWW-85	CALIFORNIA	R6	RIVERINE	Area	0.3106	ACRE	DELIN.PJD-404	34.85728058	-117.14989756	Mojave River
NWW-86	CALIFORNIA	R6	RIVERINE	Area	0.0151	ACRE	DELIN.PJD-404	34.85669782	-117.14796479	Mojave River
NWW-87	CALIFORNIA	R6	RIVERINE	Area	0.1324	ACRE	DELIN.PJD-404	34.85793592	-117.14794895	Mojave River
NWW-88	CALIFORNIA	R6	RIVERINE	Area	0.0373	ACRE	DELIN.PJD-404	34.85890624	-117.14830839	Mojave River
NWW-89	CALIFORNIA	R6	RIVERINE	Area	1.9718	ACRE	DELIN.PJD-404	34.86371081	-117.13465496	Mojave River
NWW-90	CALIFORNIA	R6	RIVERINE	Area	0.0796	ACRE	DELIN.PJD-404	34.86055151	-117.14279481	Mojave River
NWW-91	CALIFORNIA	R6	RIVERINE	Area	0.007	ACRE	DELIN.PJD-404	34.86314731	-117.14056368	Mojave River
NWW-92	CALIFORNIA	R6	RIVERINE	Area	8.3081	ACRE	DELIN.PJD-404	34.87445540	-117.13129081	Mojave River
NWW-93	CALIFORNIA	R6	RIVERINE	Area	0.0587	ACRE	DELIN.PJD-404	34.87348522	-117.11870897	Mojave River
NWW-94	CALIFORNIA	R6	RIVERINE	Area	0.0559	ACRE	DELIN.PJD-404	34.87405511	-117.11737186	Mojave River
NWW-95	CALIFORNIA	R6	RIVERINE	Area	0.0318	ACRE	DELIN.PJD-404	34.87708727	-117.11092605	Mojave River

NWW-96	CALIFORNIA	R6	RIVERINE	Area	0.0509	ACRE	DELIN.PJD-404	34.87826790	-117.10870766	Mojave River
NWW-97	CALIFORNIA	R6	RIVERINE	Area	0.0346	ACRE	DELIN.PJD-404	34.87942249	-117.10555181	Mojave River
NWW-98	CALIFORNIA	R6	RIVERINE	Area	0.02	ACRE	DELIN.PJD-404	34.88001687	-117.10595039	Mojave River
NWW-99	CALIFORNIA	R6	RIVERINE	Area	0.0278	ACRE	DELIN.PJD-404	34.88093572	-117.10122600	Mojave River
NWW-100	CALIFORNIA	R6	RIVERINE	Area	0.3415	ACRE	DELIN.PJD-404	34.88260220	-117.09540682	Mojave River
NWW-101	CALIFORNIA	R6	RIVERINE	Area	0.2864	ACRE	DELIN.PJD-404	34.88341575	-117.09267129	Mojave River
NWW-102	CALIFORNIA	R6	RIVERINE	Area	0.0089	ACRE	DELIN.PJD-404	34.88303805	-117.09193037	Mojave River
NWW-103	CALIFORNIA	R6	RIVERINE	Area	0.0112	ACRE	DELIN.PJD-404	34.79742562	-117.22308011	Mojave River
NWW-104	CALIFORNIA	R6	RIVERINE	Area	0.0101	ACRE	DELIN.PJD-404	34.79750974	-117.22288568	Mojave River
NWW-105	CALIFORNIA	R6	RIVERINE	Area	0.0059	ACRE	DELIN.PJD-404	34.82871205	-117.18237252	Mojave River
NWW-106	CALIFORNIA	R6	RIVERINE	Area	0.0112	ACRE	DELIN.PJD-404	34.82890709	-117.18208448	Mojave River
NWW-107	CALIFORNIA	R6	RIVERINE	Area	0.0049	ACRE	DELIN.PJD-404	34.83555520	-117.16950120	Mojave River
NWW-108	CALIFORNIA	R6	RIVERINE	Area	0.0131	ACRE	DELIN.PJD-404	34.84705328	-117.15190438	Mojave River
NWW-109	CALIFORNIA	R4	RIVERINE	Area	106.87	ACRE	DELIN.PJD-404	34.86327700	-117.17012800	Mojave River
NWW-110	CALIFORNIA	R6	RIVERINE	Area	0.0906	ACRE	DELIN.PJD-404	34.86285093	-117.02938746	Mojave River
NWW-111	CALIFORNIA	R6	RIVERINE	Area	0.0091	ACRE	DELIN.PJD-404	34.86232779	-117.03015416	Mojave River
NWW-112	CALIFORNIA	R6	RIVERINE	Area	0.0091	ACRE	DELIN.PJD-404	34.86311432	-117.03113286	Mojave River
NWW-113	CALIFORNIA	R6	RIVERINE	Area	0.1086	ACRE	DELIN.PJD-404	34.86302125	-117.03037808	Mojave River
NWW-114	CALIFORNIA	R6	RIVERINE	Area	0.0532	ACRE	DELIN.PJD-404	34.86390622	-117.03005978	Mojave River
NWW-115	CALIFORNIA	R6	RIVERINE	Area	0.0059	ACRE	DELIN.PJD-404	34.86394839	-117.03054830	Mojave River
NWW-116	CALIFORNIA	R6	RIVERINE	Area	0.0005	ACRE	DELIN.PJD-404	34.86374504	-117.03084293	Mojave River
NWW-117	CALIFORNIA	R6	RIVERINE	Area	0.009	ACRE	DELIN.PJD-404	34.86394805	-117.03116052	Mojave River
NWW-118	CALIFORNIA	R6	RIVERINE	Area	0.0025	ACRE	DELIN.PJD-404	34.86378427	-117.03150743	Mojave River
NWW-119	CALIFORNIA	R6	RIVERINE	Area	0.046	ACRE	DELIN.PJD-404	34.86398084	-117.03180905	Mojave River
NWW-120	CALIFORNIA	R6	RIVERINE	Area	0.0663	ACRE	DELIN.PJD-404	34.86232486	-117.03221879	Mojave River
NWW-121	CALIFORNIA	R6	RIVERINE	Area	0.0134	ACRE	DELIN.PJD-404	34.86316775	-117.03222142	Mojave River
NWW-122	CALIFORNIA	R6	RIVERINE	Area	0.0081	ACRE	DELIN.PJD-404	34.86354669	-117.03223616	Mojave River
NWW-123	CALIFORNIA	R6	RIVERINE	Area	0.0048	ACRE	DELIN.PJD-404	34.86329369	-117.03244001	Mojave River
NWW-124	CALIFORNIA	R6	RIVERINE	Area	0.0107	ACRE	DELIN.PJD-404	34.86337381	-117.03339989	Mojave River
NWW-125	CALIFORNIA	R6	RIVERINE	Area	0.0268	ACRE	DELIN.PJD-404	34.86384743	-117.03328967	Mojave River
NWW-126	CALIFORNIA	R6	RIVERINE	Area	0.0102	ACRE	DELIN.PJD-404	34.86380595	-117.03392799	Mojave River
NWW-127	CALIFORNIA	R6	RIVERINE	Area	0.0202	ACRE	DELIN.PJD-404	34.86420319	-117.03379067	Mojave River
NWW-128	CALIFORNIA	R6	RIVERINE	Area	0.0193	ACRE	DELIN.PJD-404	34.86396381	-117.03404283	Mojave River
NWW-129	CALIFORNIA	R6	RIVERINE	Area	0.0078	ACRE	DELIN.PJD-404	34.86407838	-117.03419885	Mojave River
NWW-130	CALIFORNIA	R6	RIVERINE	Area	0.0204	ACRE	DELIN.PJD-404	34.86424316	-117.03440303	Mojave River
NWW-131	CALIFORNIA	R6	RIVERINE	Area	0.0084	ACRE	DELIN.PJD-404	34.86465469	-117.03431020	Mojave River
NWW-132	CALIFORNIA	R6	RIVERINE	Area	0.025	ACRE	DELIN.PJD-404	34.86477011	-117.03439272	Mojave River
NWW-133	CALIFORNIA	R6	RIVERINE	Area	0.0113	ACRE	DELIN.PJD-404	34.86441457	-117.03469498	Mojave River
NWW-134	CALIFORNIA	R6	RIVERINE	Area	0.0044	ACRE	DELIN.PJD-404	34.86453660	-117.03480019	Mojave River
NWW-135	CALIFORNIA	R6	RIVERINE	Area	0.0379	ACRE	DELIN.PJD-404	34.86499956	-117.03478356	Mojave River
NWW-136	CALIFORNIA	R6	RIVERINE	Area	0.0102	ACRE	DELIN.PJD-404	34.86463979	-117.03499287	Mojave River
NWW-137	CALIFORNIA	R6	RIVERINE	Area	0.0009	ACRE	DELIN.PJD-404	34.86509751	-117.03536249	Mojave River
NWW-138	CALIFORNIA	R6	RIVERINE	Area	0.0122	ACRE	DELIN.PJD-404	34.86548343	-117.03539444	Mojave River
NWW-139	CALIFORNIA	R6	RIVERINE	Area	0.0051	ACRE	DELIN.PJD-404	34.86508024	-117.03554022	Mojave River
NWW-140	CALIFORNIA	R6	RIVERINE	Area	0.0275	ACRE	DELIN.PJD-404	34.86534620	-117.03582613	Mojave River
NWW-141	CALIFORNIA	R6	RIVERINE	Area	0.0191	ACRE	DELIN.PJD-404	34.86579265	-117.03575124	Mojave River
NWW-142	CALIFORNIA	R6	RIVERINE	Area	0.0136	ACRE	DELIN.PJD-404	34.86555806	-117.03618176	Mojave River
NWW-143	CALIFORNIA	R6	RIVERINE	Area	0.0212	ACRE	DELIN.PJD-404	34.86593998	-117.03596793	Mojave River

NWW-144	CALIFORNIA	R6	RIVERINE	Area	0.02	ACRE	DELIN.PJD-404	34.86569679	-117.03634085	Mojave River
NWW-145	CALIFORNIA	R6	RIVERINE	Area	0.0049	ACRE	DELIN.PJD-404	34.86709850	-117.03727300	Mojave River
NWW-146	CALIFORNIA	R6	RIVERINE	Area	0.1804	ACRE	DELIN.PJD-404	34.86727959	-117.03788910	Mojave River
NWW-147	CALIFORNIA	R6	RIVERINE	Area	0.0034	ACRE	DELIN.PJD-404	34.86747948	-117.03838012	Mojave River
NWW-148	CALIFORNIA	R6	RIVERINE	Area	0.0101	ACRE	DELIN.PJD-404	34.86801633	-117.03857326	Mojave River
NWW-149	CALIFORNIA	R6	RIVERINE	Area	0.0094	ACRE	DELIN.PJD-404	34.86788447	-117.03903021	Mojave River
NWW-150	CALIFORNIA	R6	RIVERINE	Area	0.0053	ACRE	DELIN.PJD-404	34.86794967	-117.03920062	Mojave River
NWW-151	CALIFORNIA	R6	RIVERINE	Area	0.0069	ACRE	DELIN.PJD-404	34.86838474	-117.03894621	Mojave River
NWW-152	CALIFORNIA	R6	RIVERINE	Area	0.0065	ACRE	DELIN.PJD-404	34.86816874	-117.03939449	Mojave River
NWW-153	CALIFORNIA	R6	RIVERINE	Area	0.0086	ACRE	DELIN.PJD-404	34.86868576	-117.03935877	Mojave River
NWW-154	CALIFORNIA	R6	RIVERINE	Area	0.0029	ACRE	DELIN.PJD-404	34.86847058	-117.03962488	Mojave River
NWW-155	CALIFORNIA	R6	RIVERINE	Area	0.0084	ACRE	DELIN.PJD-404	34.86849729	-117.03974763	Mojave River
NWW-156	CALIFORNIA	R6	RIVERINE	Area	0.0058	ACRE	DELIN.PJD-404	34.86875078	-117.04002497	Mojave River
NWW-157	CALIFORNIA	R6	RIVERINE	Area	0.0125	ACRE	DELIN.PJD-404	34.86909280	-117.03989785	Mojave River
NWW-158	CALIFORNIA	R6	RIVERINE	Area	0.0091	ACRE	DELIN.PJD-404	34.86949292	-117.04040865	Mojave River
NWW-159	CALIFORNIA	R6	RIVERINE	Area	0.0057	ACRE	DELIN.PJD-404	34.86940616	-117.04082180	Mojave River
NWW-160	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.86973346	-117.04123198	Mojave River
NWW-161	CALIFORNIA	R6	RIVERINE	Area	0.0116	ACRE	DELIN.PJD-404	34.87006933	-117.04175596	Mojave River
NWW-162	CALIFORNIA	R6	RIVERINE	Area	0.0039	ACRE	DELIN.PJD-404	34.87030472	-117.04189896	Mojave River
NWW-163	CALIFORNIA	R6	RIVERINE	Area	0.0106	ACRE	DELIN.PJD-404	34.87036850	-117.04211737	Mojave River
NWW-164	CALIFORNIA	R6	RIVERINE	Area	0.0048	ACRE	DELIN.PJD-404	34.87051044	-117.04226228	Mojave River
NWW-165	CALIFORNIA	R6	RIVERINE	Area	0.0084	ACRE	DELIN.PJD-404	34.87063092	-117.04245875	Mojave River
NWW-166	CALIFORNIA	R6	RIVERINE	Area	0.0191	ACRE	DELIN.PJD-404	34.87081795	-117.04270644	Mojave River
NWW-167	CALIFORNIA	R6	RIVERINE	Area	0.0094	ACRE	DELIN.PJD-404	34.87093772	-117.04289578	Mojave River
NWW-168	CALIFORNIA	R6	RIVERINE	Area	0.0252	ACRE	DELIN.PJD-404	34.87142800	-117.04276500	Mojave River
NWW-169	CALIFORNIA	R6	RIVERINE	Area	0.0057	ACRE	DELIN.PJD-404	34.87161700	-117.04284500	Mojave River
NWW-170	CALIFORNIA	R6	RIVERINE	Area	0.0106	ACRE	DELIN.PJD-404	34.87122106	-117.04325722	Mojave River
NWW-171	CALIFORNIA	R6	RIVERINE	Area	0.0308	ACRE	DELIN.PJD-404	34.87171480	-117.04385135	Mojave River
NWW-172	CALIFORNIA	R6	RIVERINE	Area	0.027	ACRE	DELIN.PJD-404	34.87236404	-117.04397368	Mojave River
NWW-173	CALIFORNIA	R6	RIVERINE	Area	0.0042	ACRE	DELIN.PJD-404	34.87226418	-117.04436040	Mojave River
NWW-174	CALIFORNIA	R6	RIVERINE	Area	0.0048	ACRE	DELIN.PJD-404	34.87261139	-117.04491681	Mojave River
NWW-175	CALIFORNIA	R6	RIVERINE	Area	0.0161	ACRE	DELIN.PJD-404	34.87308077	-117.04544880	Mojave River
NWW-176	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.87327389	-117.04567735	Mojave River
NWW-177	CALIFORNIA	R6	RIVERINE	Area	0.0571	ACRE	DELIN.PJD-404	34.87389305	-117.04593049	Mojave River
NWW-178	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.87379653	-117.04621767	Mojave River
NWW-179	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.87384688	-117.04634308	Mojave River
NWW-180	CALIFORNIA	R6	RIVERINE	Area	0.0307	ACRE	DELIN.PJD-404	34.87394468	-117.04659806	Mojave River
NWW-181	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.87487166	-117.04697816	Mojave River
NWW-182	CALIFORNIA	R6	RIVERINE	Area	0.068	ACRE	DELIN.PJD-404	34.87426778	-117.04710632	Mojave River
NWW-183	CALIFORNIA	R6	RIVERINE	Area	0.0562	ACRE	DELIN.PJD-404	34.86459438	-117.12052553	Mojave River
NWW-184	CALIFORNIA	R6	RIVERINE	Area	0.0207	ACRE	DELIN.PJD-404	34.86523217	-117.12208767	Mojave River
NWW-185	CALIFORNIA	R6	RIVERINE	Area	0.0041	ACRE	DELIN.PJD-404	34.85300850	-117.13265695	Mojave River
NWW-186	CALIFORNIA	R6	RIVERINE	Area	0.0091	ACRE	DELIN.PJD-404	34.85337643	-117.13264855	Mojave River
NWW-187	CALIFORNIA	R6	RIVERINE	Area	0.0269	ACRE	DELIN.PJD-404	34.85397730	-117.13283624	Mojave River
NWW-188	CALIFORNIA	R6	RIVERINE	Area	0.3122	ACRE	DELIN.PJD-404	34.85681032	-117.13128038	Mojave River
NWW-189	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88549883	-117.07828966300	Mojave River
NWW-190	CALIFORNIA	R6	RIVERINE	Area	0.037	ACRE	DELIN.PJD-404	34.88486930	-117.07860909800	Mojave River
NWW-191	CALIFORNIA	R6	RIVERINE	Area	0.046	ACRE	DELIN.PJD-404	34.88483124	-117.07805017600	Mojave River

NWW-192	CALIFORNIA	R6	RIVERINE	Area	0.03	ACRE	DELIN.PJD-404	34.88496800	-117.07791901200	Mojave River
NWW-193	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88477638	-117.07775899700	Mojave River
NWW-194	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.88468841	-117.07735060700	Mojave River
NWW-195	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88471766	-117.07715940900	Mojave River
NWW-196	CALIFORNIA	R6	RIVERINE	Area	0.009	ACRE	DELIN.PJD-404	34.88466196	-117.07673778300	Mojave River
NWW-197	CALIFORNIA	R6	RIVERINE	Area	0.018	ACRE	DELIN.PJD-404	34.88489776	-117.07680030200	Mojave River
NWW-198	CALIFORNIA	R6	RIVERINE	Area	0.014	ACRE	DELIN.PJD-404	34.88488812	-117.07632487100	Mojave River
NWW-199	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88471296	-117.07635144500	Mojave River
NWW-200	CALIFORNIA	R6	RIVERINE	Area	0.01	ACRE	DELIN.PJD-404	34.88464207	-117.07537091300	Mojave River
NWW-201	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.88459147	-117.07365537200	Mojave River
NWW-202	CALIFORNIA	R6	RIVERINE	Area	0.01	ACRE	DELIN.PJD-404	34.88492627	-117.07190290100	Mojave River
NWW-203	CALIFORNIA	R6	RIVERINE	Area	0.4	ACRE	DELIN.PJD-404	34.88484045	-117.07108861400	Mojave River
NWW-204	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88506114	-117.07069328500	Mojave River
NWW-205	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88495674	-117.07052271600	Mojave River
NWW-206	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.88473920	-117.07066914500	Mojave River
NWW-207	CALIFORNIA	R6	RIVERINE	Area	0.018	ACRE	DELIN.PJD-404	34.88479821	-117.07019855100	Mojave River
NWW-208	CALIFORNIA	R6	RIVERINE	Area	0.007	ACRE	DELIN.PJD-404	34.88488619	-117.07001578800	Mojave River
NWW-209	CALIFORNIA	R6	RIVERINE	Area	0.009	ACRE	DELIN.PJD-404	34.88479347	-117.06978361300	Mojave River
NWW-210	CALIFORNIA	R6	RIVERINE	Area	0.025	ACRE	DELIN.PJD-404	34.88469355	-117.06956413900	Mojave River
NWW-211	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88483211	-117.06943090600	Mojave River
NWW-212	CALIFORNIA	R6	RIVERINE	Area	0.009	ACRE	DELIN.PJD-404	34.88460287	-117.06936179300	Mojave River
NWW-213	CALIFORNIA	R6	RIVERINE	Area	0.051	ACRE	DELIN.PJD-404	34.88485238	-117.06819437000	Mojave River
NWW-214	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88463835900	-117.06904966400	Mojave River
NWW-215	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88458390070	-117.06879121300	Mojave River
NWW-216	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88459760680	-117.06875514500	Mojave River
NWW-217	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.88455715830	-117.06863748900	Mojave River
NWW-218	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88456986310	-117.06841527600	Mojave River
NWW-219	CALIFORNIA	R6	RIVERINE	Area	0.589	ACRE	DELIN.PJD-404	34.88462743470	-117.06763902800	Mojave River
NWW-220	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88454410310	-117.06695137500	Mojave River
NWW-221	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88458873450	-117.06682935500	Mojave River
NWW-222	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88453118960	-117.06637340700	Mojave River
NWW-223	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88459388930	-117.06626401600	Mojave River
NWW-224	CALIFORNIA	R6	RIVERINE	Area	0.015	ACRE	DELIN.PJD-404	34.88463059960	-117.06611126500	Mojave River
NWW-225	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88450844700	-117.06544070100	Mojave River
NWW-226	CALIFORNIA	R6	RIVERINE	Area	0.407	ACRE	DELIN.PJD-404	34.88472162740	-117.06486604200	Mojave River
NWW-227	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88499109400	-117.06441437900	Mojave River
NWW-228	CALIFORNIA	R6	RIVERINE	Area	0.029	ACRE	DELIN.PJD-404	34.88453912340	-117.06417587900	Mojave River
NWW-229	CALIFORNIA	R6	RIVERINE	Area	0.024	ACRE	DELIN.PJD-404	34.88476027970	-117.06367735200	Mojave River
NWW-230	CALIFORNIA	R6	RIVERINE	Area	0.014	ACRE	DELIN.PJD-404	34.88442008190	-117.06305225200	Mojave River
NWW-231	CALIFORNIA	R6	RIVERINE	Area	0.403	ACRE	DELIN.PJD-404	34.88496990750	-117.06285047700	Mojave River
NWW-232	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88322717840	-117.06312715900	Mojave River
NWW-233	CALIFORNIA	R6	RIVERINE	Area	0.026	ACRE	DELIN.PJD-404	34.88370511370	-117.06223841400	Mojave River

NWW-234	CALIFORNIA	R6	RIVERINE	Area	0.011	ACRE	DELIN.PJD-404	34.88407480340	-117.06254303500	Mojave River
NWW-235	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.88423961970	-117.06236390700	Mojave River
NWW-236	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88454839830	-117.06238041900	Mojave River
NWW-237	CALIFORNIA	R6	RIVERINE	Area	0.013	ACRE	DELIN.PJD-404	34.88432192950	-117.06204380700	Mojave River
NWW-238	CALIFORNIA	R6	RIVERINE	Area	0.032	ACRE	DELIN.PJD-404	34.88434594510	-117.06177174000	Mojave River
NWW-239	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.88459878700	-117.06169199800	Mojave River
NWW-240	CALIFORNIA	R6	RIVERINE	Area	0.014	ACRE	DELIN.PJD-404	34.88443904480	-117.06148694000	Mojave River
NWW-241	CALIFORNIA	R6	RIVERINE	Area	0.016	ACRE	DELIN.PJD-404	34.88313862570	-117.06067474600	Mojave River
NWW-242	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88276554110	-117.06033447600	Mojave River
NWW-243	CALIFORNIA	R6	RIVERINE	Area	0.025	ACRE	DELIN.PJD-404	34.88038916350	-117.06046369300	Mojave River
NWW-244	CALIFORNIA	R6	RIVERINE	Area	0.033	ACRE	DELIN.PJD-404	34.87969711000	-117.06092765300	Mojave River
NWW-245	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.87857190150	-117.05728840500	Mojave River
NWW-246	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.87619690170	-117.06047617900	Mojave River
NWW-247	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.87725605740	-117.05614253400	Mojave River
NWW-248	CALIFORNIA	R6	RIVERINE	Area	0.028	ACRE	DELIN.PJD-404	34.87599618810	-117.05642778900	Mojave River
NWW-249	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.87469414040	-117.05706217600	Mojave River
NWW-250	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.87478107640	-117.05298313100	Mojave River
NWW-251	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.87434811370	-117.05066073300	Mojave River
NWW-252	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.87441916880	-117.04706910600	Mojave River
NWW-253	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88179965170	-117.05594768000	Mojave River
NWW-254	CALIFORNIA	R6	RIVERINE	Area	0.051	ACRE	DELIN.PJD-404	34.88767135040	-117.05611695000	Mojave River
NWW-255	CALIFORNIA	R6	RIVERINE	Area	0.066	ACRE	DELIN.PJD-404	34.88872142310	-117.05677221900	Mojave River
NWW-256	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.89127924490	-117.05801424300	Mojave River
NWW-257	CALIFORNIA	R6	RIVERINE	Area	0.011	ACRE	DELIN.PJD-404	34.89163758090	-117.05816100100	Mojave River
NWW-258	CALIFORNIA	R6	RIVERINE	Area	0.018	ACRE	DELIN.PJD-404	34.89157993930	-117.05850914300	Mojave River
NWW-259	CALIFORNIA	R6	RIVERINE	Area	0.038	ACRE	DELIN.PJD-404	34.88762784320	-117.07209510000	Mojave River
NWW-260	CALIFORNIA	R6	RIVERINE	Area	0.064	ACRE	DELIN.PJD-404	34.88810074540	-117.07230007400	Mojave River
NWW-261	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.88774419190	-117.07363052800	Mojave River
NWW-262	CALIFORNIA	R6	RIVERINE	Area	0.013	ACRE	DELIN.PJD-404	34.88741950710	-117.07486804400	Mojave River
NWW-263	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88699412660	-117.07475275500	Mojave River
NWW-264	CALIFORNIA	R6	RIVERINE	Area	0.029	ACRE	DELIN.PJD-404	34.88534860040	-117.08300733600	Mojave River
NWW-265	CALIFORNIA	R6	RIVERINE	Area	0.011	ACRE	DELIN.PJD-404	34.88523751720	-117.08307600600	Mojave River
NWW-266	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88525133780	-117.08383661800	Mojave River
NWW-267	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.88513566	-117.08438734300	Mojave River
NWW-268	CALIFORNIA	R6	RIVERINE	Area	0.1	ACRE	DELIN.PJD-404	34.88412800	-117.08543100000	Mojave River
NWW-269	CALIFORNIA	R6	RIVERINE	Area	0.087	ACRE	DELIN.PJD-404	34.88473895	-117.08529828700	Mojave River
NWW-270	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88472979	-117.08593838200	Mojave River
NWW-271	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.88468913	-117.08605551000	Mojave River
NWW-272	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88461334	-117.08616349800	Mojave River
NWW-273	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88464071	-117.08627005500	Mojave River
NWW-274	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.88461066	-117.08644349400	Mojave River
NWW-275	CALIFORNIA	R6	RIVERINE	Area	0.007	ACRE	DELIN.PJD-404	34.88449405	-117.08680134900	Mojave River

NWW-276	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.88427207	-117.08678527600	Mojave River
NWW-277	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88444695	-117.08700760200	Mojave River
NWW-278	CALIFORNIA	R6	RIVERINE	Area	0.016	ACRE	DELIN.PJD-404	34.88432790	-117.08704349500	Mojave River
NWW-279	CALIFORNIA	R6	RIVERINE	Area	0.032	ACRE	DELIN.PJD-404	34.88419971	-117.08756050000	Mojave River
NWW-280	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88366664	-117.08734523200	Mojave River
NWW-281	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88395100	-117.08882476800	Mojave River
NWW-282	CALIFORNIA	R6	RIVERINE	Area	0.019	ACRE	DELIN.PJD-404	34.88300984	-117.09040088200	Mojave River
NWW-283	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.88367453	-117.09806555600	Mojave River
NWW-284	CALIFORNIA	R6	RIVERINE	Area	0.04	ACRE	DELIN.PJD-404	34.88325054	-117.09865517800	Mojave River
NWW-285	CALIFORNIA	R6	RIVERINE	Area	0.011	ACRE	DELIN.PJD-404	34.87256438	-117.11744935300	Mojave River
NWW-286	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.87195857	-117.11847701300	Mojave River
NWW-287	CALIFORNIA	R6	RIVERINE	Area	0.08	ACRE	DELIN.PJD-404	34.85410828	-117.14202480100	Mojave River
NWW-288	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.85448355	-117.14130692700	Mojave River
NWW-289	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.84458512	-117.15516663900	Mojave River
NWW-290	CALIFORNIA	R6	RIVERINE	Area	0.021	ACRE	DELIN.PJD-404	34.84443361	-117.15533958200	Mojave River
NWW-291	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.84404731	-117.15567469900	Mojave River
NWW-292	CALIFORNIA	R6	RIVERINE	Area	0.023	ACRE	DELIN.PJD-404	34.84383477	-117.15624098700	Mojave River
NWW-293	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.84359505	-117.15639748400	Mojave River
NWW-294	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.84352560	-117.15671258200	Mojave River
NWW-295	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.84301405	-117.15746676500	Mojave River
NWW-296	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.84128421	-117.15977849100	Mojave River
NWW-297	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.84012664	-117.16154528200	Mojave River
NWW-298	CALIFORNIA	R6	RIVERINE	Area	0.007	ACRE	DELIN.PJD-404	34.83855385	-117.16366808600	Mojave River
NWW-299	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.83816797	-117.16444130400	Mojave River
NWW-300	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.83801615	-117.16482376500	Mojave River
NWW-301	CALIFORNIA	R6	RIVERINE	Area	0.012	ACRE	DELIN.PJD-404	34.83781667	-117.16498062000	Mojave River
NWW-302	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.83737902	-117.16554293600	Mojave River
NWW-303	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.83711947	-117.16594127500	Mojave River
NWW-304	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.83696331	-117.16635973700	Mojave River
NWW-305	CALIFORNIA	R6	RIVERINE	Area	0.025	ACRE	DELIN.PJD-404	34.83661141	-117.16662507900	Mojave River
NWW-306	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.83485563	-117.17116282800	Mojave River
NWW-307	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.83478035	-117.17160509800	Mojave River
NWW-308	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.83469179	-117.17140617700	Mojave River
NWW-309	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.83449756	-117.17174321700	Mojave River
NWW-310	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.83449723	-117.17219914000	Mojave River
NWW-311	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.83384525	-117.17374139200	Mojave River
NWW-312	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.83383660	-117.17378399300	Mojave River
NWW-313	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.83178005	-117.17387612000	Mojave River
NWW-314	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.83172517	-117.17370947000	Mojave River
NWW-315	CALIFORNIA	R6	RIVERINE	Area	0.15	ACRE	DELIN.PJD-404	34.82779055	-117.18168768500	Mojave River
NWW-316	CALIFORNIA	R6	RIVERINE	Area	0.016	ACRE	DELIN.PJD-404	34.80975077	-117.19984418400	Mojave River

ATTACHMENT J

GIS DATA

(PROVIDED ELECTRONICALLY TO AGENCIES)

ATTACHMENT E

ARID WEST WETLAND DETERMINATION DATA FORMS AND EPHEMERAL AND INTERMITTENT STREAMS OHWM DATASHEETS

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: BNSF B.I.G. Aquatic Resources Delineation Report Review Area
Date: 8/14/2025
Time: 0840
Project Number: N/A
Town: Barstow
State: CA
Stream: ODP 49
Photo begin file#: 1
Photo end file#: 2
Investigator(s): Kelsey Woldt, Sarah Gulyas, Melissa Tamarkin

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:
BNSF B.I.G. Aquatic Resources Delineation Report Review Area

Projection: WGS 84 **Datum:** NAD 83
Coordinates: 34.874373, -117.045985

Potential anthropogenic influences on the channel system:
OHV use and road runoff (substation access road).

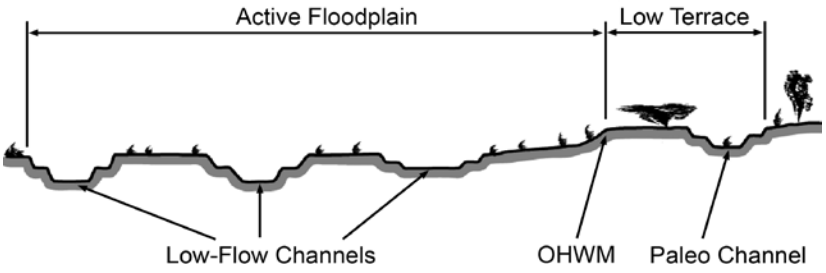
Brief site description:
Within braided channel system near Tortilla substation access road (Bonanza Road). Data was collected during a drought year; however, indicators still observed and consistent with anticipated extent of OHWM based on site conditions/topography.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

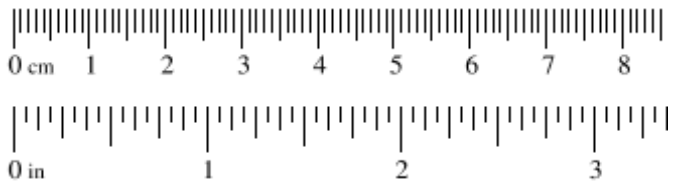


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

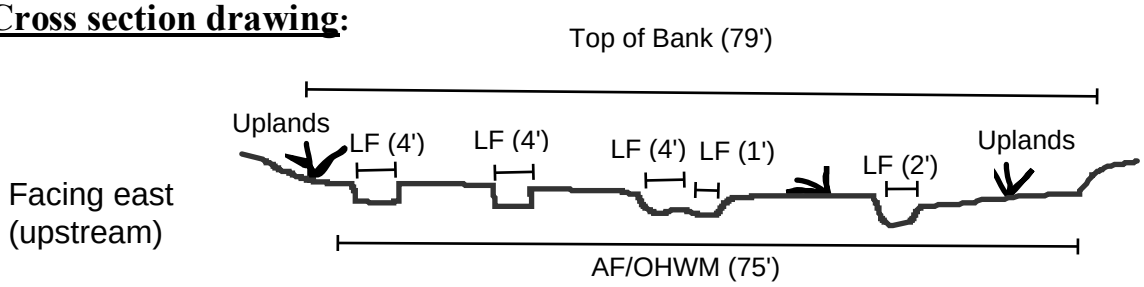
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	Gravel
0.157	4	Pebble	Gravel
0.079	2.00	Granule	Gravel
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	Sand
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	Sand
1/8 0.0025	0.0625	Very fine sand	Sand
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	Silt
1/128 0.00015	0.0039	Very fine silt	Silt
		Clay	Mud



Project ID: BNSF B.I.G. Aquatic Resources Delineation Report Review Area **Cross section ID:** ODP 49 **Date:** 8/14/2025 **Time:** 0840

Cross section drawing:



OHWM

GPS point: 34.874373, -117.045985

Indicators:

- ☐ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 75-foot wide OHWM defined by a change in vegetation species, change in vegetation cover, and break in bank slope.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: Below OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand with pebbles

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 0 %

Community successional stage:

- ☑ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Medium sand with some pebbles; unvegetated; visible bed and bank.

Project ID: BNSF B.I.G. Aquatic Resources Delineation Report Review Area **Cross section ID:** ODP 49 **Date:** 8/14/2025 **Time:** 0840

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: At OHWM

Characteristics of the floodplain unit:

Average sediment texture: Fine silt with cobble

Total veg cover: 40 % Tree: 0 % Shrub: 20 % Herb: 20 %

Community successional stage:

- ☐ NA
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Early (herbaceous & seedlings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Fine silt with some cobble; vegetation is dominated by Larrea tridentata, Ambrosia dumosa, Schismus barbatus, Malacothrix glabrata, Descurainia sp., and Erodium cicutarium. Visible break in bank slope.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above OHWM

Characteristics of the floodplain unit:

Average sediment texture: Fine silt with cobble

Total veg cover: 30 % Tree: 0 % Shrub: 15 % Herb: 15 %

Community successional stage:

- ☐ NA
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Early (herbaceous & seedlings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No true low terrace present; continues from AF to uplands. Fine silt with some cobble; vegetation is dominated by Larrea tridentata, Ambrosia dumosa, Schismus barbatus, Descurainia sp., Eriastrum sp., and Malacothrix glabrata. Uplands defined by soil development and surface relief.

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: BNSF B.I.G. Aquatic Resources Delineation Report Review Area
Date: 8/14/2025
Time: 0700
Project Number: N/A
Town: Barstow
State: CA
Stream: ODP 50
Photo begin file#: 3
Photo end file#: 4
Investigator(s): Kelsey Woldt, Sarah Gulyas, Melissa Tamarkin

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:
BNSF B.I.G. Aquatic Resources Delineation Report Review Area

Projection: WGS 84 **Datum:** NAD 83
Coordinates: 34.870604, -117.043001

Potential anthropogenic influences on the channel system:
OHV use and road runoff (substation access road).

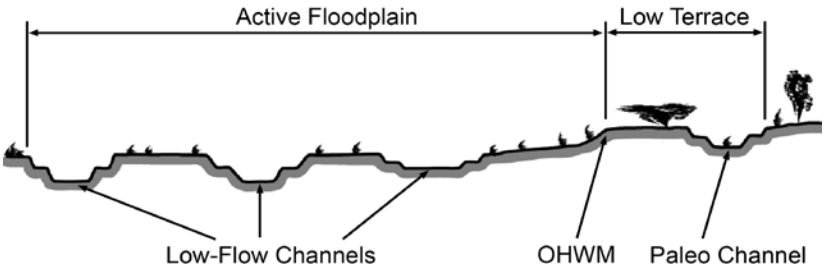
Brief site description:
Single-thread drainage system near Tortilla substation access road (Bonanza Road).

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☑ Vegetation maps
- ☑ Soils maps
- ☑ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

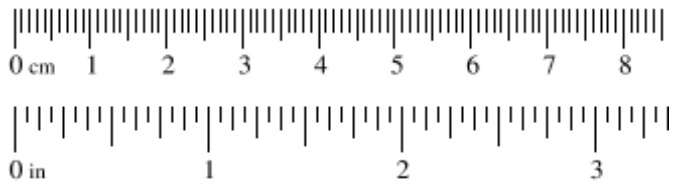


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☑ Mapping on aerial photograph
   - ☑ Digitized on computer
   - ☑ GPS
   - ☐ Other:

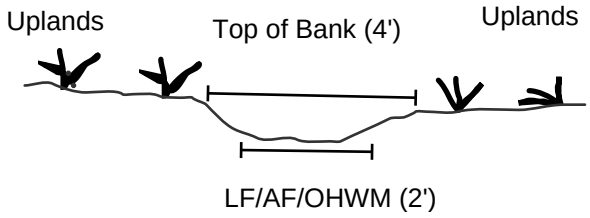
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	Gravel
0.157	4	Pebble	Gravel
0.079	2.00	Granule	Gravel
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	Sand
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	Sand
1/8 0.0025	0.0625	Very fine sand	Sand
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	Silt
1/128 0.00015	0.0039	Very fine silt	Silt
		Clay	Mud



Project ID: BNSF B.I.G. Aquatic Resources Delineation Report Review Area **Cross section ID:** ODP 50 **Date:** 8/14/2025 **Time:** 0700

Cross section drawing:



OHWM

GPS point: 34.870604, -117.043001

Indicators:

- ☑ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Approximately 2-foot wide OHWM defined by a change in average sediment texture, change in vegetation species, change in vegetation cover, and break in bank slope.

Floodplain unit:

☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace/Upland

GPS point: N/A

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Low-flow channel (LF) is indistinguishable/cannot be determined from active floodplain (AF).

Project ID: BNSF B.I.G. Aquatic Resources Delineation Report Review Area **Cross section ID:** ODP 50 **Date:** 8/14/2025 **Time:** 0700

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace/Upland

GPS point: At OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand

Total veg cover: 5 % Tree: 0 % Shrub: 1 % Herb: 4 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Medium sand; vegetation is dominated by Schismus barbatus and Ambrosia dumosa.Visible break in bank slope.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace/Upland

GPS point: Just above OHWM

Characteristics of the floodplain unit:

Average sediment texture: Medium sand with cobble

Total veg cover: 85 % Tree: 0 % Shrub: 10 % Herb: 75 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☑ Soil development
- ☑ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

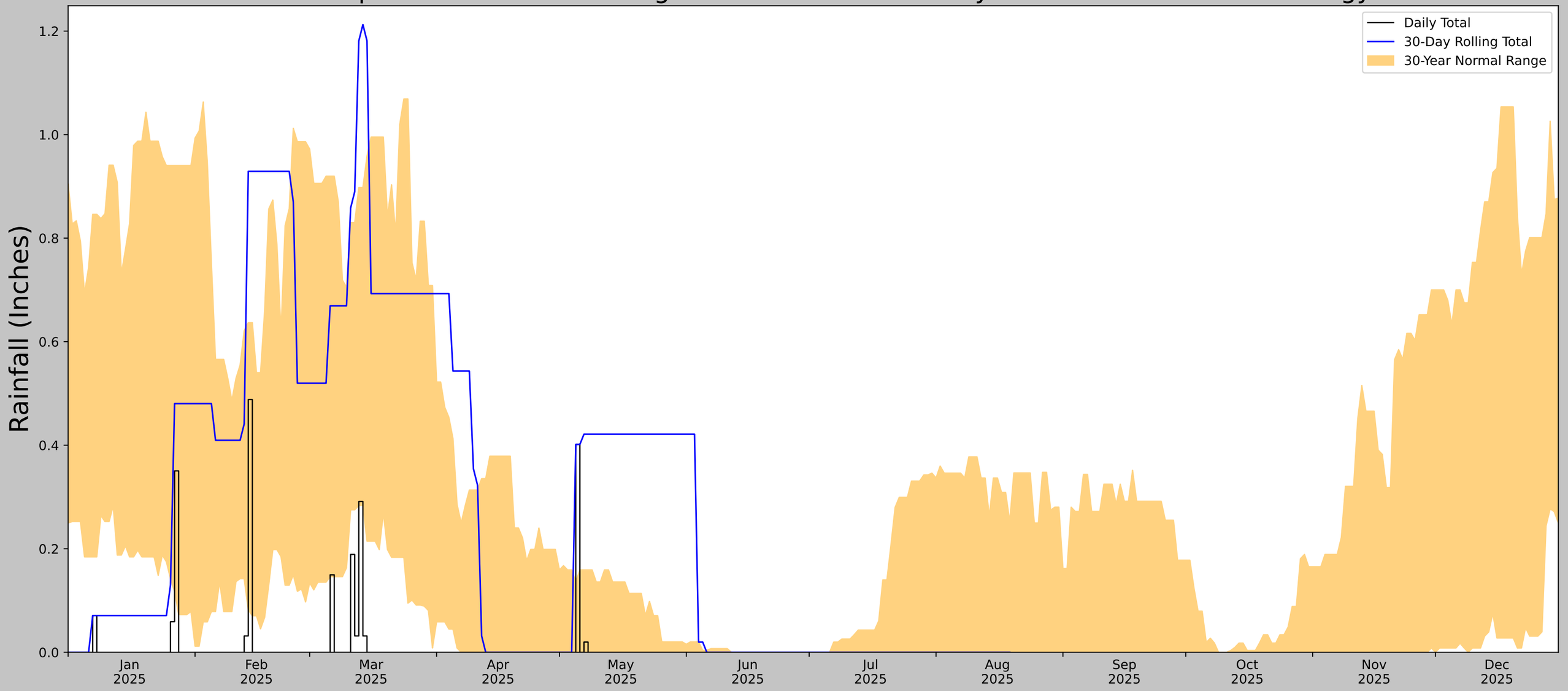
Comments:

Medium sand with some cobble; vegetation is dominated by Schismus barbatus and Ambrosia dumosa. Uplands defined by soil development and surface relief. No true low terrace present; continues from AF to uplands.

ATTACHMENT F

ANTECEDENT PRECIPITATION TOOL OUTPUT

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.86919, -117.03957
Observation Date	2025-08-13
Elevation (ft)	2602.009
Drought Index (PDSI)	Extreme drought (2025-07)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-08-13	0.0	0.336614	0.0	Normal	2	3	6
2025-07-14	0.0	0.042913	0.0	Normal	2	2	4
2025-06-14	0.0	0.0	0.0	Normal	2	1	2
Result							Normal Conditions - 12

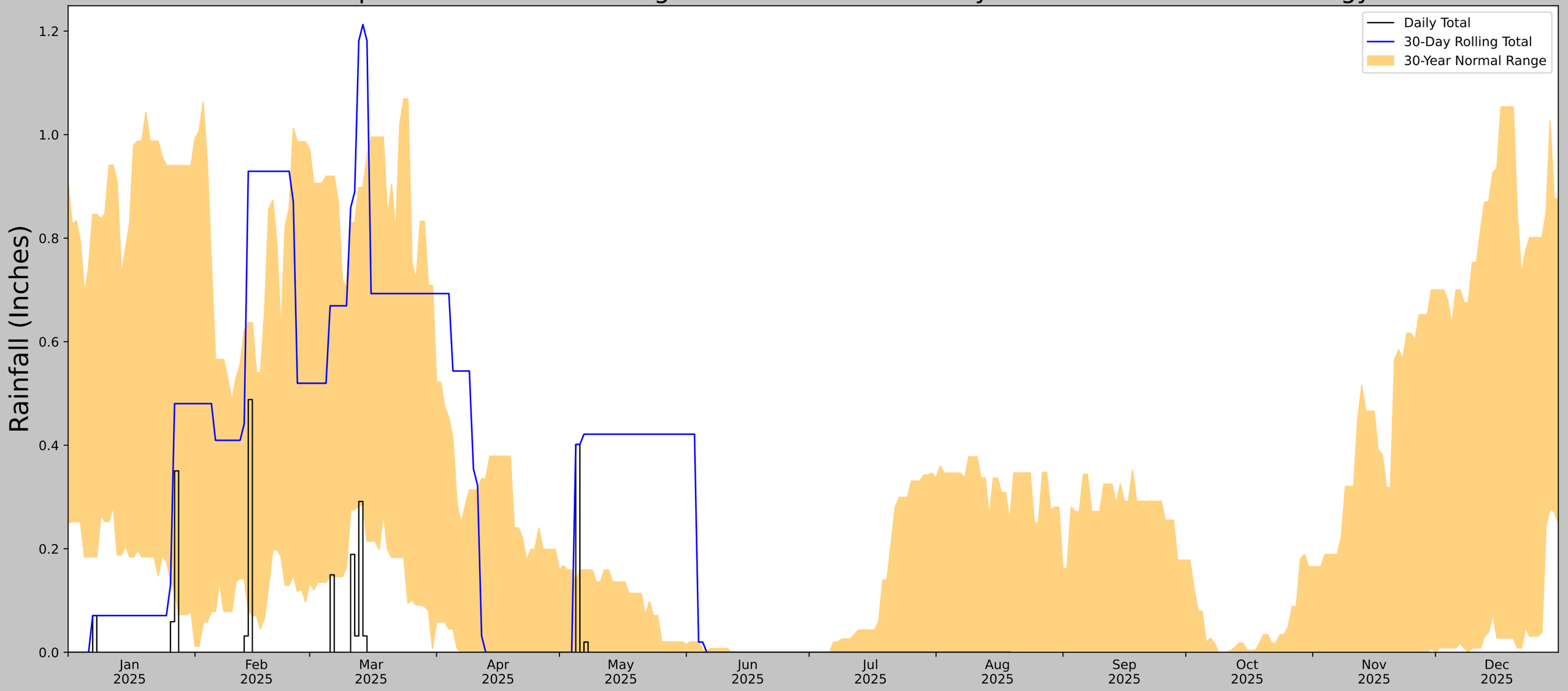
Figures and tables made by the
Antecedent Precipitation Tool
Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and
Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BARSTOW	34.8928, -117.0219	2220.144	1.914	381.865	1.592	11100	90
BARSTOW 4.2 NE	34.9237, -117.0177	2169.948	2.148	50.196	1.074	9	0
BARSTOW 3.0 W	34.88, -117.118	2229.003	5.518	8.859	2.532	1	0
BARSTOW-DAGGETT AP	34.8536, -116.7869	1918.963	13.594	301.181	10.212	243	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.86919, -117.03957
Observation Date	2025-08-14
Elevation (ft)	2602.009
Drought Index (PDSI)	Extreme drought (2025-07)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-08-14	0.0	0.261811	0.0	Normal	2	3	6
2025-07-15	0.0	0.042913	0.0	Normal	2	2	4
2025-06-15	0.0	0.0	0.0	Normal	2	1	2
Result							Normal Conditions - 12

Figures and tables made by the
Antecedent Precipitation Tool
Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
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Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BARSTOW	34.8928, -117.0219	2220.144	1.914	381.865	1.592	11100	90
BARSTOW 4.2 NE	34.9237, -117.0177	2169.948	2.148	50.196	1.074	9	0
BARSTOW 3.0 W	34.88, -117.118	2229.003	5.518	8.859	2.532	1	0
BARSTOW-DAGGETT AP	34.8536, -116.7869	1918.963	13.594	301.181	10.212	243	0

ATTACHMENT G

SITE PHOTOGRAPHS

Appendix G

Site Photographs[1]

Barstow International Gateway (BIG) Aquatic Resources Delineation Report (ARDR) August 2025 Addendum – August 13-14, 2025



Photo 1. Upstream view of Ordinary High Water Mark (OHWM) Datasheet Point (ODP) 49 within NWW-177 and associated California Department of Fish and Wildlife (CDFW) watercourse facing south, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance. ODP 49 exhibited a break in bank slope, change in vegetation species, and change in vegetation cover (34.874373, -117.045985). August 14, 2025.



Photo 2. Downstream view of ODP 49 within NWW-177 and associated CDFW watercourse, facing north, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance (34.874373, -117.045985). August 14, 2025.



Photo 3. Upstream view of ODP 50 within NWW-167, facing southwest within *Larrea tridentata – Ambrosia dumosa* shrubland alliance. ODP 2 exhibited a break in bank slope, change in average sediment texture, change in vegetation species, and change in vegetation cover (34.870601, -117.043001). August 14, 2025.



Photo 4. Downslope view of ODP 50 within NWW-167, facing northeast, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance (34.870601, -117.043001). August 14, 2025.

[1] See corresponding Figure 5 series for photo point locations. See 2025 ARDR Addendum Sections 1.5 and 1.6 and Attachment H for a discussion of each feature.



Photo 5. Upstream view of NWW-392, facing south, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance (34.874887, -117.046618). August 14, 2025.



Photo 6. Downstream view of NWW-135, facing north, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance (34.865389, -117.034752). August 13, 2025.



Photo 7. Upstream view of NWW-146, facing southwest, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance (34.866815, -117.038135). August 13, 2025.



Photo 8. Upstream view of NWW-140, facing south, within *Larrea tridentata – Ambrosia dumosa* shrubland alliance (34.865097, -117.035868). August 14, 2025.

ATTACHMENT H

AQUATIC RESOURCE SUMMARY TABLES FOR AUGUST 2025 ARDR ADDENDUM REVIEW A

Table H-1. Aquatic Resource Summary for August 2025 ARDR Addendum Review Area: Corps/RWQCB

Aquatic Resource Name (Corps/ RWQCB)	Cowardin Code	Active Channel Width Range (Linear Feet)	Observed OHWM Indicators[1]	Observed Wetland Parameters[2]	Presence of OHWM/ Wetland	Dominant Vegetation[3]	General Characteristics	Location (Latitude, Longitude)	Acre(s)[8]	Linear Feet[8]
NWW-124	R6	1 - 6	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.863001, -117.033493	0.01	156
NWW-125	R6	2 - 8	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864349, -117.033474	0.02	204
NWW-126	R6	2 – 5	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.863401, -117.033936	0.04	569
NWW-127	R6	2 - 10	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864515, -117.033667	0.02	260
NWW-128	R6	2 - 4	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.863527, -117.034098	0.01	153
NWW-131	R6	1 - 10	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See	34.865035, -117.034306	0.04	407

						Shrubland Alliance[6]	representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-132	R6	3 - 7	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865141, -117.034452	0.02	179
NWW-133	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864099, -117.034815	0.01	120
NWW-134	R6	1 - 5	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.864183, -117.034936	0.03	357
NWW-135	R6	3 - 16	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photo 6 on Figures 5A – 5B and Attachment G.)	34.865366, -117.034752	0.06	356
NWW-136	R6	1 - 8	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. ((See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.864259, -117.035097	0.02	262
NWW-138	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865849, -117.035365	0.01	129
NWW-140	R6	1 – 10	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia*	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance;	34.864878, -117.035837	0.09	1156

						dumosa Shrubland Alliance[6]	discharges to Mojave River. (See Photo 8 on Figures 5A – 5B and Attachment G.)			
NWW-141	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865978, -117.035666	<0.01	20
NWW-142	R6	3 - 16	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865357, -117.036316	0.02	57
NWW-143	R6	1 - 8	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866275, -117.035860	0.02	191
NWW-144	R6	10 - 12	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865326, -117.036388	0.03	134
NWW-145	R6	3 - 4	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.867289, -117.037149	0.01	89
NWW-146	R6	3 - 30	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	Unvegetated Channel[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photo 7 on Figures 5A – 5B and Attachment G.)	34.867197, -117.037954	0.14	323

NWW-148	R6	3 - 4	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868327, -117.038427	0.01	105
NWW-149	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867572, -117.039208	<0.01	115
NWW-150	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867674, -117.039337	<0.01	115
NWW-151	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868652, -117.038867	<0.01	100
NWW-152	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867831, -117.039533	0.02	295
NWW-157	R6	6 - 6	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869396, -117.039786	0.01	96
NWW-158	R6	2 - 5	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See	34.869804, -117.040321	0.01	155

						Shrubland Alliance[6]	representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-161	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869610, -117.041802	0.01	245
NWW-165	R6	1 – 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870213, -117.042507	<0.01	154
NWW-166	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870283, -117.042688	0.01	219
NWW-167	R6	1 - 5	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870612, -117.042976	0.01	233
NWW-168	R6	2 - 9	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871738, -117.042704	0.05	388
NWW-169	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871932, -117.042944	0.01	176
NWW-170	R6	1 - 8	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia*	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance;	34.870745, -117.043222	0.02	502

						dumosa Shrubland Alliance[6]	discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)			
NWW-171	R6	1 - 8	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871171, -117.043706	0.04	258
NWW-172	R6	6 - 6	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872688, -117.043897	0.01	83
NWW-174	R6	1 – 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872108, -117.044885	<0.01	159
NWW-177	R6	1 - 8	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.874374, -117.046021	0.04	489
NWW-180	R6	1 - 12	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.872993, -117.045973	0.13	1460
NWW-181	R6	2 - 5	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.875048, -117.047041	0.02	270

NWW-182	R6	4 - 16	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.873809, -117.047034	0.06	325
NWW-317	R6	2 - 3	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.862706, -117.033280	<0.01	63
NWW-318	R6	1 - 5	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.862899, -117.033334	0.02	272
NWW-319	R6	3 - 6	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.863979, -117.032878	0.03	324
NWW-320	R6	2 - 10	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864262, -117.033349	0.01	165
NWW-321	R6	2 - 5	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.863611, -117.034253	0.04	408
NWW-322	R6	2 - 9	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See	34.863938, -117.034647	0.04	379

						Shrubland Alliance[6]	representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)			
NWW-323	R6	1 - 10	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864502, -117.035345	0.03	236
NWW-324	R6	5 - 5	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865542, -117.034964	0.01	104
NWW-325	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865750, -117.035229	<0.01	97
NWW-326	R6	1 - 8	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865255, -117.036224	0.03	231
NWW-327	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865847, -117.036047	0.01	235
NWW-328	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866427, -117.036015	<0.01	84
NWW-329	R6	1 - 6	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance;	34.866607, -117.036273	0.01	101

						dumosa Shrubland Alliance[6]	discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-330	R6	2 - 10	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865816, -117.036955	0.03	348
NWW-331	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866779, -117.036509	<0.01	102
NWW-332	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866854, -117.036605	<0.01	89
NWW-333	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866989, -117.036762	<0.01	99
NWW-334	R6	2 - 3	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867086, -117.036880	0.01	132
NWW-335	R6	3 - 3	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866328, -117.037651	0.01	121

NWW-336	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867491, -117.039133	0.01	385
NWW-337	R6	1 – 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868450, -117.038597	<0.01	104
NWW-338	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867900, -117.039589	<0.01	137
NWW-339	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867996, -117.039741	<0.01	149
NWW-340	R6	1 - 7	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868050, -117.039894	0.01	346
NWW-341	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868729, -117.038948	<0.01	100
NWW-342	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See	34.868959, -117.039202	0.01	302

						Shrubland Alliance[6]	representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-343	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868301, -117.040088	0.01	184
NWW-344	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868513, -117.040416	0.01	156
NWW-345	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868696, -117.040623	<0.01	147
NWW-346	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869592, -117.040016	0.01	111
NWW-347	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869716, -117.040084	<0.01	48
NWW-348	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869753, -117.040238	<0.01	85

NWW-349	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868762, -117.040777	0.01	191
NWW-350	R6	1 - 5	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868807, -117.040844	0.01	135
NWW-351	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869016, -117.041011	0.01	165
NWW-352	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869113, -117.041166	0.01	284
NWW-353	R6	2 - 4	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.869282, -117.041310	0.01	129
NWW-354	R6	3 - 3	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870237, -117.040753	<0.01	54
NWW-355	R6	1 - 5	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See	34.869435, -117.041579	0.01	195

						Shrubland Alliance[6]	representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-356	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870307, -117.040979	<0.01	47
NWW-357	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870461, -117.040963	<0.01	19
NWW-358	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870513, -117.041134	<0.01	75
NWW-359	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869864, -117.041860	<0.01	34
NWW-360	R6	2 – 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869880, -117.041969	<0.01	67
NWW-361	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869711, -117.042089	<0.01	68
NWW-362	R6	2 - 5	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance;	34.869959, -117.042151	0.01	132

						dumosa Shrubland Alliance[6]	discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-363	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869927, -117.042230	<0.01	102
NWW-364	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870609, -117.041342	<0.01	206
NWW-365	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870801, -117.041464	<0.01	102
NWW-366	R6	2 - 5	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870105, -117.042422	0.01	125
NWW-367	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870211, -117.042359	<0.01	72
NWW-368	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870214, -117.042569	0.01	136

NWW-369	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870944, -117.043475	0.01	115
NWW-370	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871050, -117.043413	<0.01	68
NWW-371	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871212, -117.043507	<0.01	8
NWW-372	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872145, -117.043225	<0.01	90
NWW-373	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871405, -117.044045	0.01	186
NWW-374	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.,871505 -117.044170	<0.01	108
NWW-375	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See	34.871573, -117.044219	<0.01	148

						Shrubland Alliance[6]	representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-376	R6	2 - 6	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872417, -117.043496	0.01	95
NWW-377	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872422, -117.043566	<0.01	125
NWW-378	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872623, -117.043738	<0.01	49
NWW-379	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871816, -117.044473	<0.01	148
NWW-380	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872030, -117.044724	<0.01	133
NWW-381	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872922, -117.044150	<0.01	112
NWW-382	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia*	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance;	34.873045, -117.044203	<0.01	18

						dumosa Shrubland Alliance[6]	discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-383	R6	1 - 6	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872229, -117.045034	0.03	244
NWW-384	R6	1 - 3	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872452, -117.045339	0.02	520
NWW-385	R6	1 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872579, -117.045298	<0.01	79
NWW-386	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.873220, -117.044629	<0.01	100
NWW-387	R6	2 - 2	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.873596, -117.044918	<0.01	32
NWW-388	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.873706, -117.045186	0.01	230

NWW-389	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.838168, -117.164441	<0.01	25
NWW-390	R6	1 – 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.838016, -117.164824	<0.01	78
NWW-391	R6	1 - 4	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.837817, -117.164981	0.01	104
NWW-392	R6	8 - 10	CVS, CVC, BBS; See ODP 49[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photo 5 on Figures 5A – 5B and Attachment G.)	34.837379, -117.165543	0.02	102
NWW-393	R6	1 - 1	CAST, CVS, CVC, BBS; See ODP 50[4]	None[5]	Yes/No	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[6]	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.837119, -117.165941	<0.01	36
								Total[7]	**1.696**	**22,201**

[1] OHWM Indicators: CAST = Change in average sediment texture; CVS = Change in vegetation species; CVC = Change in vegetation cover; BBS = Break in bank slope
[2] Wetland Parameters: HV = Hydrophytic vegetation; HS = Hydric soils; WH = Wetland hydrology
[3] See Figure 6 for all vegetation communities present within/around each aquatic resource.
[4] Based on a representative ODP taken within an aquatic resource with similar conditions.
[5] Based on a representative WDP taken within an aquatic resource with similar conditions.
[6] Unvegetated within mapped vegetation community; however, no vegetation technically present within the OHWM.
[7] Acreages and linear feet totals were summed using raw numbers provided during GIS analysis (available upon request) and thus, the sum of the total rounded numbers may not directly add up in this table.
[8] Acreage and linear feet only provided for portion of aquatic resource located within the 2025 ARDR addendum review area.

Table H-2. Aquatic Resource Summary for August 2025 ARDR Addendum Review Area: CDFW

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
NWW-124*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 6	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.863001, -117.033493	0.01	156
NWW-125*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 10	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864349, -117.033474	0.03	204
NWW-126*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 7	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.863401, -117.033936	0.05	569
NWW-127*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 10	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864515, -117.033667	0.03	260
NWW-128*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.863527, -117.034098	0.01	153
NWW-131*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	1 - 12	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865035, -117.034306	0.05	407

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		Shrubland Alliance[3]					
NWW-132*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 9	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865141, -117.034452	0.02	179
NWW-133*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 6	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864099, -117.034815	0.01	120
NWW-134*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 5	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.864183, -117.034936	0.01	357
	Watercourse[6]		35 – 55			0.09	
NWW-135*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 19	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photo 6 on Figures 5A – 5B and Attachment G.)	34.865366, -117.034752	0.07	356
NWW-136*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 – 10	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. ((See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.864259, -117.035097	0.03	262
	Watercourse[6]		15 – 48			0.06	
NWW-138*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	2 - 6	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865849, -117.035365	0.01	129

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		Shrubland Alliance[3]					
NWW-140*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	1 - 10	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photo 8 on Figures 5A – 5B and Attachment G.)	34.864878, -117.035837	0.12	1156
	Watercourse[6]		260 – 350			0.58	
NWW-141*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	1 – 1	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865978, -117.035666	<0.01	20
NWW-142*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	4 - 18	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865357, -117.036316	0.02	57
NWW-143*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	3 - 10	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866275, -117.035860	0.03	191
NWW-144*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	12 - 14	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865326, -117.036388	0.04	134
NWW-145*	Unvegetated Streambed[2]	*Larrea tridentata* –	6 - 7	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave	34.867289, -117.037149	0.01	89

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
	Watercourse[6]	*Ambrosia dumosa* Shrubland Alliance[3]	15 – 30	River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)		0.02	
NWW-146*	Unvegetated Streambed[2]	Unvegetated Channel[3]	4 - 50	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photo 7 on Figures 5A – 5B and Attachment G.)	34.867197, -117.037954	0.24	323
NWW-148*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	4 - 5	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868327, -117.038427	0.01	105
NWW-149*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867572, -117.039208	0.01	115
NWW-150*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867674, -117.039337	0.01	115
NWW-151*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	6 - 6	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868652, -117.038867	0.01	100
NWW-152*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa*	2 - 6	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867831, -117.039533	0.02	295

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		Shrubland Alliance[3]					
NWW-157*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	9 - 9	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869396, -117.039786	0.02	96
NWW-158*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 5	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869804, -117.040321	0.01	155
NWW-161*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869610, -117.041802	0.01	245
NWW-165*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870213, -117.042507	<0.01	154
NWW-166*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 4	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870283, -117.042688	0.01	219
NWW-167*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	2 - 6	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870612, -117.042976	0.02	233

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		Shrubland Alliance[3]					
NWW-168*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 12	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871738, -117.042704	0.07	388
NWW-169*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 4	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871932, -117.042944	0.01	176
NWW-170*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 8	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.870745, -117.043222	0.03	502
	Watercourse[6]		80 - 140			0.26	
NWW-171*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 – 10	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871171, -117.043706	0.05	258
NWW-172*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	10 - 10	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872688, -117.043897	0.02	83
NWW-174*	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa*	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872108, -117.044885	<0.01	159

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		Shrubland Alliance[3]					
NWW-177*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	2 – 10	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.874374, -117.046021	0.06	489
	Watercourse[6]		75 – 90			0.10	
NWW-180*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	1 -15	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.872993, -117.045973	0.17	1460
	Watercourse[6]		375 – 490			0.98	
NWW-181*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	3 - 8	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.875048, -117.047041	0.03	270
NWW-182*	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	6 – 18	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.873809, -117.047034	0.08	325
	Watercourse[6]		115 – 170			0.32	
NWW-317	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	3 – 4	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.862706, -117.033280	0.01	63
NWW-318	Unvegetated Streambed[2]	*Larrea tridentata* –	2 - 8	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave	34.862899, -117.033334	0.02	272

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
	Watercourse[6]	*Ambrosia dumosa* Shrubland Alliance[3]	25 - 30	River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)		0.05	
NWW-319	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 8	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.863979, -117.032878	0.04	324
NWW-320	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 -12	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864262, -117.033349	0.03	165
NWW-321	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 7	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.863611, -117.034253	0.05	408
	Watercourse[6]		25 – 45			0.08	
NWW-322	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 – 11	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)	34.863938, -117.034647	0.06	379
	Watercourse[6]		20 – 45			0.10	
NWW-323	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 12	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.864502, -117.035345	0.03	236

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
NWW-324	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	7 - 7	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865542, -117.034964	0.02	104
NWW-325	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865750, -117.035229	<0.01	97
NWW-326	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	3 - 10	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865255, -117.036224	0.04	231
NWW-327	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	1 - 5	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865847, -117.036047	0.02	235
NWW-328	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	4 - 4	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866427, -117.036015	0.01	84
NWW-329	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	3 - 8	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866607, -117.036273	0.02	101

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
NWW-330	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	3 - 15	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.865816, -117.036955	0.05	348
NWW-331	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866779, -117.036509	<0.01	102
NWW-332	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866854, -117.036605	<0.01	89
NWW-333	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	5 - 5	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866989, -117.036762	0.01	99
NWW-334	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	4 - 5	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867086, -117.036880	0.01	132
NWW-335	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	5 - 5	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.866328, -117.037651	0.01	121

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
NWW-336	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	1 - 4	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867491, -117.039133	0.02	385
NWW-337	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868450, -117.038597	0.01	104
NWW-338	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	1 - 4	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867900, -117.039589	0.01	137
NWW-339	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	1 - 2	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.867996, -117.039741	<0.01	149
NWW-340	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	1 - 8	Unvegetated, multi-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868050, -117.039894	0.02	346
NWW-341	Unvegetated Streambed[2]	*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868729, -117.038948	<0.01	100

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
NWW-342	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868959, -117.039202	0.01	302
NWW-343	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 5	Unvegetated, single-thread feature Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868301, -117.040088	0.01	184
NWW-344	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868513, -117.040416	0.01	156
NWW-345	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868696, -117.040623	0.01	147
NWW-346	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869592, -117.040016	0.01	111
NWW-347	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869716, -117.040084	<0.01	48

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
NWW-348	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869753, -117.040238	<0.01	85
NWW-349	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 2	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868762, -117.040777	0.01	191
NWW-350	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 7	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.868807, -117.040844	0.01	135
NWW-351	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869016, -117.041011	0.01	165
NWW-352	Unvegetated Streambed[2]	*Atriplex Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 3	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869113, -117.041166	0.02	284
NWW-353	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia*	2 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave	34.869282, -117.041310	0.01	129

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
	Watercourse[6]	*dumosa* Shrubland Alliance[3]	50 - 60	River. (See representative Photos 1 and 2 on Figures 5A – 5B and Attachment G.)		0.14	
NWW-354	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870237, -117.040753	<0.01	54
NWW-355	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 6	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869435, -117.041579	0.01	195
NWW-356	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 – 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870307, -117.040979	<0.01	47
NWW-357	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870461, -117.040963	<0.01	19
NWW-358	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870513, -117.041134	0.01	75
NWW-359	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia*	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave	34.869864, -117.041860	<0.01	34

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		dumosa Shrubland Alliance[3]		River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-360	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869880, -117.041969	<0.01	67
NWW-361	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 3	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869711, -117.042089	<0.01	68
NWW-362	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 6	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869959, -117.042151	0.02	132
NWW-363	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.869927, -117.042230	0.01	102
NWW-364	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870609, -117.041342	0.01	206
NWW-365	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia*	3 - 3	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave	34.870801, -117.041464	0.01	102

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		dumosa Shrubland Alliance[3]		River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-366	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	4 - 6	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870105, -117.042422	0.01	125
NWW-367	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870211, -117.042359	<0.01	72
NWW-368	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870214, -117.042569	0.01	136
NWW-369	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.870944, -117.043475	0.01	115
NWW-370	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871050, -117.043413	<0.01	68
NWW-371	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia*	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave	34.871212, -117.043507	<0.01	8

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		dumosa Shrubland Alliance[3]		River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-372	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872145, -117.043225	<0.01	90
NWW-373	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 3	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871405, -117.044045	0.01	186
NWW-374	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.,871505 -117.044170	0.01	108
NWW-375	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871573, -117.044219	0.01	148
NWW-376	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 6	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872417, -117.043496	0.01	95
NWW-377	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia*	2 - 2	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave	34.872422, -117.043566	0.01	125

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		dumosa Shrubland Alliance[3]		River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-378	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872623, -117.043738	<0.01	49
NWW-379	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.871816, -117.044473	<0.01	148
NWW-380	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872030, -117.044724	<0.01	133
NWW-381	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872922, -117.044150	0.01	112
NWW-382	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.873045, -117.044203	<0.01	18
NWW-383	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia*	2 - 8	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave	34.872229, -117.045034	0.04	244

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		dumosa Shrubland Alliance[3]		River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-384	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 4	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872452, -117.045339	0.03	520
NWW-385	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 3	Unvegetated, multi-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.872579, -117.045298	<0.01	79
NWW-386	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.873220, -117.044629	0.01	100
NWW-387	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.873596, -117.044918	<0.01	32
NWW-388	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.873706, -117.045186	0.02	230
NWW-389	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia*	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave	34.838168, -117.164441	<0.01	25

Aquatic Resource Name (CDFW)	Aquatic Resource Type	Dominant Vegetation Community	Width Range[1] (Linear Feet)	General Characteristics	Location (Latitude, Longitude)	Acre(s)[4]	Linear Feet[4]
		dumosa Shrubland Alliance[3]		River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)			
NWW-390	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	1 - 1	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.838016, -117.164824	<0.01	78
NWW-391	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	2 - 5	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.837817, -117.164981	0.01	104
NWW-392	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	12 - 14	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See Photo 5 on Figures 5A – 5B and Attachment G.)	34.837379, -117.165543	0.03	102
	Watercourse[6]		20 - 25			0.02	
NWW-393	Unvegetated Streambed[2]	*Larrea tridentata – Ambrosia dumosa* Shrubland Alliance[3]	3 - 3	Unvegetated, single-thread feature within *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance; discharges to Mojave River. (See representative Photos 3 and 4 on Figures 5A – 5B and Attachment G.)	34.837119, -117.165941	<0.01	36
					Total[5]	5.21	22,201

[1] Corresponds with the approximate stream bank widths observed during delineation. Width range accounts for entirety of streambed delineated, not individual vegetation communities.
[2] A "streambed" under CFGC Section 1602 includes the channel of a watercourse that is generally defined to include the depression between the banks worn by the regular and usual flow of water.
[3] Unvegetated streambed within mapped vegetation community; however, no vegetation technically present within the streambed.
[4] Acreage and linear feet only provided for portion of aquatic resource located within the 2025 ARDR addendum review area.
[5] Acreages and linear feet totals were summed using raw numbers provided during GIS analysis (available upon request) and thus, the sum of the total rounded numbers may not directly add up in this table.

[6] A “watercourse” extends beyond the streambed and can consist of associated features such as low-flow, active, and braided channels and banks associated with islands, and secondary channels within the bounds of a larger channel complex (Vyverberg & Brady 2013)
[7] Linear feet not calculated for watercourse to avoid redundant linear foot calculation where such areas overlap with streambed. 3 A “streambed” under CFGC Section 1602 includes the channel of a watercourse that is generally defined to include the depression between the banks worn by the regular and usual
flow of water.
*Reflects additional acreage and linear footage delineated during the 2025 ARDR field survey only.

ATTACHMENT I

ORM BULK UPLOAD AQUATIC RESOURCES OR CONSOLIDATED EXCEL SPREADSHEET

(*SUPERSEDES APPENDIX I OF THE 2022 ARDR, ATTACHMENT G OF THE 2023 ARDR ADDENDUM, ATTACHMENT I OF THE 2024 ARDR ADDENDUM, AND ATTACHMENT I OF THE MARCH 2025 ARDR ADDENDUM*)

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
NWW-1	CALIFORNIA	R6	RIVERINE	Area	0.016278341	ACRE	DELIN.PJD-404	34.77278668	-117.28465332	Mojave River
NWW-2	CALIFORNIA	R6	RIVERINE	Area	0.01141841	ACRE	DELIN.PJD-404	34.77284665	-117.28460962	Mojave River
NWW-3	CALIFORNIA	R6	RIVERINE	Area	0.018531401	ACRE	DELIN.PJD-404	34.77322097	-117.28381670	Mojave River
NWW-4	CALIFORNIA	R6	RIVERINE	Area	0.012990956	ACRE	DELIN.PJD-404	34.77365286	-117.28303575	Mojave River
NWW-5	CALIFORNIA	R6	RIVERINE	Area	0.010801573	ACRE	DELIN.PJD-404	34.77373358	-117.28286858	Mojave River
NWW-6	CALIFORNIA	R6	RIVERINE	Area	0.01251526	ACRE	DELIN.PJD-404	34.77465215	-117.28170142	Mojave River
NWW-7	CALIFORNIA	R6	RIVERINE	Area	0.010214497	ACRE	DELIN.PJD-404	34.77667409	-117.27878631	Mojave River
NWW-8	CALIFORNIA	R6	RIVERINE	Area	0.007110064	ACRE	DELIN.PJD-404	34.77678560	-117.27870544	Mojave River
NWW-9	CALIFORNIA	R6	RIVERINE	Area	0.025525472	ACRE	DELIN.PJD-404	34.77879412	-117.27738386	Mojave River
NWW-10	CALIFORNIA	R6	RIVERINE	Area	0.00258676	ACRE	DELIN.PJD-404	34.77839910	-117.27674330	Mojave River
NWW-11	CALIFORNIA	R6	RIVERINE	Area	0.015518389	ACRE	DELIN.PJD-404	34.77837729	-117.27647789	Mojave River
NWW-12	CALIFORNIA	R6	RIVERINE	Area	0.005914291	ACRE	DELIN.PJD-404	34.77867006	-117.27612138	Mojave River
NWW-13	CALIFORNIA	R6	RIVERINE	Area	0.008761386	ACRE	DELIN.PJD-404	34.77871240	-117.27602421	Mojave River
NWW-14	CALIFORNIA	R6	RIVERINE	Area	0.009298952	ACRE	DELIN.PJD-404	34.77888564	-117.27582686	Mojave River
NWW-15	CALIFORNIA	R6	RIVERINE	Area	0.013955216	ACRE	DELIN.PJD-404	34.77897755	-117.27558467	Mojave River
NWW-16	CALIFORNIA	R6	RIVERINE	Area	0.074980734	ACRE	DELIN.PJD-404	34.78427582	-117.26266824	Mojave River
NWW-17	CALIFORNIA	R6	RIVERINE	Area	0.049261711	ACRE	DELIN.PJD-404	34.78436063	-117.26210438	Mojave River
NWW-18	CALIFORNIA	R6	RIVERINE	Area	0.007276247	ACRE	DELIN.PJD-404	34.78694821	-117.25260514	Mojave River
NWW-19	CALIFORNIA	R6	RIVERINE	Area	0.008749993	ACRE	DELIN.PJD-404	34.78731771	-117.25176124	Mojave River
NWW-20	CALIFORNIA	R6	RIVERINE	Area	0.649327705	ACRE	DELIN.PJD-404	34.79118942	-117.24186771	Mojave River
NWW-21	CALIFORNIA	R6	RIVERINE	Area	0.030927581	ACRE	DELIN.PJD-404	34.79580995	-117.22844984	Mojave River
NWW-22	CALIFORNIA	R6	RIVERINE	Area	0.015264922	ACRE	DELIN.PJD-404	34.79655915	-117.22780117	Mojave River
NWW-23	CALIFORNIA	R6	RIVERINE	Area	0.016980246	ACRE	DELIN.PJD-404	34.79577560	-117.22816166	Mojave River
NWW-24	CALIFORNIA	R6	RIVERINE	Area	0.120820824	ACRE	DELIN.PJD-404	34.79716045	-117.22775874	Mojave River
NWW-25	CALIFORNIA	R6	RIVERINE	Area	0.067415158	ACRE	DELIN.PJD-404	34.79698107	-117.22581535	Mojave River
NWW-26	CALIFORNIA	R6	RIVERINE	Area	0.065951913	ACRE	DELIN.PJD-404	34.79759457	-117.22500824	Mojave River
NWW-27	CALIFORNIA	R6	RIVERINE	Area	0.180558056	ACRE	DELIN.PJD-404	34.79825817	-117.22320368	Mojave River
NWW-28	CALIFORNIA	R6	RIVERINE	Area	0.008685874	ACRE	DELIN.PJD-404	34.79781859	-117.22212717	Mojave River
NWW-29	CALIFORNIA	R6	RIVERINE	Area	0.00222605	ACRE	DELIN.PJD-404	34.79876557	-117.22298274	Mojave River
NWW-30	CALIFORNIA	R6	RIVERINE	Area	0.025568832	ACRE	DELIN.PJD-404	34.79850826	-117.22190550	Mojave River
NWW-31	CALIFORNIA	R6	RIVERINE	Area	0.009244953	ACRE	DELIN.PJD-404	34.79858276	-117.22124669	Mojave River
NWW-32	CALIFORNIA	R6	RIVERINE	Area	0.002273815	ACRE	DELIN.PJD-404	34.79845614	-117.22006550	Mojave River
NWW-33	CALIFORNIA	R6	RIVERINE	Area	0.020177257	ACRE	DELIN.PJD-404	34.79932170	-117.21984578	Mojave River
NWW-34	CALIFORNIA	R6	RIVERINE	Area	0.026346639	ACRE	DELIN.PJD-404	34.80095511	-117.21581825	Mojave River
NWW-35	CALIFORNIA	R6	RIVERINE	Area	0.006240112	ACRE	DELIN.PJD-404	34.80729017	-117.20328971	Mojave River
NWW-36	CALIFORNIA	R6	RIVERINE	Area	0.008374707	ACRE	DELIN.PJD-404	34.80873818	-117.20155472	Mojave River
NWW-37	CALIFORNIA	R6	RIVERINE	Area	0.010649336	ACRE	DELIN.PJD-404	34.80918874	-117.20105374	Mojave River
NWW-38	CALIFORNIA	R6	RIVERINE	Area	0.008335707	ACRE	DELIN.PJD-404	34.80931564	-117.20089181	Mojave River
NWW-39	CALIFORNIA	R6	RIVERINE	Area	0.004211966	ACRE	DELIN.PJD-404	34.80967074	-117.20047139	Mojave River
NWW-40	CALIFORNIA	R6	RIVERINE	Area	0.011020279	ACRE	DELIN.PJD-404	34.81009911	-117.19997547	Mojave River
NWW-41	CALIFORNIA	R6	RIVERINE	Area	0.005998602	ACRE	DELIN.PJD-404	34.81032263	-117.19971840	Mojave River
NWW-42	CALIFORNIA	R6	RIVERINE	Area	0.016624394	ACRE	DELIN.PJD-404	34.81142504	-117.19842435	Mojave River

NWW-43	CALIFORNIA	R6	RIVERINE	Area	0.132283244	ACRE	DELIN.PJD-404	34.82669287	-117.18851109	Mojave River
NWW-44	CALIFORNIA	R6	RIVERINE	Area	3.13091042	ACRE	DELIN.PJD-404	34.82924770	-117.18642872	Mojave River
NWW-45	CALIFORNIA	R6	RIVERINE	Area	0.209015758	ACRE	DELIN.PJD-404	34.83468444	-117.18223737	Mojave River
NWW-46	CALIFORNIA	R6	RIVERINE	Area	0.062388071	ACRE	DELIN.PJD-404	34.83516795	-117.18147873	Mojave River
NWW-47	CALIFORNIA	R6	RIVERINE	Area	0.04048341	ACRE	DELIN.PJD-404	34.83370557	-117.17628314	Mojave River
NWW-48	CALIFORNIA	R6	RIVERINE	Area	0.034591479	ACRE	DELIN.PJD-404	34.83699055	-117.18112184	Mojave River
NWW-49	CALIFORNIA	R6	RIVERINE	Area	0.726772781	ACRE	DELIN.PJD-404	34.83611047	-117.17906427	Mojave River
NWW-50	CALIFORNIA	R6	RIVERINE	Area	0.021279698	ACRE	DELIN.PJD-404	34.83723900	-117.17920300	Mojave River
NWW-51	CALIFORNIA	R6	RIVERINE	Area	0.038764831	ACRE	DELIN.PJD-404	34.83746355	-117.17807757	Mojave River
NWW-52	CALIFORNIA	R6	RIVERINE	Area	0.038923469	ACRE	DELIN.PJD-404	34.83786733	-117.17767859	Mojave River
NWW-53	CALIFORNIA	R6	RIVERINE	Area	0.066434864	ACRE	DELIN.PJD-404	34.83764824	-117.17710118	Mojave River
NWW-54	CALIFORNIA	R6	RIVERINE	Area	0.019129796	ACRE	DELIN.PJD-404	34.83520967	-117.17261912	Mojave River
NWW-55	CALIFORNIA	R6	RIVERINE	Area	0.020592088	ACRE	DELIN.PJD-404	34.83545384	-117.17186322	Mojave River
NWW-56	CALIFORNIA	R6	RIVERINE	Area	0.01789333	ACRE	DELIN.PJD-404	34.83577343	-117.17261681	Mojave River
NWW-57	CALIFORNIA	R6	RIVERINE	Area	0.023183732	ACRE	DELIN.PJD-404	34.83601382	-117.17263063	Mojave River
NWW-58	CALIFORNIA	R6	RIVERINE	Area	0.496140759	ACRE	DELIN.PJD-404	34.83834849	-117.17608356	Mojave River
NWW-59	CALIFORNIA	R6	RIVERINE	Area	0.74721611	ACRE	DELIN.PJD-404	34.83824813	-117.17416003	Mojave River
NWW-60	CALIFORNIA	R6	RIVERINE	Area	0.166348296	ACRE	DELIN.PJD-404	34.84040084	-117.17974962	Mojave River
NWW-61	CALIFORNIA	R6	RIVERINE	Area	0.045607722	ACRE	DELIN.PJD-404	34.83703132	-117.16979074	Mojave River
NWW-62	CALIFORNIA	R6	RIVERINE	Area	0.136690644	ACRE	DELIN.PJD-404	34.84039716	-117.17530721	Mojave River
NWW-63	CALIFORNIA	R6	RIVERINE	Area	0.195265841	ACRE	DELIN.PJD-404	34.84093356	-117.17427517	Mojave River
NWW-64	CALIFORNIA	R6	RIVERINE	Area	0.037176669	ACRE	DELIN.PJD-404	34.84171085	-117.17441834	Mojave River
NWW-65	CALIFORNIA	R6	RIVERINE	Area	0.022213123	ACRE	DELIN.PJD-404	34.84229327	-117.17364316	Mojave River
NWW-66	CALIFORNIA	R6	RIVERINE	Area	0.078989769	ACRE	DELIN.PJD-404	34.84314736	-117.17245700	Mojave River
NWW-67	CALIFORNIA	R6	RIVERINE	Area	0.219301464	ACRE	DELIN.PJD-404	34.84113135	-117.17198414	Mojave River
NWW-68	CALIFORNIA	R6	RIVERINE	Area	0.338062922	ACRE	DELIN.PJD-404	34.83999196	-117.17009380	Mojave River
NWW-69	CALIFORNIA	R6	RIVERINE	Area	0.677821776	ACRE	DELIN.PJD-404	34.84293300	-117.16862452	Mojave River
NWW-70	CALIFORNIA	R6	RIVERINE	Area	2.087638087	ACRE	DELIN.PJD-404	34.84220858	-117.16640809	Mojave River
NWW-71	CALIFORNIA	R6	RIVERINE	Area	0.103867289	ACRE	DELIN.PJD-404	34.84455410	-117.16571821	Mojave River
NWW-72	CALIFORNIA	R6	RIVERINE	Area	0.039455635	ACRE	DELIN.PJD-404	34.84536977	-117.16623561	Mojave River
NWW-73	CALIFORNIA	R6	RIVERINE	Area	1.239925523	ACRE	DELIN.PJD-404	34.84445324	-117.16354495	Mojave River
NWW-74	CALIFORNIA	R6	RIVERINE	Area	0.166295534	ACRE	DELIN.PJD-404	34.84694969	-117.16275562	Mojave River
NWW-75	CALIFORNIA	R6	RIVERINE	Area	0.038744915	ACRE	DELIN.PJD-404	34.84554977	-117.15997825	Mojave River
NWW-76	CALIFORNIA	R6	RIVERINE	Area	0.861637745	ACRE	DELIN.PJD-404	34.84801880	-117.15913332	Mojave River
NWW-77	CALIFORNIA	R6	RIVERINE	Area	0.160267403	ACRE	DELIN.PJD-404	34.84712950	-117.15639618	Mojave River
NWW-78	CALIFORNIA	R6	RIVERINE	Area	0.012846397	ACRE	DELIN.PJD-404	34.84884536	-117.15724225	Mojave River
NWW-79	CALIFORNIA	R6	RIVERINE	Area	0.134344187	ACRE	DELIN.PJD-404	34.85024761	-117.15805737	Mojave River
NWW-80	CALIFORNIA	R6	RIVERINE	Area	2.024165545	ACRE	DELIN.PJD-404	34.85068017	-117.15456372	Mojave River
NWW-81	CALIFORNIA	R6	RIVERINE	Area	0.119515834	ACRE	DELIN.PJD-404	34.85333976	-117.15626891	Mojave River
NWW-82	CALIFORNIA	R6	RIVERINE	Area	0.641763198	ACRE	DELIN.PJD-404	34.85443320	-117.15278385	Mojave River
NWW-83	CALIFORNIA	R6	RIVERINE	Area	0.01445635	ACRE	DELIN.PJD-404	34.85623860	-117.15316665	Mojave River
NWW-84	CALIFORNIA	R6	RIVERINE	Area	0.020877849	ACRE	DELIN.PJD-404	34.85495794	-117.14606648	Mojave River
NWW-85	CALIFORNIA	R6	RIVERINE	Area	0.310567715	ACRE	DELIN.PJD-404	34.85728058	-117.14989756	Mojave River

NWW-86	CALIFORNIA	R6	RIVERINE	Area	0.015149523	ACRE	DELIN.PJD-404	34.85669782	-117.14796479	Mojave River
NWW-87	CALIFORNIA	R6	RIVERINE	Area	0.132380603	ACRE	DELIN.PJD-404	34.85793592	-117.14794895	Mojave River
NWW-88	CALIFORNIA	R6	RIVERINE	Area	0.037291294	ACRE	DELIN.PJD-404	34.85890624	-117.14830839	Mojave River
NWW-89	CALIFORNIA	R6	RIVERINE	Area	1.971802323	ACRE	DELIN.PJD-404	34.86371081	-117.13465496	Mojave River
NWW-90	CALIFORNIA	R6	RIVERINE	Area	0.079602313	ACRE	DELIN.PJD-404	34.86055151	-117.14279481	Mojave River
NWW-91	CALIFORNIA	R6	RIVERINE	Area	0.006952585	ACRE	DELIN.PJD-404	34.86314731	-117.14056368	Mojave River
NWW-92	CALIFORNIA	R6	RIVERINE	Area	8.308098646	ACRE	DELIN.PJD-404	34.87445540	-117.13129081	Mojave River
NWW-93	CALIFORNIA	R6	RIVERINE	Area	0.058704783	ACRE	DELIN.PJD-404	34.87348522	-117.11870897	Mojave River
NWW-94	CALIFORNIA	R6	RIVERINE	Area	0.0559	ACRE	DELIN.PJD-404	34.87405511	-117.11737186	Mojave River
NWW-95	CALIFORNIA	R6	RIVERINE	Area	0.03178225	ACRE	DELIN.PJD-404	34.87708727	-117.11092605	Mojave River
NWW-96	CALIFORNIA	R6	RIVERINE	Area	0.050860685	ACRE	DELIN.PJD-404	34.87826790	-117.10870766	Mojave River
NWW-97	CALIFORNIA	R6	RIVERINE	Area	0.034648103	ACRE	DELIN.PJD-404	34.87942249	-117.10555181	Mojave River
NWW-98	CALIFORNIA	R6	RIVERINE	Area	0.02	ACRE	DELIN.PJD-404	34.88001687	-117.10595039	Mojave River
NWW-99	CALIFORNIA	R6	RIVERINE	Area	0.027752881	ACRE	DELIN.PJD-404	34.88093572	-117.10122600	Mojave River
NWW-100	CALIFORNIA	R6	RIVERINE	Area	0.341549191	ACRE	DELIN.PJD-404	34.88260220	-117.09540682	Mojave River
NWW-101	CALIFORNIA	R6	RIVERINE	Area	0.286440572	ACRE	DELIN.PJD-404	34.88341575	-117.09267129	Mojave River
NWW-102	CALIFORNIA	R6	RIVERINE	Area	0.008948492	ACRE	DELIN.PJD-404	34.88303805	-117.09193037	Mojave River
NWW-103	CALIFORNIA	R6	RIVERINE	Area	0.011154835	ACRE	DELIN.PJD-404	34.79742562	-117.22308011	Mojave River
NWW-104	CALIFORNIA	R6	RIVERINE	Area	0.010103612	ACRE	DELIN.PJD-404	34.79750974	-117.22288568	Mojave River
NWW-105	CALIFORNIA	R6	RIVERINE	Area	0.005920278	ACRE	DELIN.PJD-404	34.82871205	-117.18237252	Mojave River
NWW-106	CALIFORNIA	R6	RIVERINE	Area	0.011246819	ACRE	DELIN.PJD-404	34.82890709	-117.18208448	Mojave River
NWW-107	CALIFORNIA	R6	RIVERINE	Area	0.004889903	ACRE	DELIN.PJD-404	34.83555520	-117.16950120	Mojave River
NWW-108	CALIFORNIA	R6	RIVERINE	Area	0.013087895	ACRE	DELIN.PJD-404	34.84705328	-117.15190438	Mojave River
NWW-109	CALIFORNIA	R4	RIVERINE	Area	106.8706822	ACRE	DELIN.PJD-404	34.86327700	-117.17012800	Mojave River
NWW-110	CALIFORNIA	R6	RIVERINE	Area	0.09059778	ACRE	DELIN.PJD-404	34.86285093	-117.02938746	Mojave River
NWW-111	CALIFORNIA	R6	RIVERINE	Area	0.009110204	ACRE	DELIN.PJD-404	34.86232779	-117.03015416	Mojave River
NWW-112	CALIFORNIA	R6	RIVERINE	Area	0.009124609	ACRE	DELIN.PJD-404	34.86311432	-117.03113286	Mojave River
NWW-113	CALIFORNIA	R6	RIVERINE	Area	0.108621536	ACRE	DELIN.PJD-404	34.86302125	-117.03037808	Mojave River
NWW-114	CALIFORNIA	R6	RIVERINE	Area	0.053164862	ACRE	DELIN.PJD-404	34.86390622	-117.03005978	Mojave River
NWW-115	CALIFORNIA	R6	RIVERINE	Area	0.005908986	ACRE	DELIN.PJD-404	34.86394839	-117.03054830	Mojave River
NWW-116	CALIFORNIA	R6	RIVERINE	Area	0.000514915	ACRE	DELIN.PJD-404	34.86374504	-117.03084293	Mojave River
NWW-117	CALIFORNIA	R6	RIVERINE	Area	0.009033346	ACRE	DELIN.PJD-404	34.86394805	-117.03116052	Mojave River
NWW-118	CALIFORNIA	R6	RIVERINE	Area	0.002508759	ACRE	DELIN.PJD-404	34.86378427	-117.03150743	Mojave River
NWW-119	CALIFORNIA	R6	RIVERINE	Area	0.046043131	ACRE	DELIN.PJD-404	34.86398084	-117.03180905	Mojave River
NWW-120	CALIFORNIA	R6	RIVERINE	Area	0.066264712	ACRE	DELIN.PJD-404	34.86232486	-117.03221879	Mojave River
NWW-121	CALIFORNIA	R6	RIVERINE	Area	0.013367733	ACRE	DELIN.PJD-404	34.86316775	-117.03222142	Mojave River
NWW-122	CALIFORNIA	R6	RIVERINE	Area	0.008105374	ACRE	DELIN.PJD-404	34.86354669	-117.03223616	Mojave River
NWW-123	CALIFORNIA	R6	RIVERINE	Area	0.004805313	ACRE	DELIN.PJD-404	34.86329369	-117.03244001	Mojave River
NWW-124	CALIFORNIA	R6	RIVERINE	Area	0.021140434	ACRE	DELIN.PJD-404	34.86337381	-117.03339989	Mojave River
NWW-125	CALIFORNIA	R6	RIVERINE	Area	0.046854943	ACRE	DELIN.PJD-404	34.86384743	-117.03328967	Mojave River
NWW-126	CALIFORNIA	R6	RIVERINE	Area	0.050125985	ACRE	DELIN.PJD-404	34.86380595	-117.03392799	Mojave River
NWW-127	CALIFORNIA	R6	RIVERINE	Area	0.041754681	ACRE	DELIN.PJD-404	34.86420319	-117.03379067	Mojave River
NWW-128	CALIFORNIA	R6	RIVERINE	Area	0.028113876	ACRE	DELIN.PJD-404	34.86396381	-117.03404283	Mojave River

NWW-129	CALIFORNIA	R6	RIVERINE	Area	0.007771455	ACRE	DELIN.PJD-404	34.86407838	-117.03419885	Mojave River
NWW-130	CALIFORNIA	R6	RIVERINE	Area	0.020389453	ACRE	DELIN.PJD-404	34.86424316	-117.03440303	Mojave River
NWW-131	CALIFORNIA	R6	RIVERINE	Area	0.052829531	ACRE	DELIN.PJD-404	34.86465469	-117.03431020	Mojave River
NWW-132	CALIFORNIA	R6	RIVERINE	Area	0.043516626	ACRE	DELIN.PJD-404	34.86477011	-117.03439272	Mojave River
NWW-133	CALIFORNIA	R6	RIVERINE	Area	0.01756955	ACRE	DELIN.PJD-404	34.86441457	-117.03469498	Mojave River
NWW-134	CALIFORNIA	R6	RIVERINE	Area	0.030634369	ACRE	DELIN.PJD-404	34.86453660	-117.03480019	Mojave River
NWW-135	CALIFORNIA	R6	RIVERINE	Area	0.093460616	ACRE	DELIN.PJD-404	34.86499956	-117.03478356	Mojave River
NWW-136	CALIFORNIA	R6	RIVERINE	Area	0.035074516	ACRE	DELIN.PJD-404	34.86463979	-117.03499287	Mojave River
NWW-137	CALIFORNIA	R6	RIVERINE	Area	0.000947841	ACRE	DELIN.PJD-404	34.86509751	-117.03536249	Mojave River
NWW-138	CALIFORNIA	R6	RIVERINE	Area	0.020087173	ACRE	DELIN.PJD-404	34.86548343	-117.03539444	Mojave River
NWW-139	CALIFORNIA	R6	RIVERINE	Area	0.005076476	ACRE	DELIN.PJD-404	34.86508024	-117.03554022	Mojave River
NWW-140	CALIFORNIA	R6	RIVERINE	Area	0.114360256	ACRE	DELIN.PJD-404	34.86534620	-117.03582613	Mojave River
NWW-141	CALIFORNIA	R6	RIVERINE	Area	0.019533146	ACRE	DELIN.PJD-404	34.86579265	-117.03575124	Mojave River
NWW-142	CALIFORNIA	R6	RIVERINE	Area	0.028950947	ACRE	DELIN.PJD-404	34.86555806	-117.03618176	Mojave River
NWW-143	CALIFORNIA	R6	RIVERINE	Area	0.042306301	ACRE	DELIN.PJD-404	34.86593998	-117.03596793	Mojave River
NWW-144	CALIFORNIA	R6	RIVERINE	Area	0.052167173	ACRE	DELIN.PJD-404	34.86569679	-117.03634085	Mojave River
NWW-145	CALIFORNIA	R6	RIVERINE	Area	0.012571792	ACRE	DELIN.PJD-404	34.86709850	-117.03727300	Mojave River
NWW-146	CALIFORNIA	R6	RIVERINE	Area	0.325113933	ACRE	DELIN.PJD-404	34.86727959	-117.03788910	Mojave River
NWW-147	CALIFORNIA	R6	RIVERINE	Area	0.003398032	ACRE	DELIN.PJD-404	34.86747948	-117.03838012	Mojave River
NWW-148	CALIFORNIA	R6	RIVERINE	Area	0.018302191	ACRE	DELIN.PJD-404	34.86801633	-117.03857326	Mojave River
NWW-149	CALIFORNIA	R6	RIVERINE	Area	0.01205285	ACRE	DELIN.PJD-404	34.86788447	-117.03903021	Mojave River
NWW-150	CALIFORNIA	R6	RIVERINE	Area	0.007904138	ACRE	DELIN.PJD-404	34.86794967	-117.03920062	Mojave River
NWW-151	CALIFORNIA	R6	RIVERINE	Area	0.011522548	ACRE	DELIN.PJD-404	34.86838474	-117.03894621	Mojave River
NWW-152	CALIFORNIA	R6	RIVERINE	Area	0.02483363	ACRE	DELIN.PJD-404	34.86816874	-117.03939449	Mojave River
NWW-153	CALIFORNIA	R6	RIVERINE	Area	0.008568596	ACRE	DELIN.PJD-404	34.86868576	-117.03935877	Mojave River
NWW-154	CALIFORNIA	R6	RIVERINE	Area	0.002923272	ACRE	DELIN.PJD-404	34.86847058	-117.03962488	Mojave River
NWW-155	CALIFORNIA	R6	RIVERINE	Area	0.008395214	ACRE	DELIN.PJD-404	34.86849729	-117.03974763	Mojave River
NWW-156	CALIFORNIA	R6	RIVERINE	Area	0.005831885	ACRE	DELIN.PJD-404	34.86875078	-117.04002497	Mojave River
NWW-157	CALIFORNIA	R6	RIVERINE	Area	0.025629278	ACRE	DELIN.PJD-404	34.86909280	-117.03989785	Mojave River
NWW-158	CALIFORNIA	R6	RIVERINE	Area	0.018806348	ACRE	DELIN.PJD-404	34.86949292	-117.04040865	Mojave River
NWW-159	CALIFORNIA	R6	RIVERINE	Area	0.00573387	ACRE	DELIN.PJD-404	34.86940616	-117.04082180	Mojave River
NWW-160	CALIFORNIA	R6	RIVERINE	Area	0.005981813	ACRE	DELIN.PJD-404	34.86973346	-117.04123198	Mojave River
NWW-161	CALIFORNIA	R6	RIVERINE	Area	0.01801783	ACRE	DELIN.PJD-404	34.87006933	-117.04175596	Mojave River
NWW-162	CALIFORNIA	R6	RIVERINE	Area	0.003918529	ACRE	DELIN.PJD-404	34.87030472	-117.04189896	Mojave River
NWW-163	CALIFORNIA	R6	RIVERINE	Area	0.010570904	ACRE	DELIN.PJD-404	34.87036850	-117.04211737	Mojave River
NWW-164	CALIFORNIA	R6	RIVERINE	Area	0.004842582	ACRE	DELIN.PJD-404	34.87051044	-117.04226228	Mojave River
NWW-165	CALIFORNIA	R6	RIVERINE	Area	0.0119429	ACRE	DELIN.PJD-404	34.87063092	-117.04245875	Mojave River
NWW-166	CALIFORNIA	R6	RIVERINE	Area	0.027146606	ACRE	DELIN.PJD-404	34.87081795	-117.04270644	Mojave River
NWW-167	CALIFORNIA	R6	RIVERINE	Area	0.020035192	ACRE	DELIN.PJD-404	34.87093772	-117.04289578	Mojave River
NWW-168	CALIFORNIA	R6	RIVERINE	Area	0.072516072	ACRE	DELIN.PJD-404	34.87142800	-117.04276500	Mojave River
NWW-169	CALIFORNIA	R6	RIVERINE	Area	0.013730366	ACRE	DELIN.PJD-404	34.87161700	-117.04284500	Mojave River
NWW-170	CALIFORNIA	R6	RIVERINE	Area	0.031653565	ACRE	DELIN.PJD-404	34.87122106	-117.04325722	Mojave River
NWW-171	CALIFORNIA	R6	RIVERINE	Area	0.069758627	ACRE	DELIN.PJD-404	34.87171480	-117.04385135	Mojave River

NWW-172	CALIFORNIA	R6	RIVERINE	Area	0.03842669	ACRE	DELIN.PJD-404	34.87236404	-117.04397368	Mojave River
NWW-173	CALIFORNIA	R6	RIVERINE	Area	0.004208607	ACRE	DELIN.PJD-404	34.87226418	-117.04436040	Mojave River
NWW-174	CALIFORNIA	R6	RIVERINE	Area	0.008475357	ACRE	DELIN.PJD-404	34.87261139	-117.04491681	Mojave River
NWW-175	CALIFORNIA	R6	RIVERINE	Area	0.016060467	ACRE	DELIN.PJD-404	34.87308077	-117.04544880	Mojave River
NWW-176	CALIFORNIA	R6	RIVERINE	Area	0.008026398	ACRE	DELIN.PJD-404	34.87327389	-117.04567735	Mojave River
NWW-177	CALIFORNIA	R6	RIVERINE	Area	0.100130732	ACRE	DELIN.PJD-404	34.87389305	-117.04593049	Mojave River
NWW-178	CALIFORNIA	R6	RIVERINE	Area	0.005979178	ACRE	DELIN.PJD-404	34.87379653	-117.04621767	Mojave River
NWW-179	CALIFORNIA	R6	RIVERINE	Area	0.002959895	ACRE	DELIN.PJD-404	34.87384688	-117.04634308	Mojave River
NWW-180	CALIFORNIA	R6	RIVERINE	Area	0.161941232	ACRE	DELIN.PJD-404	34.87394468	-117.04659806	Mojave River
NWW-181	CALIFORNIA	R6	RIVERINE	Area	0.025652661	ACRE	DELIN.PJD-404	34.87487166	-117.04697816	Mojave River
NWW-182	CALIFORNIA	R6	RIVERINE	Area	0.130814439	ACRE	DELIN.PJD-404	34.87426778	-117.04710632	Mojave River
NWW-183	CALIFORNIA	R6	RIVERINE	Area	0.056202796	ACRE	DELIN.PJD-404	34.86459438	-117.12052553	Mojave River
NWW-184	CALIFORNIA	R6	RIVERINE	Area	0.020651092	ACRE	DELIN.PJD-404	34.86523217	-117.12208767	Mojave River
NWW-185	CALIFORNIA	R6	RIVERINE	Area	0.004124309	ACRE	DELIN.PJD-404	34.85300850	-117.13265695	Mojave River
NWW-186	CALIFORNIA	R6	RIVERINE	Area	0.009129134	ACRE	DELIN.PJD-404	34.85337643	-117.13264855	Mojave River
NWW-187	CALIFORNIA	R6	RIVERINE	Area	0.026921385	ACRE	DELIN.PJD-404	34.85397730	-117.13283624	Mojave River
NWW-188	CALIFORNIA	R6	RIVERINE	Area	0.312152162	ACRE	DELIN.PJD-404	34.85681032	-117.13128038	Mojave River
NWW-189	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88549883	-117.078289663	Mojave River
NWW-190	CALIFORNIA	R6	RIVERINE	Area	0.037	ACRE	DELIN.PJD-404	34.88486930	-117.078609098	Mojave River
NWW-191	CALIFORNIA	R6	RIVERINE	Area	0.046	ACRE	DELIN.PJD-404	34.88483124	-117.078050176	Mojave River
NWW-192	CALIFORNIA	R6	RIVERINE	Area	0.03	ACRE	DELIN.PJD-404	34.88496800	-117.077919012	Mojave River
NWW-193	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88477638	-117.077758997	Mojave River
NWW-194	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.88468841	-117.077350607	Mojave River
NWW-195	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88471766	-117.077159409	Mojave River
NWW-196	CALIFORNIA	R6	RIVERINE	Area	0.009	ACRE	DELIN.PJD-404	34.88466196	-117.076737783	Mojave River
NWW-197	CALIFORNIA	R6	RIVERINE	Area	0.018	ACRE	DELIN.PJD-404	34.88489776	-117.076800302	Mojave River
NWW-198	CALIFORNIA	R6	RIVERINE	Area	0.014	ACRE	DELIN.PJD-404	34.88488812	-117.076324871	Mojave River
NWW-199	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88471296	-117.076351445	Mojave River
NWW-200	CALIFORNIA	R6	RIVERINE	Area	0.01	ACRE	DELIN.PJD-404	34.88464207	-117.075370913	Mojave River
NWW-201	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.88459147	-117.073655372	Mojave River
NWW-202	CALIFORNIA	R6	RIVERINE	Area	0.01	ACRE	DELIN.PJD-404	34.88492627	-117.071902901	Mojave River
NWW-203	CALIFORNIA	R6	RIVERINE	Area	0.4	ACRE	DELIN.PJD-404	34.88484045	-117.071088614	Mojave River
NWW-204	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88506114	-117.070693285	Mojave River
NWW-205	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88495674	-117.070522716	Mojave River
NWW-206	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.88473920	-117.070669145	Mojave River
NWW-207	CALIFORNIA	R6	RIVERINE	Area	0.018	ACRE	DELIN.PJD-404	34.88479821	-117.070198551	Mojave River
NWW-208	CALIFORNIA	R6	RIVERINE	Area	0.007	ACRE	DELIN.PJD-404	34.88488619	-117.070015788	Mojave River
NWW-209	CALIFORNIA	R6	RIVERINE	Area	0.009	ACRE	DELIN.PJD-404	34.88479347	-117.069783613	Mojave River
NWW-210	CALIFORNIA	R6	RIVERINE	Area	0.025	ACRE	DELIN.PJD-404	34.88469355	-117.069564139	Mojave River
NWW-211	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88483211	-117.069430906	Mojave River
NWW-212	CALIFORNIA	R6	RIVERINE	Area	0.009	ACRE	DELIN.PJD-404	34.88460287	-117.069361793	Mojave River

NWW-213	CALIFORNIA	R6	RIVERINE	Area	0.051	ACRE	DELIN.PJD-404	34.88485238	-117.068194370	Mojave River
NWW-214	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88463835900	-117.069049664	Mojave River
NWW-215	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88458390070	-117.068791213	Mojave River
NWW-216	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88459760680	-117.068755145	Mojave River
NWW-217	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.88455715830	-117.068637489	Mojave River
NWW-218	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88456986310	-117.068415276	Mojave River
NWW-219	CALIFORNIA	R6	RIVERINE	Area	0.589	ACRE	DELIN.PJD-404	34.88462743470	-117.067639028	Mojave River
NWW-220	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88454410310	-117.066951375	Mojave River
NWW-221	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88458873450	-117.066829355	Mojave River
NWW-222	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88453118960	-117.066373407	Mojave River
NWW-223	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.88459388930	-117.066264016	Mojave River
NWW-224	CALIFORNIA	R6	RIVERINE	Area	0.015	ACRE	DELIN.PJD-404	34.88463059960	-117.066111265	Mojave River
NWW-225	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88450844700	-117.065440701	Mojave River
NWW-226	CALIFORNIA	R6	RIVERINE	Area	0.407	ACRE	DELIN.PJD-404	34.88472162740	-117.064866042	Mojave River
NWW-227	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88499109400	-117.064414379	Mojave River
NWW-228	CALIFORNIA	R6	RIVERINE	Area	0.029	ACRE	DELIN.PJD-404	34.88453912340	-117.064175879	Mojave River
NWW-229	CALIFORNIA	R6	RIVERINE	Area	0.024	ACRE	DELIN.PJD-404	34.88476027970	-117.063677352	Mojave River
NWW-230	CALIFORNIA	R6	RIVERINE	Area	0.014	ACRE	DELIN.PJD-404	34.88442008190	-117.063052252	Mojave River
NWW-231	CALIFORNIA	R6	RIVERINE	Area	0.403	ACRE	DELIN.PJD-404	34.88496990750	-117.062850477	Mojave River
NWW-232	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88322717840	-117.063127159	Mojave River
NWW-233	CALIFORNIA	R6	RIVERINE	Area	0.026	ACRE	DELIN.PJD-404	34.88370511370	-117.062238414	Mojave River
NWW-234	CALIFORNIA	R6	RIVERINE	Area	0.011	ACRE	DELIN.PJD-404	34.88407480340	-117.062543035	Mojave River
NWW-235	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.88423961970	-117.062363907	Mojave River
NWW-236	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88454839830	-117.062380419	Mojave River
NWW-237	CALIFORNIA	R6	RIVERINE	Area	0.013	ACRE	DELIN.PJD-404	34.88432192950	-117.062043807	Mojave River
NWW-238	CALIFORNIA	R6	RIVERINE	Area	0.032	ACRE	DELIN.PJD-404	34.88434594510	-117.061771740	Mojave River
NWW-239	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.88459878700	-117.061691998	Mojave River
NWW-240	CALIFORNIA	R6	RIVERINE	Area	0.014	ACRE	DELIN.PJD-404	34.88443904480	-117.061486940	Mojave River
NWW-241	CALIFORNIA	R6	RIVERINE	Area	0.016	ACRE	DELIN.PJD-404	34.88313862570	-117.060674746	Mojave River
NWW-242	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88276554110	-117.060334476	Mojave River
NWW-243	CALIFORNIA	R6	RIVERINE	Area	0.025	ACRE	DELIN.PJD-404	34.88038916350	-117.060463693	Mojave River
NWW-244	CALIFORNIA	R6	RIVERINE	Area	0.033	ACRE	DELIN.PJD-404	34.87969711000	-117.060927653	Mojave River
NWW-245	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.87857190150	-117.057288405	Mojave River
NWW-246	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.87619690170	-117.060476179	Mojave River
NWW-247	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.87725605740	-117.056142534	Mojave River
NWW-248	CALIFORNIA	R6	RIVERINE	Area	0.028	ACRE	DELIN.PJD-404	34.87599618810	-117.056427789	Mojave River
NWW-249	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.87469414040	-117.057062176	Mojave River
NWW-250	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.87478107640	-117.052983131	Mojave River
NWW-251	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.87434811370	-117.050660733	Mojave River
NWW-252	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.87441916880	-117.047069106	Mojave River

NWW-253	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88179965170	-117.055947680	Mojave River
NWW-254	CALIFORNIA	R6	RIVERINE	Area	0.051	ACRE	DELIN.PJD-404	34.88767135040	-117.056116950	Mojave River
NWW-255	CALIFORNIA	R6	RIVERINE	Area	0.066	ACRE	DELIN.PJD-404	34.88872142310	-117.056772219	Mojave River
NWW-256	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.89127924490	-117.058014243	Mojave River
NWW-257	CALIFORNIA	R6	RIVERINE	Area	0.011	ACRE	DELIN.PJD-404	34.89163758090	-117.058161001	Mojave River
NWW-258	CALIFORNIA	R6	RIVERINE	Area	0.018	ACRE	DELIN.PJD-404	34.89157993930	-117.058509143	Mojave River
NWW-259	CALIFORNIA	R6	RIVERINE	Area	0.038	ACRE	DELIN.PJD-404	34.88762784320	-117.072095100	Mojave River
NWW-260	CALIFORNIA	R6	RIVERINE	Area	0.064	ACRE	DELIN.PJD-404	34.88810074540	-117.072300074	Mojave River
NWW-261	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.88774419190	-117.073630528	Mojave River
NWW-262	CALIFORNIA	R6	RIVERINE	Area	0.013	ACRE	DELIN.PJD-404	34.88741950710	-117.074868044	Mojave River
NWW-263	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88699412660	-117.074752755	Mojave River
NWW-264	CALIFORNIA	R6	RIVERINE	Area	0.029	ACRE	DELIN.PJD-404	34.88534860040	-117.083007336	Mojave River
NWW-265	CALIFORNIA	R6	RIVERINE	Area	0.011	ACRE	DELIN.PJD-404	34.88523751720	-117.083076006	Mojave River
NWW-266	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88525133780	-117.083836618	Mojave River
NWW-267	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.88513566	-117.084387343	Mojave River
NWW-268	CALIFORNIA	R6	RIVERINE	Area	0.1	ACRE	DELIN.PJD-404	34.88412800	-117.085431000	Mojave River
NWW-269	CALIFORNIA	R6	RIVERINE	Area	0.087	ACRE	DELIN.PJD-404	34.88473895	-117.085298287	Mojave River
NWW-270	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.88472979	-117.085938382	Mojave River
NWW-271	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.88468913	-117.086055510	Mojave River
NWW-272	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.88461334	-117.086163498	Mojave River
NWW-273	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88464071	-117.086270055	Mojave River
NWW-274	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.88461066	-117.086443494	Mojave River
NWW-275	CALIFORNIA	R6	RIVERINE	Area	0.007	ACRE	DELIN.PJD-404	34.88449405	-117.086801349	Mojave River
NWW-276	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.88427207	-117.086785276	Mojave River
NWW-277	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88444695	-117.087007602	Mojave River
NWW-278	CALIFORNIA	R6	RIVERINE	Area	0.016	ACRE	DELIN.PJD-404	34.88432790	-117.087043495	Mojave River
NWW-279	CALIFORNIA	R6	RIVERINE	Area	0.032	ACRE	DELIN.PJD-404	34.88419971	-117.087560500	Mojave River
NWW-280	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88366664	-117.087345232	Mojave River
NWW-281	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.88395100	-117.088824768	Mojave River
NWW-282	CALIFORNIA	R6	RIVERINE	Area	0.019	ACRE	DELIN.PJD-404	34.88300984	-117.090400882	Mojave River
NWW-283	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.88367453	-117.098065556	Mojave River
NWW-284	CALIFORNIA	R6	RIVERINE	Area	0.04	ACRE	DELIN.PJD-404	34.88325054	-117.098655178	Mojave River
NWW-285	CALIFORNIA	R6	RIVERINE	Area	0.011	ACRE	DELIN.PJD-404	34.87256438	-117.117449353	Mojave River
NWW-286	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.87195857	-117.118477013	Mojave River
NWW-287	CALIFORNIA	R6	RIVERINE	Area	0.08	ACRE	DELIN.PJD-404	34.85410828	-117.142024801	Mojave River
NWW-288	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.85448355	-117.141306927	Mojave River
NWW-289	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.84458512	-117.155166639	Mojave River
NWW-290	CALIFORNIA	R6	RIVERINE	Area	0.021	ACRE	DELIN.PJD-404	34.84443361	-117.155339582	Mojave River
NWW-291	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.84404731	-117.155674699	Mojave River
NWW-292	CALIFORNIA	R6	RIVERINE	Area	0.023	ACRE	DELIN.PJD-404	34.84383477	-117.156240987	Mojave River

NWW-293	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.84359505	-117.156397484	Mojave River
NWW-294	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.84352560	-117.156712582	Mojave River
NWW-295	CALIFORNIA	R6	RIVERINE	Area	0.008	ACRE	DELIN.PJD-404	34.84301405	-117.157466765	Mojave River
NWW-296	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.84128421	-117.159778491	Mojave River
NWW-297	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.84012664	-117.161545282	Mojave River
NWW-298	CALIFORNIA	R6	RIVERINE	Area	0.007	ACRE	DELIN.PJD-404	34.83855385	-117.163668086	Mojave River
NWW-299	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.83816797	-117.164441304	Mojave River
NWW-300	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.83801615	-117.164823765	Mojave River
NWW-301	CALIFORNIA	R6	RIVERINE	Area	0.012	ACRE	DELIN.PJD-404	34.83781667	-117.164980620	Mojave River
NWW-302	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.83737902	-117.165542936	Mojave River
NWW-303	CALIFORNIA	R6	RIVERINE	Area	0.005	ACRE	DELIN.PJD-404	34.83711947	-117.165941275	Mojave River
NWW-304	CALIFORNIA	R6	RIVERINE	Area	0.006	ACRE	DELIN.PJD-404	34.83696331	-117.166359737	Mojave River
NWW-305	CALIFORNIA	R6	RIVERINE	Area	0.025	ACRE	DELIN.PJD-404	34.83661141	-117.166625079	Mojave River
NWW-306	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.83485563	-117.171162828	Mojave River
NWW-307	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.83478035	-117.171605098	Mojave River
NWW-308	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.83469179	-117.171406177	Mojave River
NWW-309	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.83449756	-117.171743217	Mojave River
NWW-310	CALIFORNIA	R6	RIVERINE	Area	0.002	ACRE	DELIN.PJD-404	34.83449723	-117.172199140	Mojave River
NWW-311	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.83384525	-117.173741392	Mojave River
NWW-312	CALIFORNIA	R6	RIVERINE	Area	0.001	ACRE	DELIN.PJD-404	34.83383660	-117.173783993	Mojave River
NWW-313	CALIFORNIA	R6	RIVERINE	Area	0.004	ACRE	DELIN.PJD-404	34.83178005	-117.173876120	Mojave River
NWW-314	CALIFORNIA	R6	RIVERINE	Area	0.003	ACRE	DELIN.PJD-404	34.83172517	-117.173709470	Mojave River
NWW-315	CALIFORNIA	R6	RIVERINE	Area	0.15	ACRE	DELIN.PJD-404	34.82779055	-117.181687685	Mojave River
NWW-316	CALIFORNIA	R6	RIVERINE	Area	0.016	ACRE	DELIN.PJD-404	34.80975077	-117.199844184	Mojave River
NWW-317	CALIFORNIA	R6	RIVERINE	Area	0.003833951	ACRE	DELIN.PJD-404	34.86270602	-117.03327959	Mojave River
NWW-318	CALIFORNIA	R6	RIVERINE	Area	0.017806362	ACRE	DELIN.PJD-404	34.86289924	-117.03333448	Mojave River
NWW-319	CALIFORNIA	R6	RIVERINE	Area	0.03475922	ACRE	DELIN.PJD-404	34.86397948	-117.03287750	Mojave River
NWW-320	CALIFORNIA	R6	RIVERINE	Area	0.01312546	ACRE	DELIN.PJD-404	34.86426237	-117.03334898	Mojave River
NWW-321	CALIFORNIA	R6	RIVERINE	Area	0.036068044	ACRE	DELIN.PJD-404	34.86361141	-117.03425280	Mojave River
NWW-322	CALIFORNIA	R6	RIVERINE	Area	0.042109047	ACRE	DELIN.PJD-404	34.86393786	-117.03464666	Mojave River
NWW-323	CALIFORNIA	R6	RIVERINE	Area	0.028121353	ACRE	DELIN.PJD-404	34.86450222	-117.03534469	Mojave River
NWW-324	CALIFORNIA	R6	RIVERINE	Area	0.011942356	ACRE	DELIN.PJD-404	34.86554247	-117.03496375	Mojave River
NWW-325	CALIFORNIA	R6	RIVERINE	Area	0.004467527	ACRE	DELIN.PJD-404	34.86575044	-117.03522907	Mojave River
NWW-326	CALIFORNIA	R6	RIVERINE	Area	0.027735926	ACRE	DELIN.PJD-404	34.86525495	-117.03622420	Mojave River
NWW-327	CALIFORNIA	R6	RIVERINE	Area	0.013405481	ACRE	DELIN.PJD-404	34.86584731	-117.03604701	Mojave River
NWW-328	CALIFORNIA	R6	RIVERINE	Area	0.001944273	ACRE	DELIN.PJD-404	34.86642716	-117.03601480	Mojave River
NWW-329	CALIFORNIA	R6	RIVERINE	Area	0.010602361	ACRE	DELIN.PJD-404	34.86660723	-117.03627314	Mojave River
NWW-330	CALIFORNIA	R6	RIVERINE	Area	0.034122696	ACRE	DELIN.PJD-404	34.86581578	-117.03695532	Mojave River
NWW-331	CALIFORNIA	R6	RIVERINE	Area	0.002348149	ACRE	DELIN.PJD-404	34.86677858	-117.03650942	Mojave River
NWW-332	CALIFORNIA	R6	RIVERINE	Area	0.002044208	ACRE	DELIN.PJD-404	34.86685416	-117.03660496	Mojave River
NWW-333	CALIFORNIA	R6	RIVERINE	Area	0.004566495	ACRE	DELIN.PJD-404	34.86698942	-117.03676234	Mojave River

NWW-334	CALIFORNIA	R6	RIVERINE	Area	0.008447221	ACRE	DELIN.PJD-404	34.86708591	-117.03687963	Mojave River
NWW-335	CALIFORNIA	R6	RIVERINE	Area	0.00832102	ACRE	DELIN.PJD-404	34.86632811	-117.03765069	Mojave River
NWW-336	CALIFORNIA	R6	RIVERINE	Area	0.012465867	ACRE	DELIN.PJD-404	34.86749053	-117.03913254	Mojave River
NWW-337	CALIFORNIA	R6	RIVERINE	Area	0.002386376	ACRE	DELIN.PJD-404	34.86844956	-117.03859707	Mojave River
NWW-338	CALIFORNIA	R6	RIVERINE	Area	0.004936312	ACRE	DELIN.PJD-404	34.86789967	-117.03958939	Mojave River
NWW-339	CALIFORNIA	R6	RIVERINE	Area	0.0034267	ACRE	DELIN.PJD-404	34.86799621	-117.03974124	Mojave River
NWW-340	CALIFORNIA	R6	RIVERINE	Area	0.014964421	ACRE	DELIN.PJD-404	34.86805011	-117.03989382	Mojave River
NWW-341	CALIFORNIA	R6	RIVERINE	Area	0.002288773	ACRE	DELIN.PJD-404	34.86872934	-117.03894811	Mojave River
NWW-342	CALIFORNIA	R6	RIVERINE	Area	0.006868274	ACRE	DELIN.PJD-404	34.86895949	-117.03920242	Mojave River
NWW-343	CALIFORNIA	R6	RIVERINE	Area	0.009079811	ACRE	DELIN.PJD-404	34.86830078	-117.04008770	Mojave River
NWW-344	CALIFORNIA	R6	RIVERINE	Area	0.007154715	ACRE	DELIN.PJD-404	34.86851322	-117.04041551	Mojave River
NWW-345	CALIFORNIA	R6	RIVERINE	Area	0.003368846	ACRE	DELIN.PJD-404	34.86869613	-117.04062343	Mojave River
NWW-346	CALIFORNIA	R6	RIVERINE	Area	0.005104443	ACRE	DELIN.PJD-404	34.86959245	-117.04001562	Mojave River
NWW-347	CALIFORNIA	R6	RIVERINE	Area	0.002246615	ACRE	DELIN.PJD-404	34.86971645	-117.04008385	Mojave River
NWW-348	CALIFORNIA	R6	RIVERINE	Area	0.003919961	ACRE	DELIN.PJD-404	34.86975277	-117.04023757	Mojave River
NWW-349	CALIFORNIA	R6	RIVERINE	Area	0.005412915	ACRE	DELIN.PJD-404	34.86876240	-117.04077669	Mojave River
NWW-350	CALIFORNIA	R6	RIVERINE	Area	0.009260641	ACRE	DELIN.PJD-404	34.86880725	-117.04084414	Mojave River
NWW-351	CALIFORNIA	R6	RIVERINE	Area	0.009238727	ACRE	DELIN.PJD-404	34.86901551	-117.04101086	Mojave River
NWW-352	CALIFORNIA	R6	RIVERINE	Area	0.008862169	ACRE	DELIN.PJD-404	34.86911304	-117.04116554	Mojave River
NWW-353	CALIFORNIA	R6	RIVERINE	Area	0.009866621	ACRE	DELIN.PJD-404	34.86928212	-117.04130963	Mojave River
NWW-354	CALIFORNIA	R6	RIVERINE	Area	0.003809937	ACRE	DELIN.PJD-404	34.87023726	-117.04075322	Mojave River
NWW-355	CALIFORNIA	R6	RIVERINE	Area	0.010655009	ACRE	DELIN.PJD-404	34.86943521	-117.04157921	Mojave River
NWW-356	CALIFORNIA	R6	RIVERINE	Area	0.002209423	ACRE	DELIN.PJD-404	34.87030679	-117.04097945	Mojave River
NWW-357	CALIFORNIA	R6	RIVERINE	Area	0.000895087	ACRE	DELIN.PJD-404	34.87046146	-117.04096296	Mojave River
NWW-358	CALIFORNIA	R6	RIVERINE	Area	0.001726885	ACRE	DELIN.PJD-404	34.87051318	-117.04113377	Mojave River
NWW-359	CALIFORNIA	R6	RIVERINE	Area	0.000797645	ACRE	DELIN.PJD-404	34.86986355	-117.04185982	Mojave River
NWW-360	CALIFORNIA	R6	RIVERINE	Area	0.00309614	ACRE	DELIN.PJD-404	34.86988015	-117.04196894	Mojave River
NWW-361	CALIFORNIA	R6	RIVERINE	Area	0.002146719	ACRE	DELIN.PJD-404	34.86971053	-117.04208855	Mojave River
NWW-362	CALIFORNIA	R6	RIVERINE	Area	0.013288356	ACRE	DELIN.PJD-404	34.86995933	-117.04215095	Mojave River
NWW-363	CALIFORNIA	R6	RIVERINE	Area	0.004746055	ACRE	DELIN.PJD-404	34.86992714	-117.04223018	Mojave River
NWW-364	CALIFORNIA	R6	RIVERINE	Area	0.00470329	ACRE	DELIN.PJD-404	34.87060882	-117.04134154	Mojave River
NWW-365	CALIFORNIA	R6	RIVERINE	Area	0.00235667	ACRE	DELIN.PJD-404	34.87080062	-117.04146449	Mojave River
NWW-366	CALIFORNIA	R6	RIVERINE	Area	0.00912706	ACRE	DELIN.PJD-404	34.87010465	-117.04242159	Mojave River
NWW-367	CALIFORNIA	R6	RIVERINE	Area	0.001664677	ACRE	DELIN.PJD-404	34.87021136	-117.04235943	Mojave River
NWW-368	CALIFORNIA	R6	RIVERINE	Area	0.006291893	ACRE	DELIN.PJD-404	34.87021383	-117.04256920	Mojave River
NWW-369	CALIFORNIA	R6	RIVERINE	Area	0.005304534	ACRE	DELIN.PJD-404	34.87094355	-117.04347529	Mojave River
NWW-370	CALIFORNIA	R6	RIVERINE	Area	0.001578679	ACRE	DELIN.PJD-404	34.87105017	-117.04341339	Mojave River
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NWW-372	CALIFORNIA	R6	RIVERINE	Area	0.002064751	ACRE	DELIN.PJD-404	34.87214497	-117.04322494	Mojave River
NWW-373	CALIFORNIA	R6	RIVERINE	Area	0.006622014	ACRE	DELIN.PJD-404	34.87140451	-117.04404495	Mojave River
NWW-374	CALIFORNIA	R6	RIVERINE	Area	0.002506625	ACRE	DELIN.PJD-404	34.87150478	-117.04417014	Mojave River
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NWW-378	CALIFORNIA	R6	RIVERINE	Area	0.001135258	ACRE	DELIN.PJD-404	34.87262300	-117.04373782	Mojave River
NWW-379	CALIFORNIA	R6	RIVERINE	Area	0.003411982	ACRE	DELIN.PJD-404	34.87181620	-117.04447319	Mojave River
NWW-380	CALIFORNIA	R6	RIVERINE	Area	0.003068908	ACRE	DELIN.PJD-404	34.87203038	-117.04472399	Mojave River
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NWW-383	CALIFORNIA	R6	RIVERINE	Area	0.026989047	ACRE	DELIN.PJD-404	34.87222851	-117.04503418	Mojave River
NWW-384	CALIFORNIA	R6	RIVERINE	Area	0.01718862	ACRE	DELIN.PJD-404	34.87245223	-117.04533893	Mojave River
NWW-385	CALIFORNIA	R6	RIVERINE	Area	0.003174169	ACRE	DELIN.PJD-404	34.87257895	-117.04529764	Mojave River
NWW-386	CALIFORNIA	R6	RIVERINE	Area	0.00461724	ACRE	DELIN.PJD-404	34.87321993	-117.04462900	Mojave River
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NWW-392	CALIFORNIA	R6	RIVERINE	Area	0.021986951	ACRE	DELIN.PJD-404	34.87476619	-117.04655779	Mojave River
NWW-393	CALIFORNIA	R6	RIVERINE	Area	0.000833073	ACRE	DELIN.PJD-404	34.87519572	-117.04700067	Mojave River

ATTACHMENT J

GIS DATA

(PROVIDED ELECTRONICALLY TO AGENCIES)

ATTACHMENT D

BURROWING OWL SURVEY RESULTS PASSES 1 AND 2 BNSF ALTERNATIVES FEASIBILITY ASSESSMENT, BARSTOW, CALIFORNIA, DECEMBER 2021



Burrowing Owl Survey Results

Passes 1 and 2

BNSF Alternatives Feasibility Assessment

Barstow, California

Prepared for:

BNSF RAILWAY & ROCKS BIOLOGICAL CONSULTING

Prepared by:

EcoVita

December 2021

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Figure 1: Pass 1 Project Overview Map
Figure 2: Pass 2 Project Overview Map
Figure 3: Pass 1 Burrowing Owl Sign (Map 1 of 3)
Figure 4: Pass 1 Burrowing Owl Sign (Map 2 of 3)
Figure 5: Pass 1 Burrowing Owl Sign (Map 3 of 3)

1.0 Introduction

1.1 Background

This burrowing owl survey memo summarizes the results of Pass 1 and Pass 2 of a four-pass burrowing owl winter survey protocol. The remaining two passes will be completed by January 12, 2022.

1.2 Project Location

The project area is in Lenwood, California, approximately 4.5 miles west of downtown Barstow, on private land, in San Bernardino County.

1.3 Survey Area

The burrowing owl Pass 1 survey was conducted over 3,200 acres. The survey area can be viewed on **Figure 1: Pass 1 Project Overview Map**. The Pass 2 survey was conducted over 337 acres and can be viewed on **Figure 2: Pass 2 Project Overview Map**. The Pass 2 survey area represents a reduced acreage of the original 3,200 acres.

2.0 Methods

2.1 Personnel

The burrowing owl surveys were led by Adam Hamburg of Eco Vita Environmental Compliance. Mr. Hamburg possesses over 12 years of burrowing owl field experience within Nevada and California. All biologists participating in the field survey have burrowing owl survey experience.

2.2 Survey Methodology

The burrowing owl surveys followed the non-breeding season survey protocol described in the California Department of Fish and Game *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). This protocol requires four survey passes to be conducted throughout the non-breeding season (September 1 to January 31).

The Pass 1 burrowing owl survey occurred October 16, 2021, through October 21, 2021, and was conducted concurrent with desert tortoise surveys. Pass 2 was a focused burrowing owl survey that was conducted December 7, 2021, through December 9, 2021.

Belt-transects were used to cover 100 percent of the accessible terrain. The belt-transect widths varied between 10, 15, and 20-meter spacing, adjusting for vegetation height and density. Garmin Global Positioning System units were used to guide the surveys. All surveyors used high quality binoculars. Fulcrum digital datasheets and photographs were used to record observations of burrowing owl and burrowing owl sign. Burrowing owl sign includes but is not limited to burrows, white-wash, feathers, and pellets.

3.0 Survey Results

For the location of observations made during the Pass 1 survey, see **Figure 3: Pass 1 Burrowing Owl Sign (Map 1 of 3)**, **Figure 4: Pass 1 Burrowing Owl Sign (Map 2 of 3)**, and **Figure 5: Pass 1 Burrowing Owl Sign (Map 3 of 3)**.

Below are the results of the 3,200-acre, Pass 1 survey:

- Eight burrowing owls;
- 13 burrowing owl burrows.

Below are the results of the 337-acre, Pass 2 survey:

- No burrowing owls;
- No burrowing owl sign;
- No burrows with suitable potential to host owls.

No burrowing owl, burrowing owl sign, or burrows with the potential to host owls (burrows of tortoise, canid, etc.) were observed within the reduced 337-acre survey area on Pass 1 or Pass 2.

4.0 References

California Department of Fish and Wildlife (CDFW). 2012. Staff Report on Burrowing Owl Mitigation. Sacramento, CA.

Figures

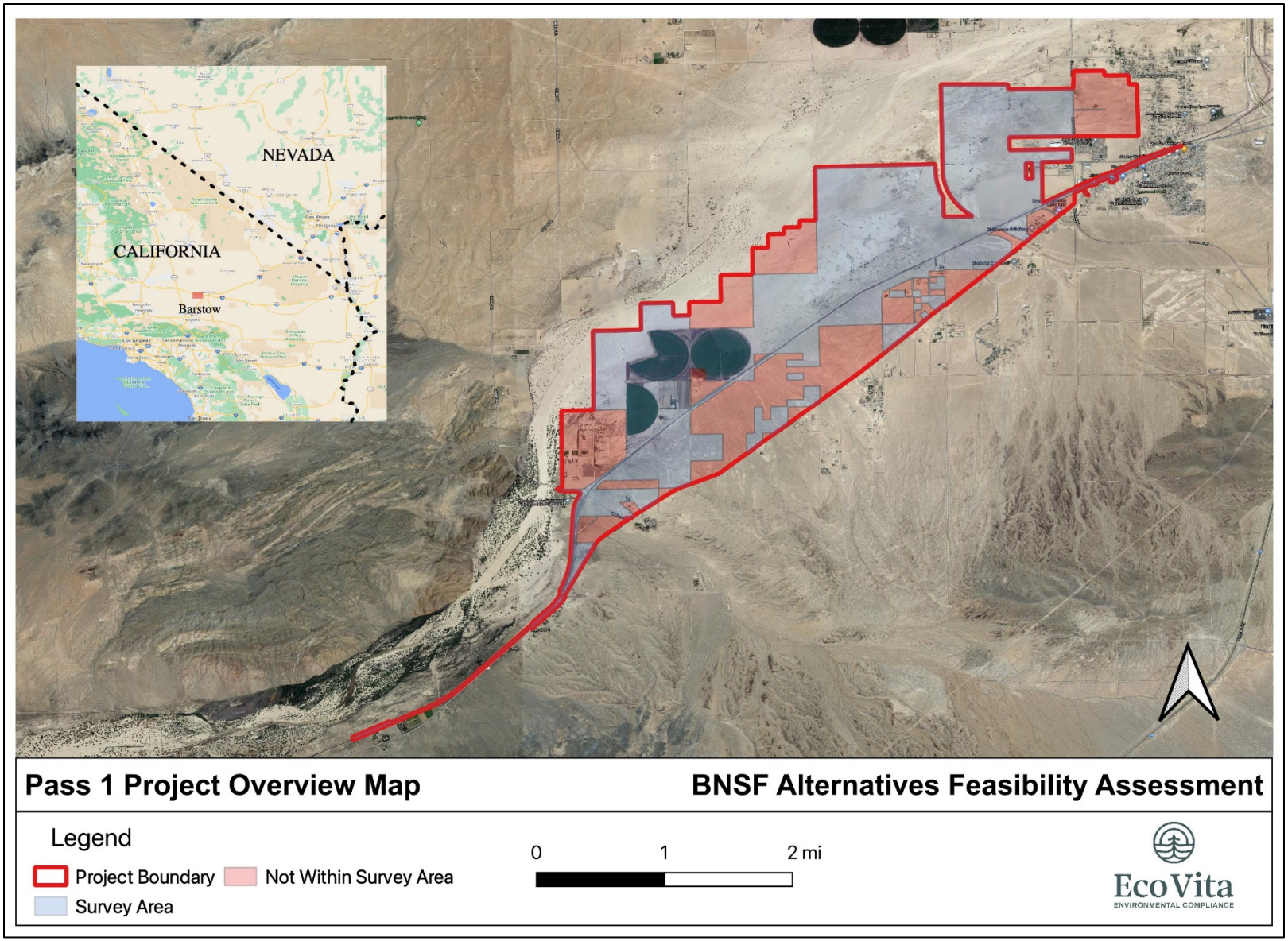


Figure 1: Pass 1 Project Overview Map

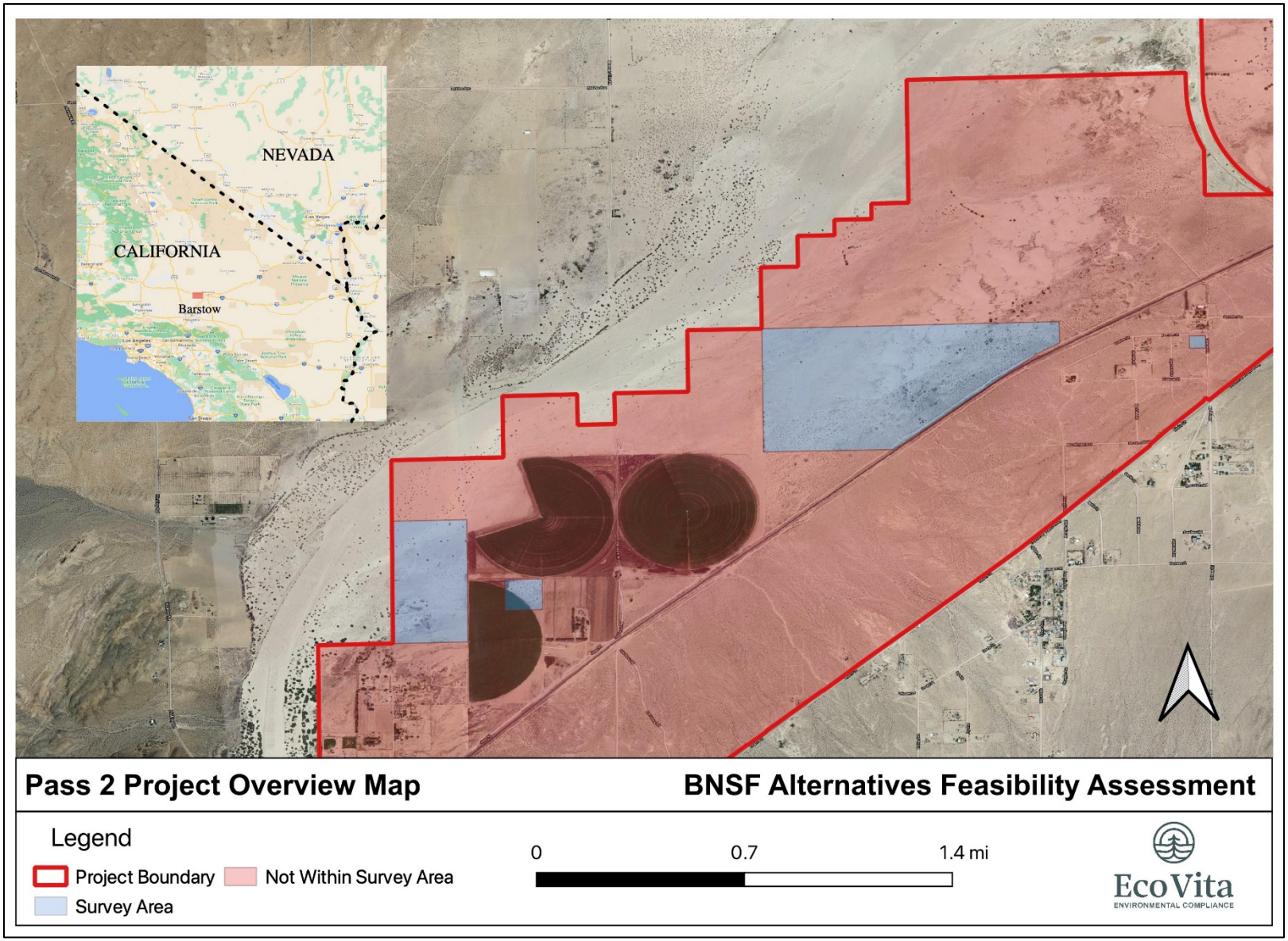


Figure 2: Pass 2 Project Overview Map

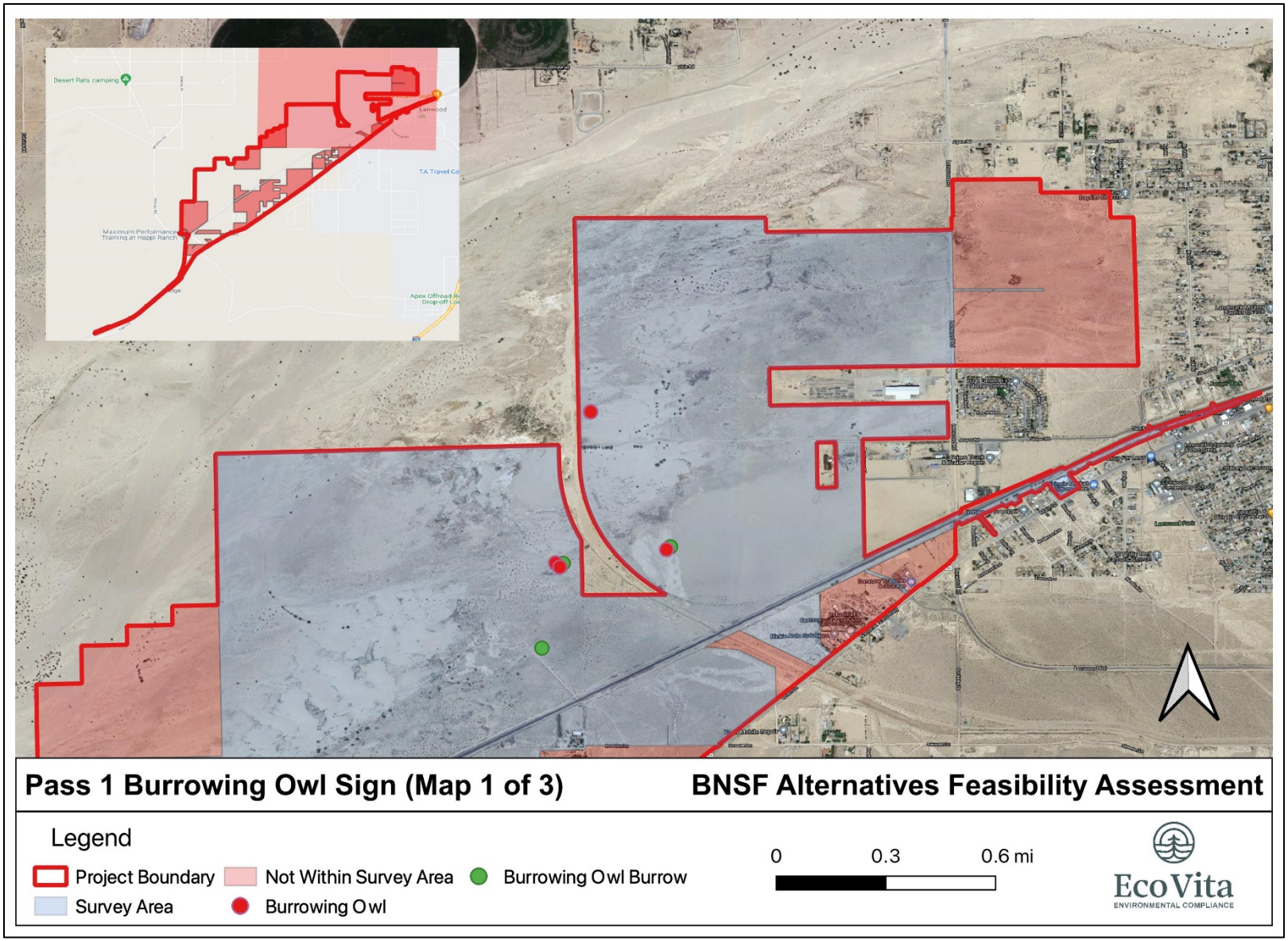


Figure 3: Pass 1 Burrowing Owl Sign (Map 1 of 3)

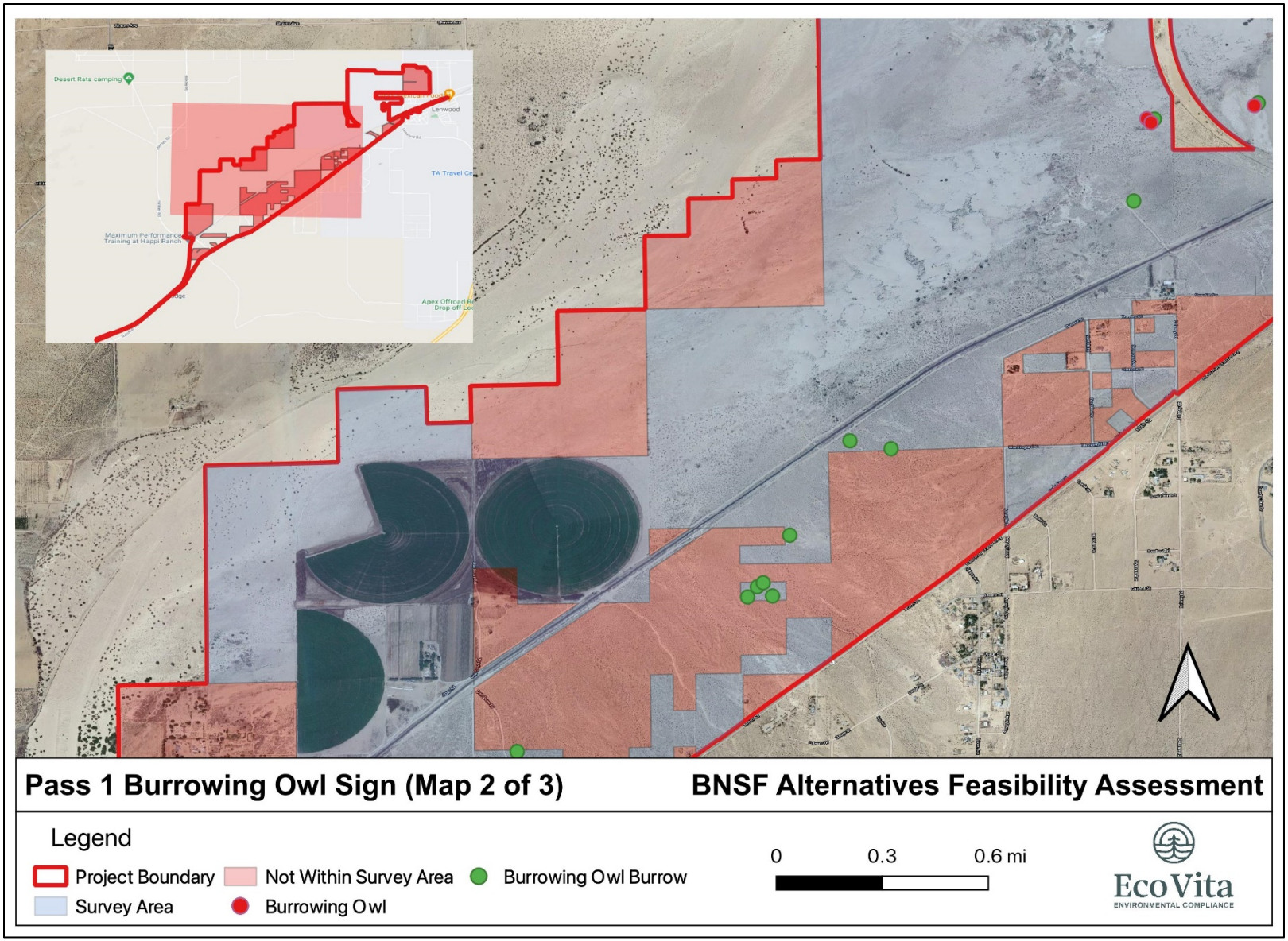


Figure 4: Pass 1 Burrowing Owl Sign (Map 2 of 3)

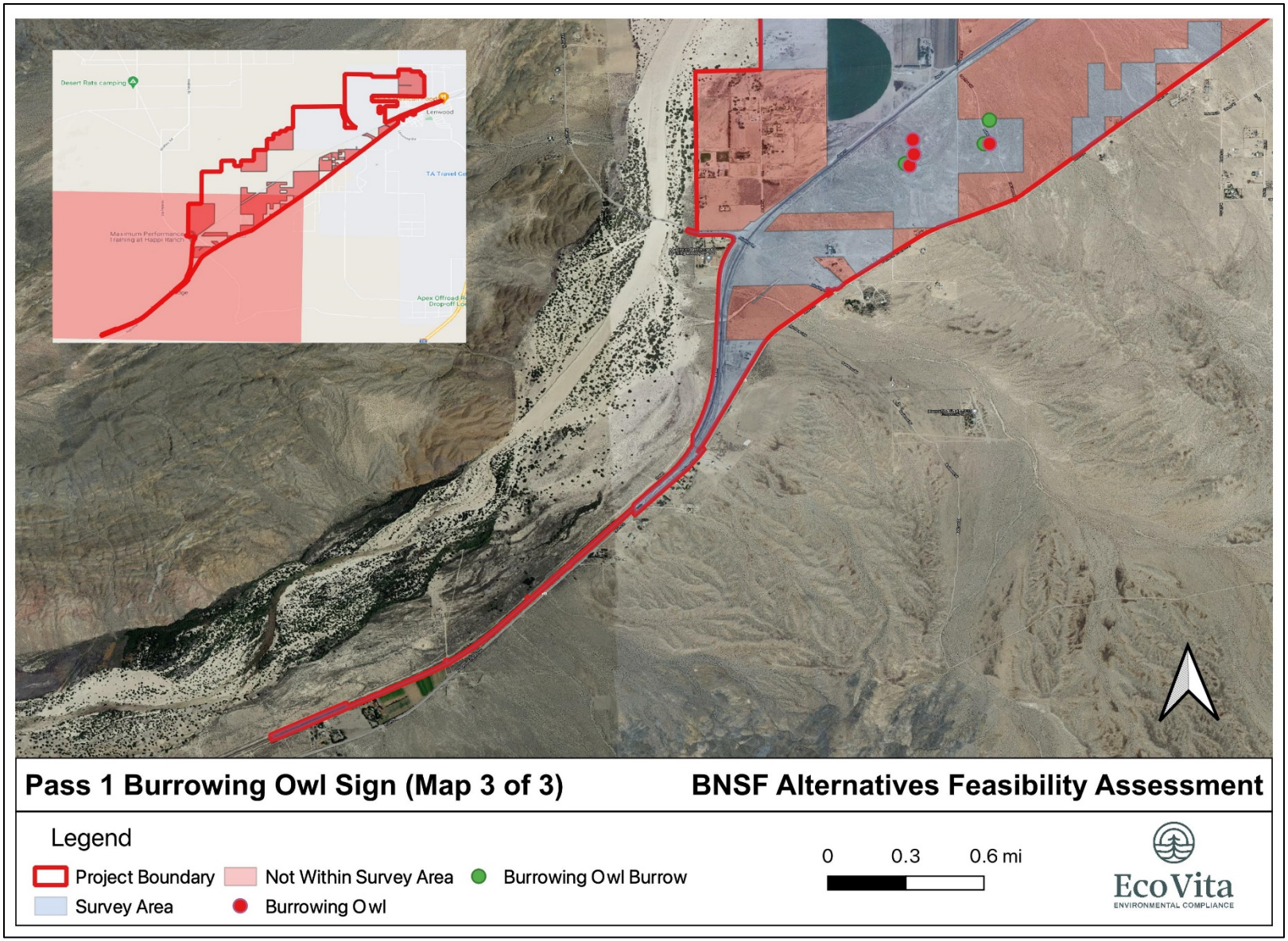


Figure 5: Pass 1 Burrowing Owl Sign (Map 3 of 3)

ATTACHMENT E

BURROWING OWL SURVEY RESULTS PASSES 3 AND 4 BNSF ALTERNATIVES FEASIBILITY ASSESSMENT, BARSTOW, CALIFORNIA, FEBRUARY 2021



Burrowing Owl Survey Results

Passes 3 and 4

BNSF Alternatives Feasibility Assessment

Barstow, California

Prepared for:

BNSF RAILWAY & ROCKS BIOLOGICAL CONSULTING

Prepared by:

EcoVita

February 2022

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Figure 1: Pass 3 and Pass 4 Overview Map
Figure 2: Pass 3 Burrowing Owl Sign
Figure 3: Pass 4 Burrowing Owl Sign

1.0 Introduction

1.1 Background

This burrowing owl survey memo summarizes the results of Pass 3 and Pass 4 of a four-pass burrowing owl winter survey protocol. The Pass 1 burrowing owl survey occurred October 16, 2021, through October 21, 2021, and was conducted concurrent with a desert tortoise survey. Pass 2 was a focused burrowing owl survey that was conducted December 7, 2021, through December 9, 2021.

1.2 Project Location

The project area is in Lenwood, California, approximately 4.5 miles west of downtown Barstow, on private land, in San Bernardino County.

1.3 Survey Area

The Pass 3 and Pass 4 surveys were conducted over 337 acres and can be viewed on **Figure 1: Pass 3 and Pass 4 Overview Map**.

2.0 Methods

2.1 Personnel

The burrowing owl surveys were led by Adam Hamburg of Eco Vita Environmental Compliance. Mr. Hamburg possesses over 12 years of burrowing owl field experience within Nevada and California. Wildlife biologist Alec Goodman of Rocks Biological Consulting was also present for Pass 3 and Pass 4 surveys. All biologists participating in the field survey have burrowing owl survey experience.

2.2 Survey Methodology

The burrowing owl surveys followed the non-breeding season survey protocol described in the California Department of Fish and Game *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). This protocol requires four survey passes to be conducted throughout the non-breeding season (September 1 to January 31).

Pass 3 and Pass 4 surveys were focused burrowing owl surveys. The Pass 3 burrowing owl survey occurred December 28, 2021, through December 29, 2021. The Pass 4 burrowing owl survey occurred January 10, 2022, through January 12, 2022.

Belt-transects were used to cover 100 percent of the accessible terrain. The belt-transect widths varied between 10, 15, and 20-meter spacing, adjusting for vegetation height and density. Garmin Global Positioning System units were used to guide the surveys. All surveyors used high quality binoculars. Fulcrum digital datasheets and photographs were used to record observations of burrowing owl and burrowing owl sign. Burrowing owl sign includes but is not limited to burrows, white-wash, feathers, and pellets.

All observed potential and surrogate burrowing owl burrows were also recorded. Potential burrows are those that are deemed suitable for burrowing owls but display no burrowing owl sign. Potential burrowing

owl burrows include canid, tortoise, badger, or other appropriately sized burrows. Burrow surrogates include culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures.

3.0 Survey Results

For the location of observations made during the Pass 3 survey, see **Figure 2: Pass 3 Burrowing Owl Sign**. For the location of observations made during the Pass 4 survey, see **Figure 3: Pass 4 Burrowing Owl Sign**.

Below are the results of the Pass 3 survey:

- One burrowing owl;
- One active burrowing owl burrow;
- One burrow with potential to host owls.

Below are the results of the Pass 4 survey:

- No burrowing owls;
- One active burrowing owl burrow (same as previously observed active burrow in Pass 3);
- One burrow with potential to host owls.

The active burrow observed in Pass 3 and Pass 4 are the same burrow. The burrowing owl observed during the Pass 3 survey was located 72-meters from the active burrow.

4.0 References

California Department of Fish and Wildlife (CDFW). 2012. Staff Report on Burrowing Owl Mitigation. Sacramento, CA.

Figures

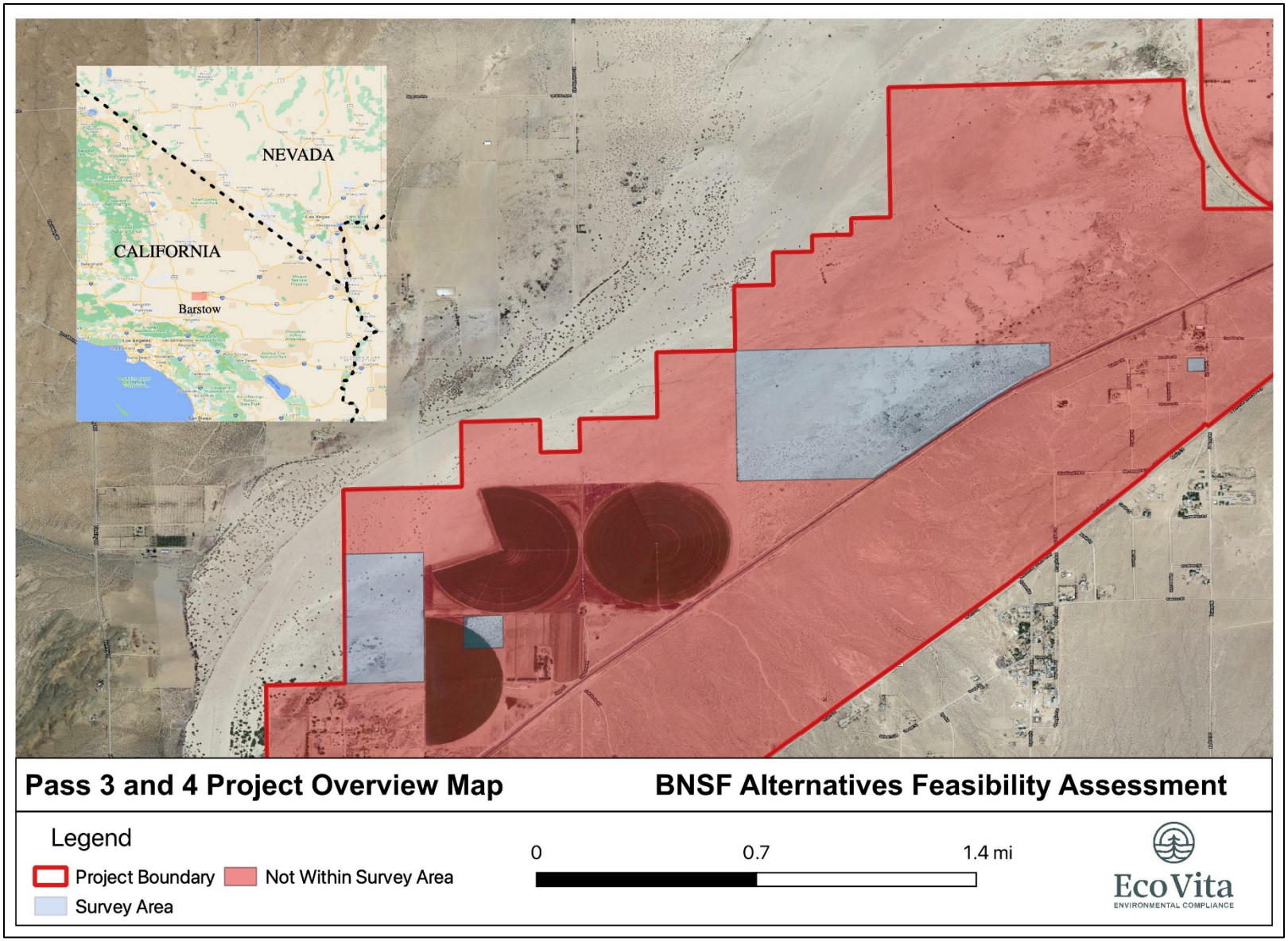


Figure 1: Pass 3 and Pass 4 Overview Map

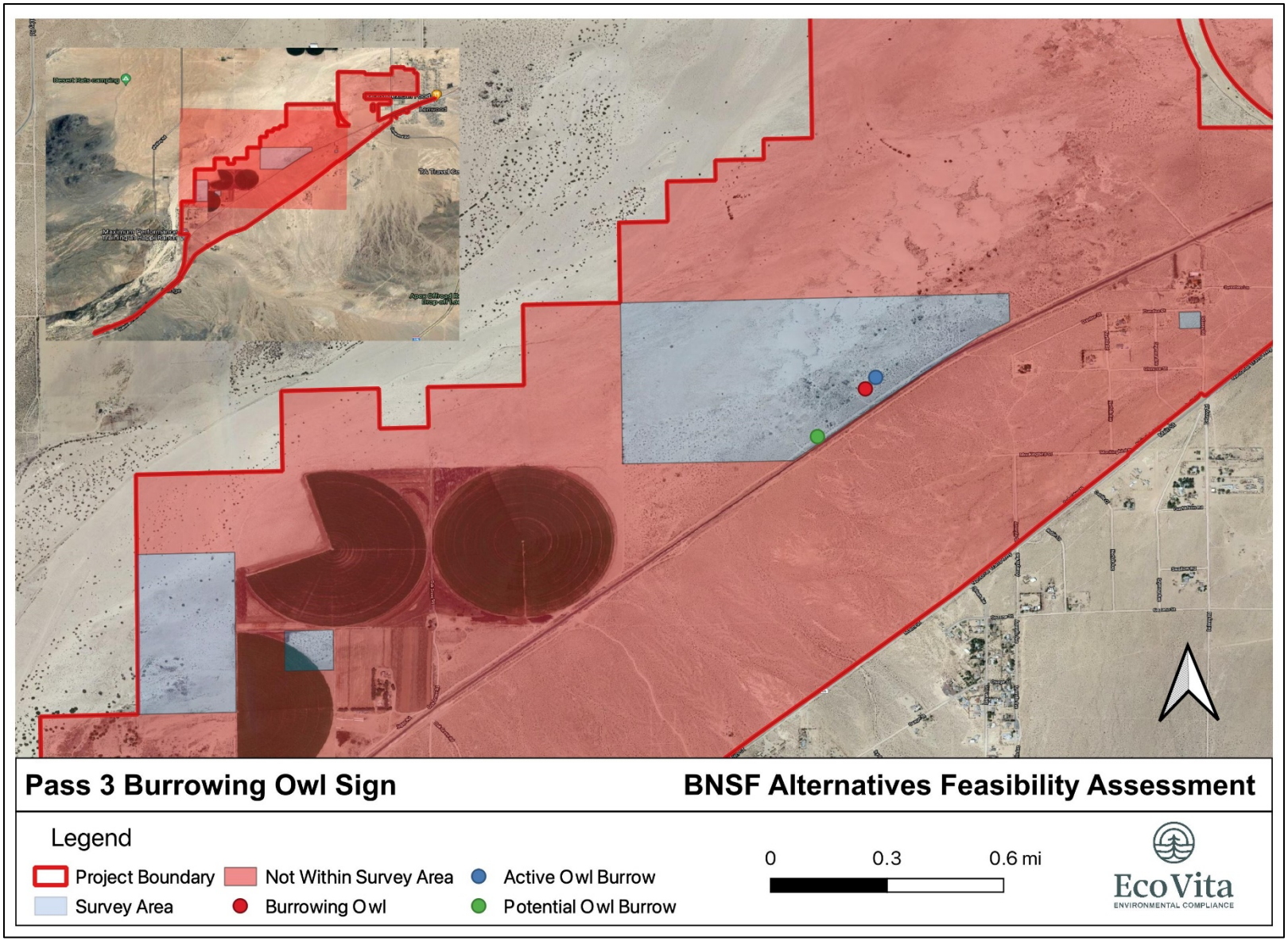


Figure 2: Pass 3 Burrowing Owl Sign

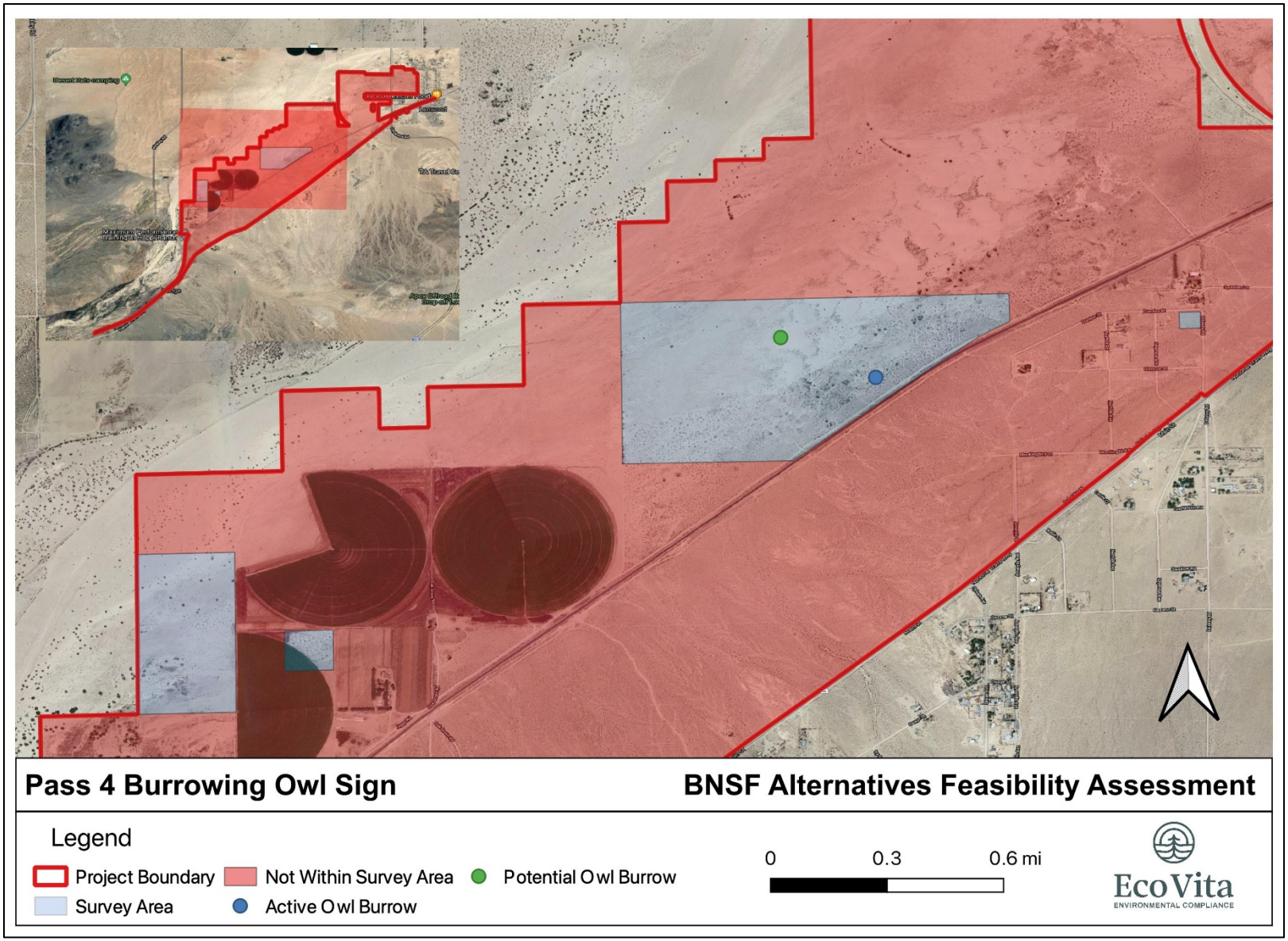


Figure 3: Pass 4 Burrowing Owl Sign

ATTACHMENT F

FOCUSED BURROWING OWL SURVEY REPORT 345, 172, AND 246 ACRES, BNSF ALTERNATIVES FEASIBILITY ASSESSMENT, BARSTOW, CALIFORNIA, AUGUST 2022



Focused Burrowing Owl Survey Report

345, 172, and 246 Acres

BNSF Alternatives Feasibility Assessment

Lenwood, California

Prepared for:

BNSF RAILWAY & ROCKS BIOLOGICAL CONSULTING

Prepared by:

EcoVita ENVIRONMENTAL COMPLIANCE

August 2022

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Figure 1: Project Overview Map
Figure 2: Burrowing Owl Sign Map

1.0 Introduction

1.1 Background

This survey report summarizes the results of three focused burrowing owl surveys that were all part of the greater BNSF Alternatives Feasibility Assessment Project (Project). These surveys were conducted in overlapping timeframes and often contiguous survey areas. To distinguish the individual surveys, they have been named with regards to their survey acreage. The titles for the three surveys are as follows:

- BNSF Barstow 345 Acres
- BNSF Barstow 172 Acres
- BNSF Barstow 246 Acres

1.2 Project Location

The Project is located in Lenwood, California, approximately 4.5 miles west of downtown Barstow, on private land, in San Bernardino County. The survey area includes the following Sections, Townships, and Ranges within the San Bernardino Meridian:

- Township 9 North, Range 2 West, Sections 17, 18, and 19;
- Township 9 North, Range 3 West, Sections 13, 23, 24, 26, and 27;
- Township 8 North, Range 3 West, Sections 4, 5, and 8.

1.3 Survey Area

See **Figure 1: Project Overview Map** to view the survey locations within the Project. The three burrowing owl surveys total 708 acres.

2.0 Environmental Setting

2.1 Land Use

The habitat within the survey area and the immediate surroundings is composed of a mixture of open desert, agriculture, semi-urban, and industrial habitat that is highly disturbed from human activity. Railroad tracks bisects the survey area.

2.2 Landcover

The Classification and Assessment with LANDSAT of Visible Ecological Groupings classification system and field survey reconnaissance reveal that survey area includes desert scrub, alkali desert scrub, agriculture, and urban landscapes within the survey area (Databasin 2022). The Manual of California Vegetation alliances observed within the survey area include *Ephedra californica – Ephedra trifurca* Shrubland Alliance, *Larrea tridentata* Shrubland Alliance, and *Atriplex polycarpa* Shrubland Alliance (CNPS 2022).

Invasive plant species were pervasive throughout the survey area and include redstem filaree (*Erodium cicutarium*), Sahara mustard (*Brassica tournefortii),* tumble mustard (*Sisymbrium altissimum*), cheatgrass (*Bromus tectorum*), foxtail brome (*Bromus madritensis*), and Mediterranean grass (*Schismus barbatus*).

2.3 Topography

The topography of the survey area is nearly flat with an elevation of 1,629 feet (497 meters) in the west to 2,215 feet (675 meters) in the east.

3.0 Methods

3.1 Personnel

The burrowing owl surveys were led by Adam Hamburg of Eco Vita Environmental Compliance. Mr. Hamburg possesses over 12 years of burrowing owl field experience within Nevada and California. All biologists participating in the field survey have previous burrowing owl survey experience.

3.2 Survey Methodology

To the degree possible, the burrowing owl surveys followed the breeding season survey protocol described in the California Department of Fish and Game (CDFG) *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). This protocol requires a minimum of four survey passes to be conducted throughout the breeding season of April 15 through July 15.

The belt-transect widths varied between 10, 15, and 20-meter spacing, adjusting for vegetation height and density. Belt-transects were used to cover 100 percent of the accessible terrain. Some locations were inaccessible due to landowner access issues or for safety. Per protocol, the inaccessible locations were observed from the closest feasible location using binoculars. To the extent possible, surveys were conducted between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight to provide the highest detection probabilities.

Garmin Global Positioning System units were used to guide the surveys. All surveyors used high quality binoculars. Digital datasheets were used to record observations of burrowing owl and burrowing owl sign. Burrowing owl sign includes but is not limited to burrows, whitewash, feathers, and pellets.

The survey dates and their deviation from the CDFG protocols for each survey are described below:

BNSF Barstow 345 Acres

The fourth survey was delayed 4 to 7 days past the July 15 window to avoid excessively high desert temperatures. The May surveys were conducted concurrently with desert tortoise surveys.

Survey 1: April 6 to April 7.

Survey 2: May 18 and May 19.

Survey 3: June 14 to June 16.

Survey 4: July 20 to July 21

BNSF Barstow 172 Acres

These burrowing owl surveys commenced in May and missed the CDFG prescribed April start window. The third survey was delayed 4 to 7 days past the July 15 window to avoid excessive desert temperatures. The fourth survey was conducted in August which is beyond the protocol survey window. The May surveys were conducted concurrently with desert tortoise surveys.

Survey 1: May 18 and May 19.

Survey 2: June 14 to June 16.

Survey 3: July 20 to July 21

Survey 4: August 11.

BNSF Barstow 246 Acres

These focused burrowing owl surveys took place in June and were only conducted once. The surveys were conducted concurrently with desert tortoise surveys.

Survey 1: June 14 to June 16

4.0 Survey Results

Below are the observations of the BNSF Barstow 345 Acre surveys. See **Figure 2: Burrowing Owl Sign Map** for the location of the observations. Survey documentation can be found in **Appendix A: Datasheets**, **Appendix B: Survey Photos**, and **Appendix C: Avian Observations**.

- No burrowing owls;
- 12 burrows with burrowing owl sign;
- No active burrowing owl burrows.

Below are the observations of the BNSF Barstow 172 Acre surveys:

- No burrowing owls;
- No burrowing owl sign.

Below are the observations of the BNSF Barstow 246 Acre surveys:

- No burrowing owls;
- No burrowing owl sign.

Coyote and kit fox burrows were observed within the survey areas. These burrows displayed evidence of canid occupancy, but no owl sign or sign of owl predation was observed. Raptors were observed during the surveys and could pose a predation threat to burrowing owls.

Eighteen bird species were observed during the protocol surveys and are listed in **Appendix C: Avian Observations** .

5.0 Discussion

Although burrowing owl sign was observed within the BNSF Barstow 345 Acre survey area, there was no continued evidence of use. This suggests that the burrowing owls within the survey area were migratory or transient and are not a breeding or resident population.

No burrowing owl or burrowing owl sign were documented within the BNSF Barstow 172 Acre or the BNSF Barstow 246 Acre survey areas during their respective surveys.

Due to the Project's location within the San Bernardino County burrowing owl overlay zone and the presence of suitable habitat on-site, pre-construction take avoidance surveys should be conducted in accordance with the California Department of Fish and Wildlife guidelines at least 14 days and 24 hours prior to ground disturbance.

6.0 References

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. Sacramento, CA.

California Native Plant Society (CNPS). 2022. A Manual of California Vegetation, Online Edition. Accessed August 2022. http://www.cnps.org/cnps/vegetation/. California Native Plant Society, Sacramento, CA.

Databasin. 2022. California Augmented Multisource Landcover 2010. Accessed August 2022. https://databasin.org/datasets/f12a901528c0498ba63ca291b8e6627b/. Allan D. Hollander, Information Center for the Environment, University of California, Davis.

Figures

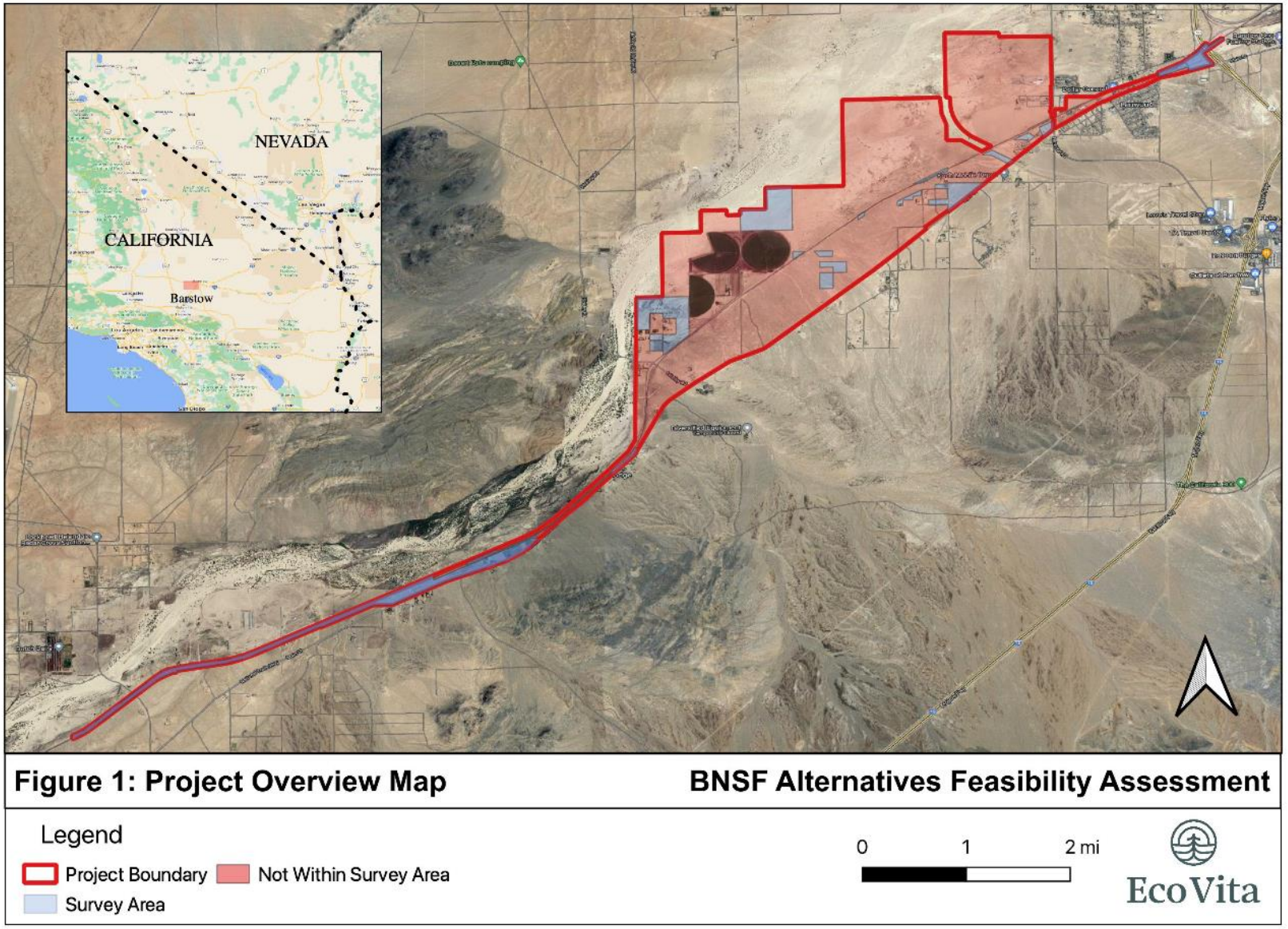


Figure 1: Project Overview Map

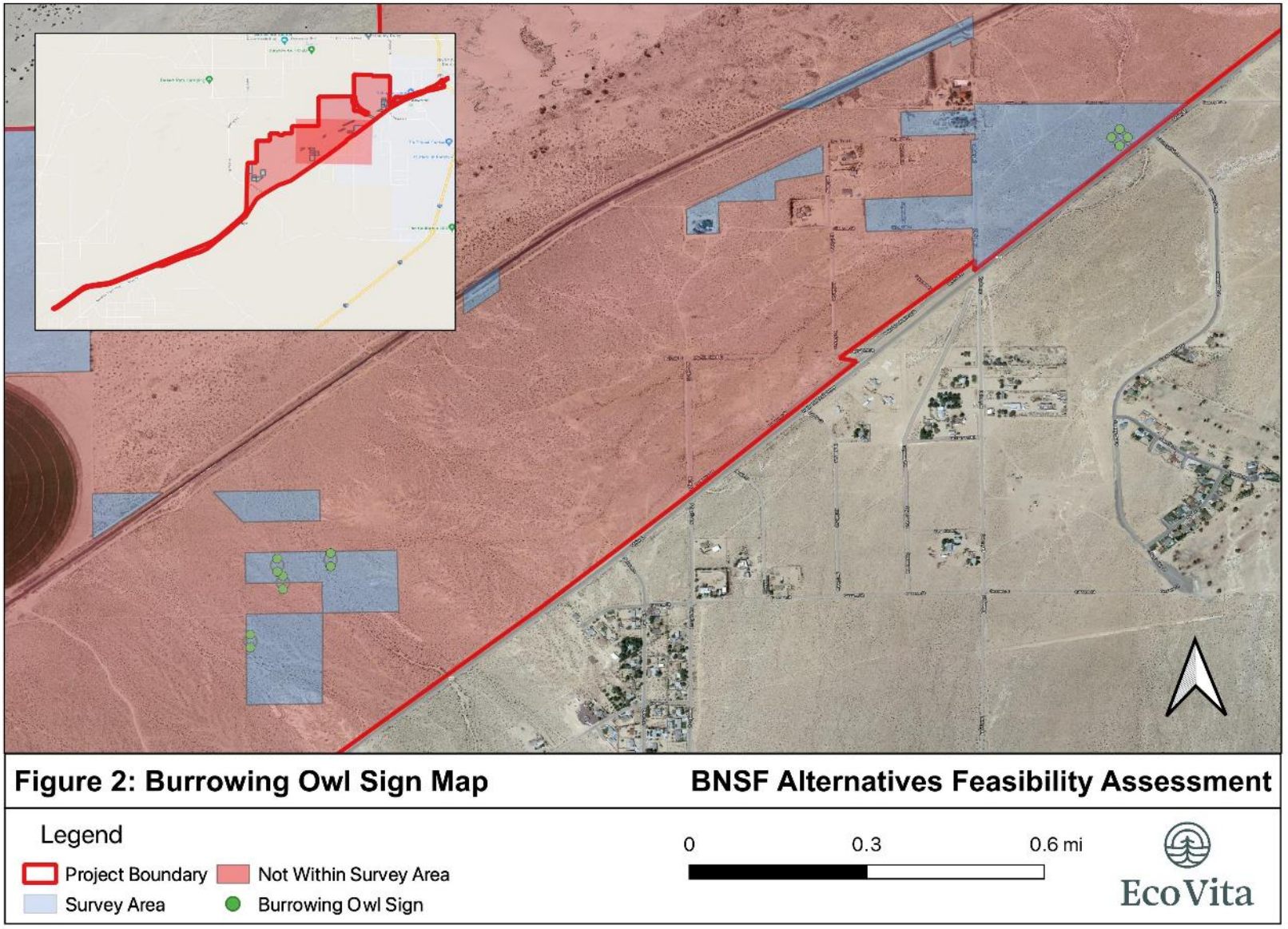


Figure 2: Burrowing Owl Sign Map

Appendix A: Datasheets

Burrowing Owl Survey Data Sheet - 345 Acres

Survey number	Date	Time: start/ end	Temp (c): start/ end	Wind speed (kph): start/ end	Cloud coverage: start/ end	Precipitation (mm)	Visibility (km): start/ end	Transect Spacing (m)	Survey biologists
1	4/6/2022	08:30 - 18:00	13 - 26	6 - 8	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Wade Plafcan
1	4/7/2022	08:00 - 15:00	14 - 29	3 - 5	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Wade Plafcan
2	5/18/2022	06:49 - 17:45	22 - 37	5 - 10	Partly Cloudy (37 - 61%) - Sunny (0 - 11%)	0	10 - 16	10	Adam Hamburg, Wade Plafcan, Shane McKinney
2	5/19/2022	06:30 - 16:30	21 - 37	5 - 46	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	10	Adam Hamburg, Wade Plafcan, Shane McKinney
3	6/14/2022	10:00 - 18:45	22 - 33	5 - 5	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Shane McKinney
3	6/15/2022	08:20 - 16:49	23 - 38	5 - 3	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Shane McKinney
3	6/16/2022	08:00 - 10:30	27 - 32	0 - 5	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Shane McKinney
4	7/20/2022	06:55 - 16:10	27 - 47	0 - 17	Mostly Sunny (12 - 36%) - Mostly Sunny (12 - 36%)	0	16 - 16	20	Adam Hamburg, Mik Metzler
4	7/21/2022	07:00 - 13:15	27 - 44	5 - 17	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Mik Metzler

Burrowing Owl Survey Data Sheet - 172 Acres									
Survey number	Date	Time: start/ end	Temp (c): start/ end	Wind speed (kph): start/ end	Cloud coverage: start/ end	Precipitation (mm)	Visibility (km): start/ end	Transect Spacing (m)	Survey biologists
1	5/18/2022	06:49 - 17:45	22 - 37	5 - 10	Partly Cloudy (37 - 61%) - Sunny (0 - 11%)	0	10 - 16	10	Adam Hamburg, Wade Plafcan, Shane McKinney
1	5/19/2022	06:30 - 16:30	21 - 37	5 - 46	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	10	Adam Hamburg, Wade Plafcan, Shane McKinney
2	6/14/2022	10:00 - 18:45	22 - 33	5 - 5	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Shane McKinney
2	6/15/2022	08:20 - 16:49	23 - 38	5 - 3	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Shane McKinney
2	6/16/2022	08:00 - 10:30	27 - 32	0 - 5	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Shane McKinney
3	7/20/2022	06:55 - 16:10	27 - 47	0 - 17	Mostly Sunny (12 - 36%) - Mostly Sunny (12 - 36%)	0	16 - 16	20	Adam Hamburg, Mik Metzler
3	7/21/2022	07:00 - 13:15	27 - 44	5 - 17	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Mik Metzler
4	8/11/2022	11:50 - 14:56	38 - 40	3 - 1	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Shane McKinney

Burrowing Owl Survey Data Sheet - 246 Acres									
Survey number	Date	Time: start/ end	Temp (c): start/ end	Wind speed (kph): start/ end	Cloud coverage: start/ end	Precipitation (mm)	Visibility (km): start/ end	Transect Spacing (m)	Survey biologists
1	6/14/2022	10:00 - 18:45	22 - 33	5 - 5	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Shane McKinney
1	6/15/2022	08:20 - 16:49	23 - 38	5 - 3	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Shane McKinney
1	6/16/2022	08:00 - 10:30	27 - 32	0 - 5	Sunny (0 - 11%) - Sunny (0 - 11%)	0	16 - 16	20	Adam Hamburg, Shane McKinney

Burrowing Owl Sign Datasheet

date	sign	burrow active?	nesting activity observed?	comments	latitude	longitude	photo number
4/6/2022	Burrow,Pellets	No	No	No white wash but fresh looking pellets. Canid den.	34.8483734	-117.157932	Photo 1
4/6/2022	Burrow,Pellets,White Wash,Bones	No	No	Tortoise burrow.	34.8506281	-117.157093	Photo 2
4/7/2022	Burrow,Pellets,Feathers,White Wash,Bones	No	No	Complex in cut bank with 4 burrows.	34.8629273	-117.131869	Photo 3, 4, 5, 6
4/7/2022	Burrow	No	No	Canid Burrow complex with 3 burrows in arroyo cut bank. No sign of owl but excellent condition. Examine in passed 2-4.	34.8627674	-117.131642	Photos 7, 8
4/7/2022	Burrow,White Wash	No	No	Complex. Only one spot of white wash on mound.	34.8764265	-117.12076	Photo 9, 10, 11
4/7/2022	Burrow	No	No	Canid complex with no owl sign. Observe in next pass.	34.8747275	-117.120404	Photo 12
4/13/2022	Burrow	No	No	No owl sign. Canid Burrow. Marked for further observation only.	34.8389549	-116.738597	Photo 13
5/18/2022	Burrow,Pellets	No	No		34.8483692	-117.15793	Photo 14
5/18/2022	Burrow,Pellets,White Wash	No	No	No sign of recent activity. Burrow partially filled in.	34.8507509	-117.155496	Photo 15, 16, 17
5/19/2022	Burrow,White Wash,Bones	No	No	Canid complex. No sign of recent activity.	34.8501357	-117.156946	Photo 18
5/19/2022	Burrow,Pellets,White Wash	No	No	No sign of recent activity. Canid complex.	34.8500226	-117.156897	Photo 19, 20
5/19/2022	Burrow,Pellets,White Wash	No	No	No sign of recent activity.	34.8505899	-117.157094	Photo 21
5/19/2022	Burrow,Feathers,White Wash	No	No	No pellets. Old white wash.	34.862867	-117.131766	Photo 22
5/19/2022	Burrow,Feathers,White Wash	No	No	No fresh sign	34.8628929	-117.13182	Photo 23, 24
5/23/2022	Burrow,Pellets,Feathers,White Wash,Bones	No	No	Canid burrow.	37.1897053	-117.004769	Photo 25, 26
5/25/2022	Burrow,Pellets,White Wash	No	No		37.231661	-116.999489	Photo 27

date	sign	burrow active?	nesting activity observed?	comments	latitude	longitude	photo number
6/14/2022	Burrow	No	Burrow was previously observed with sign. There is no evidence of recent activity.	Burrow was previously observed with sign. There is no evidence of recent activity.	34.8483476	-117.157917	Photo 28
6/14/2022	Burrow,White Wash	No	Previously observed. No sign of recent activity.	Previously observed. No sign of recent activity.	34.8506109	-117.15708	Photo 29
6/14/2022	Burrow,Pellets,White Wash	No	One patch of white wash. One faded pellet. No change from previous observation. No sign of recent activity.	One patch of white wash. One faded pellet. No change from previous observation. No sign of recent activity.	34.8507216	-117.155489	Photo 30, 31
6/15/2022	Burrow,Pellets,White Wash	No	Previously observed burrow with owl sign. No evidence of continued use or activity.	Previously observed burrow with owl sign. No evidence of continued use or activity.	34.8629037	-117.131833	Photo 32

date	sign	burrow active?	nesting activity observed?	comments	latitude	longitude	photo number
6/15/2022	Burrow,White Wash	No	Previously observed burrow with owl sign. No evidence of continued use or activity.	Previously observed burrow with owl sign. No evidence of continued use or activity.	34.8628902	-117.131777	Photo 33
7/20/2022	Burrow,Feathers,White Wash,Bones	No	Previously observed burrows. These have owl sign but exhibit no evidence of continued use.	Previously observed burrows. These have owl sign but exhibit no evidence of continued use.	34.8627957	-117.131675	Photo 34, 35, 36, 37
7/20/2022	Burrow,Bones	No	Burrow previously observed with sign. no evidence continued activity.	Burrow previously observed with sign. no evidence continued activity.	34.8483516	-117.157921	Photo 38

Appendix B: Survey Photos



Photograph 1: No whitewash but fresh-looking pellets. Canid den.



Photograph 2: Tortoise burrow. No sign.



Photograph 3: Complex in cut bank with 4 burrows.



Photograph 4: Complex in cut bank with 4 burrows.



Photograph 5: Complex in cut bank with 4 burrows.



Photograph 6: Complex in cut bank with 4 burrows.



Photograph 7: Canid burrow complex with 3 burrows in arroyo cut bank. No owl sign.



Photograph 8: Canid Burrow complex with 3 burrows in arroyo cut bank. No owl sign.



Photograph 9: Complex. Only one spot of whitewash on mound.



Photograph 10: Complex. Only one spot of whitewash on mound.



Photograph 11: Complex. Only one spot of whitewash on mound.



Photograph 12: Canid complex with no owl sign.



Photograph 13: No owl sign. Canid Burrow.



Photograph 14: Canid burrow, with owl sign.



Photograph 15: Burrow with owl sign. No evidence of recent activity.



Photograph 16: Whitewash.



Photograph 17: Canid complex with owl sign. No evidence of recent activity.



Photograph 18: Canid complex with owl sign. No evidence of recent activity.



Photograph 19: Canid complex with owl sign. No evidence of recent activity.



Photograph 20: Whitewash.



Photograph 21: No evidence of recent activity.



Photograph 22: Old whitewash.



Photograph 23: Owl sign. No evidence of recent activity.



Photograph 24: Whitewash.



Photograph 25: Canid burrow with owl sign.



Photograph 26: Whitewash.



Photograph 27: Burrow with pellets and whitewash.



Photograph 28: Canid burrow with owl sign. No evidence of recent activity.



Photograph 29: Burrow with owl sign. No evidence of recent activity.



Photograph 30: Burrow with owl sign. No evidence of recent activity.



Photograph 31: Whitewash.



Photograph 32: Burrow with owl sign. No evidence of recent activity.



Photograph 33: Burrow with owl sign. No evidence of recent activity.



Photograph 34: Burrow with owl sign. No evidence of recent activity.



Photograph 35: Burrow with owl sign. No evidence of recent activity.



Photograph 36: Burrow with owl sign. No evidence of recent activity.



Photograph 37: Burrow with owl sign. No evidence of recent activity.



Photograph 38: Burrow with owl sign. No evidence of recent activity.

Appendix C: Avian Observations

Avian Observations

Family	Common Name	Scientific Name
Accipitridae	Red-tailed hawk	*Buteo jamaicensis*
Alaudidae	California horned lark	*Eremophila alpestris actia*
Cathartidae	Turkey vulture	*Cathartes aura*
Columbidae	Eurasian collared-dove	*Streptopelia decaocto*
Columbidae	Mourning dove	*Zenaida macroura*
Columbidae	Rock pigeon	*Columba livia*
Corvidae	American crow	*Corvus brachyrhynchos*
Corvidae	Common raven	*Corvus corax*
Cuculidae	Greater roadrunner	*Geococcyx californianus*
Fringillidae	House finch	*Haemorhous mexicanus*
Icteridae	Brewer's blackbird	*Euphagus cyanocephalus*
Icteridae	Great-tailed grackle	*Quiscalus mexicanus*
Mimidae	Northern mockingbird	*Mimus polyglottos*
Odontophoridae	California quail	*Callipepla californica*
Passerellidae	Black-throated sparrow	*Amphispiza bilineata*
Passerellidae	White-crowned sparrow	*Zonotrichia leucophrys*
Sturnidae	European starling	*Sturnus vulgaris*
Tyrannidae	Say's phoebe	*Sayornis saya*

ATTACHMENT G

BURROWING OWL SURVEY REPORT – 2023 BREEDING SEASON – BARSTOW INTERNATIONAL GATEWAY

BURROWING OWL SURVEY REPORT – 2023 BREEDING SEASON

BARSTOW INTERNATIONAL GATEWAY



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1. Introduction

This report presents the methods and results of focused breeding season surveys for western burrowing owl (*Athene cunicularia hypugaea*) conducted by Nomad Biological LLC (Nomad Bio) for Rocks Biological Consulting (RBC) during the 2023 breeding season for the Barstow International Gateway Project (Project) located in and adjacent to the City of Barstow, San Bernardino County, California. No burrowing owls were observed during the surveys. Seventy-six suitable burrowing owl burrows were recorded and burrowing owl sign consisting of whitewash, pellets, and/or feathers were found at 16 of these burrows. None of the sign was determined to be from the current breeding season and no active burrowing owl burrows were observed. However, the burrowing owl sign observed indicates that burrowing owls have occupied the Project site within the last three years; therefore, the Project site is considered occupied habitat.

1.1 Project Description

BNSF Railway plans to construct an approximately 4,500-acre integrated rail facility west of Barstow, consisting of a rail yard, intermodal facility and warehouses for transloading freight from international containers to domestic containers. The facility will allow the direct transfer of containers from ships at the Ports of Los Angeles and Long Beach to trains for transport through the Alameda Corridor on the BNSF mainline to Barstow. Once the containers reach the Barstow International Gateway, they will be processed at the facility using clean-energy powered cargo-handling equipment, and then staged and loaded onto trains travelling east via BNSF's interstate network of rail lines. Westbound freight will be similarly processed at the facility, to bring cargo more efficiently to Pacific ports and other California terminals.

1.2 Project Location

The Project is located within and adjacent to the City of Barstow, the census-designated place of Lenwood, and the unincorporated community of Hodge, as well as additional portions of unincorporated San Bernardino County, California, on private and public lands (Figure 1: Project Location). The Project is located north of National Trails Highway/CA Route 66, south of CA Highway 58, and west of Interstate 15. Specifically, the Project is located within the *Barstow, Barstow SE, Hinkley, Hodge,* and *Wild Crossing* U.S. Geological Survey (USGS) 7.5-minute quadrangles.

2. Methods

2.1. Literature Review and Habitat Assessment

Prior to conducting focused burrowing owl surveys, a literature and existing data review was conducted for the Project site and vicinity to assess the potential of burrowing owls to occupy the Project site. The reviews consisted of a search of California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2023), United States Department of Agriculture (USDA) Natural Resource Conservation Science (NRCS) Digital General Soil Map of the United States (STATSGO2) (USDA/NRCS 2023), United States Geological Survey (USGS) topographic maps, aerial imagery (Google 2023), *BNSF Alternatives Feasibility Assessment Burrowing Owl Survey Results Passes 1 and 2* (Eco Vita 2021), *BNSF Alternatives Feasibility Assessment Burrowing Owl Survey Results Passes 3 and 4* (Eco Vita 2022a), and the *BNSF Alternatives Feasibility Assessment Focused Burrowing Owl Survey Report – 345, 172, and 246 Acres* (Eco Vita 2022b).

2.2. Breeding Season Surveys

Nomad Bio biologists, with assistance from RBC biologists, conducted burrowing owl breeding season surveys from March-July 2023. To the extent feasible, breeding season surveys followed the survey guidelines as described in the *Staff Report on Burrowing Owl Mitigation* (Staff Report) (CDFW 2012). Using these guidelines, four survey visits spaced three weeks apart were conducted within the Survey Area. The Survey Area for the 2023 breeding season surveys was defined as the Project footprint with a 150m buffer; however, parcels previously surveyed with four survey passes during the 2022 breeding season were excluded from the surveys (Eco Vita 2022b). Due to private property access constraints, the 150m buffer was surveyed from the Project with binoculars or spotting scopes. Due to concerns for the safety of the biologists, various developed areas within the communities of Lenwood and Hodge were surveyed by vehicle and binoculars (Figure 2: Survey Area).

The first survey was conducted prior to April 15th and three survey visits were conducted between April 15th and July 15th, with the final survey visit conducted after June 15th. Biologists walked 20m-spaced belt transects throughout the accessible, undeveloped portions of the Survey Area. All burrows detected were inspected for occupancy and suitability, then recorded. A burrow was determined to be suitable for burrowing owl if it was at least 110mm in height and width and at least 1.5m deep. Burrows without a visible end were assumed to be at least 1.5m deep and marked as suitable. Burrow surrogates were also documented. These include culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures. Biologists further categorized suitable burrowing owl burrows by the species that likely dug the burrow, which is based on burrow size and nearby sign such as animal scat, tracks, and soil dispersal. All burrowing owl sign, including live individuals, feathers, tracks, pellets, whitewash, prey remains, and nest decorations were recorded, if present. Biologists scanned for burrowing owls at the start of each transect and every 100m along the transect line. Surveys were not conducted during heavy rain, sustained winds of greater than 20 miles per hour, or dense fog.

The first two survey passes were conducted within the undeveloped portions of the Survey Area to locate suitable burrows for burrowing owls. The area surveyed for passes 3 and 4 was reduced to exclude areas lacking burrows; thus, not deemed burrowing owl habitat. Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey (CDFW 2012). This reduction excluded large areas where no suitable burrows or burrow surrogates were recorded during previous passes, resulting in the elimination of most of the active and stabilized sand dunes, portions of the agricultural land, and developed private residences from the Survey Area. All suitable burrows marked during previous passes were inspected for the presence of owls and new owl sign. On each subsequent survey pass, newly detected suitable burrows were recorded and inspected. Driving and binocular surveys throughout the Project buffer and Lenwood were continued during the remaining passes.

Table 1: Summary of Survey Dates and Personnel details the survey date range for each focused survey effort. For a description of daily survey results please see Appendix B: Summary of Survey Results.

Table 1. Summary of Survey Dates and Personnel

Date Range	Survey	Personnel
3/23/2023-4/1/2023	Pass 1/Burrow Survey	R. Layden, K. Black, M. Baker, A. Goodman, K. Woldt, H. Swarthout, K. Koeper, A. Keller, J. Mohlmann, P. Livingston, C. Chan
5/4/2023-5/16/2023	Pass 2/Burrow Survey	R. Layden, K. Koeper, E. Bowen, M. Baker, P. Livingston, C. Scanlon, K. Black, A. Pigniolo, J. Smith
5/26/2023-6/5/2023	Pass 3	R. Layden, M. Baker, T. Toelkes, P. Livingston, C. Scanlon
7/4/2023-7/14/2023	Pass 4	R. Layden, M. Baker, T. Toelkes

3. Results

3.1 Site Characteristics

3.1.1 Regional Setting

The Project is in the Mojave Desert, an area that covers more than 40,000 acres within California, Arizona, Nevada, and Utah, and acts as the transitional zone between the hot, low-elevation Sonoran Desert to the south and the relatively cooler, higher-elevation Great Basin to the north. The Project area is characterized by hot summers with minimal precipitation and cold winters with extreme temperature swings. The Mojave River is located immediately north and flows parallel to the Project. Both active and stabilized sand dunes border the northern limits of the Project. The topography in the surrounding area and within the Project site generally slopes downward to the north towards the Mojave River. Surface elevation within the Project site ranges from approximately 2,200 feet above mean sea level (amsl) in the eastern end to 4,400 amsl in the western end.

The Project occurs on mostly privately-owned land, and approximately 30 acres of land managed by the Bureau of Land Management (BLM) is present within the center of the Project site. The east end of the Project is within the community of Lenwood and consists of developed land that includes commercial and residential properties. The central and western portions of the Project are predominantly undeveloped, with vacant lands and scattered private residences throughout. Land uses within and adjacent to the Project include commercial, residential, agricultural, transportation, and open space.

3.1.2 Soils

The Project contains three general soil types per the United States General Soils Map: (1) Nebona-Mirage-Joshua-Cajon, (2) Villa-Victorville-Riverwash-Cajon, and (3) Wasco-Rosamond-Cajon (Figure 3: Soils). The Nebona-Mirage-Joshua-Cajon association occurs in the western portion of the Project site, primarily west of Hinkley Road. This association consists of fine to sandy loam, primarily derived from granitic alluvium. It is classified as a well-drained soil, indicating water is readily but not rapidly removed from the soil. The Villa-Victorville-Riverwash-Cajon association occurs in the northern portion of the Project and includes the

agricultural fields near the community of Hodge as well as the dunes associated with the Mojave River. This association consists of sandy loam from primarily granitic alluvium. It is classified as a moderately well-drained soil, indicating water is removed from the soil at a slower rate during periods of higher precipitation. The Wasco-Rosamond-Cajon association occurs throughout most of the Project site, specifically in the central and eastern portions. This association consists of sandy to coarse loam derived from granitic and igneous alluvium. It is classified as a somewhat excessively-drained soil, indicating water is removed from the soil rapidly.

3.1.3 Vegetation Communities

Vegetation communities within the Project site were previously mapped by RBC botanists using *A manual of California Vegetation, 2nd Edition* (Sawyer et al. 2009). Ten vegetation communities and land cover types were mapped within the Project site (Table 2: Vegetation Communities within the Project Site; Figure 4: Vegetation Communities). Allscale scrub, creosote bush scrub, agriculture, and disturbed habitat provide the most suitable habitat for burrowing owls within the Project site.

Table 2: Vegetation Communities within the Project Site

Vegetation Communities	Acreage within Project Site
Active Desert Dunes	1094.3
Active Desert Dunes - Disturbed	87.1
Agriculture	319.9
Allscale Scrub	1011.0
Allscale Scrub - Disturbed	217.5
Creosote Bush Scrub	516.6
Creosote Bush Scrub - Disturbed	262.6
Developed	230.8
Disturbed Habitat	584.1
Stabilized/Partially Stabilized Desert Dunes	223.2
Tamarisk Thickets	16.6
Unvegetated Channel	27.5
Total Acreage	**4,591.1**

3.2 Burrowing Owl Suitability

The western burrowing owl is a California Species of Special Concern and BLM Sensitive Species that occurs throughout western North America within a wide range of habitats. Although regional occupancy varies seasonally it is a year-round resident throughout much of California, specifically within the Central Valley, San Francisco Bay region, Imperial Valley, and Carrizo Plain (Gervais et al. 2008). In Southern California, burrowing owls occur across most of the Mojave and Colorado deserts, although these populations are low and occupied areas are widely scattered throughout the region (Gervais et al. 2008). Burrowing owls are known to occupy dry, open grasslands, shrub-steppes, deserts, and prairies, as well as agricultural fields, golf courses, airports and vacant lots (Haug et al. 1993). In California, preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography, and well-drained soils (Haug et al. 1993). The most significant component of burrowing owl habitat is the presence of burrows, as they provide security for nesting, protection from predators, and shelter from extreme weather. Western burrowing owls do not dig

their own burrows, instead relying on existing burrows dug primarily by fossorial mammals. Within the Project Vicinity, burrowing owls may use burrows excavated by California ground squirrels (*Otospermophilus beecheyi*), desert tortoise (*Gopherus agassizii*), American badger (*Taxidea taxus*), desert kit fox (*Vulpes macrotis*), coyote (*Canis latrins*), and sometimes human-made structures such as asphalt and concrete piles, culverts, or pipes.

The Project site is located within the known range for burrowing owl and burrowing owls are known to occur within the Project vicinity (CNDDB 2023, Eco Vita 2021, Eco Vita 2022a, Eco Vita 2022b). The Project site also contains well drained soils, gentle topography, suitable vegetation communities and land cover types, and several suitable burrows that provide habitat for this species.

3.3 Breeding Season Surveys

No live burrowing owls were observed during the 2023 breeding season surveys. A total of 112 burrows were observed, of which 76 were determined to be suitable for burrowing owls based on recorded burrow dimensions (Table 3: Suitable Burrowing Owl Burrows; Figure 5: Survey Results). Burrowing owl sign, including whitewash, pellets, and feathers were present at 16 of these burrows. None of the observed sign was determined to be fresh and from the current breeding season. The whitewash was heavily faded, and was not observed in the quantity typical of an active burrowing owl burrow. The pellets lacked insect exoskeletons and the glossy sheen typical of a recently egested pellet. Instead, the pellets were desiccated and contained only larger bone fragments. One fresh pellet was observed on Pass 1 at burrow 042 but appeared too large to be burrowing owl and was potentially from another raptor (Figure 5: Survey Results).

Of the suitable burrowing owl burrows found onsite, biologists used identifying characteristics to categorize the burrows by the species that dug the burrow. This included small round holes dug by ground squirrel, larger round holes often with tracks or scat indicative of kit fox or coyote, or flat-bottomed half-moon shaped holes modified by desert tortoise. When these characteristics were lacking or not definitive, the burrow was categorized as unknown.

Several other special-status wildlife species were observed during the surveys including desert tortoise, Mojave fringe-toed lizard (*Uma scoparia*), golden eagle (*Aquila chrysaetos*), horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus hudsonius*), prairie falcon (*Falco mexicanus*), and Swainson's hawk (*Buteo swainsoni*), (Figure 6: Special-Status Species).

Table 3. Suitable Burrowing Owl Burrows

ID	Burrow Species	Dimensions (mm)			Burrowing Owl Sign	Active Burrowing Owl Nest
		Width	Height	Length		
1	Coyote	300	450	>500	None	No
2	Ground Squirrel	120	130	>300	None	No
3	Ground Squirrel	100	100	>300	None	No
4	Ground Squirrel	170	150	>600	None	No
5	Ground Squirrel	150	150	>300	Whitewash	No
6	Kit Fox	200	300	> 1000	None	No
7	Unknown Mammal	200	120	>500	None	No

ID	Burrow Species	Dimensions (mm)			Burrowing Owl Sign	Active Burrowing Owl Nest
		Width	Height	Length		
8	Kit Fox	200	210	Unknown	None	No
9	Kit Fox	210	200	>1m	Whitewash	No
10	Kit Fox	500	300	>900	None	No
11	Kit Fox	240	150	>400	None	No
12	Kit Fox	150	150	>1m	None	No
13	Kit Fox	300	400	> 300	None	No
14	Desert Tortoise	240	100	> 400	None	No
15	Desert Tortoise	250	200	> 600	Whitewash	No
16	Kit Fox	220	150	>200	Whitewash, pellets	No
17	Unknown	280	150	>1.5m	None	No
18	Kit Fox	240	180	Unknown	None	No
19	Unknown Mammal	200	200	> 100	None	No
20	Kit Fox	250	150	Unknown	Whitewash	No
21	Kit Fox	180	200	>1m	None	No
22	Ground Squirrel	110	120	Unknown	None	No
23	Kit Fox	180	180	>500	Pellet	No
24	Unknown Mammal	400	300	> 300	None	No
25	Unknown Mammal	400	400	> 300	Whitewash, pellets	No
26	Kit Fox	220	230	>1m	Whitewash	No
27	Kit Fox	170	240	>800	None	No
28	Kit Fox	220	150	>1m	None	No
29	Unknown Mammal	200	150	>500	None	No
30	Unknown Mammal	250	150	>500	Whitewash, pellets	No
31	Kit Fox	220	110	>500	None	No
32	Kit Fox	350	200	> 200	Whitewash, pellets	No
33	Unknown Mammal	200	150	>300	Whitewash, pellets	No
34	Unknown Mammal	120	120	>200	None	No
35	Kit Fox	200	210	>400	None	No
36	Kit Fox	220	150	>300	None	No
37	Kit Fox	230	200	Unknown	None	No
38	Coyote	300	350	>500	None	No
39	Kit Fox	280	200	>500	None	No
40	Coyote	300	250	>700	None	No

ID	Burrow Species	Dimensions (mm)			Burrowing Owl Sign	Active Burrowing Owl Nest
		Width	Height	Length		
41	Unknown Mammal	360	180	>2m	None	No
42	Other	160	120	>1m	Pellet	No
43	Unknown Mammal	250	180	>1m	None	No
44	Kit Fox	225	190	>1m	None	No
45	Desert Tortoise	280	130	>1m	None	No
46	Other - Culvert	230	140	>1.5m	None	No
47	Other - Culvert	210	190	>1m	None	No
48	Kit Fox	160	180	Unknown	None	No
49	Kit Fox	250	210	Unknown	None	No
50	Unknown Mammal	400	170	>1.5m	None	No
51	Other	500	400	>1m	None	No
52	Kit Fox	180	120	>1m	None	No
53	Kit Fox	260	110	>1m	Whitewash, pellets	No
54	Unknown Mammal	280	140	>500	Whitewash, pellets	No
55	Desert Tortoise	220	140	>500	None	No
56	Desert Tortoise	350	180	>1.5m	None	No
57	Kit Fox	300	200	>1.5m	None	No
58	Kit Fox	>110	>110	>1.5m	Whitewash, pellets	No
59	Kit Fox	150	140	>1.5m	None	No
60	Kit Fox	340	220	>1m	None	No
60	Kit Fox	200	200	>500	None	No
61	Kit Fox	>110	>110	>1m	None	No
62	Kit Fox	>110	>110	>500	Pellet	No
63	Kit Fox	>110	>110	>1.5 m	None	No
64	Kit Fox	130	220	>1m	None	No
65	Unknown Mammal	310	140	>1m	None	No
66	Desert Tortoise	310	120	>1 m	None	No
67	Unknown Mammal	300	150	>1.5	None	No
68	Unknown Mammal	250	160	>1.5	Pellet	No
70	Kit Fox	200	400	>500	None	No
71	Unknown Mammal	180	130	>1m	None	No
72	Desert Tortoise	300	130	>500	None	No

ID	Burrow Species	Dimensions (mm)			Burrowing Owl Sign	Active Burrowing Owl Nest
		Width	Height	Length		
73	Other - Culvert	210	190	>1m	None	No
74	Kit Fox	100	240	>500	None	No

4. Discussion and Recommendations

The Staff Report states that occupancy of burrowing owl habitat is confirmed when at least one burrowing owl, or its sign at or near the entrance of a burrow, is observed within the last three years (CDFW 2012). Although no burrowing owl individuals were observed, their sign was observed at 16 burrows. Additionally, burrowing owls were observed within the Project during focused burrowing owl surveys conducted in the 2021 non-breeding season (Eco Vita 2021) and during focused desert tortoise surveys conducted in February 2022. Although the burrowing owl breeding season begins February 1, burrowing owl migrants may still be present in southern California through March and confirmation of breeding occupancy should be cautioned during this time (CDFW 2012). Therefore, the burrowing owls incidentally observed during the desert tortoise surveys may have been wintering residents.

Although burrowing owls exhibit high site fidelity, seasonal occupancy may change in response to predators and prey availability (Zarn 1974). It is unclear why burrowing owls did not occupy the Project site during the 2023 breeding season, if there has been a breeding population in the recent past or if it is primarily used as wintering grounds for a migrant population. However, due to the presence of habitat and suitable burrows, burrowing owls may inhabit the Project site again.

Due to the dynamic nature of burrowing owl occupancy at the Project site, a Burrowing Owl Management Plan should be drafted prior to Project construction in accordance with the avoidance and minimization measures outlined in the Staff Report. No less than 14 days prior to the commencement of ground disturbing activities, take avoidance surveys should be conducted. If burrowing owls are present, then the protective measures outlined in the Burrowing Owl Management Plan should be implemented.

5. References

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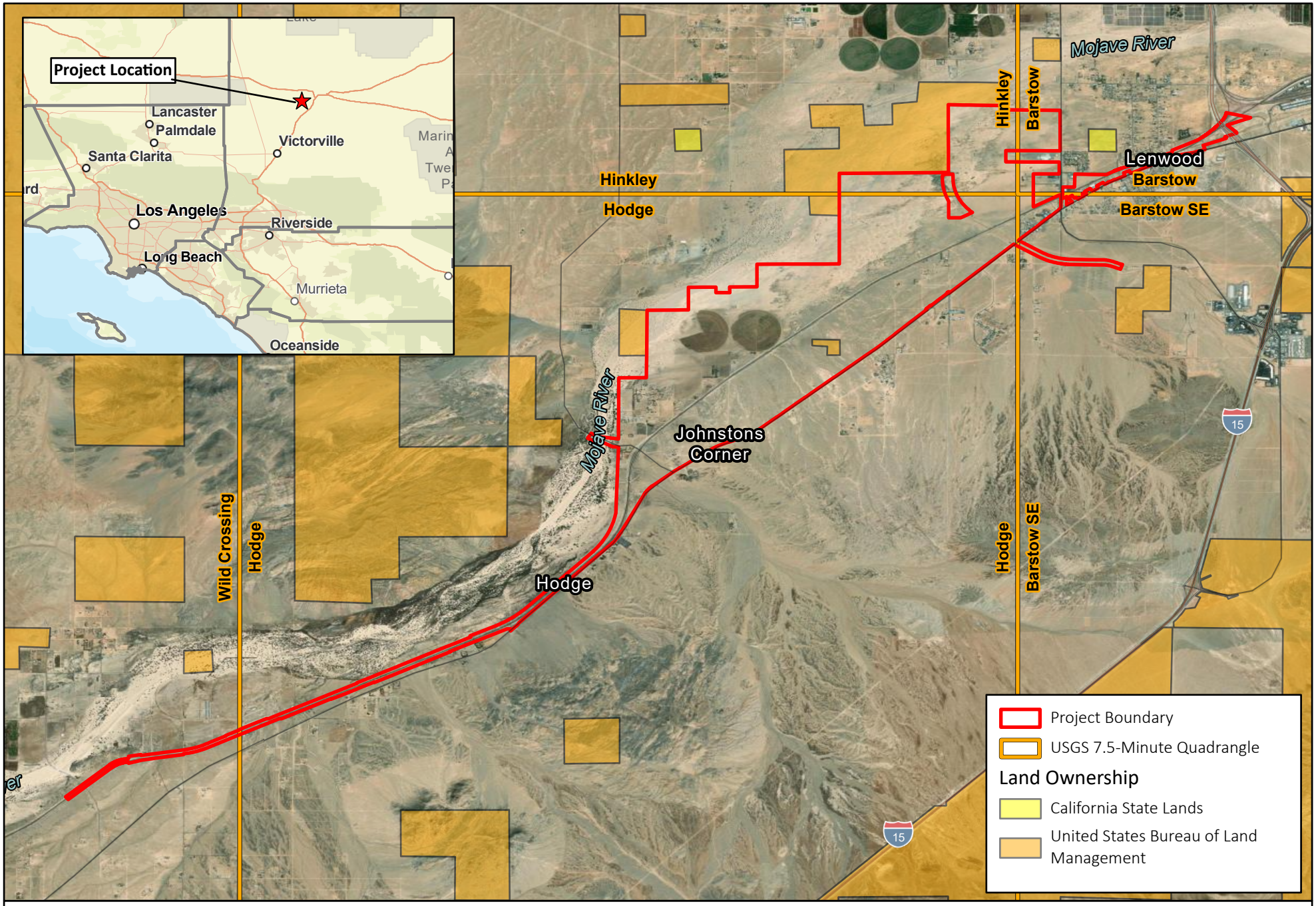
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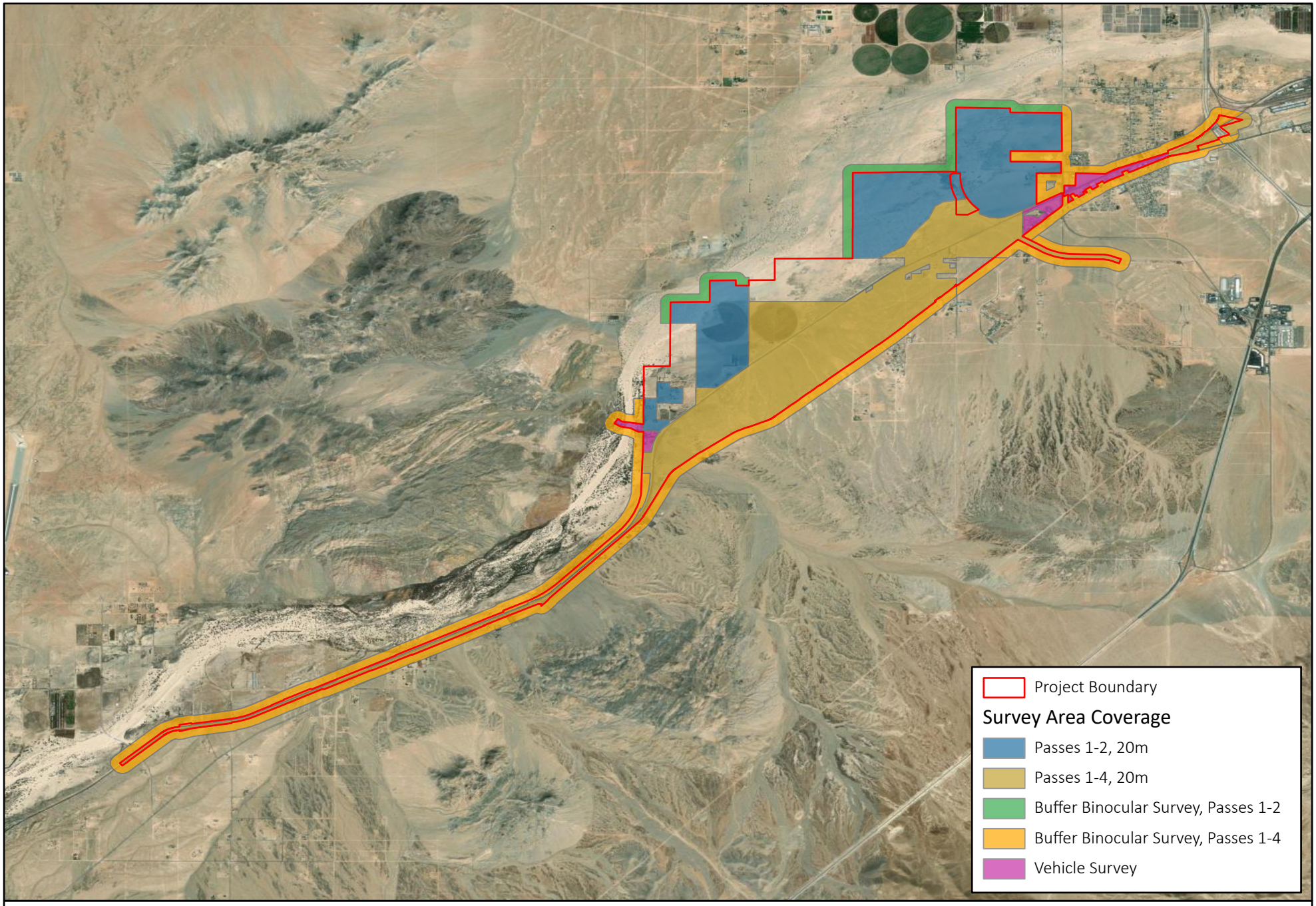
1:90,000 NAD83 UTM Zone 11N

ESRI Basemap 2021

Figure 1 - Project Location

Burrowing Owl Survey Report- 2023 Breeding Season

Barstow International Gateway

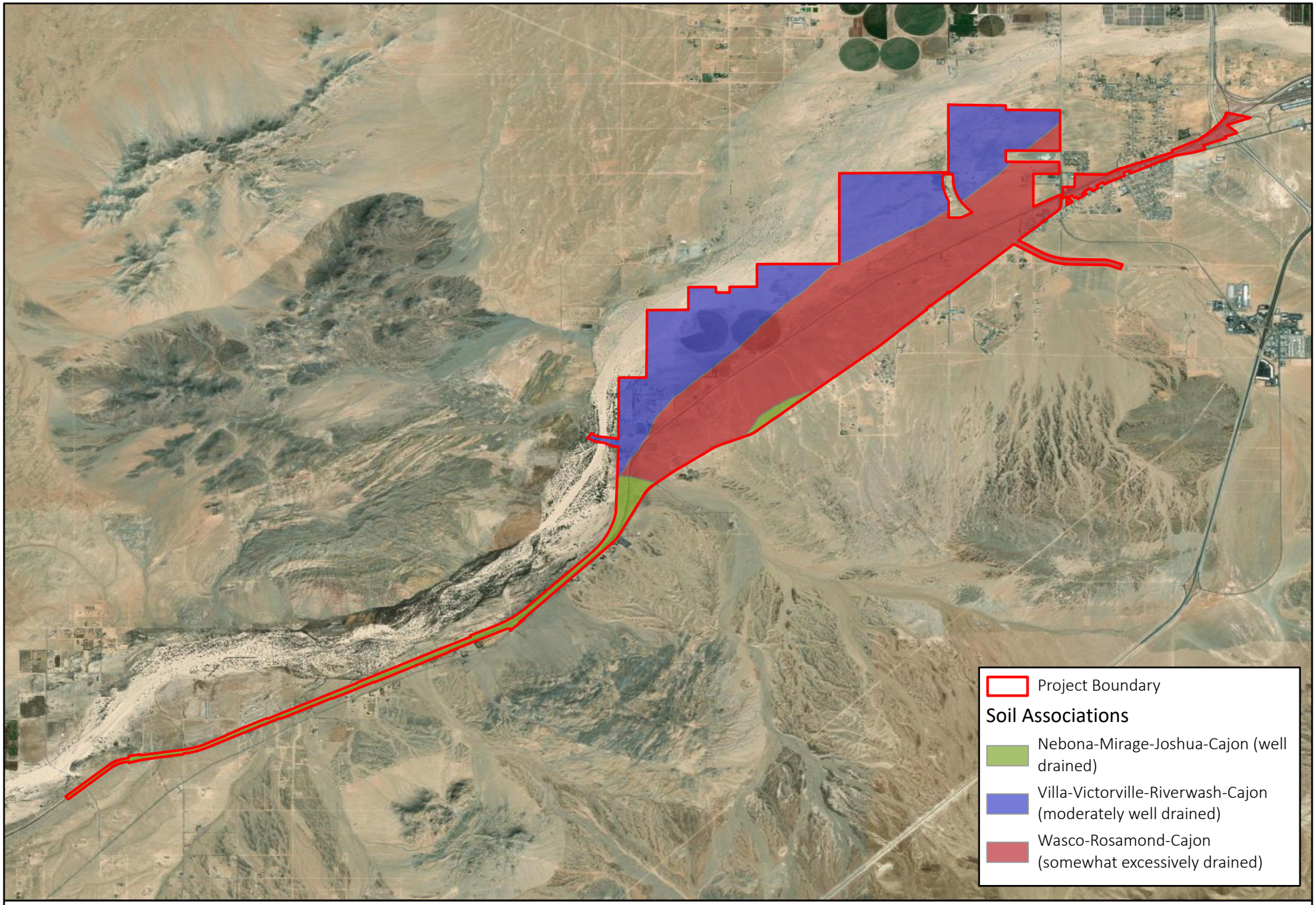


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Figure 2 - Survey Area

Burrowing Owl Survey Report- 2023 Breeding Season

Barstow International Gateway

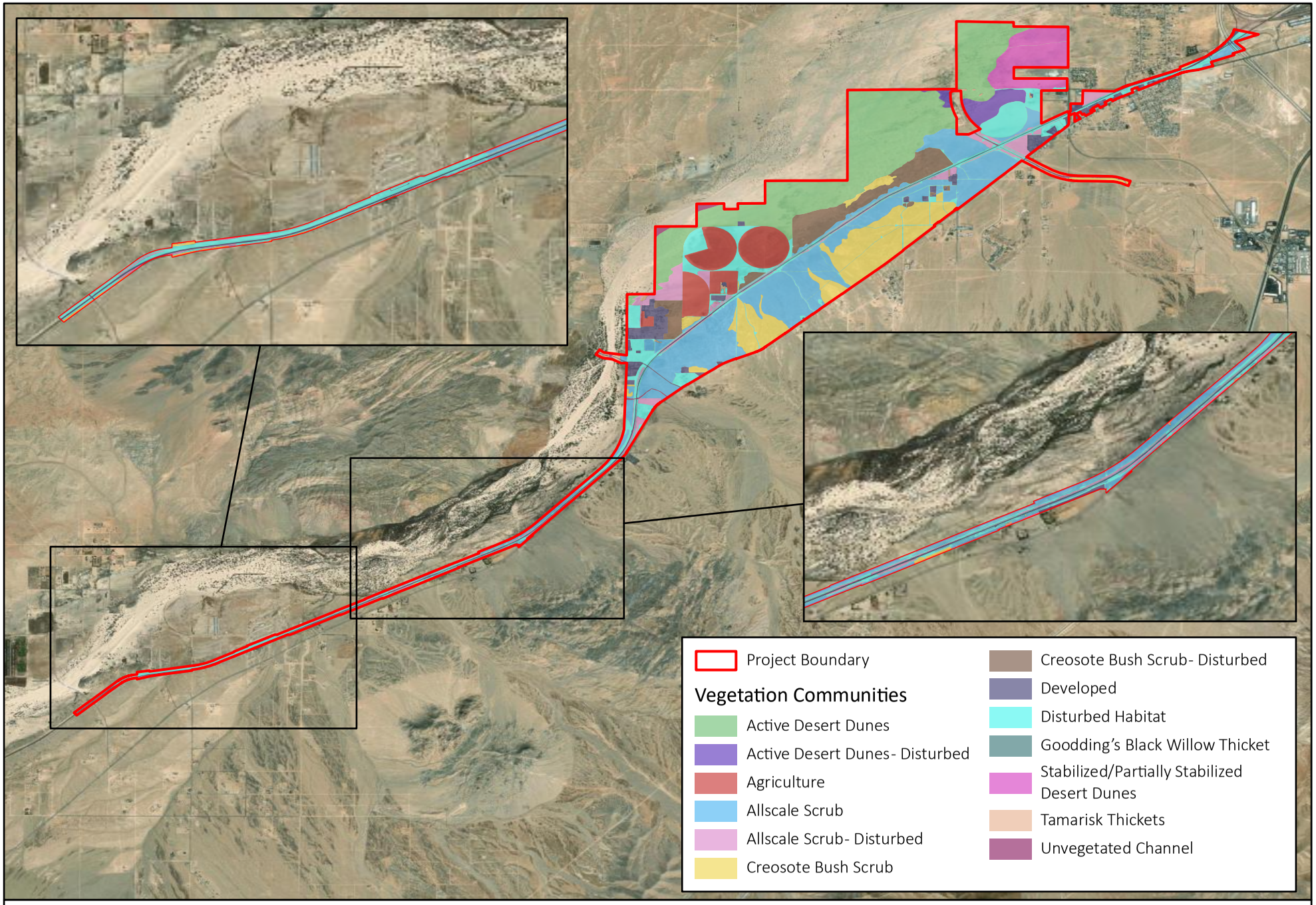


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Figure 3 - Soils

Burrowing Owl Survey Report- 2023 Breeding Season

Barstow International Gateway



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Figure 4 - Vegetation Communities

Burrowing Owl Survey Report- 2023 Breeding Season

Barstow International Gateway

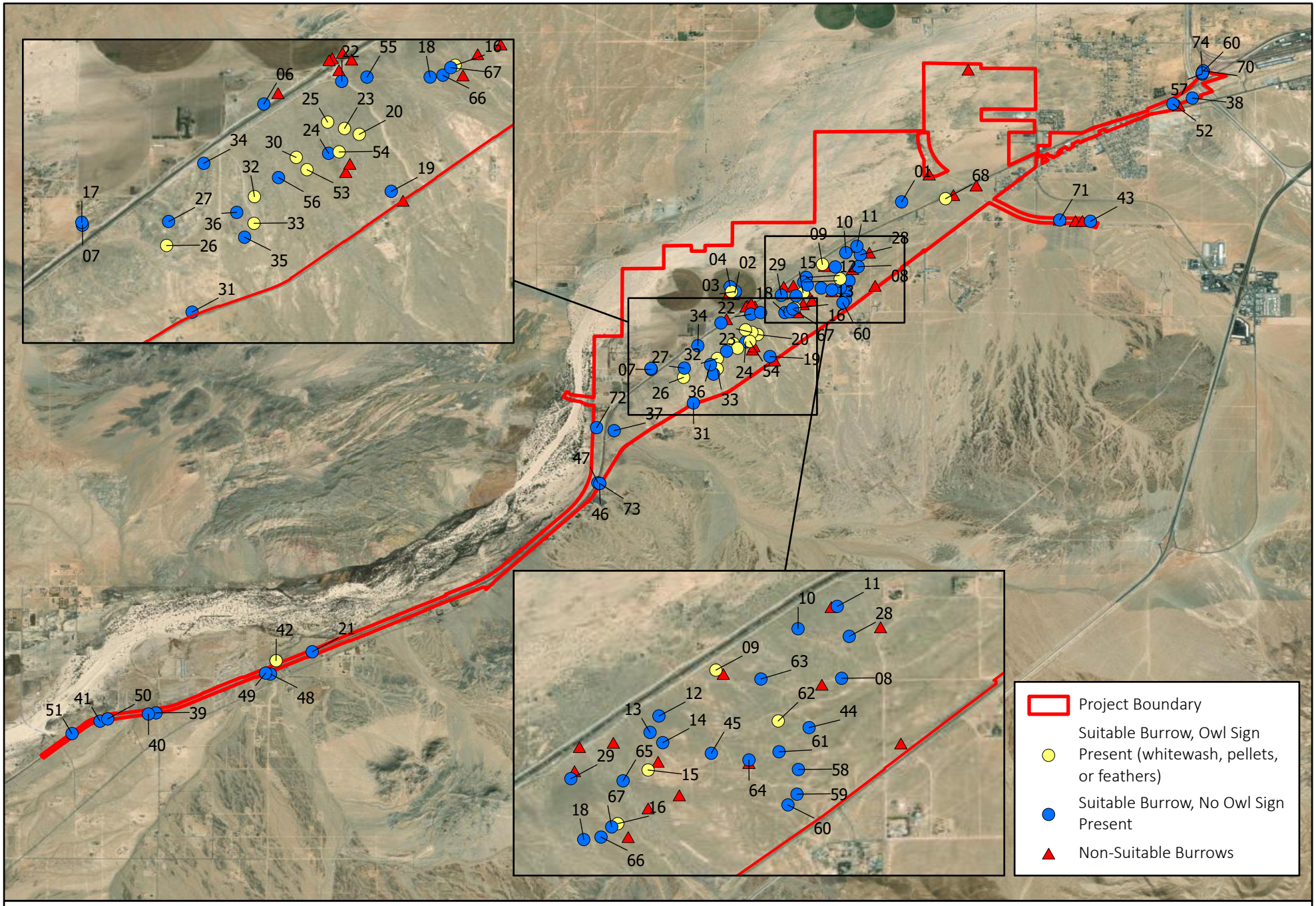
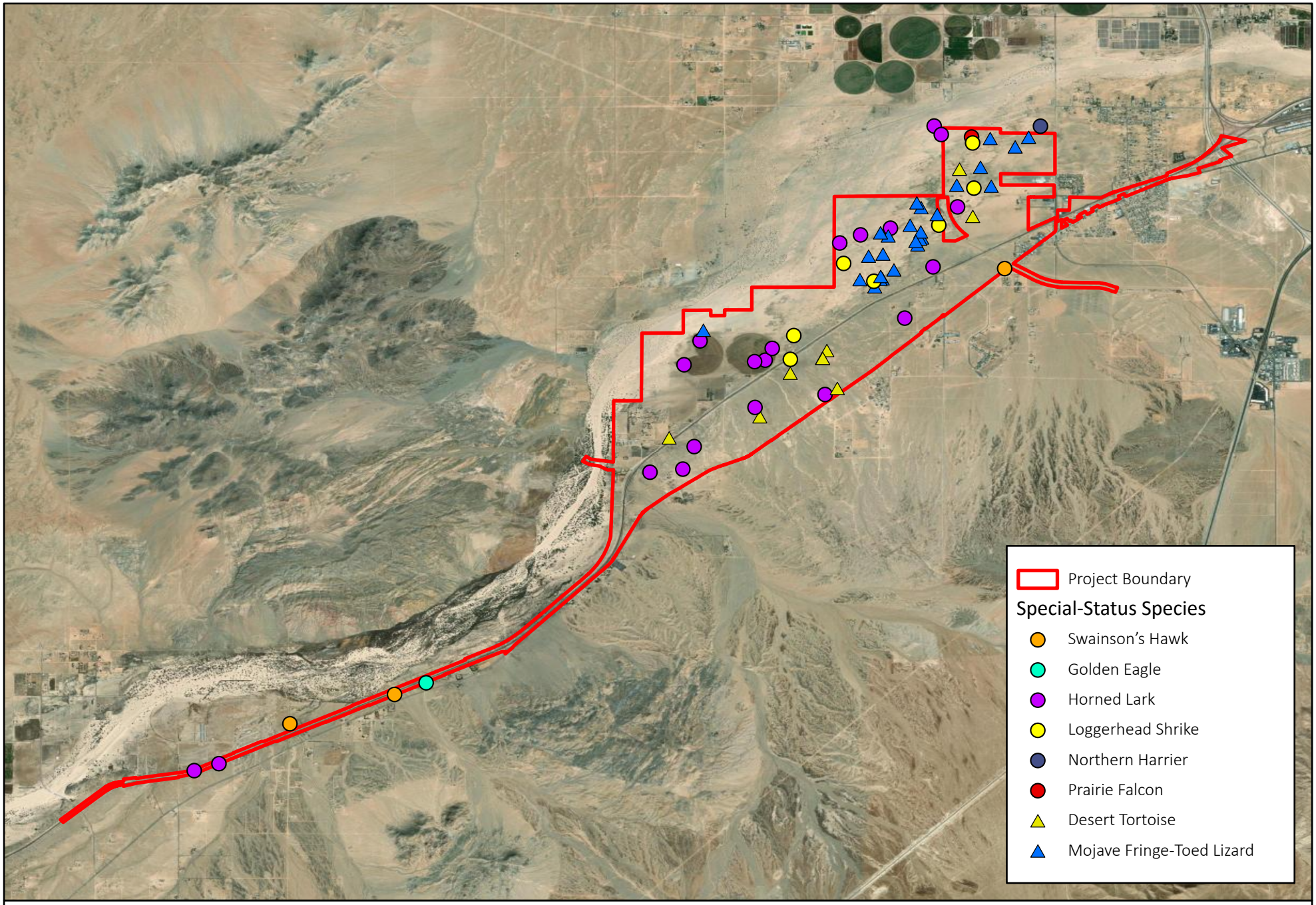


Figure 5 - Survey Results

Burrowing Owl Survey Report- 2023 Breeding Season

Barstow International Gateway



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Figure 6 - Special-Status Species

Burrowing Owl Survey Report- 2023 Breeding Season

Barstow International Gateway



Photo 1. Southwest-facing view of the eastern portion of the Project site.



Photo 2. Southwest-facing view of the project where creosote bush scrub transitions into desert dunes.



Photo 3. Northwest-facing view of central portion of Project site within creosote bush scrub.



Photo 4. Northeastern view of the western portion of Project site within allscale scrub.

Date	Survey Pass	Start Time	End Time	Temperature (°F)	Wind (MPH)	Cloud Cover (%)	Personnel
23-Mar	1	08:00	17:00	45-58	3-15	0-30	R. Layden; K. Black, A Goodman, H. Swarthout, K. Woldt
24-Mar	1	07:00	17:00	39-57	5-18	5	R. Layden; K. Black, A Goodman, H. Swarthout, K. Woldt, M. Baker
27-Mar	1	08:00	18:00	54-57	4-8	5-10	R. Layden, K. Black, C. Chan, P. Livingston, J. Mohlmann, K. Koeper, A. Keller
28-Mar	1	07:00	17:00	36-70	3-10	0-10	R. Layden, K. Black, C. Chan, P. Livingston, J. Mohlmann, K. Koeper, A. Keller
29-Mar	1	07:00	17:00	48-57	5-20	100-5	R. Layden, K. Black, C. Chan, P. Livingston, J. Mohlmann, K. Koeper, A. Keller
30-Mar	1	07:30	17:00	39-55	8-20	0-60	R. Layden, K. Black, C. Chan, P. Livingston, J. Mohlmann, K. Koeper, A. Keller
31-Mar	1	07:00	17:00	38-66	0-3	0-60	R. Layden, K. Black, C. Chan, P. Livingston, J. Mohlmann, K. Koeper, A. Keller
1-Apr	1	07:00	17:00	42-66	4-10	0	R. Layden, J. Mohlmann, K. Koeper, A. Keller
4-May	2	07:00	17:00	41-62	4-15	0-10	K. Koeper, A. Omlid, P. Livingston, E. Bowen, C. Scanlon
5-May	2	07:30	17:30	49-64	5-18	0-10	K. Koeper, A. Omlid, P. Livingston, E. Bowen, C. Scanlon
6-May	2	07:00	15:00	41-65	8-20	0-10	K. Koeper, E. Bowen, C. Scanlon
8-May	2	08:00	18:30	48-76	8-18	0	R. Layden, K. Black, K. Koeper, P. Livingston, E. Bowen, C. Scanlon, A. Pigniolo, J. ??
9-May	2	07:00	17:15	55-72	4-16	0-30	R. Layden, K. Black, K. Koeper, P. Livingston, E. Bowen, C. Scanlon, A. Pigniolo, J. ??
10-May	2	07:00	17:00	55-78	8-14	0	R. Layden, K. Black, K. Koeper, P. Livingston, E. Bowen, C. Scanlon, A. Pigniolo, J. ??
11-May	2	07:00	17:30	62-84	3-20	0	R. Layden, K. Black, K. Koeper, P. Livingston, E. Bowen, C. Scanlon, A. Pigniolo, J. ??

Date	Survey Pass	Start Time	End Time	Temperature (°F)	Wind (MPH)	Cloud Cover (%)	Personnel
12-May	2	07:00	18:00	64-93	0-5	0	R. Layden, K. Black, K. Koeper, P. Livingston, E. Bowen, C. Scanlon, A. Pigniolo, J. ??
13-May	2	07:00	14:45	22-32.2	3-12	0	K. Koeper, C. Scanlon
15-May	2	07:00	17:45	72-89	3-10	0-55	K. Koeper, C. Scanlon, A. Pigniolo, J. ??
16-May	2	06:30	16:45	65-96	3-10	50-30	K. Koeper, A. Pigniolo, J. ??
26-May	3	06:30	17:00	68-85	3-12	0-20	M. Baker, P. Livingston, S. Harris, T. Toelkes, C. Scanlon
27-May	3	07:00	15:30	60-88	0-6	0	M. Baker, P. Livingston, S. Harris, T. Toelkes, C. Scanlon
30-May	3	06:30	16:30	68-85	3-12	0-20	R. Layden, M. Baker, P. Livingston, T. Toelkes
31-May	3	06:30	17:30	59-88	3-14	0-10	R. Layden, M. Baker, P. Livingston, T. Toelkes
1-Jun	3	06:30	17:15	61-86	3-20	0-20	R. Layden, M. Baker, P. Livingston, T. Toelkes
2-Jun	3	06:30	17:00	58-90	0-15	0	M. Baker, P. Livingston, T. Toelkes
3-Jun	3	06:30	16:00	64-94	1-5	0	M. Baker, P. Livingston, T. Toelkes
5-Jun	3	06:30	16:30	72-101	1-4	0	R. Layden, T. Toelkes
4-Jul	4	08:00	18:00	82-97	8-25	0	M. Baker, T. Toelkes
5-Jul	4	06:30	16:30	72-101	1-4	0	M. Baker, T. Toelkes
6-Jul	4	06:30	17:00	70-98	3-15	0	M. Baker, T. Toelkes
7-Jul	4	06:30	16:45	70-97	3-20	0	M. Baker, T. Toelkes
8-Jul	4	06:30	13:15	69-93	2-10	0	M. Baker, T. Toelkes
10-Jul	4	07:30	17:30	71-100	3-20	0	R. Layden, M. Baker, T. Toelkes
11-Jul	4	06:30	17:30	72-100	3-20	0	R. Layden, M. Baker, T. Toelkes
12-Jul	4	06:30	16:15	76-102	3-14	0	R. Layden, M. Baker, T. Toelkes
13-Jul	4	06:00	16:15	76-105	6-12	0-5	R. Layden, M. Baker, T. Toelkes
14-Jul	4	06:00	15:45	73-102	2-8	0	R. Layden, M. Baker, T. Toelkes

Scientific Name	Common Name
Reptiles	
Aspidoscelis tigris tigris	Great Basin Whiptail
Crotalus scutulatus	Mojave Rattlesnake
Gopherus agassizii	Desert Tortoise
Sceloporus uniformis	Yellow-Backed Spiny Lizard
Uma Scoparia	Mojave Fringe-Toed Lizard
Uta stansburiana elegans	Western Side-Blotched Lizard
Birds	
Anas platyrhynchos	Mallard
Aquila chrysaetos	Golden Eagle
Artemisiospiza belli belli	Bell's Sage Sparrow
Auriparus flaviceps	Verdin
Bubo virginianus	Great Horned Owl
Buteo jamaicensis	Red-tailed Hawk
Buteo swainsoni	Swainson's Hawk
Cathartes aura	Turkey Vulture
Charadrius vociferus	Killdeer
Circus cyaneus	Northern Harrier
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Eremophila alpestris	Horned Lark
Euphagus cyanocephalus	Brewer's Blackbird
Falco mexicanus	Prairie Falcon
Falco sparverius	American Kestrel
Geothlypis trichas	Common Yellowthroat
Icterus bullockii	Bullock’s Oriole
Lanius ludovicianus	Loggerhead Shrike
Larus delawarensis	Ring-billed Gull
Mimus polyglottos	Northern Mockingbird
Passer domesticus	House Sparrow
Passerculus sandwichensis	Savannah Sparrow
Petrochelidon pyrrhonota	Cliff Swallow
Polioptila caerulea	Blue-gray Gnatcatcher
Quiscalus mexicanus	Great-tailed Grackle
Regulus calendula	Ruby-crowned Kinglet
Sayornis nigricans	Black Phoebe
Sayornis saya	Say's Phoebe
Setophaga coronata	Yellow-rumped Warbler
Spizella breweri	Brewer's Sparrow
Streptopelia decaocto	Eurasian Collared-Dove
Sturnella neglecta	Western Meadowlark
Sturnus vulgaris	European Starling
Tachycineta bicolor	Tree Swallow

Tachycineta thalassina	Violet-green Swallow
Toxostoma lecontei	Le Conte's Thrasher
Tringa melanoleuca	Greater Yellowlegs
Tyrannus verticalis	Western Kingbird
Zonotrichia leucophrys	White-crowned Sparrow
Mammals	
Canis familiaris	Domestic Dog
Lepus californicus	Black-Tailed Jackrabbit
Neotoma lepida	Desert Woodrat
Sylvilagus audubonii	Desert Cottontail
Vulpes Macrotis	Desert Kit Fox

ATTACHMENT H

RESULTS OF FOCUSED BURROWING OWL SURVEYS FOR THE BARSTOW INTERNATIONAL GATEWAY – TORTILLA SUBSTATION PROJECT, BARSTOW, SAN BERNARDINO COUNTY, CALIFORNIA

ROCKS
BIOLOGICAL CONSULTING

August 09, 2023

Ms. Jennifer Harry
Kimley-Horn and Associates
401 B Street, Suite 600
San Diego, CA 92101

Subject: Results of Focused Burrowing Owl Surveys for the Barstow International Gateway – Tortilla Substation Project, Barstow, San Bernardino County, California

Ms. Harry:

This memo is a summary of the focused burrowing owl (*Athene cunicularia*; BUOW) surveys conducted by Rocks Biological Consulting (RBC) for the Barstow International Gateway - Tortilla Substation Project (project) in Barstow, California. RBC conducted focused breeding season BUOW surveys between April 27, 2023, and July 13, 2023, in accordance with the California Department of Fish and Wildlife (CDFW) *Staff Report on Burrowing Owl Mitigation* (BUOW Guidelines; CDFW 2012). No BUOW, active burrows, or BUOW sign were documented within the survey area during the focused BUOW surveys.

INTRODUCTION

The Tortilla Substation is located approximately five miles southeast of the railyard of the Barstow International Gateway Project. The project site consists of the alignment along Bonanza Road and the existing substation. The project site is north of open undeveloped land, west of Barstow Road, east of H Street, and south of Rimrock Road (Figure 1).

The CDFW lists the BUOW as a Species of Special Concern. In California, suitable habitat for BUOW is generally characterized by short, sparse vegetation with few shrubs, level to gentle topography, and well-drained soils, such as naturally occurring grassland, shrub steppe, and desert habitats (Haug et al. 1993). In addition, BUOW may also occur in agricultural areas, ruderal grassy fields, vacant lots, and pastures containing suitable vegetation structure and useable burrows with foraging habitat in proximity (Gervais et al. 2008). Typically, BUOW use burrows dug by California ground squirrel (*Otospermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*) and dens or holes dug by other fossorial species including American badger (*Taxidea taxus*), coyote (*Canis latrans*), and kit fox (*Vulpes macrotis*) (Ronan 2002). Additionally, BUOW frequently use natural rock cavities, debris piles, and artificial burrows (e.g., pipes and culverts) for nesting and roosting (Rosenberg et al. 1998; Smith and Belthoff 2001).

METHODS

A total of four focused BUOW surveys were conducted by qualified biologists Alec Goodman, Hannah Swarthout, Ian Hirschler, and Kelsey Woldt (RBC biologists) during the species' typical

breeding season (March 1 – August 31) following survey recommendations outlined in the CDFW BUOW Guidelines. RBC biologists have extensive experience performing BUOW surveys and are familiar with BUOW natural history and identification. Additional surveyor qualifications can be provided upon request.

All surveys were conducted during high visibility weather conditions that were suitable for BUOW detection. Surveys were not conducted during rain, dense fog, or when high winds were greater than 20 miles per hour.

The survey area consisted of the project site plus a surrounding 500-foot buffer (Figure 1). Surveys were conducted by walking transects spaced approximately 20 meters apart throughout all suitable BUOW habitat within the survey area. At the beginning of each transect, and approximately every 100 meters, RBC biologists used binoculars (10x42) to scan the survey area for BUOW, suitable burrows, and/or sign of BUOW. All burrows suitable for BUOW occupation, if observed, were examined for sign, including feathers, pellets, prey remains, whitewash, and/or decoration at or near burrow entrances. Burrows are considered active if a BUOW is observed at or near the entrance or if evidence of recent sign is present. All observations of BUOW, BUOW sign, and/or suitable burrows were recorded using the geographic information system (GIS) program ArcGIS Collector.

RESULTS

The survey area is dominated by creosote bush scrub and is surrounded by creosote bush scrub to the immediate north, south, and east of the project site and residential development to the west.

RBC biologists conducted four focused BUOW surveys between April 27, 2023 and July 13, 2023. Survey dates, times, surveyors, and weather conditions are presented in Table 1, below.

Table 1. Survey Conditions During Burrowing Owl Surveys for the Barstow International Gateway – Tortilla Substation Project

Survey	Date	Time (Start-End)	Temp (ºF) (Start-End)	Cloud Cover (%) (Start-End)	Wind Speed (MPH) (Start/End)	Precipitation (%) (Start-End)	Visibility (Low, Med, High) (Start-End)	Surveyors
1	4/27/2023	0700-1445	58-88	30-35	6-8/1-3	0-0	High-High	AG, KW
2	6/2/2023	0830-1315	65-82	0-0	8-12/3-5	0-0	High-High	AG, HS, KW
3	6/23/2023	0715-1115	58-73	0-0	5-9/2-6	0-0	High-High	HS, IH
4	7/13/2023	1330-1815	101-100	1-1	10-12/12-15	0-0	High-High	AG, HS, KW
Surveyors: AG= Alec Goodman, HS= Hannah Swarthout, IH= Ian Hirschler, KW= Kelsey Woldt								

No BUOW or sign were observed during any of the focused surveys. Ten burrows suitable for BUOW were observed; however, no sign was detected (Figure 1). All surveys were conducted during high visibility weather conditions suitable for BUOW detection; therefore, survey efforts conducted between 10:00 AM and two hours before sunset were not anticipated to yield false-negative results.

Common raven (*Corvus corax*) were observed within survey area and are known to predate on BUOW; however, no evidence of BUOW predation was observed. A comprehensive list of bird species observed during the focused BUOW surveys is provided in Attachment B.

CONCLUSIONS

All 2023 focused BUOW surveys conducted for the project were negative. No BUOW, active burrows, or BUOW sign were observed within the survey area. There is potential for BUOW to occupy the project site year-round during subsequent breeding and non-breeding (i.e., overwinter) seasons and, as a result, additional surveys shall be conducted prior to initiating any project-related disturbance activities.

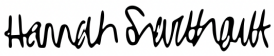
Please don't hesitate to call RBC at (760) 712-6663 if have any questions or concerns arise.

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

Sincerely,



Alec Goodman
Associate Biologist



Hannah Swarthout
Associate Biologist



Ian Hirschler
Senior Biologist



Kelsey Woldt
Associate Biologist

ATTACHMENTS

Figure 1. Survey Results

Attachment A. Site Photographs
Attachment B. Bird Species Observed
Attachment C. Field Notes

REFERENCES

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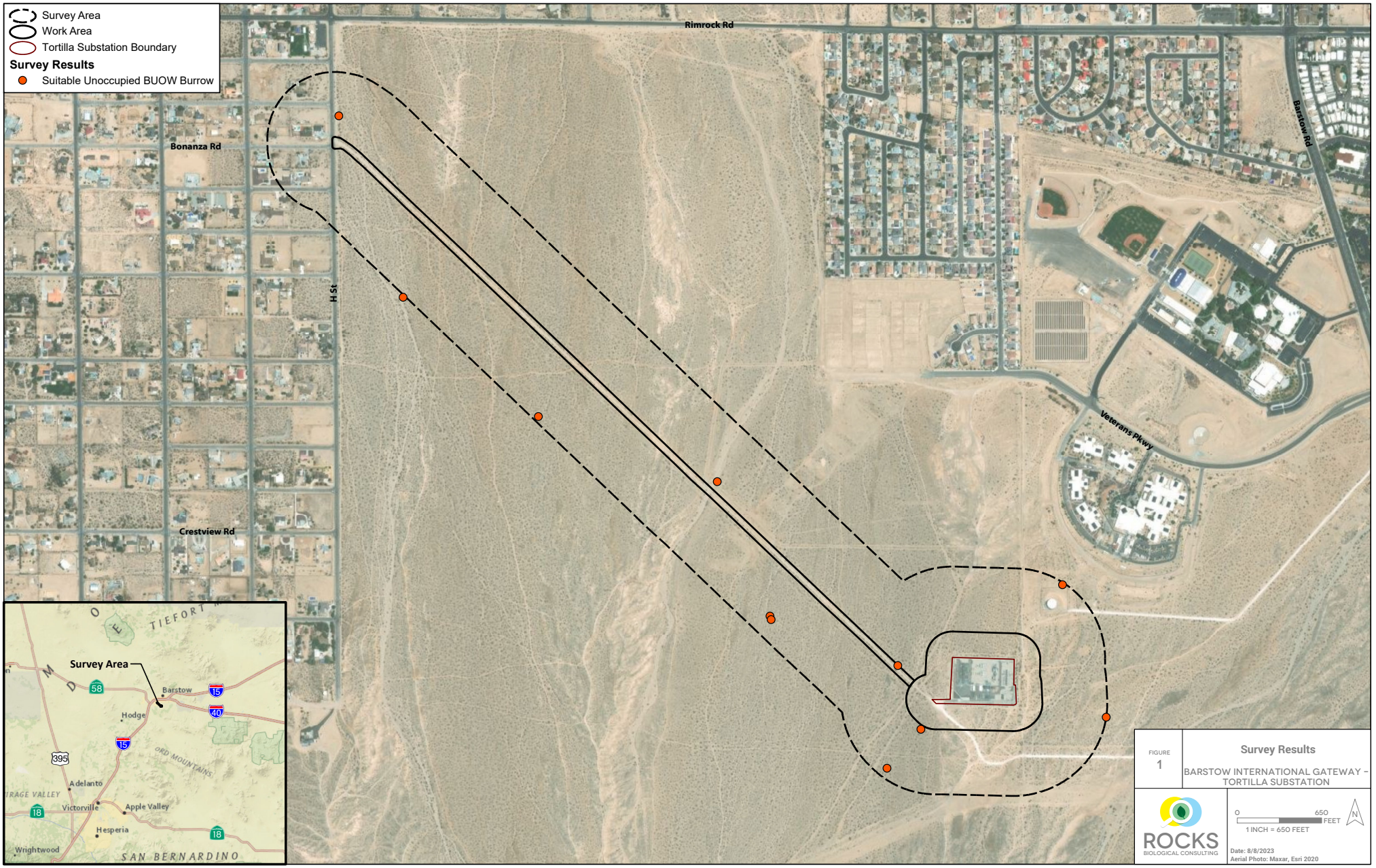
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Survey Area
Work Area
Tortilla Substation Boundary
Survey Results
Suitable Unoccupied BUOW Burrow
Rimrock Rd
Bonanza Rd
H St
Barstow Rd
Veterans Pkwy
Crestview Rd
Survey Area
Barstow
Hodge
Adelanto
Victorville
Apple Valley
Hesperia
Wrightwood
SAN BERNARDINO
TIEFORT
ORD MOUNTAINS
58
15
40
395
18
FIGURE 1
Survey Results
BARSTOW INTERNATIONAL GATEWAY – TORTILLA SUBSTATION
ROCKS BIOLOGICAL CONSULTING
0 650 FEET
1 INCH = 650 FEET
N
Date: 8/8/2023
Aerial Photo: Maxar, Esri 2020

Attachment A

Site Photographs



Photo 1. Northeast-facing view of the Tortilla Substation in the southeast portion of project site surrounded creosote bush scrub. April 27, 2023.



Photo 2. View of Bonanza Road leading to the Tortilla Substation facing southeast. June 2, 2023.



Photo 3. Representative view of the creosote bush scrub throughout the survey area, facing southeast. April 27, 2023.



Photo 4. View of the creosote bush scrub throughout the survey area, facing northwest. April 27, 2023.



Photo 5. View of the creosote bush scrub throughout the survey area, facing southeast. June 23, 2023.



Photo 6. Representative view of the suitable unoccupied BUOW burrows, largely within the project site buffer, facing southeast. June 2, 2023.

Attachment B

Bird Species Observed

Family	Common Name	Scientific Name
Alaudidae	horned lark	*Eremophila alpestris*
Columbidae	Eurasian collared-dove	*Streptopelia decaocto*
Columbidae	mourning dove	*Zenaida macroura*
Columbidae	rock pigeon*	*Columba livia*
Corvidae	American crow	*Corvus brachyrhynchos*
Corvidae	common raven	*Corvus corax*
Cuculidae	greater roadrunner	*Geococcyx californianus*
Falconidae	American kestrel	*Falco sparverius*
Fringillidae	house finch	*Haemorhous mexicanus*
Mimidae	northern mockingbird	*Mimus polyglottos*
Passerellidae	black-throated sparrow	*Amphispiza bilineata*
Passerellidae	white-crowned sparrow	*Zonotrichia leucophrys*
Passeridae	house sparrow*	*Passer domesticus*
Sturnidae	Eurasian starling*	*Sturnus vulgaris*
Tyrannidae	ash-throated flycatcher	*Myriarchus cinerascens*
Tyrannidae	Say's phoebe	*Sayornis saya*

*Introduced species
WL: CDFW Watch List Species

Attachment C
Field Notes

for Tilla substation BUOW | 4/27/23

Ab	0700	58	5-8	30
KW	1445	58	1-3	35

CoPA SAPH NoMO WCSP HOFI BTSP
EUST EUCD HOSP ROPE MODO HOLA

- small mammal burrows
- great basin whiptail, leopard lizard, side blotched
- Antelope ground squirrel, desert iguana
- DETD (1116) spotted by Ab
  - on the crawl. Adult > 160mm
  - healthy but thin
  - female. 34.867435 117.037642
  - green veg on beak
- NO BUOW or S.jh.

Tortilla Sub BUOW #2 6

AG	0830	63	8-12	0%
HS	1315	82	3-5	0
KW				

HOLA* CORA HOFI HOSP MOJO
ATFL RUFI

*15 hola, foraging, in flight age unk.
AGS, GBWHP, DREG, CROSCU
BTJR, DECO
DETO obs by me in burrow
@ 1126
multiple burrows, scat

TORTILLA SUB BUOY #2 6/2/23

START	830	8-12	65° 0.0°
END	1315	3-5	82° 0.0°

HOLA* [redacted] CORA HOFI HOSP
MODO ATFL ROPI

HOLA: n=15, foraging
DETO: n=1, in burrow
↳ multiple burrows + scat

OTHER VERTS:
ANTELOPE SQUIRREL
GREAT BASIN WHIPTAIL
MOJAVE GREEN RATTLER
DESERT IGUANA
DESERT TORTOISE* 11:26 ADULT HEALTHY
↳ in burrow
AUDUBON COTTONTAIL

64 6/2 TORTILLA BUOW #2
0500 - 1745 + 76 MILES

	TIME	TEMP	WIND	CC
START	0830	65	C-12	0%
END	1315	82	3-5	0%

WILDLIFE:
COBRA, HOLA, GR WHIP, GRASSHOPPERS, HOFI, ANTELOPE SQUIRREL, H'OSP, DESERT IGUANA, MOHAVE GREEN, MOBO, ATFL, BTJR, COTTONTAIL, ROAD RUNNER,

1126 OBSERVED LIVE DETO IN BURROW.

MULTIPLE DETO BURROWS

SCAT

Scale: 1 square = _____

6/23/23 TORTILLA SUB. BUOW #3
1H, HS

	TIME	TEMP	CC	WIND
START	0715	58	0%	5-9
END	1115	73	0%	2-6

COLD AMOR GRAD MUD WITH AMKE HOM HOFI BTJR UTA ASTI

ADDED 1 NEW UNACTIVE SUITABLE BURROW. NO BUOW, NO SIGN.

52

TORTILLA BUOW #4 7/13/23

1330 101° 10-12 10°

1815 100° 12-15 10°

CORA HOSP HOLA*

* SURVEY NEGATIVE FOR BUOW & SIGN.

OTHER VERTS:

DETO - adult, n=1, in burrow
healthy

BTJR
Antelope ground squirrel

Portfolio Burrow 7/13

NG	1330	101°	10-12	18
KW	1815	100°	12-15	11.

HS

CORA HOLA 1708P

BTJR, DETO, AGS

Live DT, found by me, in burrow

~~adult~~ adult, healthy, scat in burrow @ 1400

34, 864444 117.032572

1701: New DETO Burrow, active, definitely tortoise, tracks, photo 1701-1705

7/13 TORTILLA BUOW #L
1145 - 2330

	TIME	TEMP	WIND CL
START	1330	101°	10-12 1%
END	1815	100°	12-15 1%

WILDLIFE:
DETO*, COEA, ANTELOPE GS, BTJR, HOSP, PODI, HOLA,

*ALEC FOUND DETO IN BURROW W/ LOTS OF SCAT

ATTACHMENT I

BARSTOW INTERNATIONAL GATEWAY – EAST SOLAR FARM PROJECT PROTOCOL PRESENCE/ ABSENCE 2024 SURVEY REPORT FOR BURROWING OWL (*ATHENE CUNICULARIA*)

ROCKS
BIOLOGICAL CONSULTING





BARSTOW INTERNATIONAL GATEWAY – EAST SOLAR FARM PROJECT

PROTOCOL PRESENCE/ABSENCE 2024 SURVEY REPORT FOR BURROWING OWL (*Athene cunicularia*)

San Bernardino County, California

December 12, 2024

Prepared for:
Kimley-Horn and Associates
1100 W Town and Country Road, Suite 700
Orange, CA 92868
(619) 234-9411

Prepared by:
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4312 Rialto Street
San Diego, CA 92107
(619) 701-6798

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Figure 1. Survey Results

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Appendix A – Site Photographs
Appendix B – Bird Species Observed
Appendix C – California Natural Diversity Database Online Field Survey Form Reports
Appendix D – Surveyor Field Notes

1 SUMMARY

This report is a summary of the focused burrowing owl (*Athene cunicularia*; BUOW) surveys conducted by Rocks Biological Consulting (RBC) for the Barstow International Gateway (BIG project) – East Solar Farm (solar farm) in the City of Barstow, San Bernadino County, California. The solar farm site is located within the San Bernardino Biotic Resources Burrowing Owl Overlay Zone and based on the presence of suitable habitat, RBC conducted focused breeding season BUOW surveys between April 12, 2024, and July 10, 2024, in accordance with the California Department of Fish and Wildlife (CDFW) *Staff Report on Burrowing Owl Mitigation* (Guidelines; CDFW 2012).

No BUOW, active burrows, or BUOW sign were documented within the solar farm boundary and survey buffer during the focused breeding season BUOW surveys.

2 INTRODUCTION

2.1 PROJECT LOCATION & PROPOSED ACTIVITY

The BIG project is located in the City of Barstow and unincorporated San Bernardino County, California. The solar farm is located directly southeast of Main Street and northwest of Country Club Drive (Figure 1).

The BIG project will be an approximately 4,500-acre integrated rail facility west of Barstow, consisting of a rail yard and intermodal facility, a block swap yard, and a transload warehouse center. The development of an approximately 138.25-acre solar farm is also proposed as a component of the BIG project and will be used as a source of renewable energy for daily operations.

2.3 BURROWING OWL NATURAL HISTORY

The CDFW previously listed BUOW as a Species of Special Concern; however, on October 10, the California Fish and Game Commission voted to elevate BUOW's status as a candidate species for listing under the California Endangered Species Act. In California, suitable habitat for BUOW is generally characterized by short, sparse vegetation with few shrubs, level to gentle topography, and well-drained soils, such as naturally occurring grassland, shrub steppe, and desert habitats (Haug et al. 1993). In addition, BUOW may also occur in agricultural areas, ruderal grassy fields, vacant lots, and pastures containing suitable vegetation structure and useable burrows with foraging habitat in proximity (Gervais et al. 2008). Typically, BUOW use burrows dug by California ground squirrel (*Otospermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*) and dens or holes dug by other fossorial species including badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (e.g., San Joaquin kit fox [*Vulpes macrotis mutica*]) (Ronan 2002). Additionally, BUOW frequently use natural rock cavities, debris piles, culverts, and pipes for nesting and roosting (Rosenberg et al. 1998) and have been documented using artificial burrows for nesting and cover (Smith and Belthoff 2001). Occupancy of BUOW habitat is confirmed at a site when at least one BUOW, or its sign at or near a burrow entrance, is observed within the last three years (Rich 1984).

3 METHODS

RBC biologists Ryan Meszaros, Garrett Moss, Alec Goodman, Kelsey Woldt, and Hannah Swarthout and Nomad Biological biologist Audrey Layden conducted breeding season BUOW surveys for the solar farm. Collectively, the biologists have approximately 38 years of biological resource surveys and environmental compliance monitoring throughout California and have numerous years of experience surveying for BUOW and associated sign. Each biologist has experience performing BUOW surveys and is familiar with BUOW natural history and identification.

Four BUOW surveys were conducted during the typical BUOW breeding season (February 1 – August 31). In accordance with CDFW recommendations (CDFW 2012), three of the surveys occurred during the peak of breeding season (April 15 – July 15) at least three weeks apart. The survey area included the project site, as well as all suitable habitat within a 500-foot buffer (290.64 acres) per CDFW guidance (Figure 1).

During each survey, biologists walked through suitable BUOW habitat within the project site via straight-line transects spaced 10 to 30 meters (m) apart, adjusting for vegetation height and density, and periodically used binoculars to scan the survey area for BUOW, active burrows, and/or sign of BUOW. Due to lack of access, the 500-foot buffer was not accessed directly but scanned thoroughly using binoculars. No calls were used. All observed burrows were examined for sign, including feathers, pellets, whitewash, and prey remains. Burrows were considered active if a BUOW was observed at or near the entrance or if recent sign was present. Any BUOW, active burrows, and/or BUOW sign observed during surveys were mapped in the geographic information system (GIS) program ArcGIS Field Maps.

4 RESULTS

4.1 EXISTING CONDITIONS & HABITAT ASSESSMENT

Vegetation within the solar farm site is dominated by creosote bush (*Larrea tridentata*), white bur-sage (*Ambrosia dumosa*), four-wing saltbush (*Atriplex canescens*), spiny saltbush (*A. confertifolia*), Mediterranean schismus (*Schismus barbatus*), and Sahara mustard (*Brassica tournefortii*). The solar farm site was mapped primarily as *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance, developed and disturbed habitat, and disturbed *Atriplex polycarpa* Shrubland Alliance (Figure 1). A small area of *Ambrosia Dumosa* Shrubland Alliance is also present in the northern tip of the solar farm site. The topography of the solar farm site is generally flat with elevation ranging from 2,261 to 2,338 feet above mean sea level. Open space in the form of *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance surrounds the solar farm site to the north, south, east, and west.

Many burrows were present on site, likely dug up by domestic dogs from the residences in and around the solar farm site or by other canid species.

Photographs of the survey area are presented in Appendix A.

4.2 BURROWING OWL SURVEY RESULTS

RBC conducted four focused BUOW surveys during the breeding season between April 12, 2024, and July 10, 2024. Survey dates, times, and weather conditions are presented in Table 1, below.

Table 1. Burrowing Owl Survey Dates and Conditions

Survey Number	Date	Surveyor(s)	Time (Start- End)	Temp. (F) (Start- End)	Cloud Cover (%) (Start- End)	Wind Range (mph) (Start; End)	Precip. (Low, Med, High) (Start- End)	Visibility (Low, Med, High) (Start; End)
1	4/12/2024	AG, AL, HS, KW	0830-1445	60-79	20-10	0-3; 10-20	None; None	High; High
2	5/2/2024	AG, GM, HS, KW, RM	0700-1430	55-84	0-0	3-5; 3-5	None; None	High; High
3	6/6/2024	AG, GM, HS, KW	0630-1015	78-90	0-0	1-3; 1-3	None; None	High; High
4	7/10/2024	AG, GM, RM	0530-0900	78-92	0-0	1-3; 1-3	None; None	High; High
AG=Alec Goodman, Audrey Layden, GM=Garrett Moss, HS=Hannah Swarthout, KW=Kelsey Woldt, Ryan Meszaros								

No BUOW, active burrows, or BUOW sign were documented within the solar farm site nor survey buffer. The majority of the suitable BUOW burrows were present within a dirt road berm within the southern portion of the solar farm site. Suitable burrows were mapped and provided on Figure 1.

These negative survey results suggest that BUOW are not currently breeding on the solar farm site; however, due the presence of suitable habitat and burrows, BUOW could forage, seek refuge, and/or breed on the solar farm site in the future. Domestic dogs were observed within the survey area and could pose a potential threat to BUOW if the species occupies the solar farm site in the future.

A total of 22 bird species were observed during surveys as listed in Appendix B. Observations of special-status species observed during the surveys were submitted to the California Natural Diversity Database and are presented in Appendix C. Surveyor field notes are presented in Appendix D.

5 BURROWING OWL AVOIDANCE AND MINIMIZATION

Due to the presence of suitable habitat, pre-construction take avoidance surveys should be conducted in accordance with the CDFW guidelines at least 14 days and 24 hours prior to ground disturbing activities. If BUOW are documented during pre-construction surveys, CDFW shall be consulted to determine proper avoidance and minimization and/or mitigation measures.

6 CONCLUSIONS

No BUOW, active burrows, or BUOW sign were documented within the solar farm site nor the survey buffer during the BUOW breeding season surveys conducted between April 12, 2024, and July 10, 2024. The absence of BUOW during the peak breeding season suggests that the solar farm site is not currently used by BUOW for nesting; however, the site could be used for foraging and/or refuge outside of the breeding season. Due to the presence of suitable habitat, pre-construction take avoidance surveys would be required to avoid potential direct impacts on BUOW resulting from development of the solar farm.

7 REFERENCES

California Department of Fish and Wildlife (CDFW). (2012). *Staff Report on Burrowing Owl Mitigation*. Sacramento, CA.

Gervais, J. A., D. K. Rosenberg, & L. A. Comrack. (2008). *Burrowing owl* (Athene cunicularia). In California Bird Species of Special Concern: A ranked assessment of species, subspecies and distinct populations of birds of immediate conservation concern in California. Shuford, W. D. & T. Gardali, editors. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento, CA.

Haug, E. A., B. A. Millsap, & M. S. Martell. (1993). *Burrowing owl* (Speotyto cunicularia). In The Birds of North America. Poole, A. & F. Gill, editors. The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington, D.C.

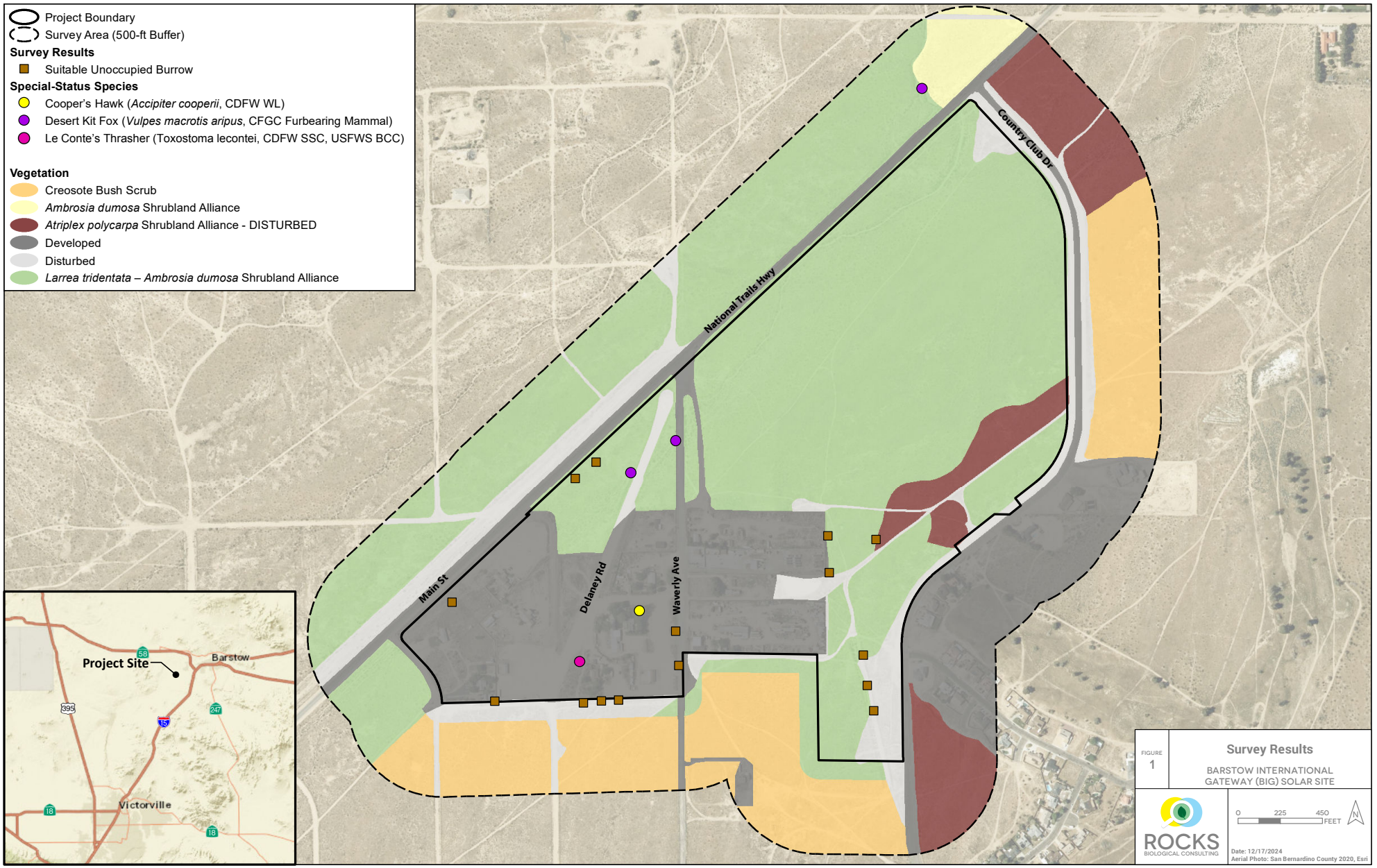
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Ronan, N. A. (2002). *Habitat selection, reproductive success, and site fidelity of burrowing owls in a grassland ecosystem*. Thesis, Oregon State University, Corvallis, OR.

Rosenberg, D. K., J. A. Gervais, H. Ober, & D. F. DeSante. (1998). *An adaptive management plan for the burrowing owl population at Naval Air Station Lemoore, California, USA*. Publication 95. Institute for Bird Populations, Pt. Reyes Station, CA.

San Bernardino County. (2012). *San Bernardino County Biotic Resources.* San Bernardino, CA.

Smith, B. W. & J. R. Belthoff. (2001). *Effects of nest dimensions on use of artificial burrow systems by burrowing owls*. The Journal of Wildlife Management, 65(2):318-326.


Project Boundary
Survey Area (500-ft Buffer)
Survey Results
Suitable Unoccupied Burrow
Special-Status Species
Cooper's Hawk (Accipiter cooperii, CDFW WL)
Desert Kit Fox (Vulpes macrotis aripus, CFGC Furbearing Mammal)
Le Conte's Thrasher (Toxostoma lecontei, CDFW SSC, USFWS BCC)
Vegetation
Creosote Bush Scrub
Ambrosia dumosa Shrubland Alliance
Atriplex polycarpa Shrubland Alliance - DISTURBED
Developed
Disturbed
Larrea tridentata – Ambrosia dumosa Shrubland Alliance
National Trails Hwy
Country Club Dr
Main St
Delaney Rd
Waverly Ave
Project Site
Barstow
Victorville
58
395
15
247
18
FIGURE 1
Survey Results
BARSTOW INTERNATIONAL GATEWAY (BIG) SOLAR SITE
ROCKS BIOLOGICAL CONSULTING
0 225 450 FEET
N
Date: 12/17/2024
Aerial Photo: San Bernardino County 2020, Esri

Appendix A

Site Photographs



Photo 1. Overview of the *Larrea tridentata – Ambrosia dumosa* shrubland alliance which occurs throughout the majority of the project site, facing east. June 6, 2024.



Photo 2. View of the *Larrea tridentata – Ambrosia dumosa* shrubland alliance from the center of the project site, facing west. June 6, 2024.



Photo 3. View of the *Larrea tridentata – Ambrosia dumosa* shrubland alliance from the center of the project site, facing south. June 6, 2024.



Photo 4. View of disturbed land in the southern portion of the project site, facing north. June 6, 2024.



Photo 5. View of the developed land in the southeastern portion of the project site, facing east. July 10, 2024.



Photo 6. Representative view of the suitable unoccupied burrows within the project site, facing northeast. July 10, 2024.

Appendix B

Bird Species Observed

Family	Common Name	Scientific Name
Accipitridae	Cooper's hawk (WL)	*Accipiter cooperii*
Accipitridae	Red-tailed hawk	*Buteo jamaicensis*
Alaudidae	Horned lark	*Eremophila alpestris*
Caprimulgidae	Lesser nighthawk	*Chordeiles acutipennis*
Charadriidae	Killdeer	*Charadrius vociferus*
Columbidae	Eurasian collared-dove*	*Streptopelia decaocto*
Columbidae	Mourning dove	*Zenaida macroura*
Corvidae	Common raven	*Corvus corax*
Fringillidae	House finch	*Haemorhous mexicanus*
Icteridae	Bullock's oriole	*Icterus bullockii*
Icteridae	Great-tailed grackle	*Quiscalus mexicanus*
Mimidae	Northern mockingbird	*Mimus polyglottos*
Mimidae	Le Conte's thrasher (BCC, SSC)	*Toxostoma lecontei*
Odontophoridae	California quail	*Callipepla californica*
Passerellidae	Bell's sparrow (WL)	*Artemisiospiza belli belli*
Passerellidae	White-crowned sparrow	*Zonotrichia leucophrys*
Passeridae	House sparrow*	*Passer domesticus*
Remizidae	Verdin	*Auriparus flaviceps*
Sturnidae	European starling*	*Sturnus vulgaris*
Trochilidae	Anna's hummingbird	*Calypte anna*
Tyrannidae	Say's phoebe	*Sayornis saya*
Tyrannidae	Western kingbird	*Tyrannus verticalis*

*Introduced species
BCC = U.S. Fish and Wildlife Service (USFWS) Bird of Conservation Concern
SSC = California Department of Fish and Wildlife (CDFW) Species of Special Concern
WL = CDFW Watch List

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code SWA24F0011
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Accipiter cooperii*

Common name: Cooper's hawk

Date of field work (mm-dd-yyyy): 06-06-2024

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Hannah Swarthout

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: hannah@rocksbio.com

Phone: (760) 712-6663

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in: iBird Pro mobile application

By another person:

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Protocol BUOW survey

Total number of individuals: 1

Collection? **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
1				

Age class comment:

Bird site use:

☐ Nesting ☐ Rookery ☐ Nesting colony ☐ Burrow site ☐ Lek

☐ Non-breeding (over-wintering) ☐ Communal roost ☑ Other

Site use description: Perched in large tree

What was the observed behavior? Perched

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description:

Slope: Land owner/manager:

Aspect:

Site condition + population viability:

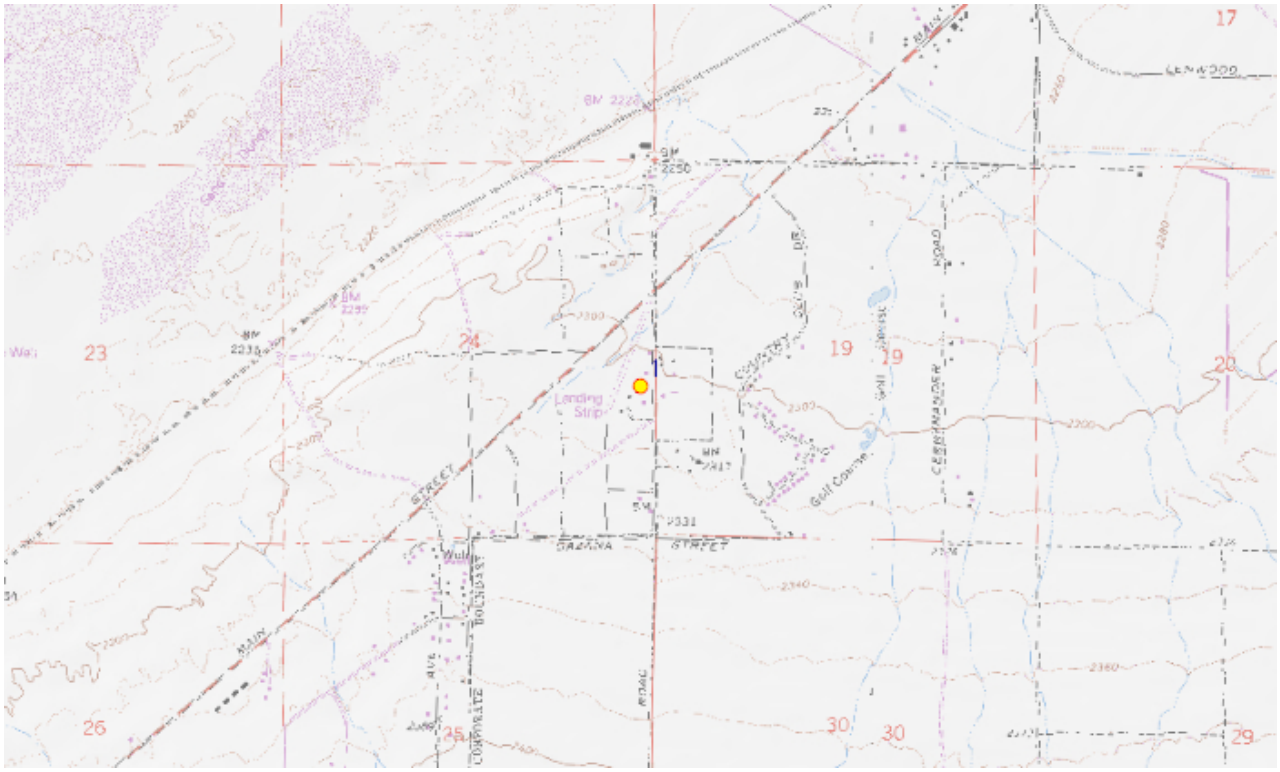
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2307	34.85524	-117.13681	487493	3856999	11
1	**Public Land Survey**	**Feature Comment**						
	S T09N R03W 24							

The mapped feature is accurate within: 5 m

Source of mapped feature: FieldMaps AGOL mobile application

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code MOS24F0005
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Toxostoma lecontei*

Common name: Le Conte's thrasher

Date of field work (mm-dd-yyyy): 06-06-2024

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Garrett Moss

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: garrett@rocksbio.com

Phone: (661) 742-5589

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in: iBird Pro application

By another person:

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Protocol BUOW survey

Total number of individuals: 1

Collection? **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Heard calling then seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
				1

Age class comment: Unsure age class

Bird site use:

☐ Nesting ☐ Rookery ☐ Nesting colony ☐ Burrow site ☐ Lek

☐ Non-breeding (over-wintering) ☐ Communal roost ☑ Other

Site use description: In shrub calling

What was the observed behavior? Perched in shrub

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description:

Slope: Land owner/manager:

Aspect:

Site condition + population viability:

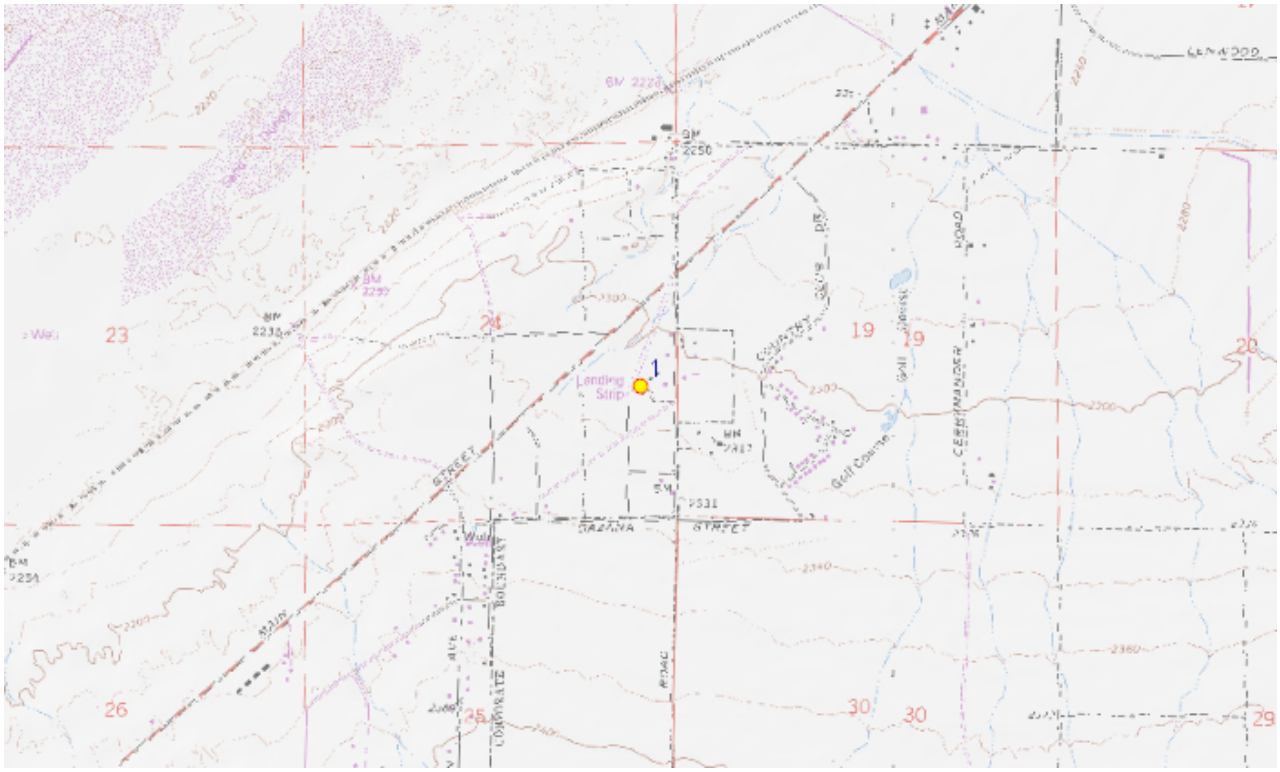
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2312	34.85454	-117.13782	487401	3856921	11
1	**Public Land Survey**	**Feature Comment**						
	S T09N R03W 24							

The mapped feature is accurate within: 5 m

Source of mapped feature: FieldMaps mobile application

Mapping notes:

Location/directions comments:

Attachment(s):

Big New Solar DETO & BUSW 4/k

	0800	60	calm 1-3	20%
	1445	79	10-20	15%

110mm x 110mm

EUCO	HOFI	CORA	AUAU	EUST	HUSP
ASCL	NOMO	WCSP	HOUA	SAPH	

SBLI DETO GBSWJ ZTLI

07300-

NO BUSW, NO DETO.

Burrows moved last - 11 determined

4/12/24 B16 DETD/BUOW
7:30AM - 7:00PM

	TIME	TEMP	WIND	CC
START	8:30AM	60°	CALM	20%
END	2:45PM	79°	10-20	10%

WILDLIFE:
EUST, CORA, ANHU, KILL, HOFI, MODO, HOSP, NOMO, GBWTHP, DESERT 16, HOLA, SAPH, GTGR, WCSP, SPINY, ZEBRA

Ale Ku Big Nw Solar 157 5/2

US Gm		Rare plant	Bwd #2	
RM	5	0700	55	3.5 OK
		1430	84	3.5 OK

Hosp Cust CURA WEVCI AWHU EWD
BUCK Hold SAPH NOMO WCSP

Quail carry in residents
Desert storm
Evaporation
Mentholated
Evaporation
Cupid's

Kit fox in culvert 34.857285
Panel update 117.136950

Remarks

SQAR

5/2 BIG RARE PLANT / BUOW

6:30AM - 4:30PM +0.5

	TIME	TEMP	WIND	CC
START	7:00AM	55	3-5	0%
END	2:30PM	84	3-5	0%

WILDLIFE:

BUOR, EUCD, RTHA,

5/2 TORTILLA

	TIME	TEMP	WIND	CC
START	2:30pm	84	3-5	0%
END	5:00PM	85	3-8	0%

BIG East Solar BUOW & Rare Plants

Date: 5/2/2024
Biologists: AG, HS, KW, GM,Ryan Meszaros

Start: 0700, 55F, 3-5 mph wind, 0% CC
End: 1430, 84F, 3-5 mph wind, 0% CC

Species Observed:
Reptiles: Uta stansburiana, Aspidoscelis tigris, Dipsosaurus dorsalis
Birds: EUST HOSP WEKI SAPH HOFI RTHA ANHU EUCD HOLA CORA WCSP NOMO BESP
Mammals: CAGS, DKF, desert cottontail

Notes:

- No BUOW or their sign were observed.
- No special-status plant species were observed.

5/2 B16 SOLAR RARE PLANT/BU

0700	55°	3-5	0.10
1430	84	3-5	0.10

WEKI	CORA	ELST	HOSP
ANHY	RTHA	EUCD	MODO
BUOR	HOLA*	HOFI	SAPH
NOMO	NCSP	BESP*	

Side-blotched lizard
Great basin whiptail
Desert Kit Fox

*BESP n=1 in LARTR1
*HOLA n=1 flyover

0630

AG HS	BIG	157	Slow	BUOW	6/6
KW GM	0700	78	1-3	0%	
	1015	92	1-3	0%	
HOLA*	COLA	EUCO	HOSP	GTLR	LCTG*
COLA*	SAPH	CMBO	HOSP	NOMO	

GB whip
Desramyum
CIAOS
DELO
Kit Fox* in and out
side blotches
: Points taken for all 8 8 SP.

No new BUOW known
No sign of animals down

6/4 BIG SOLAR BUOW #3

6:30AM - 3:15 PM

	TIME	TEMP	WIND	CC
START	7:00AM	78	1-3	0%
END	10:15AM	92	1-3	0%

WILDLIFE:

HOLA, GB WHIP, GRASSHOPPER, CORA, HOFI, EUCD, CAGS, GTGR, ~3-10

MULTIPLE FLOCKS OF HOLA FORAGING THROUGHOUT SITE THROUGHOUT SURVEY.

DESERT KIT FOX OBSERVED IN AND OUT OF CULVERT (ALEC DROPPED POINT)

HONEYBEE, SULPHER (ALL SPECIES) CABBAGE WHITE, NOMD, LGTH, COHA, HOSP, SAPH, CAQU, COTTONTAIL

COHA PERCHED ON TREE

SITE BLOTCHED,

BIG Focused BUOW Survey - East Solar (Pass #3)

Date: 6/6/2024
Biologists: AG, KW, HS, GM

Start: 0700, 78F, 1-3 mph wind, 0% CC
End: 1015, 92F, 1-3 mph wind, 0% CC

Species Observed:
Reptiles: Aspidoscelis tigris, Dipsosaurus dorsalis, Uta stansburiana
Birds: HOLA CORA EUCD HOSP GTGR LCTH COHA SAPH CAQU HOFI NOMO
Mammals: CAGS, desert cottontail, DKF

Survey Notes:

- No BUOW or their sign were observed.

SOLAR EAST BUOW 6/6/24

0630	78	1-3	0.10
1015	90	1-3	0.10

HOLA*	HOSP	HOFI	GTGR
EUCD	CORA	[redacted]	[redacted]
NOMO	LCTH*	COHA*	SAPH
CAQU			

- 6B Whiptail
- Desert iguana
- CAGS
- AUCO
- DKF

HOLA n=20, foraging seen + heard

LCTH n=1, heard calling in residential trees

COHA n=1 seen in trees over residential

ATTACHMENT J

DESERT TORTOISE PRESENCE/ ABSENCE SURVEY REPORT, BNSF ALTERNATIVES FEASIBILITY ASSESSMENT BARSTOW, CALIFORNIA, DECEMBER 2021



Desert Tortoise

Presence/ Absence Survey Report

BNSF Alternatives Feasibility Assessment

Barstow, California

Prepared for:

BNSF RAILWAY & ROCKS BIOLOGICAL CONSULTING

Prepared by:

EcoVita

December 2021

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Appendices

Appendix A: Datasheets
Appendix B: Survey Photos
Appendix C: Qualifications Form

1.0 Executive Summary

The BSNF Alternatives Feasibility Assessment is located on private land in Lenwood, California, approximately 4.5 miles west of downtown Barstow. A desert tortoise (*Gopherus agassizii*) presence/ absence survey was conducted over 3,200 acres (survey area). The surveys occurred October 16, 2021 through October 21, 2021 and followed the United States Fish and Wildlife Service's (USFWS) *Mojave Desert Tortoise Pre-project Survey Protocols* (USFWS 2019). The survey area can be viewed on the **Figure 1: Project Overview Map**. For survey results, see **Figure 2: Desert Tortoise Sign Map 1 of 3**, **Figure 3: Desert Tortoise Sign Map 2 of 3**, and **Figure 4: Desert Tortoise Sign Map 3 of 3**.

See **Appendix A: Datasheets**, **Appendix B: Survey Photos**, and **Appendix C: Qualifications Form** for survey documentation.

Below are the results of the October 2021 surveys:

- Zero live desert tortoise;
- Two Class 1 desert tortoise burrows;
- Two Class 2 desert tortoise burrow;
- Six Class 3 desert tortoise burrows;
- Six Class 4 - 5 possibly desert tortoise burrows;
- Two Class 5 carcasses;
- Tortoise density is estimated to be low.

2.0 Introduction

2.1 Project Location

The survey area is in Lenwood, California, approximately 4.5 miles west of downtown Barstow, on private land, in San Bernardino County (**Figure 1: Project Overview Map**). The survey area includes the following Sections, Townships and Ranges within the San Bernardino Meridian:

- Township 8 North, Range 3 West, Sections 4 and 8
- Township 9 North, Range 2 West, Sections 7, 8, 17, 18, and 19
- Township 9 North, Range 3 West, Sections 13, 22, 23, 24, 25, 26, 27, and 34

2.2 Purpose and Need

The purpose of this survey report is to provide biological information that will be used for impact assessments pursuant to the National Environmental Policy Act and California Environmental Quality Act. This document may be used for consultation with the U.S. Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act, and any necessary incidental take authorization from the California Department of Fish and Wildlife with respect to the California Endangered Species Act, and any other relevant agencies.

2.3 Survey Area

Following the USFWS "large project" desert tortoise survey protocols, the survey covers nearly 100 percent of the 3,200-acre project area. 60 acres were excluded from the survey area due to safety concerns. The unsurveyed acreage is adjacent to urban structures and trash piles and represents very low habitat quality. The survey area can be viewed on the **Figure 1: Project Overview Map**.

2.4 Desert Tortoise Conservation Areas

The 1994 Desert Tortoise (Mojave Population) Recovery Plan identified proposed Desert Wildlife Management Areas where recovery efforts for the desert tortoise would be focused but did not contain any legal boundaries. The USFWS formalized the general Desert Wildlife Management Areas from the 1994 Recovery Plan and administers them as Critical Habitat (USFWS 2011). Critical Habitat that falls within Bureau of Land Management (BLM) jurisdiction are administered as Areas of Critical Environmental Concern (ACEC). Designated critical habitat and ACEC boundaries generally, but not always, coincide along legal boundaries (USFWS 2011).

3.0 Previous Surveys

A desert tortoise survey was conducted by Sundance Biology in 2007 within an approximately 1,235 acre survey area that overlaps with some portions of the 2021 survey area. Five live desert tortoises, 53 burrows, and five carcasses were observed during the 2007 survey effort (Sundance Biology 2007).

4.0 Methods

4.1 Personnel

The desert tortoise surveys were led by Adam Hamburg and Gina Robinson of Eco Vita Environmental Compliance. Mr. Hamburg and Ms. Robinson possess 14 and 12 years of desert tortoise field experience, respectively and have been authorized by the USFWS on numerous projects to conduct desert tortoise surveys. A USFWS Desert Tortoise Qualifications Form for the lead biologist can be found in **Appendix *C*: Qualifications Form**.

4.2 Survey Methodology

The desert tortoise presence/ absence surveys were conducted October 16, 2021 through October 21, 2021. The surveys followed guidelines established in the Mojave Desert Tortoise Pre-Project Survey Protocols (USFWS 2019). Belt-transects were spaced 10-meters apart and covered 100 percent of accessible terrain and suitable habitat throughout the entire project area. Garmin Global Positioning System units were used to guide the surveys. Fulcrum digital datasheets and photographs were used to record observations of live tortoises and tortoise sign. Tortoise sign included burrows, scat, tracks, and carcasses. All observed burrows were examined using flashlights.

Observations made during the 2007 desert tortoise survey were provided prior to the start of the 2021 surveys and were used to closely investigate the sites of old observations.

5.0 Survey Results

5.1 Landcover

The Classification and Assessment with LANDSAT of Visible Ecological Groupings (CALVEG) classification system and field survey reconnaissance reveal that survey area includes desert scrub, alkali desert scrub, agriculture and urban landscapes within the survey area (Data basin 2021). The Manual of California Vegetation alliances observed within the survey area includes *Ephedra californica – Ephedra trifurca* Shrubland Alliance, *Brassica tournefortii – Malcolmia Africana* Provisional Herbaceous Semi-natural Alliance, and *Atriplex polycarpa* Shrubland Alliance (CNPS 2021).

Invasive plant species were pervasive throughout the survey area and include redstem filaree (*Erodium cicutarium*), Sahara mustard (*Brassica tournefortii*), tumble mustard (*Sisymbrium altissimum*), cheatgrass (*Bromus tectorum*), foxtail brome (*Bromus madritensis*), tamarisk (*Tamarix* sp.) and Mediterranean grass (*Schismus barbatus*).

5.2 Desert Tortoise Conservation Areas

The survey area is not within desert tortoise Critical Habitat, BLM designated ACEC, or Desert Wildlife Management Areas. The survey area is approximately 2.1 miles south and 4.8 miles west of desert tortoise USFWS Critical Habitat and BLM ACEC.

5.3 Desert Tortoise Presence/ Absence Survey

For the location of observations made during the survey, see **Figure 2: Desert Tortoise Sign Map 1 of 3**, **Figure 3: Desert Tortoise Sign Map 2 of 3**, and **Figure 4: Desert Tortoise Sign Map 3 of 3**. See **Appendix A: Datasheets** and **Appendix B: Survey Photos** for survey documentation.

Below are the observations of the October 2021 surveys:

- Zero live desert tortoise;
- Two Class 1 desert tortoise burrows;
- Two Class 2 desert tortoise burrow;
- Six Class 3 desert tortoise burrows;
- Six Class 4 - 5 possibly desert tortoise burrows;
- Two Class 5 carcasses;

5.4 Desert Tortoise Estimated Within Survey Area

Utilizing the statistical model from the USFWS Mojave Desert Tortoise Pre-project Survey Protocols (USFWS 2019), it is estimated that there are zero desert tortoises within the survey area. However, indirect desert tortoise observations make an estimate of zero unlikely. This is examined in greater detail in **Section 6.0 Discussion**.

6.0 Discussion

Despite the USFWS statistical model projecting zero tortoises within the survey area, it is likely that desert tortoises are present in low densities. Two Class 1 and two Class 2 burrows were observed during the

surveys, thus demonstrating signs of recent desert tortoise presence. There are several factors that may account for the lack of direct desert tortoise observation.

Much of the southwest is experiencing severe drought conditions. The previous winter rain (October 2020 to March 2021) on which the Western Mojave population of desert tortoise primarily rely, only accumulated 15.24 millimeters (mm, 0.6 inches). Average annual precipitation in Barstow is 134.6 mm (5.3 inches). At the time of the October 2021 surveys, Barstow had received 14.9 percent of its average rainfall for that date. Drought conditions provide little forage opportunities for desert tortoise and few incentives to remain above ground and active. Instead, tortoises have an incentive to conserve resources by remaining below ground and inactive.

The fall surveys were conducted in mid-October towards the end of the desert tortoise active season. Nighttime temperatures during the surveys were in the mid 30's to low 40's degrees Fahrenheit (1.5 to 7 degrees Celsius). These temperatures are below the 52 degrees Fahrenheit (11.1 Celsius) low average for the month of October (U.S. Climate Data 2021) and likely encouraged the desert tortoises to remain deeper within their burrows where they are not observable.

Burrows and tortoises found in the 2007 survey were not observed in the 2021 surveys despite having access to these locations during the new survey. The 2021 survey observations reveal that these burrows and tortoises have been buried and/ or displaced by the eastern encroachment of an expansive sand dune within the survey area. ***Photo 1*** and ***Photo 2*** below were taken during the 2021 surveys at known 2007 survey burrow locations. The photos show a deep and expansive loose sand field. Aerial imagery from 2006, 2009, and 2014 (***Photo 3***, ***Photo 4***, and ***Photo 5***) clearly show a loss of vegetation and an encroachment of loose sand. An increase in urban expansion, agricultural activities, the pervasiveness of invasive plant species, and the expansion of the sand dunes, make it likely that the tortoise population has declined since the 2007 surveys.

Two Class 1 burrows and one Class 2 burrow were found within two meters of each other. Another Class 2 burrow was located within 118 meters from the above-mentioned active burrow cluster. The proximity of these burrows makes it possible that they are utilized by the same desert tortoise. Adult tortoises may use more than 3.9 square kilometers (1.5 square miles) of habitat and with occasional excursions of more than 11 kilometers (7 miles) at a time (Berry 1986).

At the time of the survey, the deep Class 1 burrow was likely occupied by a desert tortoise due to the observation of very fresh tracks and scat. These observations make it probable that at least one or two desert tortoises reside within the survey area. If we use one Class 1 burrow as a proxy for a tortoise observation, the USFWS statistical model projects an estimated 2.26 desert tortoises within the survey area. Tortoise density within the survey is likely to be very low.

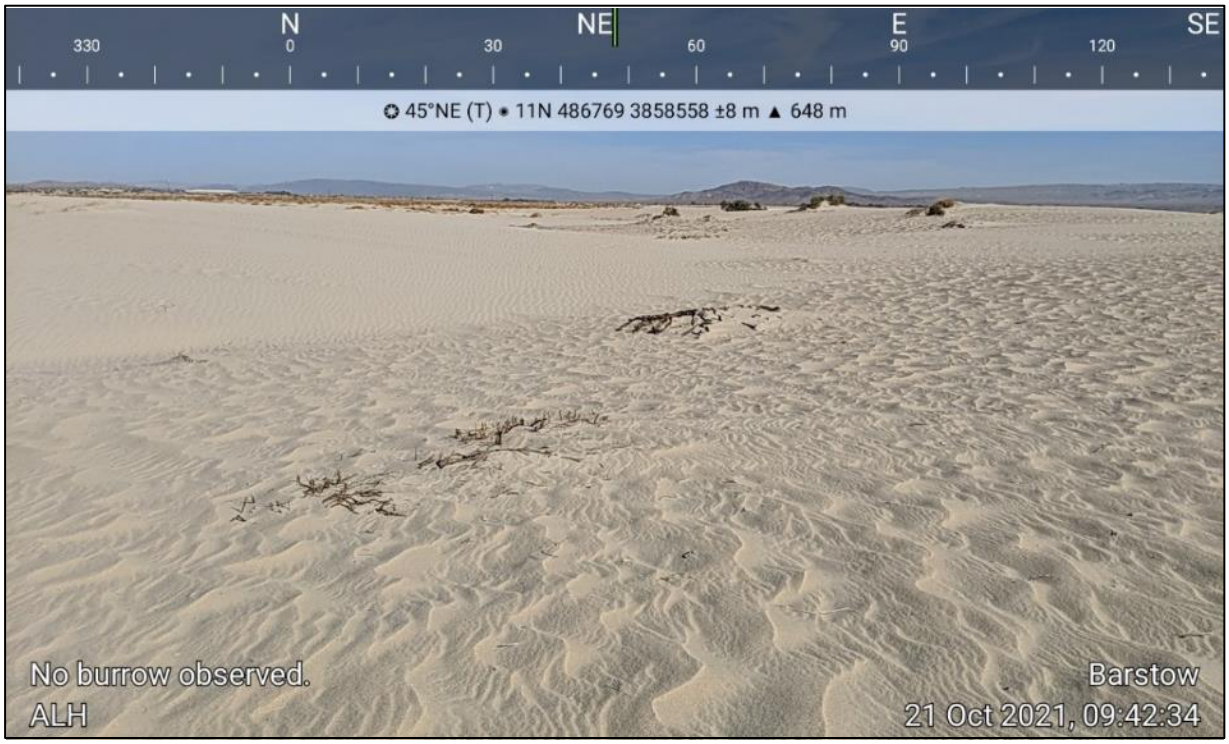


Photo 1: Known location of observed burrow from 2007 survey with no burrow observed in 2021.



Photo 2: Known location of observed burrow from 2007 survey with no burrow observed in 2021.

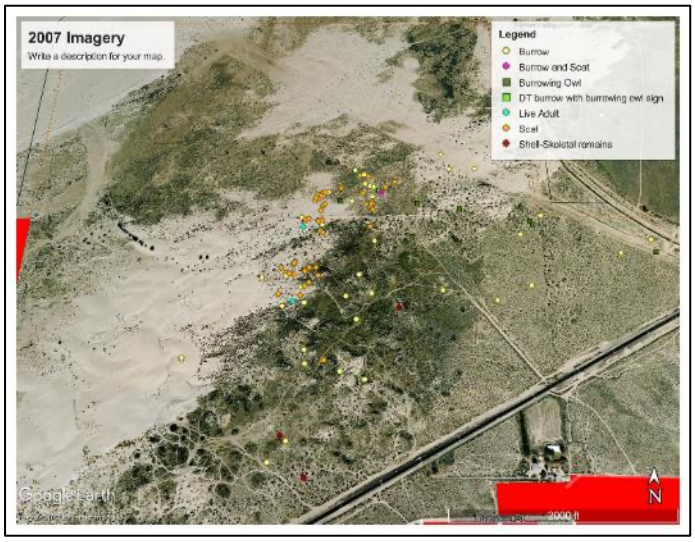


Photo 3: 2007 Imagery with 2007 Survey Observations.

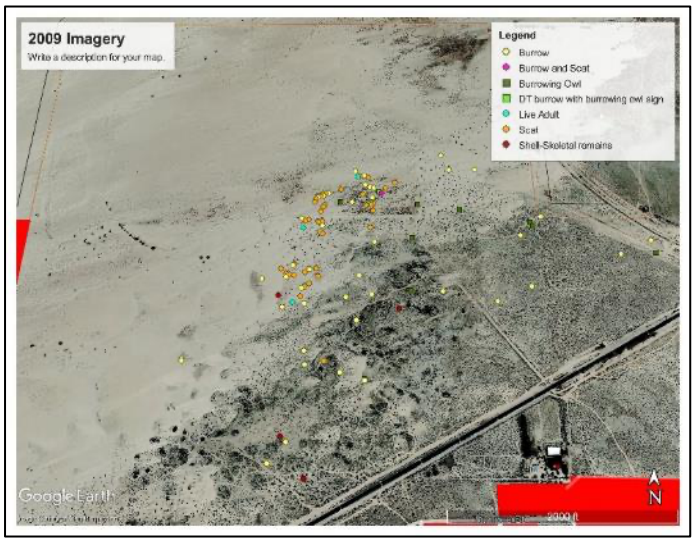


Photo 4: 2009 Imagery with 2007 Survey Observations.

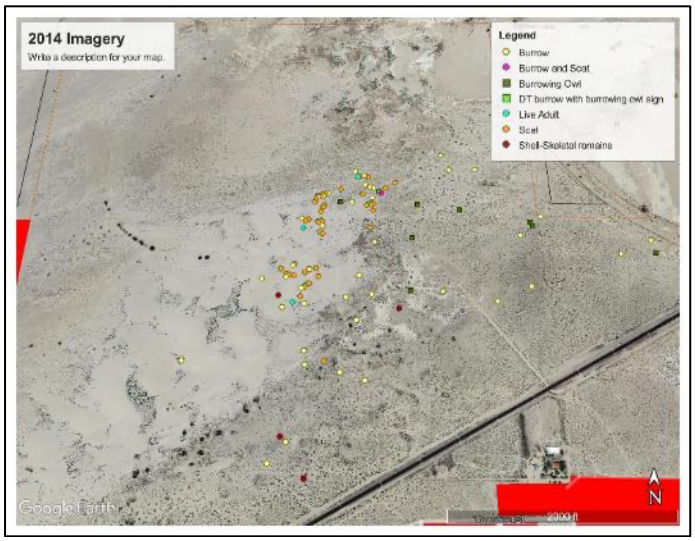


Photo 5: 2014 Imagery with 2007 Survey Observations.

7.0 References

Berry, K.H. 1986. Desert tortoise (Gopherus agassizii) relocation: Implications of social behavior and movements. Herpetologica 42:113-125. United States Fish and Wildlife Service (USFWS). 1994. Desert Tortoise (Mojave Population) Recovery Plan. Region 1, Portland, Oregon.

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U.S. Climate Data. 2021. Accessed November 2021. https://www.usclimatedata.com/climate/barstow/california/united-states/usca0069. US Climate Data 2021, version 3.0.

Figures

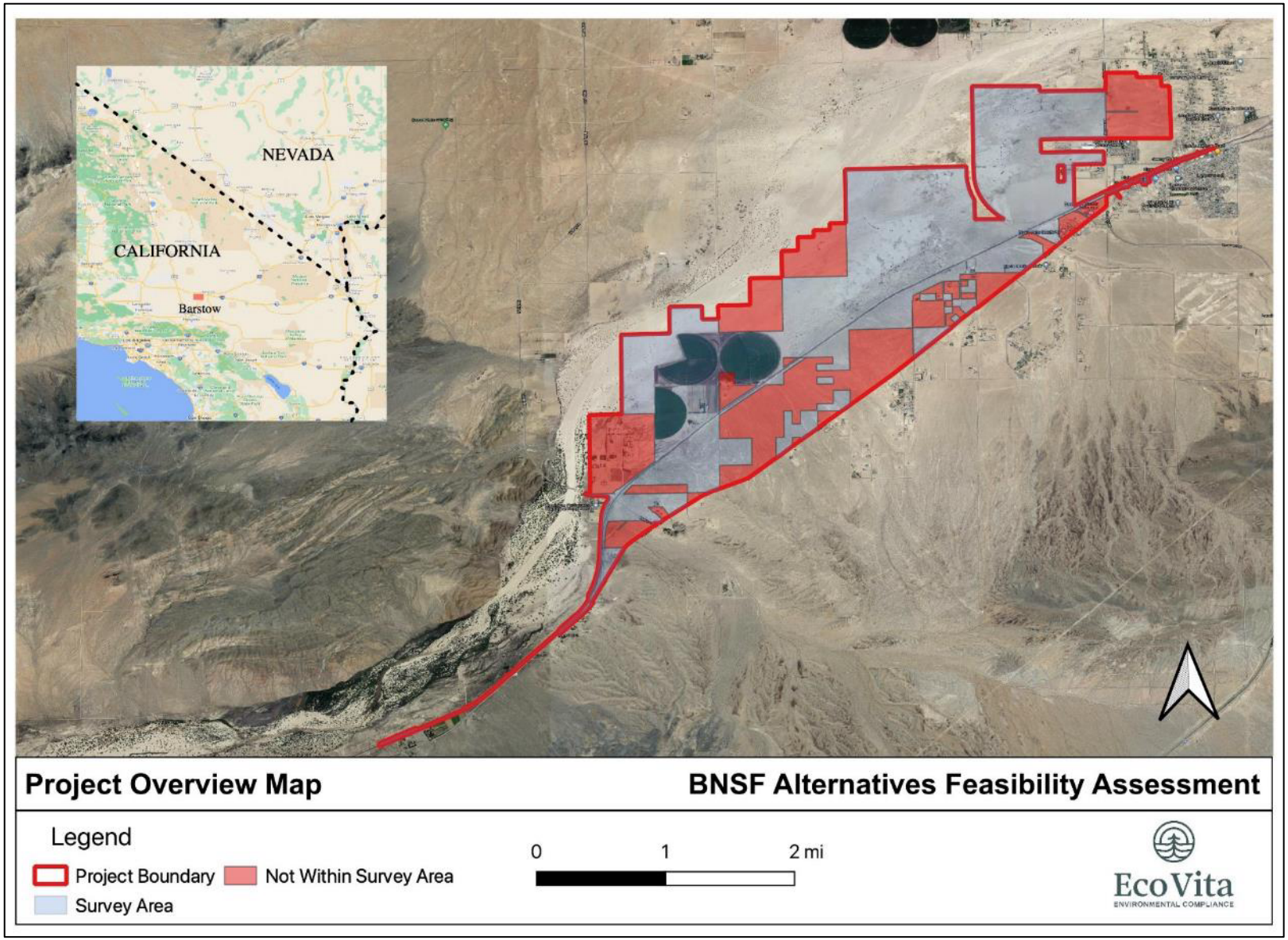


Figure 1: Project Overview Map

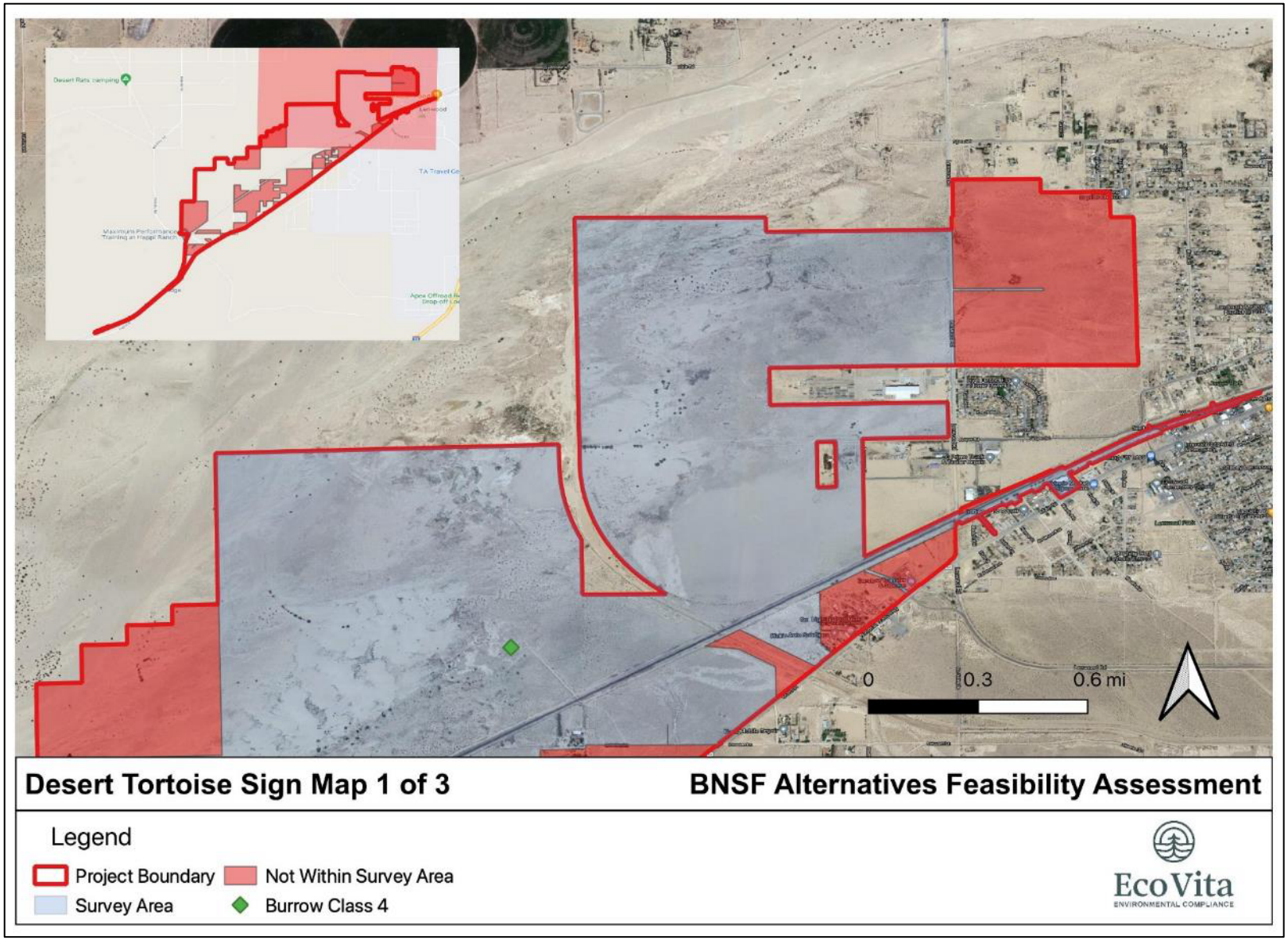


Figure 2: Desert Tortoise Sign Map 1 of 3

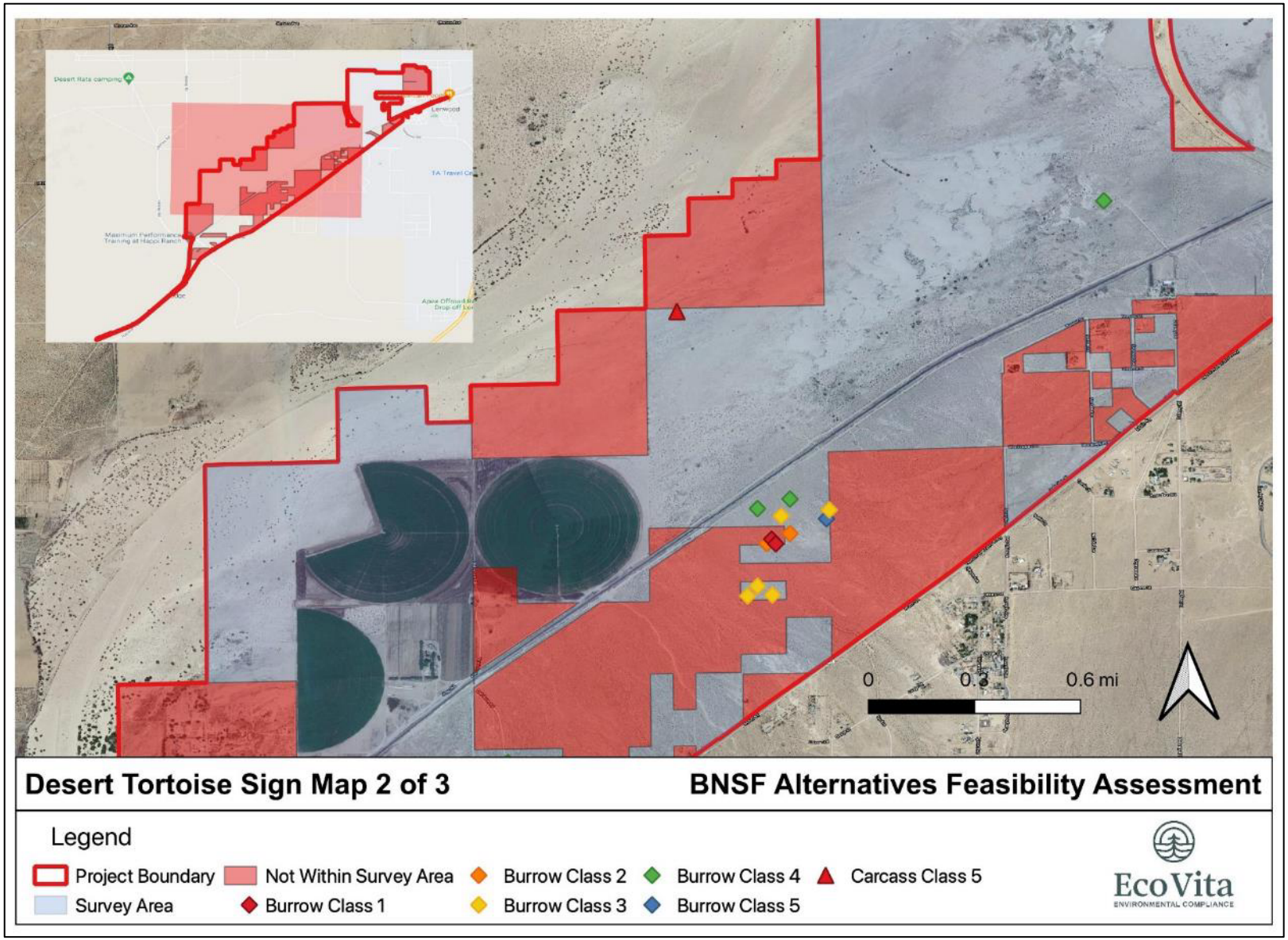


Figure 3: Desert Tortoise Sign Map 2 of 3

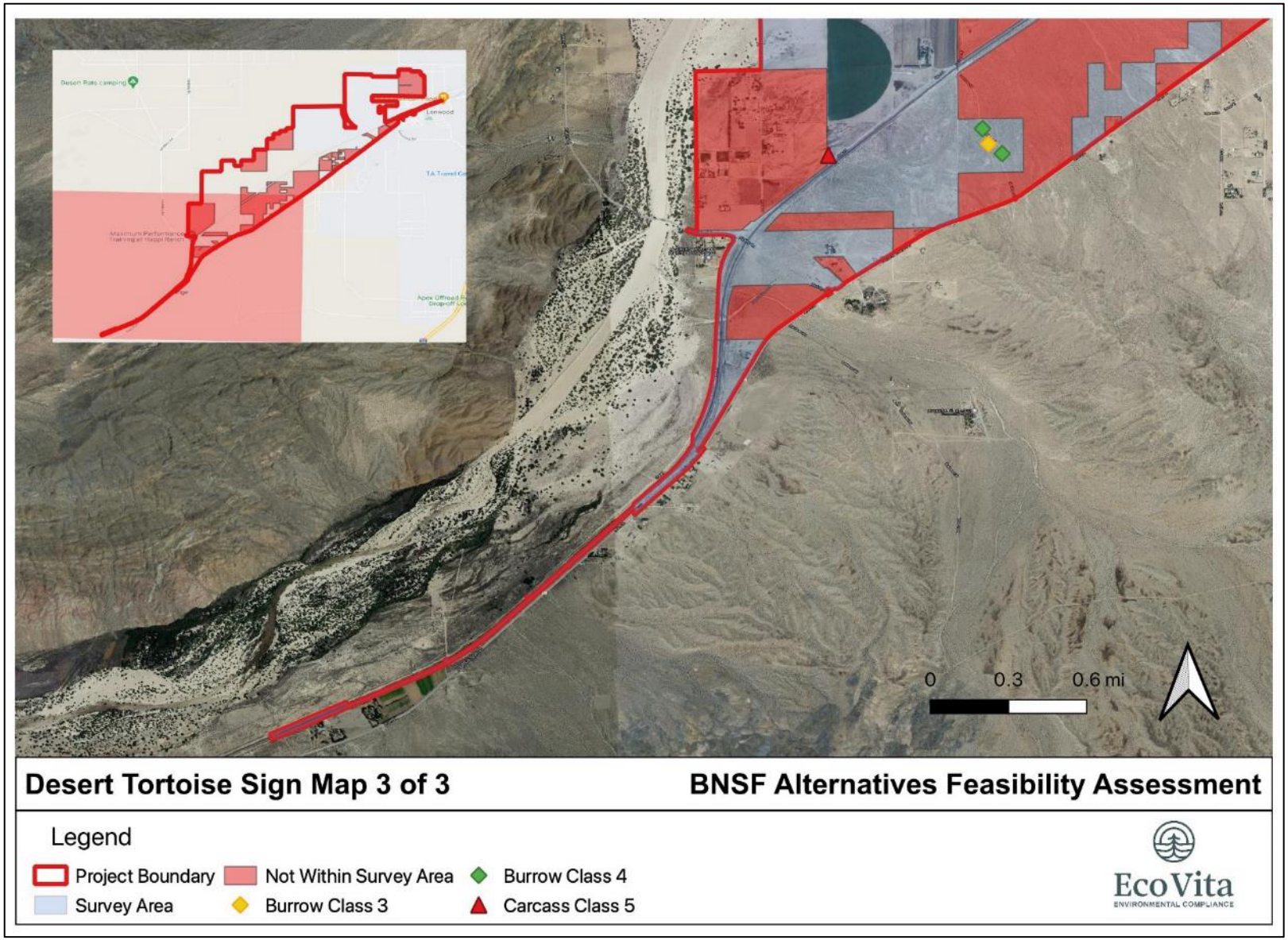


Figure 4: Desert Tortoise Sign Map 3 of 3

Appendix A: *Datasheets*

Desert Tortoise Survey Start/ End of Day Data Sheet

date	start time	start temp (c)	start location (utm nad83)	start elevation (m)	survey biologists	site description	sampling type	end time	end temp (c)	end location (utm nad 83)	end elevation (m)
10/16/2021	7:31	5.6	11S 489212 3860680	688	Adam Hamburg,Alec Hamburg,Christian Black,Gina Robinson,Tyler Meester	North east corner	100% Coverage	14:57	26.4	11S489218 3860290	689
10/17/2021	7:21	7.7	11S 489211 3860280	675	Adam Hamburg, Alec Hamburg,Christian Black,Gina Robinson,Tyler Meester	Northwest	100% Coverage	14:49	24.1	11S 489195 3859770	675
10/18/2021	7:40	5.4	11S 489186 3859760	675	Adam Hamburg,Alec Hamburg,Cassie Collins,Christian Black,Sarah Donahue,Tyler Meester	Northwest boundary. East west transects	100% Coverage	14:09	15	11S 488813 3859050	681
10/19/2021	7:20	2.5	11S 488815 3859040	683	Adam Hamburg,Alec Hamburg,Cassie Collins,Gina Robinson,Tyler Meester,Christian Black	Northeast	100% Coverage	15:38	20	11S 487780 3858392	676
10/20/2021	7:29	4	11S 487770 3858378	680	Adam Hamburg,Alec Hamburg,Cassie Collins,Christian Black,Gina Robinson,Sarah Donahue,Tyler Meester	Southeast corner	100% Coverage	15:32	22	11S 486940 3857907	681
10/21/2021	7:41	7	11S 486930 3857904	682	Adam Hamburg,Alec Hamburg,Cassie Collins,Christian Black,Gina Robinson,Sarah Donahue,Tyler Meester	South east	100% Coverage	14:02	26	486380 3857584	686
10/22/2021	7:44	10	11S 486370 3857564	686	Adam Hamburg,Alec Hamburg,Cassie Collins,Christian Black,Gina Robinson,Sarah Donahue,Tyler Meester	Middle section	100% Coverage	14:49	25	486060 3857319	677
10/23/2021	7:45	16	11S 486050 3857296	686	Adam Hamburg,Alec Hamburg,Cassie Collins,Christian Black,Gina Robinson,Sarah Donahue,Tyler Meester	Center	100% Coverage	12:42	21	485140 3856731	685

Desert Tortoise Survey Start/ End of Day Data Sheet

date	start time	start temp (c)	start location (utm nad83)	start elevation (m)	survey biologists	site description	sampling type	end time	end temp (c)	end location (utm nad 83)	end elevation (m)
10/24/2021	7:56	12.8	11S 485040 3855527	712	Adam Hamburg,Alec Hamburg,Cassie Collins,Christian Black,Gina Robinson,Sarah Donahue,Tyler Meester, Hannah Swarthout	Middle South	100% Coverage	14:18	27	11S 485408 3856760	688
10/25/2021	8:18	12	11S 485429 3846770	675	Adam Hamburg,Alec Hamburg,Cassie Collins,Christian Black,Gina Robinson,Kyle Queener,Tyler Meester, Hannah Swarthout, Ian Hirschler	Middle of site near rail road tracks	100% Coverage	13:29	19	11S 483360 3854980	693
10/26/2021	7:39	5	11S 483544 3855274	688	Tyler Meester,Gina Robinson,Christian Black,Cassie Collins,Alec Hamburg, Adam Hamburg, Ian Hirschler	Northwest corner. North of railroad tracks	100% Coverage	15:36	15	11S 484050 3856349	678

Desert Tortoise Sign Datasheet

tortoise sign	sign class	comments	date	time	latitude	longitude	burrowing owl sign	photo number
Burrow	Class 4	Multi use burrow likely made by tortoise long ago. Certainly being used by rabbit currently. No sign of recent activity.	10/20/2021	10:58	34.8687326	-117.1396057	no	1
Carcass	Class 5		10/23/2021	11:30	34.86359509	-117.1609603	no	2
Burrow	Class 2	Scat	10/24/2021	13:35	34.851962	-117.1566869	no	3
Burrow	Class 3		10/24/2021	12:16	34.84936321	-117.1576855	yes	4
Burrow	Class 3		10/24/2021	12:26	34.84939592	-117.1564516	yes	5
Burrow	Class 3		10/24/2021	12:40	34.84984894	-117.157181	yes	6
Burrow	Class 1	Scat and tracks	10/24/2021	13:37	34.85194962	-117.156691	no	7
Burrow	Class 1	Scat	10/24/2021	13:38	34.85195022	-117.1566711	no	8
Burrow	Class 2		10/24/2021	13:59	34.85243967	-117.1555247	no	9
Burrow	Class 5	Filled in	10/25/2021	8:40	34.8531437	-117.1536939	no	10
Burrow	Class 3		10/25/2021	8:45	34.8535803	-117.1535407	no	11
Burrow	Class 4	Canid complex.	10/25/2021	8:55	34.8537085	-117.1571163	no	12
Burrow	Class 4	Canid complex multi use	10/25/2021	9:04	34.8541564	-117.1554931	no	13
Burrow	Class 3		10/25/2021	8:28	34.85331547	-117.1559446	no	14
Carcass	Class 5		10/26/2021	7:45	34.83966716	-117.1802153	no	15, 16
Burrow	Class 4		10/26/2021	7:35	34.8412773	-117.1697725	no	17
Burrow	Class 3		10/26/2021	7:39	34.840243	-117.1693815	yes	18
Burrow	Class 4		10/26/2021	7:44	34.8395677	-117.1684729	no	19, 20

Appendix B: *Survey Photos*



Photograph 1: Class 4 burrow.



Photograph 2: Class 5 tortoise carcass.



Photograph 3: Class 2 burrow with tortoise scat.



Photograph 4: Class 3 burrow.



Photograph 5: Class 3 burrow.



Photograph 6: Class 3 burrow.



Photograph 7: Class 1 burrow with scat and tracks.



Photograph 8: Class 1 burrow.



Photograph 9: Class 2 burrow.



Photograph 10: Class 5 burrow.



Photograph 11: Class 3 burrow.



Photograph 12: Class 4 burrow, multi-species use canid complex.



Photograph 13: Class 4 burrow, multi-species use canid complex.



Photograph 14: Class 3 burrow.



Photograph 15: Class 5 tortoise carcass.



Photograph 16: Class 5 tortoise carcass.



Photograph 17: Class 4 burrow.



Photograph 18: Class 3 burrow.



Photograph 19: Class 4 burrow.



Photograph 20: Class 4 burrow.

Appendix C: *Qualifications Form*

GENERAL DESERT TORTOISE QUALIFICATIONS STATEMENT

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e. Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Adam L. Hamburg
Address	596 California Ave, Apt A
City, State, Zip Code	Reno, NV 89509
Phone Number(s)	(702) 556-2500
Email Address	ahamburg@EcoVitaEnv.com

2. Date:

3. Areas in which authorization is requested (check all that apply):

□ San Bernardino, Kern, and Los Angeles Counties, California (Ventura office)
□ Riverside and Imperial Counties, California (Carlsbad office)
□ Nevada □ Utah □ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP Permit No.		
Project Name		
Federal Agency		
Proponent or Contractor		

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities
Desert Tortoise	05/31/2016	USFWS authorization required for each project	Sub-carapacial venipuncture, epicoelomic fluid administration, blood sample processing.

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
Northern Arizona University	May 2004 to December 2006	Environmental Sciences, Management	Bachelor of Science

7. Desert Tortoise Training:

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes- Desert Tortoise Handling Workshop	November 3-4, 2007	Ridgecrest, California	Desert Tortoise Council
2. USFWS Desert Tortoise Health Assessments for Translocation Projects Training Workshop	April 3-5, 2012	Desert Tortoise Conservation Center, Las Vegas, Nevada	Kimberleigh Field
3. USFWS Supervised Practice of Health Assessments for Desert Tortoises	May 24-25, 2016	Large-Scale Translocation Site, Southern Nevada	Roy C. Averill-Murray and Kimberleigh Field

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary.

Experience by project and activity:

Project Name, Job Title, Dates of Employment	Project Contact name, phone no., & Email address		Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm / ≥ 100mm	Relocate DTs (No.)	Excavate, and relocate DT nests (No.)
1. Southern Bighorn South and North Health Study, 2,800-acres, Moapa, NV. Health Assessor. 5/12 – 5/20/2021.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com						
2. Mother Lode Exploration Project Presence/ Absence Surveys, 4703-acres, Beatty, NV. Project lead. 5/1 – 5/25/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com						
3. Southern Bighorn South and North Pre-Clearance Surveys, 2,800-acres, Moapa, NV. Desert tortoise Biologist. 4/13 – 4/16/2021.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com		110/11		0/7		
4. Undisclosed Mineral Exploration Project Presence/ Absence Survey, 640-acres, Newberry Springs, CA. Project Lead. 4/13-4/16/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com						
5. Copper Rays Solar Presence/ Absence Surveys, 6,000-acres, Pahrump, NV. Desert Tortoise Biologist. 4/1/2021 - 4/8/2021	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com				0/7		
6. North Bullfrog Exploration Project Modification #2, Presence/ Absence Surveys, 20-acres, Beatty, NV. Project lead. 3/6/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com						

7. Eagle Shadow Mountain Health Assessment for Translocation, 3000-acres. Moapa River Indian Reservation, Clark County, NV. Lead Health Assessor. 04/01/20 – 04/28/20 and 08/01/20 – 10/15/20.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com					39	
8. Undisclosed Mineral Exploration Project Presence/ Absence Survey, 35-miles. Beatty, NV. Project Lead Biologist. 06/16/2020 – 06/18/20.	McGinley and Associates Gareth Blakemore (775) 432-4792 gblakemore@mcgin.com						
9. Eagle Shadow Mountain Health Assessment for Translocation, 3000-acres. Moapa River Indian Reservation, Clark County, NV. Desert Tortoise Biologist. 09/16/19 – 11/06/19.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com				2/16 (Found while tracking or moving between health exams, not line surveying)		
10. Eagle Shadow Mountain Presence/ Absence Survey, 3,000-acres. Moapa River Indian Reservation, Clark County, NV. Desert Tortoise Biologist. 9/24/18 – 10/3/18.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com		120/10		0/5		
11. Techren Solar 1 Clearance Survey, 2,300-acres. Boulder City, NV. Desert Tortoise Biologist. 5/1/18 – 5/5/18.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com		50/5				
12. Mesquite Gold Mine Clearance Surveys, 1,800-acres. Brawley, CA. Desert Tortoise Biologist. 5/16/17 – 5/23/17.	Hernandez Environmental Services Juan Hernandez (951) 579-1657 juan@hernandezenvironmental.com		130/13	2			

13. Eldorado, Lugo, Mohave Transmission Line Upgrade Project 20-acre Pre-Project Survey. Hesperia, CA to Laughlin, NV to Boulder City, NV. Desert Tortoise Biologist. 5/12/17 – 5/15/17	Insignia Environmental Stephanie Hansen (650) 321-6787 shansen@insigniaenv.com						
14. USFWS Supervised Practice of Health Assessments for Desert Tortoise, Large-Scale Translocation Site (LSTS), Jean, NV, 5/24/16 – 5/25/16	USFWS Roy Averill-Murray (775) 861-6362 roy_averill-murray@fws.gov Cristina Jones (623) 236-7767 cajones@azgfd.gov						
15. Silver State Solar South, Primm, NV, Project Field Manager, 4/20/15 – 11/13/2015	NewFields Sean Milne, (585) 269-0054 smilne@newfields.com		8/2	1	2/8	21	
16. Copper Mountain Solar 4, Ivanpah Valley, NV, Project Field Manager, 10/16/15	Sean Milne, (585) 269-0054, smilne@newfields.com						
17. Copper Mountain Solar 5, Ivanpah Valley, NV, Project Field Manager, 10/5/15 – 10/15/15	Sean Milne, (585) 269-0054, smilne@newfields.com				1/4		
18. San Diego Zoo Institute for Conservation Research Health Examinations w/ Blood Work, Las Vegas, NV, Volunteer, 8/6/15 – 8/7/15	Jeanette Perry, (702) 278-1001 jperry@sandiegozoo.org						
19. AIYA Solar Project, Moapa, NV, Project Field Manager, 5/23/15 – 5/29/15	Sean Milne, (585) 269-0054 smilne@newfields.com				2/5		

20. Moapa Paiute Solar Project Health Examinations w/ Blood Work, Moapa, NV, Volunteer, Environmental Scientist, 4/14/15 – 4/15/15	Scott Hoffman, (702) 875-2243 scott.hoffmann@cardno.com						
21. Boulder City By-Pass, Boulder City, NV, Federal Communications Representative/ Project Field Manager, 2/18/15 – 4/17/15	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/45		0/3	2	
22. Dry Lake Solar Energy Zone, Presence/ Absence Survey, North Las Vegas, NV, Environmental Scientist, 9/8/14 – 10/17/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/20		1/11		
23. Paiute Snow Mountain Solar, 5m Presence/ Absence Survey, Las Vegas, NV, Environmental Scientist, 9/27/14 – 10/10/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		110/11		3/8		
24. Silver State Solar North, Construction Monitoring, Ivanpah Valley, NV, Environmental Scientist, 9/30/14 - 10/1/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
25. Paiute Lyttle Solar Energy Project, Moapa, NV, Construction Monitoring, Environmental Scientist, 9/29/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
26. Copper Mountain Solar 4, Presence/ Absence Survey, Environmental Scientist, 5/23/14 – 5/28/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		60/6				
27. Snow Mountain Paiute Reservation Solar Project, Project Presence/ Absence Survey, Environmental Scientist, 5/14/14 – 5/18/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		50/5		1/9		

28. Boulder City Conservation Easement Occupancy Sampling 2014, Environmental Scientist, 4/9/14 – 5/30/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		160/16		0/8		
29. Copper Mountain Solar 3, Eldorado Valley, NV, Federal Communications Representative, 8/19/13 – 5/11/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		468/39				
30. Boulder City By-Pass, Boulder City, NV, Presence/ Absence, Tortoise Crew Leader, 4/7/14 – 5/10/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10		1/9		
31. Silver State Solar North Relocation Pens Tracking, Ivanpah Valley, NV, Environmental Scientist, 4/4/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		10/1		2/6		
32. Mark-Recapture Study, Marine Corps Air Ground Combat Center, Johnson Valley, CA, Environmental Scientist, 4/16/13 – 5/14/13	Dr. Alice Karl, (530) 304-4121, heliophile@mindspring.com				0/11		
33. Boulder City Conservation Easement Occupancy Sampling Pilot Study, Environmental Scientist, 3/18/13 – 4/6/13	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com				2/7		
34. Boulder Solar Project (formerly Dry Lake) Pre-Project Presence/ Absence Survey, Environmental Scientist, 4/16/12 – 4/28/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com				1/0		
35. Townsite Solar Pre-Project Presence/ Absence Survey, Environmental Scientist, 4/1/12 – 4/15/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						

36. Tortoise Population Connectivity Research, Ivanpah Valley; Environmental Scientist, 2/8/12- 2/10/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
37. Desert Tortoise Conservation Center Construction Monitoring, Environmental Scientist, 4 /2011	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10				
38. Silver State Solar North Project Clearance Survey, Environmental Scientist, 2/17/11 – 4/5/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/20	5	3/2	3	
39. Copper Mountain 2 (Formerly Nextlight) Solar Project Clearance Survey, Environmental Scientist, 1/9/12 – 1/13/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		50/5	10	0/4	4	
40. Mesquite Regional Park, Hardy Way Construction Monitoring, Environmental Scientist, 10/18/11-10/21/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		40/4				
41. Mesquite Regional Park, Hardy Way Clearance Survey, Environmental Scientist, 5/5/11 – 5/13/11 & 10/3/11-10/12/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		150/15	28	2/7	17	
42. Techren Boulder City Solar Pre-Project Presence/ Absence Survey, Environmental Scientist, 5/2/11 - 5/4/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		30/3				
43. Ivanpah Airport Geo-tech Monitoring, Environmental Scientist, June 2010	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10				

44. Kitty Hawk Road North Modified Retention Facility, Environmental Scientist, November 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				
45. Nextlight Boulder City Solar Project, Environmental Scientist, October 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		60/5		0/2		
46. Jean, NV Geotech Surveys (Klienfelder), Environmental Monitor, July 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		20/2				
47. Town Wash Flood Control, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		16/2				
48. Mesquite Highway Interchange, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		16/2				
49. Cactus Avenue & I-15 Interchange, Pre-Project Presence/ Absence Survey, Environmental Scientist, June 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		16/2				
50. Mesquite 11-Acres, Pre-Project Presence/ Absence Survey, Environmental Scientist, May 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				
51. Lincoln County 230kV Transmission Line, Environmental Scientist, April -May, 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		200/25		1/3		

52. Mesquite Regional Park, Environmental Scientist, Pre-Project Presence/ Absence Survey,January 3rd, 7th and 8th, 2008.	**Ken MacDonald, 702-952-2072, kmacdonald@newfields.com**		**30/3**		**1/1**	**2**	**0**
53. Floyd Lamb Park at Tule Springs, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 11th and 12th, 2007.	**Ken MacDonald, 702-952-2072, kmacdonald@newfields.com**		**8/1**				
54. Laughlin River Village-19 Acre, Pre-Project Presence/ Absence Survey, Environmental Scientist, May 12th, 2007.	**Ken MacDonald, 702-952-2072, kmacdonald@newfields.com**		**8/1**				

Experience by project and activity (continued): Each project number should correspond with the project listed on the previous page

Project Number (Corresponds to previous page)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/Days)	Oversee project compliance (Hrs/Days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence Installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
1. Southern Bighorn South and North Health Study				80/8, 4		
2. Mother Lode Exploration Project				150/15		
3. Southern Bighorn South and North Pre-Clearance Surveys				110/11, 12		
4. Fort Cady Mine Presence/ Absence Surveys				40/4, 4		
5. Copper Rays Solar Presence/ Absence Surveys						
6. North Bullfrog Exploration Project Modification #2				12/1, 1		
7. Eagle Shadow Mountain Health Assessment for Translocation	10			364/28 Staff-6		

8. Undisclosed Mineral Exploration Project Presence/ Absence Survey					25/3 Staff-1		
9. Eagle Shadow Mountain Health Assessment for Translocation					240/24, Staff-1		
10. Eagle Shadow Mountain Presence/ Absence Survey							
11. Techren Solar 1							
12. Mesquite Gold Mine Clearance Surveys							
13. Eldorado, Lugo, Mohave Transmission Line Upgrade Project							
14. USFWS Supervised Practice of Health Assessments for Desert Tortoise, Large-Scale Translocation Site							
15. Silver State Solar South		20	803/73	803/73	803/73, Staff-22	180/15	
16. Copper Mountain Solar 4					24/2, Staff-5		
17. Copper Mountain Solar 5					80/8, Staff-5		

18. San Diego Zoo Institute for Conservation Research Health Examinations w/ Blood Work							
19. AIYA Solar Project					60/6, Staff-5		
20. Moapa Paiute Solar Project Health Examinations w/ Blood Work							
21. Boulder City By-Pass			450/45	450/45	450/45, Staff-12		27
22. Dry Lake Solar Energy Zone					200/20, Staff-8		
23. Paiute Snow Mountain Solar					110/11, Staff-8		
24. Silver State Solar North			20/2	20/2		20/2	2
25. Paiute Lyttle Solar Energy Project			10/1	10/1	10/1, Staff-1		
26. Copper Mountain Solar 4					60/6, Staff-5		
27. Snow Mountain Paiute Solar Project					100/10, Staff-6		

28. Boulder City Conservation Easement Occupancy Sampling 2014					150/15, Staff-4		
29. Copper Mountain Solar 3			490/49	490/49	490/49, Staff-18	250/25	14
30. Boulder City By-Pass					90/9, Staff-6		
31. Silver State Solar North					10/1, Staff-2		
32. Mark-Recapture Study, Marine Corps Air Ground Combat Center							
33. Boulder City Conservation Easement Occupancy Sampling Pilot Study							
34. Boulder City Solar Project					13/130, Staff-4		
35. Townsite Solar					16/160, Staff-4		
36. Ivanpah Valley							
37. Desert Tortoise Conservation Center			100	100/10			

38. Silver State Solar North			20/2		200/20,Staff-20	20/2	20
39. Copper Mountain 2					50/5, Staff-4		
40. Mesquite Regional Park		2	40/4	40/4	40/4, Staff-10	40/4	5
41. Mesquite Regional Park			150/15	150/15	150/15,Staff-12	150/15	25
42. Techren Boulder City Solar					30/3, Staff-8		
43. Ivanpah Airport			100/10	100/10	100/10, Staff-2		20
44. Kitty Hawk Road North Modified Retention Facility							
45. Nextlight Boulder City Solar					5/60, Staff-5		
46. Jean, NV			20/2	20/2			
47. Town Wash Flood Control					16/2, Staff-1		

48. Mesquite Highway Interchange				16/2, Staff-1		
49. Cactus Avenue & I-15 Interchange		300+/30+	300+/30+			
50. Mesquite 11-Acres						
51. Lincoln County 230kV Transmission Line						
52. Mesquite Regional Park				160/20, Staff-1		
53. Floyd Lamb Park at Tule Springs			2		20/2	2
54. Laughlin River Village-19 Acre						

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours
OR total number of 8-hour days: _____Over 6,000 hours_____

Total number of miles/kilometers walked conducting survey transects:
Over 1500 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: __46___

≥100 mm: __319___

Additional desert tortoise experience:

Project	No.
Health Examinations Including Sub-Carapacial Venipuncture	84
Health Examinations Assist Sub-Carapacial Venipuncture	22
Desert Tortoise Tracking	Over 600
Transmitter Placement or Removal	79

Additional supervisory experience other than with desert tortoise work

Project	Hours	Staff (No.)
Gulf Coast BP Oil Spill Sediment and Water Quality Survey	700+	Approx. 30
Las Vegas Ski and Snowboard Resort Projects	1000+	Approx. 10
Numerous U.S. Army Corps of Engineers Section 404 Surveys	1000+	Approx. 3
Numerous Biological Assessments	500+	Approx. 3+
Numerous Invasive Species Mitigation Projects	1000+	Approx. 15

Additional references for individuals whom have held **less than three** positions working with desert tortoise

Project Name **Job Title** **Date of Employmenet**	**Supervisor/ Project Contact** **Name** **Phone** **Email Address**

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.
I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: _____ Date: 14JUN2021

2

ATTACHMENT K

DESERT TORTOISE PRESENCE/ ABSENCE SURVEY REPORT, BNSF ALTERNATIVES FEASIBILITY ASSESSMENT, BARSTOW, CALIFORNIA, MARCH 2022



Desert Tortoise

Presence/ Absence Survey Report

BNSF Alternatives Feasibility Assessment

Barstow, California

Prepared for:

BNSF RAILWAY & ROCKS BIOLOGICAL CONSULTING

Prepared by:

EcoVita

March 2022

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Appendices

Appendix A: Datasheets
Appendix B: Survey Photos
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1.0 Executive Summary

The BNSF Alternatives Feasibility Assessment is located on private land in Lenwood, California, approximately 4.5 miles west of downtown Barstow. A desert tortoise (*Gopherus agassizii*) presence/ absence survey was conducted over 545 acres (survey area). The surveys occurred February 21, 2022 through February 23, 2022 and followed the United States Fish and Wildlife Service's (USFWS) *Mojave Desert Tortoise Pre-project Survey Protocols* (USFWS 2019). The survey area can be viewed on the **Figure 1: Project Overview Map**. For survey results, see **Figure 2: Desert Tortoise Sign Map 1 of 3**, **Figure 3: Desert Tortoise Sign Map 2 of 3**, and **Figure 4: Desert Tortoise Sign Map 3 of 3**.

See **Appendix A: Datasheets**, **Appendix B: Survey Photos**, and **Appendix C: Qualifications Form** for survey documentation.

Below are the results of the February 2022 surveys:

- One live desert tortoise;
- One Class 1 desert tortoise burrow;
- Two Class 2 desert tortoise burrows;
- Ten Class 3 desert tortoise burrows and pallets;
- One Class 5 possibly desert tortoise burrow;
- Five Class 5 desert tortoise carcasses;
- Tortoise density is estimated to be low.

2.0 Introduction

2.1 Project Location

The survey area is in Lenwood, California, approximately 4.5 miles west of downtown Barstow, on private land, in San Bernardino County (**Figure 1: Project Overview Map**). The survey area includes the following Sections, Townships, and Ranges within the San Bernardino Meridian:

- Township 9 North, Range 3 West, Sections 23, 24, 25, and 27

2.2 Purpose and Need

The purpose of this survey report is to provide biological information that will be used for impact assessments pursuant to the National Environmental Policy Act and California Environmental Quality Act. This document may be used for consultation with the USFWS under the Federal Endangered Species Act, and any necessary incidental take authorization from the California Department of Fish and Wildlife with respect to the California Endangered Species Act, and any other relevant agencies.

2.3 Survey Area

The survey followed the USFWS "large project" desert tortoise survey protocols. The "large project" protocol was appropriate for the 545-acre survey because it is part of a larger project area. The survey area can be viewed on the **Figure 1: Project Overview Map**.

2.4 Desert Tortoise Conservation Areas

The 1994 Desert Tortoise (Mojave Population) Recovery Plan identified proposed Desert Wildlife Management Areas where recovery efforts for the desert tortoise would be focused but did not contain any legal boundaries. The USFWS formalized the general Desert Wildlife Management Areas from the 1994 Recovery Plan and administers them as Critical Habitat (USFWS 2011). Critical Habitat that falls within Bureau of Land Management (BLM) jurisdiction are administered as Areas of Critical Environmental Concern (ACEC). Designated critical habitat and ACEC boundaries generally, but not always, coincide along legal boundaries (USFWS 2011).

3.0 Methodology

3.1 Personnel

The desert tortoise surveys were led by Adam Hamburg of Eco Vita Environmental Compliance. Mr. Hamburg possesses 15 years of desert tortoise field experience and has been authorized by the USFWS on numerous projects to conduct desert tortoise surveys. A USFWS Desert Tortoise Qualifications Form for the lead biologist can be found in **Appendix C: Qualifications Form**.

3.2 Survey Methodology

The desert tortoise presence/ absence surveys were conducted February 21, 2022 through February 23, 2022. The surveys followed guidelines established in the Mojave Desert Tortoise Pre-Project Survey Protocols (USFWS 2019). Belt-transects were spaced 10 meters apart and covered 100 percent of accessible terrain and suitable habitat throughout the entire project area. Garmin Global Positioning System units were used to guide the surveys. Fulcrum digital datasheets and photographs were used to record observations of live tortoises and tortoise sign. Tortoise sign included burrows, pallets, scat, tracks, and carcasses. All observed burrows were examined using flashlights.

4.0 Survey Results

4.1 Landcover

The Classification and Assessment with LANDSAT of Visible Ecological Groupings (CALVEG) classification system and field survey reconnaissance reveal that survey area includes desert scrub, alkali desert scrub, agriculture, and urban landscapes within the survey area (Databasin 2021). The Manual of California Vegetation alliances observed within the survey area include: *Ephedra californica – Ephedra trifurca* Shrubland Alliance, *Larrea tridentata* Shrubland Alliance, and *Atriplex polycarpa* Shrubland Alliance (CNPS 2021).

Invasive plant species were pervasive throughout the survey area and include redstem filaree (*Erodium cicutarium*), Sahara mustard (*Brassica tournefortii*), tumble mustard (*Sisymbrium altissimum*), cheatgrass (*Bromus tectorum*), foxtail brome (*Bromus madritensis*), and Mediterranean grass (*Schismus barbatus*).

4.2 Desert Tortoise Conservation Areas

The survey area is not within desert tortoise Critical Habitat, BLM designated ACEC, or Desert Wildlife Management Areas. The survey area is approximately 4.4 miles south and 6.0 miles west of desert tortoise USFWS Critical Habitat and BLM ACEC.

4.3 Desert Tortoise Presence/ Absence Survey

For the location of observations made during the survey, see **Figure 2: Desert Tortoise Sign Map 1 of 3**, **Figure 3: Desert Tortoise Sign Map 2 of 3**, and **Figure 4: Desert Tortoise Sign Map 3 of 3**. See **Appendix A: Datasheets** and **Appendix B: Survey Photos** for survey documentation.

Below are the observations of the February 2022 surveys:

- One live desert tortoise;
- One Class 1 desert tortoise burrow;
- Two Class 2 desert tortoise burrows;
- Ten Class 3 desert tortoise burrows and pallets;
- One Class 5 possibly desert tortoise burrow;
- Five Class 5 desert tortoise carcasses;

4.4 Desert Tortoise Estimated Within Survey Area

Utilizing the statistical model from the USFWS Mojave Desert Tortoise Pre-project Survey Protocols (USFWS 2019), it is estimated that there are 2.17 desert tortoises within the survey area. Geo-spatial analysis of survey data also suggests there are two desert tortoises within or near the survey area. However, the surveys were conducted out of the standard desert tortoise season and could result in an undercount of tortoises. This is examined in greater detail in **Section 5.0 Discussion**.

5.0 Discussion

Geo-spatial analysis and the USFWS statistical model of the data collected during the February 2022 survey suggest that approximately two tortoises are within the survey area. One desert tortoise with an approximate midline carapace length of 200 millimeters (mm) was observed in a burrow. Survey data suggests that another larger tortoise may also be within or near the survey area. However, there are reasons why conducting the survey outside of the active desert tortoise season reduces the probability of a tortoise observation and could result in an undercount of the resident population.

When using the USFWS statistical model to estimate tortoises, the model assumes an in-season survey with warmer temperatures. Daily temperatures during the surveys averaged 7 degrees Celsius (45.2 degrees Fahrenheit) and nighttime temperatures during the surveys were below freezing (U.S. Climate Data 2022). Lower temperatures will cause desert tortoises to remain deeper within their burrows where they are unobservable.

The USFWS model also requires a measurement of the previous winter-rains that fall from October 1 through March 31 to accurately calculate the probability of tortoise detection. The surveys were conducted with one month remaining in the winter-rain period and thus can only be estimated.

The Western Mojave population of desert tortoise primarily rely upon the winter-rain-season and the protracted drought in the Southwestern United States can also result in an undercount of desert tortoises. Between 1991 and 2000, Barstow averaged 5.99 centimeters (2.36 inches) of rain during the winter rain season (NOAA 2022). At the time of the February 2022 survey, Barstow accumulated 25.65 mm (1.01 inches) of winter rain. This represents 42.8 percent of the average rainfall for that date (NOAA 2022). Drought conditions provide little forage opportunities for desert tortoise and few incentives to remain above ground and active. Instead, tortoises have an incentive to conserve resources by remaining below ground and inactive, thus making their observation less likely.

Much of the desert tortoise habitat within the survey area was significantly degraded. Evidence of off-road-vehicle use was abundant, extensive trash piles were observed, and tortoise predators such as raven and coyote were detected in large numbers. Also, urban development, farms, railroad, and major dirt and paved roads are within or are adjacent to the survey area.

Despite the limitations of the out-of-season survey, the survey data and habitat suitability suggest that tortoise density within the survey area is likely to be low.

6.0 References

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Figures

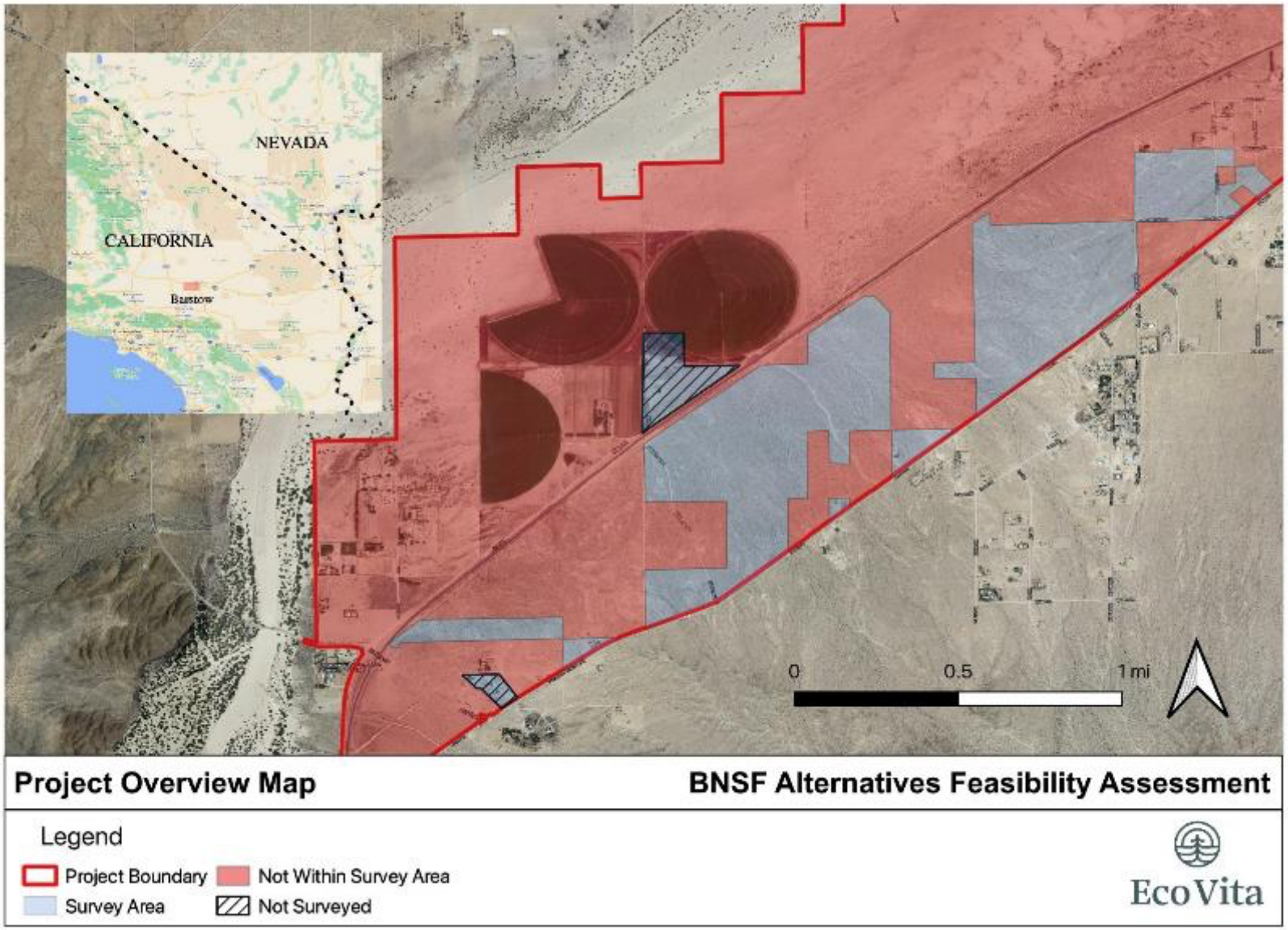


Figure 1: Project Overview Map

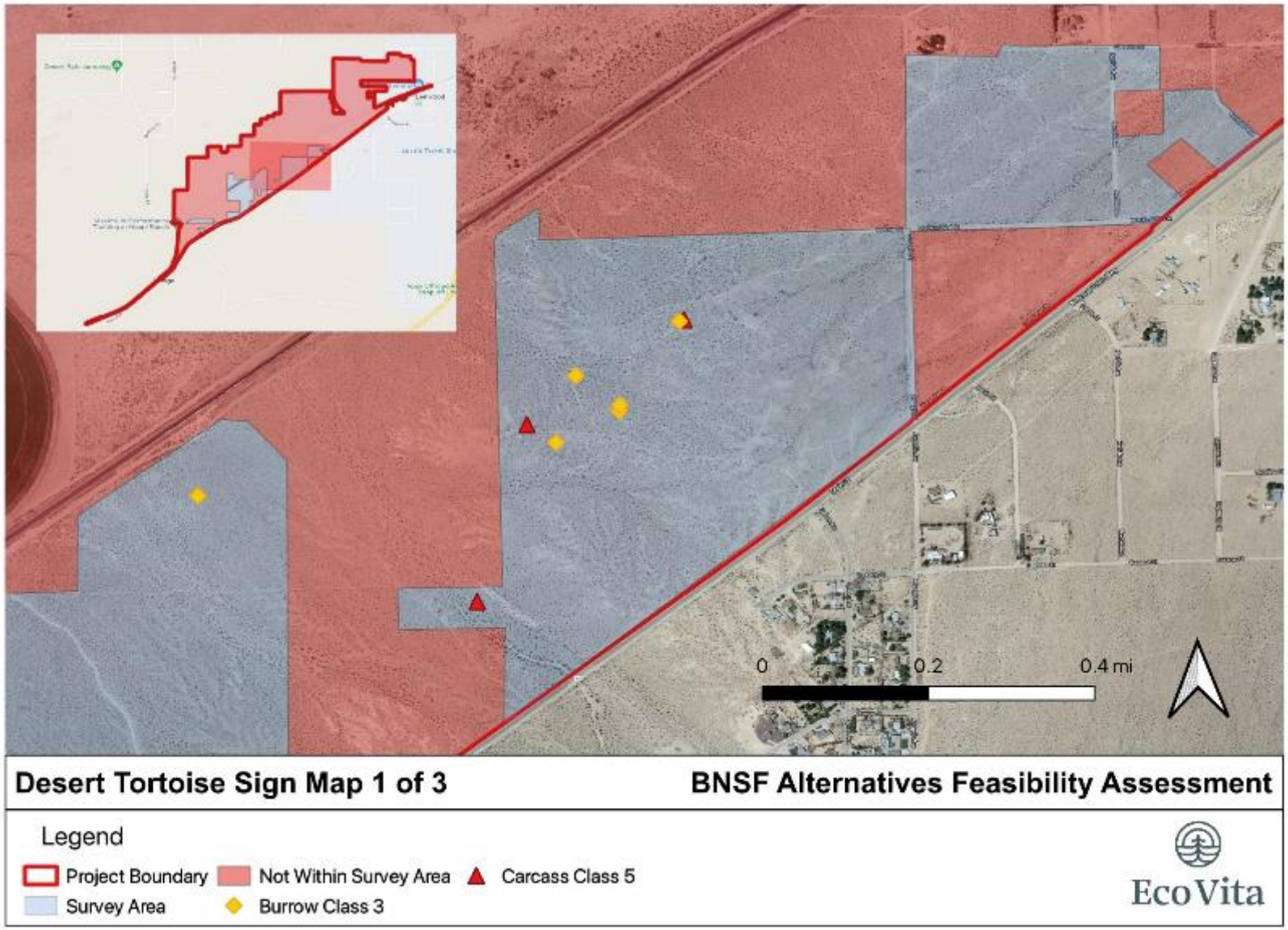


Figure 2: Desert Tortoise Sign Map 1 of 3

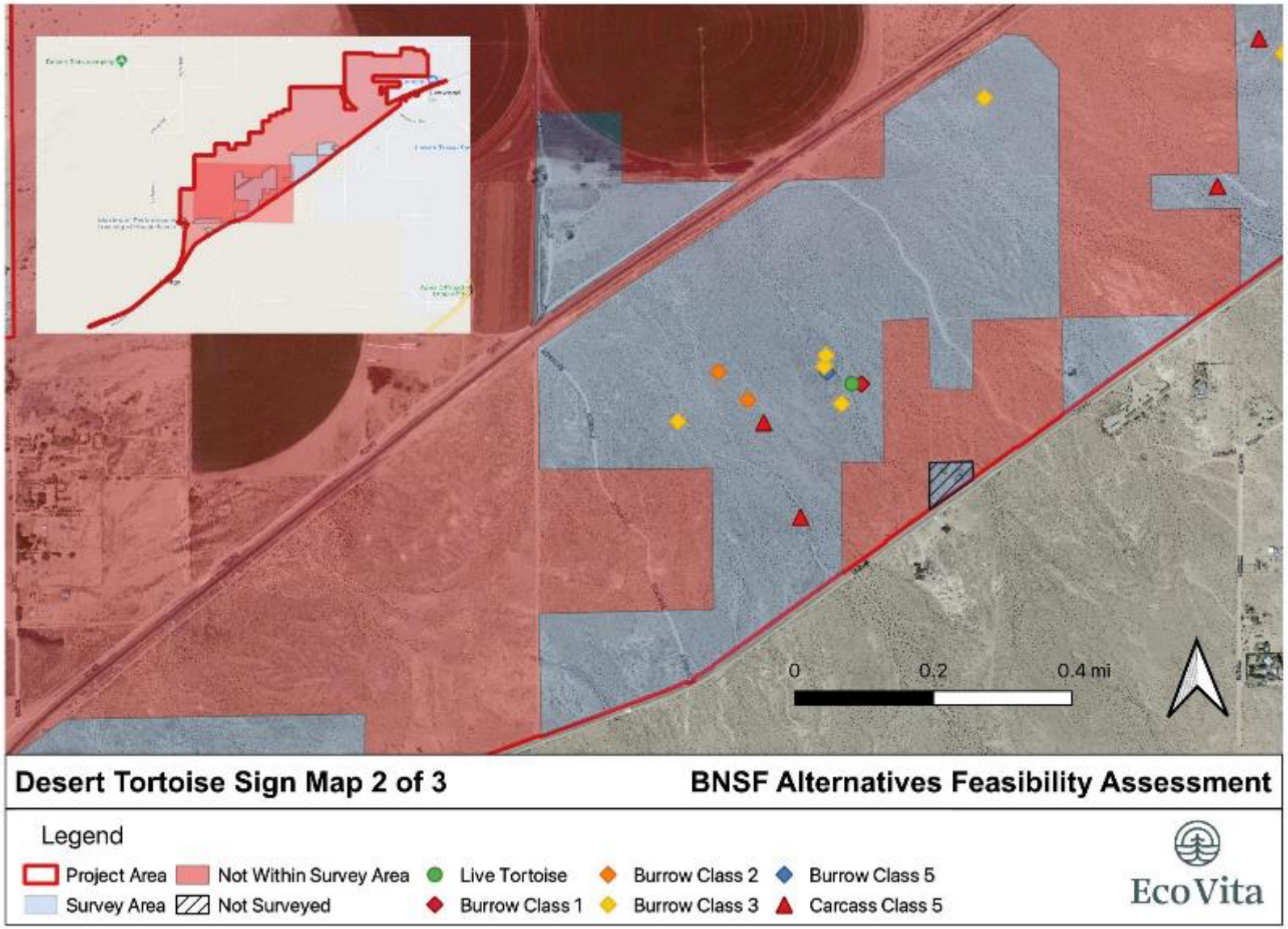


Figure 3: Desert Tortoise Sign Map 2 of 3



Figure 4: Desert Tortoise Sign Map 3 of 3

Appendix A: *Datasheets*

Start of Day Data Sheet

date	start time	start temp (c)	start location utm nad83	survey biologists	site description	100% coverage or sampling	end time	end temp (c)	end location utm nad83	Start altitude (m)
2022-02-21	07:48	10	11S 486010 3856041	Adam Hamburg, Sarah Donahue, Mike Altenhoffen, Halley Bagley	Southern Portion	100% Coverage	15:36	16	11S 0484782 3856018	656
2022-02-22	07:29	7	11S 0485600 3855699	Adam Hamburg, Sarah Donahue, Mike Altenhoffen, Halley Bagley	Southern Portion	100% Coverage	15:00	13	11S 484340 3855919	678
2022-02-23	07:27	2	11S 0486047 3856528	Adam Hamburg, Sarah Donahue, Mike Altenhoffen, Halley Bagley	Southern Portion	100% Coverage	15:52	9	11S 0487262 3857551	671

Desert Tortoise Sign Datasheet

tortoise sign	sign class	comments	date	time	latitude	longitude	burrowing owl sign	photo number
Burrow	Class 3	Very old and filled in	2022-02-21	10:14	34.8511587	-117.159944	no	Photo 1
Burrow	Class 1	Tortoise in burrow. Approximately 200mm. Scat, tracks.	2022-02-21	13:37	34.8439501	-117.1634236	yes	Photo 2, Photo 3
Burrow	Class 3		2022-02-21	13:45	34.8434563	-117.1637068	yes	Photo 4
Burrow	Class 5	Highly degraded. Decent apron and roof.	2022-02-21	13:57	34.8442651	-117.1640545	no	Photo 5
Burrow	Class 3	Excellent roof	2022-02-21	14:04	34.8444076	-117.1641308	no	Photo 6
Burrow	Class 3	Multi use burrow.	2022-02-21	14:09	34.8446826	-117.1640781	yes	Photo 7
Carcass	Class 5		2022-02-21	15:07	34.84301	-117.1656882		Photo 8
Burrow	Class 2		2022-02-21	15:20	34.8435933	-117.1660801	yes	Photo 9
Carcass	Class 5	By power line road	2022-02-22	10:31	34.8405935	-117.1647962		Photo 10
Burrow	Class 2	Part of canid complex.	2022-02-22	12:25	34.844316	-117.1668166	yes	Photo 11
Burrow	Class 3		2022-02-22	12:51	34.8430775	-117.1678684	no	Photo 12
Carcass	Class 5		2022-02-23	08:36	34.8488143	-117.1540667		Photo 13
Pallet	Class 3		2022-02-23	10:04	34.8521551	-117.1523433		Photo 14
Carcass	Class 5	Scoot only	2022-02-23	10:39	34.8525441	-117.1529478		Photo 15
Pallet	Class 3		2022-02-23	10:45	34.8527986	-117.1509866		Photo 16
Burrow	Class 3	Canid complex, tortoise scat.	2022-02-23	11:07	34.8529214	-117.1509731	yes	Photo 17
Pallet	Class 3		2022-02-23	11:20	34.8535633	-117.151897		Photo 18
Pallet	Class 3		2022-02-23	12:44	34.8546779	-117.149683		Photo 19
Carcass	Class 5		2022-02-23	12:45	34.8547114	-117.1495809		Photo 20

Live Tortoise Data Sheet

approximate mcl (mm)	activity	comment	date	time	utm (nad83 easting_northing)	latitude	longitude	gps altitude (m)	photo number
Adult (>180 mm)	Under rock shelf	Tortoise in back of burrow.	2022-02-21	13:35	11S 0485058 3855749	34.8439563	-117.1634375	670	Photo 2, Photo 3

Appendix B: *Survey Photos*



Photograph 1:
Class 3 burrow.



Photograph 2:
Class 1 burrow.



Photograph 3: Class 1 burrow.



Photograph 4: Class 3 burrow.



Photograph 5: Class 5 burrow.



Photograph 6: Class 3 burrow.



Photograph 7: Class 3 burrow.



Photograph 8: Class 5 carcass.



Photograph 9: Class 2 burrow.



Photograph 10: Class 5 carcass.



Photograph 11: Class 2 burrow.



Photograph 12: Class 3 burrow.



Photograph 13: Class 5 carcass.



Photograph 14: Class 3 pallet.



Photograph 15: Class 5 carcass.



Photograph 16: Class 3 Pallet.



Photograph 17: Class 3 burrow.



Photograph 18: Class 3 pallet.



Photograph 19: Class 3 pallet.



Photograph 20: Class 5 carcass.

Appendix C: *Qualifications Form*

GENERAL DESERT TORTOISE QUALIFICATIONS STATEMENT

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e. Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Adam L. Hamburg
Address	596 California Ave, Apt A
City, State, Zip Code	Reno, NV 89509
Phone Number(s)	(702) 556-2500
Email Address	ahamburg@EcoVitaEnv.com

2. Date:

3. Areas in which authorization is requested (check all that apply):

□ San Bernardino, Kern, and Los Angeles Counties, California (Ventura office)
□ Riverside and Imperial Counties, California (Carlsbad office)
□ Nevada □ Utah □ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP Permit No.		
Project Name		
Federal Agency		
Proponent or Contractor		

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities
Desert Tortoise	05/31/2016	USFWS authorization required for each project	Sub-carapacial venipuncture, epicoelomic fluid administration, blood sample processing.

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
Northern Arizona University	May 2004 to December 2006	Environmental Sciences, Management	Bachelor of Science

7. Desert Tortoise Training:

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes- Desert Tortoise Handling Workshop	November 3-4, 2007	Ridgecrest, California	Desert Tortoise Council
2. USFWS Desert Tortoise Health Assessments for Translocation Projects Training Workshop	April 3-5, 2012	Desert Tortoise Conservation Center, Las Vegas, Nevada	Kimberleigh Field
3. USFWS Supervised Practice of Health Assessments for Desert Tortoises	May 24-25, 2016	Large-Scale Translocation Site, Southern Nevada	Roy C. Averill-Murray and Kimberleigh Field

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary.

Experience by project and activity:

Project Name, Job Title, Dates of Employment	Project Contact name, phone no., & Email address	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm / ≥ 100mm	Relocate DTs (No.)	Excavate, and relocate DT nests (No.)
1. Southern Bighorn South and North Health Study, 2,800-acres, Moapa, NV. Health Assessor. 5/12 – 5/20/2021.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com					
2. Mother Lode Exploration Project Presence/ Absence Surveys, 4703-acres, Beatty, NV. Project lead. 5/1 – 5/25/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com					
3. Southern Bighorn South and North Pre-Clearance Surveys, 2,800-acres, Moapa, NV. Desert tortoise Biologist. 4/13 – 4/16/2021.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com	110/11		0/7		
4. Undisclosed Mineral Exploration Project Presence/ Absence Survey, 640-acres, Newberry Springs, CA. Project Lead. 4/13-4/16/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com					
5. Copper Rays Solar Presence/ Absence Surveys, 6,000-acres, Pahrump, NV. Desert Tortoise Biologist. 4/1/2021 - 4/8/2021	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com			0/7		
6. North Bullfrog Exploration Project Modification #2, Presence/ Absence Surveys, 20-acres, Beatty, NV. Project lead. 3/6/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com					

7. Eagle Shadow Mountain Health Assessment for Translocation, 3000-acres. Moapa River Indian Reservation, Clark County, NV. Lead Health Assessor. 04/01/20 – 04/28/20 and 08/01/20 – 10/15/20.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com					39	
8. Undisclosed Mineral Exploration Project Presence/ Absence Survey, 35-miles. Beatty, NV. Project Lead Biologist. 06/16/2020 – 06/18/20.	McGinley and Associates Gareth Blakemore (775) 432-4792 gblakemore@mcgin.com						
9. Eagle Shadow Mountain Health Assessment for Translocation, 3000-acres. Moapa River Indian Reservation, Clark County, NV. Desert Tortoise Biologist. 09/16/19 – 11/06/19.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com				2/16 (Found while tracking or moving between health exams, not line surveying)		
10. Eagle Shadow Mountain Presence/ Absence Survey, 3,000-acres. Moapa River Indian Reservation, Clark County, NV. Desert Tortoise Biologist. 9/24/18 – 10/3/18.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com		120/10		0/5		
11. Techren Solar 1 Clearance Survey, 2,300-acres. Boulder City, NV. Desert Tortoise Biologist. 5/1/18 – 5/5/18.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com		50/5				
12. Mesquite Gold Mine Clearance Surveys, 1,800-acres. Brawley, CA. Desert Tortoise Biologist. 5/16/17 – 5/23/17.	Hernandez Environmental Services Juan Hernandez (951) 579-1657 juan@hernandezenvironmental.com		130/13	2			

13. Eldorado, Lugo, Mohave Transmission Line Upgrade Project 20-acre Pre-Project Survey. Hesperia, CA to Laughlin, NV to Boulder City, NV. Desert Tortoise Biologist. 5/12/17 – 5/15/17	Insignia Environmental Stephanie Hansen (650) 321-6787 shansen@insigniaenv.com						
14. USFWS Supervised Practice of Health Assessments for Desert Tortoise, Large-Scale Translocation Site (LSTS), Jean, NV, 5/24/16 – 5/25/16	USFWS Roy Averill-Murray (775) 861-6362 roy_averill-murray@fws.gov Cristina Jones (623) 236-7767 cajones@azgfd.gov						
15. Silver State Solar South, Primm, NV, Project Field Manager, 4/20/15 – 11/13/2015	NewFields Sean Milne, (585) 269-0054 smilne@newfields.com		8/2	1	2/8	21	
16. Copper Mountain Solar 4, Ivanpah Valley, NV, Project Field Manager, 10/16/15	Sean Milne, (585) 269-0054, smilne@newfields.com						
17. Copper Mountain Solar 5, Ivanpah Valley, NV, Project Field Manager, 10/5/15 – 10/15/15	Sean Milne, (585) 269-0054, smilne@newfields.com				1/4		
18. San Diego Zoo Institute for Conservation Research Health Examinations w/ Blood Work, Las Vegas, NV, Volunteer, 8/6/15 – 8/7/15	Jeanette Perry, (702) 278-1001 jperry@sandiegozoo.org						
19. AIYA Solar Project, Moapa, NV, Project Field Manager, 5/23/15 – 5/29/15	Sean Milne, (585) 269-0054 smilne@newfields.com				2/5		

20. Moapa Paiute Solar Project Health Examinations w/ Blood Work, Moapa, NV, Volunteer, Environmental Scientist, 4/14/15 – 4/15/15	Scott Hoffman, (702) 875-2243 scott.hoffmann@cardno.com						
21. Boulder City By-Pass, Boulder City, NV, Federal Communications Representative/ Project Field Manager, 2/18/15 – 4/17/15	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/45		0/3	2	
22. Dry Lake Solar Energy Zone, Presence/ Absence Survey, North Las Vegas, NV, Environmental Scientist, 9/8/14 – 10/17/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/20		1/11		
23. Paiute Snow Mountain Solar, 5m Presence/ Absence Survey, Las Vegas, NV, Environmental Scientist, 9/27/14 – 10/10/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		110/11		3/8		
24. Silver State Solar North, Construction Monitoring, Ivanpah Valley, NV, Environmental Scientist, 9/30/14 - 10/1/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
25. Paiute Lyttle Solar Energy Project, Moapa, NV, Construction Monitoring, Environmental Scientist, 9/29/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
26. Copper Mountain Solar 4, Presence/ Absence Survey, Environmental Scientist, 5/23/14 – 5/28/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		60/6				
27. Snow Mountain Paiute Reservation Solar Project, Project Presence/ Absence Survey, Environmental Scientist, 5/14/14 – 5/18/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		50/5		1/9		

28. Boulder City Conservation Easement Occupancy Sampling 2014, Environmental Scientist, 4/9/14 – 5/30/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		160/16		0/8		
29. Copper Mountain Solar 3, Eldorado Valley, NV, Federal Communications Representative, 8/19/13 – 5/11/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		468/39				
30. Boulder City By-Pass, Boulder City, NV, Presence/ Absence, Tortoise Crew Leader, 4/7/14 – 5/10/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10		1/9		
31. Silver State Solar North Relocation Pens Tracking, Ivanpah Valley, NV, Environmental Scientist, 4/4/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		10/1		2/6		
32. Mark-Recapture Study, Marine Corps Air Ground Combat Center, Johnson Valley, CA, Environmental Scientist, 4/16/13 – 5/14/13	Dr. Alice Karl, (530) 304-4121, heliophile@mindspring.com				0/11		
33. Boulder City Conservation Easement Occupancy Sampling Pilot Study, Environmental Scientist, 3/18/13 – 4/6/13	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com				2/7		
34. Boulder Solar Project (formerly Dry Lake) Pre-Project Presence/ Absence Survey, Environmental Scientist, 4/16/12 – 4/28/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com				1/0		
35. Townsite Solar Pre-Project Presence/ Absence Survey, Environmental Scientist, 4/1/12 – 4/15/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						

36. Tortoise Population Connectivity Research, Ivanpah Valley; Environmental Scientist, 2/8/12- 2/10/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
37. Desert Tortoise Conservation Center Construction Monitoring, Environmental Scientist, 4 /2011	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10				
38. Silver State Solar North Project Clearance Survey, Environmental Scientist, 2/17/11 – 4/5/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/20	5	3/2	3	
39. Copper Mountain 2 (Formerly Nextlight) Solar Project Clearance Survey, Environmental Scientist, 1/9/12 – 1/13/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		50/5	10	0/4	4	
40. Mesquite Regional Park, Hardy Way Construction Monitoring, Environmental Scientist, 10/18/11-10/21/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		40/4				
41. Mesquite Regional Park, Hardy Way Clearance Survey, Environmental Scientist, 5/5/11 – 5/13/11 & 10/3/11-10/12/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		150/15	28	2/7	17	
42. Techren Boulder City Solar Pre-Project Presence/ Absence Survey, Environmental Scientist, 5/2/11 - 5/4/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		30/3				
43. Ivanpah Airport Geo-tech Monitoring, Environmental Scientist, June 2010	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10				

44. Kitty Hawk Road North Modified Retention Facility, Environmental Scientist, November 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	8/1				
45. Nextlight Boulder City Solar Project, Environmental Scientist, October 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	60/5		0/2		
46. Jean, NV Geotech Surveys (Klienfelder), Environmental Monitor, July 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	20/2				
47. Town Wash Flood Control, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	16/2				
48. Mesquite Highway Interchange, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	16/2				
49. Cactus Avenue & I-15 Interchange, Pre-Project Presence/ Absence Survey, Environmental Scientist, June 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	16/2				
50. Mesquite 11-Acres, Pre-Project Presence/ Absence Survey, Environmental Scientist, May 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	8/1				
51. Lincoln County 230kV Transmission Line, Environmental Scientist, April -May, 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	200/25		1/3		

52. Mesquite Regional Park, Environmental Scientist, Pre-Project Presence/ Absence Survey,January 3rd, 7th and 8th, 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		30/3		1/1	2	0
53. Floyd Lamb Park at Tule Springs, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 11th and 12th, 2007.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				
54. Laughlin River Village-19 Acre, Pre-Project Presence/ Absence Survey, Environmental Scientist, May 12th, 2007.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				

Experience by project and activity (continued): Each project number should correspond with the project listed on the previous page

Project Number (Corresponds to previous page)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/Days)	Oversee project compliance (Hrs/Days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
1. Southern Bighorn South and North Health Study				80/8, 4		
2. Mother Lode Exploration Project				150/15		
3. Southern Bighorn South and North Pre-Clearance Surveys				110/11, 12		
4. Fort Cady Mine Presence/ Absence Surveys				40/4, 4		
5. Copper Rays Solar Presence/ Absence Surveys						
6. North Bullfrog Exploration Project Modification #2				12/1, 1		
7. Eagle Shadow Mountain Health Assessment for Translocation	10			364/28 Staff-6		

8. Undisclosed Mineral Exploration Project Presence/ Absence Survey				25/3 Staff-1		
9. Eagle Shadow Mountain Health Assessment for Translocation				240/24, Staff-1		
10. Eagle Shadow Mountain Presence/ Absence Survey						
11. Techren Solar 1						
12. Mesquite Gold Mine Clearance Surveys						
13. Eldorado, Lugo, Mohave Transmission Line Upgrade Project						
14. USFWS Supervised Practice of Health Assessments for Desert Tortoise, Large-Scale Translocation Site						
15. Silver State Solar South	20	803/73	803/73	803/73, Staff-22	180/15	
16. Copper Mountain Solar 4				24/2, Staff-5		
17. Copper Mountain Solar 5				80/8, Staff-5		

18. San Diego Zoo Institute for Conservation Research Health Examinations w/ Blood Work						
19. AIYA Solar Project				60/6, Staff-5		
20. Moapa Paiute Solar Project Health Examinations w/ Blood Work						
21. Boulder City By-Pass		450/45	450/45	450/45, Staff-12		27
22. Dry Lake Solar Energy Zone				200/20, Staff-8		
23. Paiute Snow Mountain Solar				110/11, Staff-8		
24. Silver State Solar North		20/2	20/2		20/2	2
25. Paiute Lyttle Solar Energy Project		10/1	10/1	10/1, Staff-1		
26. Copper Mountain Solar 4				60/6, Staff-5		
27. Snow Mountain Paiute Solar Project				100/10, Staff-6		

28. Boulder City Conservation Easement Occupancy Sampling 2014					150/15, Staff-4		
29. Copper Mountain Solar 3			490/49	490/49	490/49, Staff-18	250/25	14
30. Boulder City By-Pass					90/9, Staff-6		
31. Silver State Solar North					10/1, Staff-2		
32. Mark-Recapture Study, Marine Corps Air Ground Combat Center							
33. Boulder City Conservation Easement Occupancy Sampling Pilot Study							
34. Boulder City Solar Project					13/130, Staff-4		
35. Townsite Solar					16/160, Staff-4		
36. Ivanpah Valley							
37. Desert Tortoise Conservation Center			100	100/10			

38. Silver State Solar North		20/2		200/20,Staff-20	20/2	20
39. Copper Mountain 2				50/5, Staff-4		
40. Mesquite Regional Park	2	40/4	40/4	40/4, Staff-10	40/4	5
41. Mesquite Regional Park		150/15	150/15	150/15,Staff-12	150/15	25
42. Techren Boulder City Solar				30/3, Staff-8		
43. Ivanpah Airport		100/10	100/10	100/10, Staff-2		20
44. Kitty Hawk Road North Modified Retention Facility						
45. Nextlight Boulder City Solar				5/60, Staff-5		
46. Jean, NV		20/2	20/2			
47. Town Wash Flood Control				16/2, Staff-1		

48. Mesquite Highway Interchange				16/2, Staff-1		
49. Cactus Avenue & I-15 Interchange		300+/30+	300+/30+			
50. Mesquite 11-Acres						
51. Lincoln County 230kV Transmission Line						
52. Mesquite Regional Park				160/20, Staff-1		
53. Floyd Lamb Park at Tule Springs			2		20/2	2
54. Laughlin River Village-19 Acre						

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours
OR total number of 8-hour days: _____Over 6,000 hours_____

Total number of miles/kilometers walked conducting survey transects:
Over 1500 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: __46___

≥100 mm: __319___

Additional desert tortoise experience:

Project	No.
Health Examinations Including Sub-Carapacial Venipuncture	84
Health Examinations Assist Sub-Carapacial Venipuncture	22
Desert Tortoise Tracking	Over 600
Transmitter Placement or Removal	79

Additional supervisory experience other than with desert tortoise work

Project	Hours	Staff (No.)
Gulf Coast BP Oil Spill Sediment and Water Quality Survey	700+	Approx. 30
Las Vegas Ski and Snowboard Resort Projects	1000+	Approx. 10
Numerous U.S. Army Corps of Engineers Section 404 Surveys	1000+	Approx. 3
Numerous Biological Assessments	500+	Approx. 3+
Numerous Invasive Species Mitigation Projects	1000+	Approx. 15

Additional references for individuals whom have held **less than three** positions working with desert tortoise

Project Name **Job Title** **Date of Employmenet**	**Supervisor/ Project Contact** **Name** **Phone** **Email Address**

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.
I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: _____ Date: 14JUN2021

2

ATTACHMENT L

DESERT TORTOISE PRESENCE/ ABSENCE SURVEY REPORT, BNSF ALTERNATIVES FEASIBILITY ASSESSMENT, BARSTOW, CALIFORNIA, JUNE 2022



Desert Tortoise

Presence/ Absence Survey Report

BNSF Alternatives Feasibility Assessment

Barstow, California

Prepared for:

BNSF RAILWAY & ROCKS BIOLOGICAL CONSULTING

Prepared by:

EcoVita

June 2022

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1.0 Executive Summary

The BNSF Alternatives Feasibility Assessment is located on private land in Lenwood, California, approximately 4.5 miles west of downtown Barstow. A desert tortoise (*Gopherus agassizii*) presence/ absence survey was conducted over 495 acres (survey area). The surveys occurred May 18, 2022 through May 19, 2022 and followed the United States Fish and Wildlife Service's (USFWS) *Mojave Desert Tortoise Pre-project Survey Protocols* (USFWS 2019). The survey area can be viewed on the **Figure 1: Project Overview Map**. For survey results, see **Figure 2: Desert Tortoise Sign Map 1 of 3**, **Figure 3: Desert Tortoise Sign Map 2 of 3**, and **Figure 4: Desert Tortoise Sign Map 3 of 3**.

See **Appendix A: Datasheets**, **Appendix B: Survey Photos**, and **Appendix C: Qualifications Form** for survey documentation.

Below are the results of the May 2022 surveys:

- One Class 2 desert tortoise burrow;
- Five Class 3 desert tortoise burrows.

2.0 Introduction

2.1 Project Location

The survey area is in Lenwood, California, approximately 4.5 miles west of downtown Barstow, on private land, in San Bernardino County (**Figure 1: Project Overview Map**). The survey area includes the following Sections, Townships, and Ranges within the San Bernardino Meridian:

- Township 8 North, Range 3 West, Sections 3, 4, 5, 7, and 8
- Township 9 North, Range 3 West, Sections 23, 24, 26, and 27
- Township 9 North, Range 2 West, Sections 17, 18, and 19

2.2 Survey Area

The survey area can be viewed on the **Figure 1: Project Overview Map**. The survey area is approximately 4.4 miles south and 6.0 miles west of desert tortoise USFWS Critical Habitat and Bureau of Land Management Area of Critical Environmental Concern.

3.0 Environmental Setting

3.1 Land Cover

The Classification and Assessment with LANDSAT of Visible Ecological Groupings (CALVEG) classification system and field survey reconnaissance reveal that survey area includes desert scrub, alkali desert scrub, agriculture, and urban landscapes within the survey area (Databasin 2021). The Manual of California Vegetation alliances observed within the survey area include: *Ephedra californica – Ephedra trifurca* Shrubland Alliance, *Larrea tridentata* Shrubland Alliance, and *Atriplex polycarpa* Shrubland Alliance (CNPS 2021).

Invasive plant species were pervasive throughout the survey area and include redstem filaree (*Erodium cicutarium*), Sahara mustard (*Brassica tournefortii*), tumble mustard (*Sisymbrium altissimum*), cheatgrass (*Bromus tectorum*), foxtail brome (*Bromus madritensis*), and Mediterranean grass (*Schismus barbatus*).

4.0 Methodology

4.1 Personnel

The desert tortoise surveys were led by Adam Hamburg of Eco Vita Environmental Compliance. Mr. Hamburg possesses 15 years of desert tortoise field experience and has been authorized by the USFWS on numerous projects to conduct desert tortoise surveys. A USFWS Desert Tortoise Qualifications Form for the lead biologist can be found in **Appendix C: Qualifications Form**.

4.2 Survey Methodology

The desert tortoise presence/ absence surveys were conducted May 18, 2022 through May 19, 2022, 2022. The survey followed the USFWS "large project" desert tortoise survey protocols. The "large project" protocol was appropriate for the 495-acre survey because it is part of a larger project area that is being surveyed incrementally. Belt-transects were spaced 10 meters apart and covered 100 percent of the Project Area. Garmin Global Positioning System units were used to guide the surveys. Fulcrum digital datasheets and photographs were used to record all sign of desert tortoise presence. Tortoise sign includes burrows, pallets, scat, tracks, courtship rings, drinking depressions, carcasses, and live tortoises. The conditions recorded for each desert tortoise burrow, carcass, and scat observation were classified according to the USFWS 2009 protocol classification system (**Table 1: Desert Tortoise Sign Classification Index**). All observed burrows were examined using flashlights.

5.0 Survey Results

For the location of observations made during the survey, see **Figure 2: Desert Tortoise Sign Map 1 of 3**, **Figure 3: Desert Tortoise Sign Map 2 of 3**, and **Figure 4: Desert Tortoise Sign Map 3 of 3**. See **Appendix A: Datasheets** and **Appendix B: Survey Photos** for survey documentation.

Below are the results of the May 2022 surveys:

- One Class 2 desert tortoise burrow;
- Five Class 3 desert tortoise burrows.

6.0 References

California Native Plant Society (CNPS). 2021. A Manual of California Vegetation, Online Edition. Accessed November 2021. http://www.cnps.org/cnps/vegetation/. California Native Plant Society, Sacramento, CA.

Databasin. 2021. California Augmented Multisource Landcover 2010. Accessed November 2021. https://databasin.org/datasets/f12a901528c0498ba63ca291b8e6627b/. Allan D. Hollander, Information Center for the Environment, University of California, Davis.

United States Fish and Wildlife Service (USFWS)da. 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). Region 8, Sacramento, California.

USFWS. 2011. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). Region 8, Sacramento, California.

USFWS. 2019. Preparing for Any Action That May Occur Withing the Range of the Mojave Desert Tortoise. Region 8, Sacramento, California.

Figures

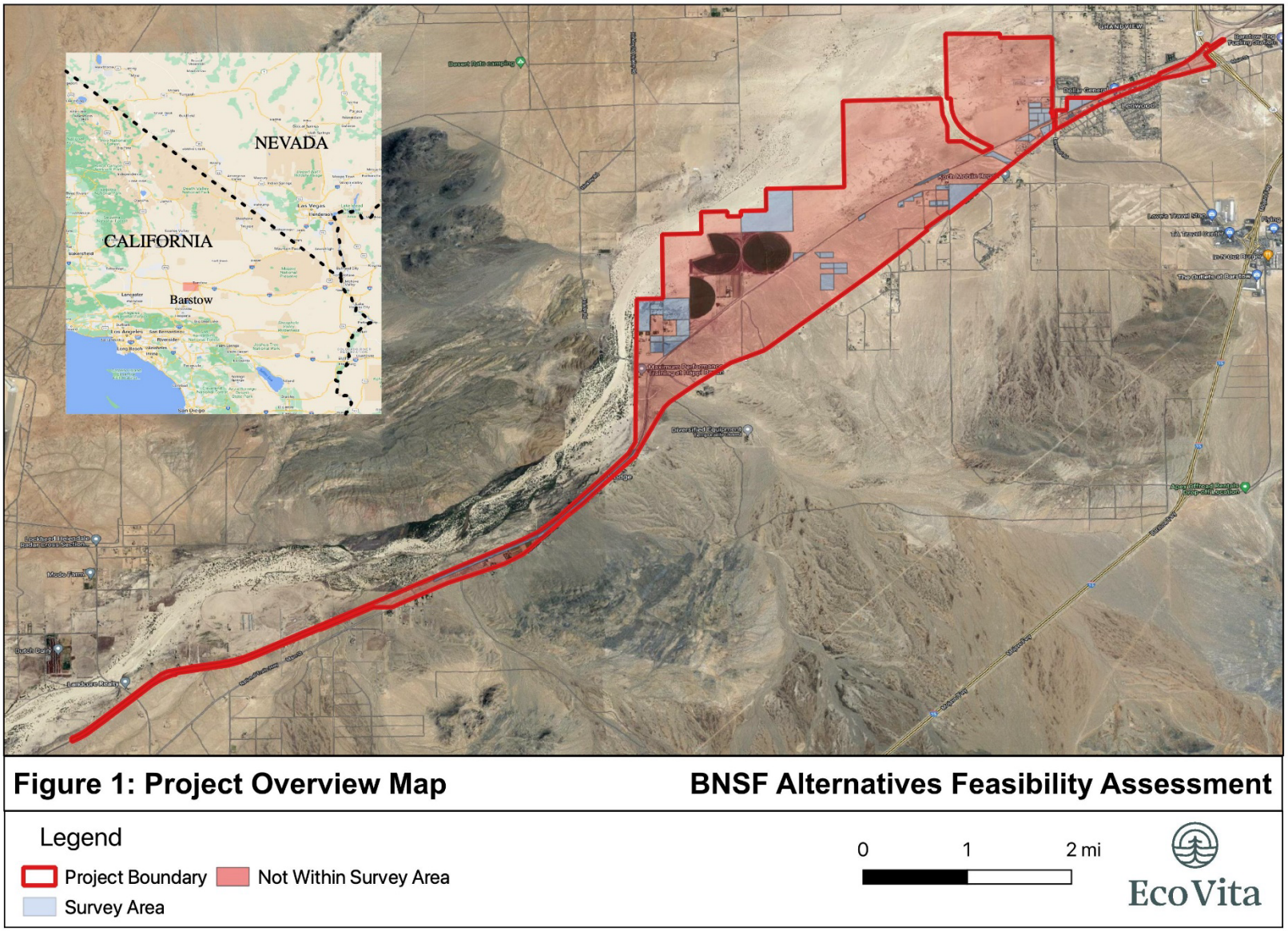


Figure 1: Project Overview Map

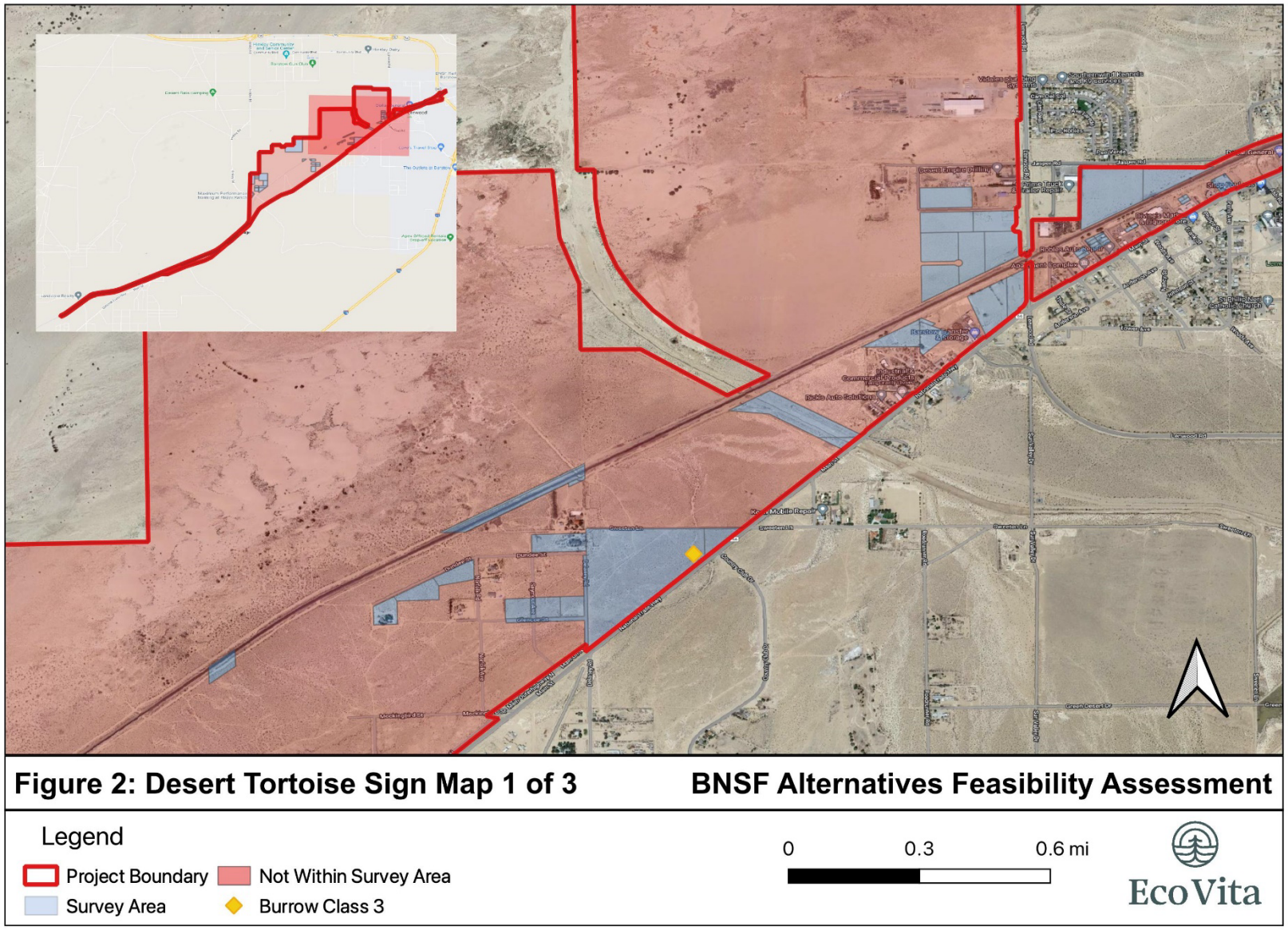


Figure 2: Desert Tortoise Sign Map 1 of 3

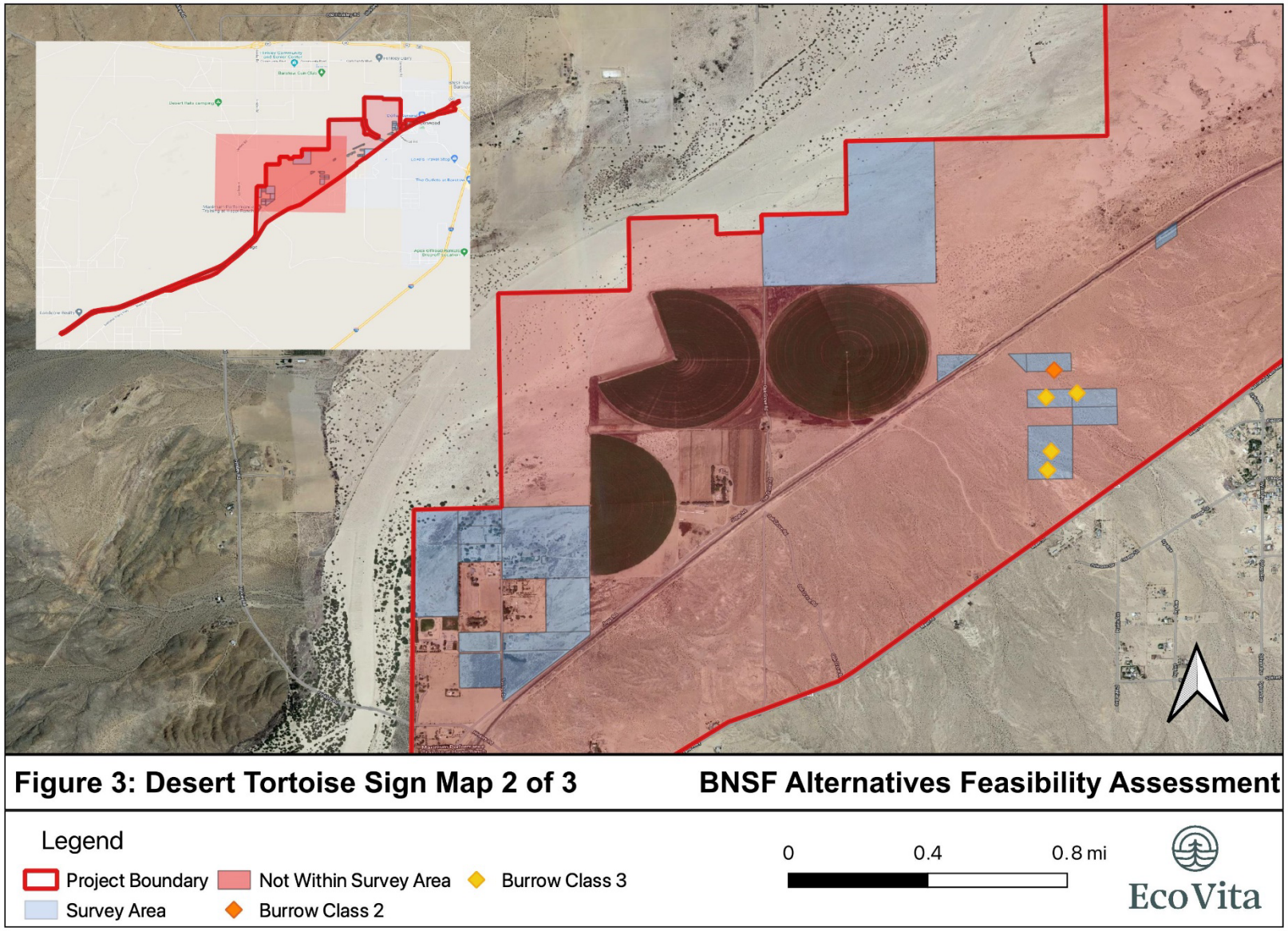


Figure 3: Desert Tortoise Sign Map 2 of 3

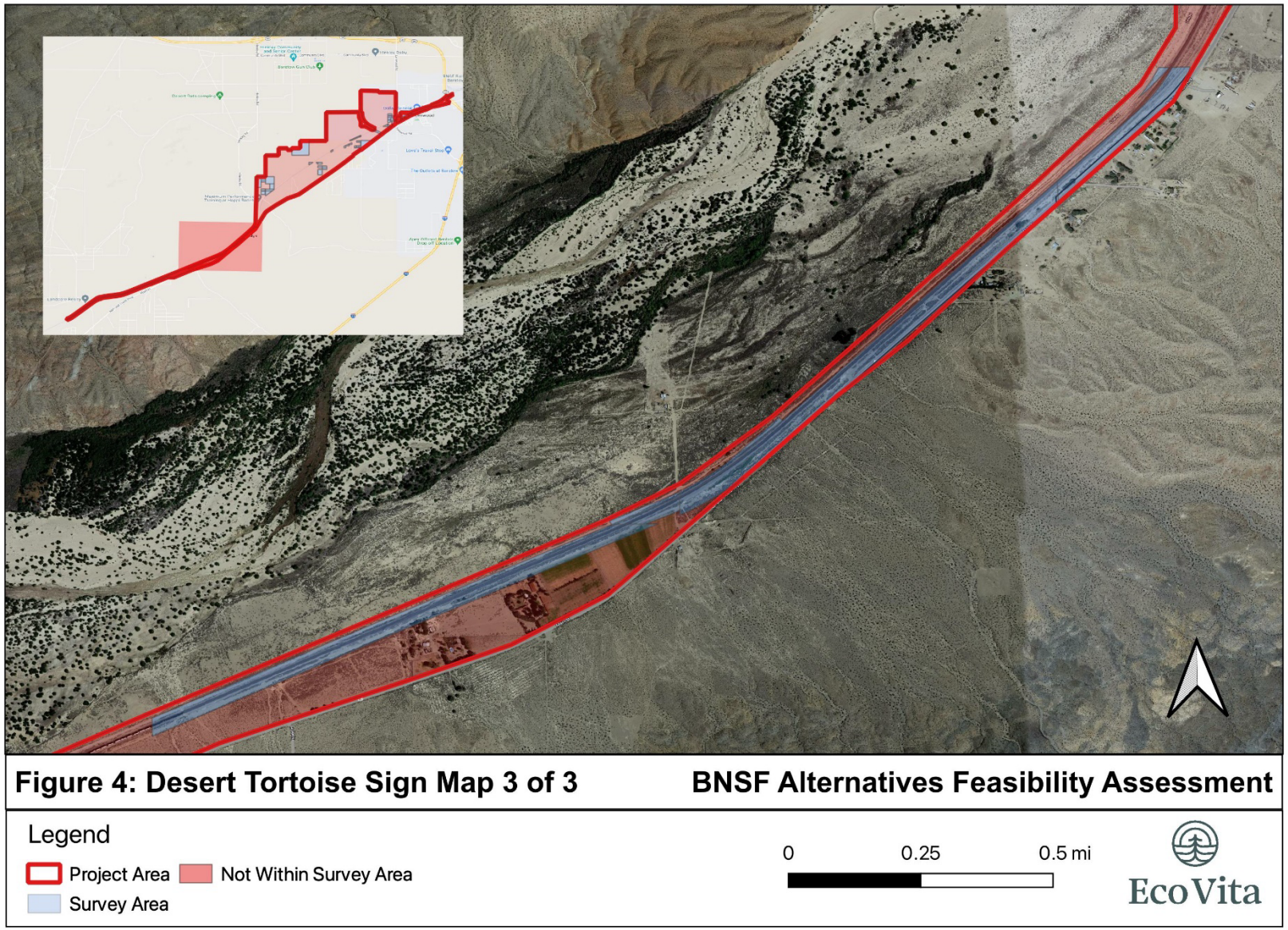


Figure 4: Desert Tortoise Sign Map 3 of 3

Tables

Sign	Class	Definition
Burrows and Pallets		
	1	Definitely Tortoise (Fresh tracks, tortoise inside, freshly disturbed soil)
	2	Definitely Tortoise (Good condition, no evidence of recent use)
	3	Definitely Tortoise (Deteriorated condition, maybe used by another animal)
	4	Possibly Tortoise (Condition good, maybe used by another animal)
	5	Possibly Tortoise (Deteriorated condition)
Scat		
	1	This year (Wet or fresh, dark color, odiferous, with glaze)
	2	This year (Dried, possible glaze on part, dark on unexposed surface)
	3	This year (Dried, no glaze, at least partially faded color)
	4	Not this year (Dried, no glaze, mostly faded color)
	5	Not this year (Dried, loosening, pale or bleached)
Carcass		
	1	1st Year (Unexposed scutes normal color and sheen, adhere tightly, exposed scutes paling and may be lifting off. Unexposed bone waxy and solid, odor)
	2	1-2 Years (Unexposed scutes normal color with slight sheen, mostly tightly attached. Exposed scutes slightly pale with no sheen and no to slight growth ring peeling, no odor, unexposed scutes silky)
	3	2-3 Years (Unexposed scutes normal color to slightly pale, no sheen, no peeling. Exposed scutes pale with slight peeling. Scutes loose, off and/ or tight. Bone sutures generally tight)
	4	4 years (Unexposed scutes normal color to slightly pale, no sheen, no peeling. Exposed scutes loose, pale dull, with moderate peeling. Sutures separating and bone surface is fissured, edges are roughened and chip fairly easily)
	5	Greater than 4 years (Disarticulated and disarticulating. Bone edges chip and crumble easily. Scutes are peeling and curled)

Table 1: Desert Tortoise Sign Classification Index

Appendix A: *Datasheets*

Start of Day Data Sheet

Site Description (Project, size, general location):	BNSF Alternatives Feasability Assessment - Barstow, 495 acres, Lenwood, CA	County:	San Bernardino	Quad:	Hodge, Barstow SE, Barstow

date	start time	start temp (c)	start location utm nad83	start altitude (m)	survey biologists	100% coverage or sampling	end time	end temp (c)	end location utm nad83	end altitude (m)
5/18/22	8:30	21	479498 3850740	711	Adam Hamburg,Wade Plafcan, Shane McKinney	100% Coverage	18:00	37	485670 3856243	696
5/19/22	6:30	23	485670 3856585	696	Adam Hamburg,Wade Plafcan, Shane McKinney	100% Coverage	16:30	37	489863 3859524	685

Desert Tortoise Sign Datasheet

tortoise sign	sign class	comments	date	latitude	longitude	photo number
Burrow	Class 3		5/18/22	34.8469166	-117.1570693	Photo 1
Burrow	Class 3		5/18/22	34.8478582	-117.1568673	Photo 2
Burrow	Class 3	Egg shells	5/18/22	34.8507801	-117.1555138	Photo 3, Photo 4
Burrow	Class 3		5/19/22	34.8505942	-117.1570791	Photo 5, Photo 6
Burrow	Class 2	Scat,Tracks. Possibly Class 3.	5/19/22	34.851957	-117.1566485	Photo 7
Burrow	Class 3	Good shaped ceiling in back. No evidence of recent use.	5/19/22	34.8628639	-117.1317659	Photo 8

Appendix B: *Survey Photos*



Photograph 1:
Class 3 burrow.



Photograph 2:
Class 3 burrow.



Photograph 3:
Class 3 burrow.



Photograph 4:
Class 3 burrow.



Photograph 5: Class 3 burrow.



Photograph 6: Tortoise scat near Class 3 burrow.



Photograph 7: Class 2 burrow.



Photograph 8: Class 3 burrow.

Appendix C: *Qualifications Form*

GENERAL DESERT TORTOISE QUALIFICATIONS STATEMENT

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e. Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Adam L. Hamburg
Address	596 California Ave, Apt A
City, State, Zip Code	Reno, NV 89509
Phone Number(s)	(702) 556-2500
Email Address	ahamburg@EcoVitaEnv.com

2. Date:

3. Areas in which authorization is requested (check all that apply):

□ San Bernardino, Kern, and Los Angeles Counties, California (Ventura office)
□ Riverside and Imperial Counties, California (Carlsbad office)
□ Nevada □ Utah □ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP Permit No.		
Project Name		
Federal Agency		
Proponent or Contractor		

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities
Desert Tortoise	05/31/2016	USFWS authorization required for each project	Sub-carapacial venipuncture, epicoelomic fluid administration, blood sample processing.

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
Northern Arizona University	May 2004 to December 2006	Environmental Sciences, Management	Bachelor of Science

7. Desert Tortoise Training:

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes- Desert Tortoise Handling Workshop	November 3-4, 2007	Ridgecrest, California	Desert Tortoise Council
2. USFWS Desert Tortoise Health Assessments for Translocation Projects Training Workshop	April 3-5, 2012	Desert Tortoise Conservation Center, Las Vegas, Nevada	Kimberleigh Field
3. USFWS Supervised Practice of Health Assessments for Desert Tortoises	May 24-25, 2016	Large-Scale Translocation Site, Southern Nevada	Roy C. Averill-Murray and Kimberleigh Field

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary.

Experience by project and activity:

Project Name, Job Title, Dates of Employment	Project Contact name, phone no., & Email address	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm / ≥ 100mm	Relocate DTs (No.)	Excavate, and relocate DT nests (No.)
1. Southern Bighorn South and North Health Study, 2,800-acres, Moapa, NV. Health Assessor. 5/12 – 5/20/2021.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com					
2. Mother Lode Exploration Project Presence/ Absence Surveys, 4703-acres, Beatty, NV. Project lead. 5/1 – 5/25/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com					
3. Southern Bighorn South and North Pre-Clearance Surveys, 2,800-acres, Moapa, NV. Desert tortoise Biologist. 4/13 – 4/16/2021.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com	110/11		0/7		
4. Undisclosed Mineral Exploration Project Presence/ Absence Survey, 640-acres, Newberry Springs, CA. Project Lead. 4/13-4/16/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com					
5. Copper Rays Solar Presence/ Absence Surveys, 6,000-acres, Pahrump, NV. Desert Tortoise Biologist. 4/1/2021 - 4/8/2021	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com			0/7		
6. North Bullfrog Exploration Project Modification #2, Presence/ Absence Surveys, 20-acres, Beatty, NV. Project lead. 3/6/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com					

7. Eagle Shadow Mountain Health Assessment for Translocation, 3000-acres. Moapa River Indian Reservation, Clark County, NV. Lead Health Assessor. 04/01/20 – 04/28/20 and 08/01/20 – 10/15/20.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com					39	
8. Undisclosed Mineral Exploration Project Presence/ Absence Survey, 35-miles. Beatty, NV. Project Lead Biologist. 06/16/2020 – 06/18/20.	McGinley and Associates Gareth Blakemore (775) 432-4792 gblakemore@mcgin.com						
9. Eagle Shadow Mountain Health Assessment for Translocation, 3000-acres. Moapa River Indian Reservation, Clark County, NV. Desert Tortoise Biologist. 09/16/19 – 11/06/19.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com				2/16 (Found while tracking or moving between health exams, not line surveying)		
10. Eagle Shadow Mountain Presence/ Absence Survey, 3,000-acres. Moapa River Indian Reservation, Clark County, NV. Desert Tortoise Biologist. 9/24/18 – 10/3/18.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com		120/10		0/5		
11. Techren Solar 1 Clearance Survey, 2,300-acres. Boulder City, NV. Desert Tortoise Biologist. 5/1/18 – 5/5/18.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com		50/5				
12. Mesquite Gold Mine Clearance Surveys, 1,800-acres. Brawley, CA. Desert Tortoise Biologist. 5/16/17 – 5/23/17.	Hernandez Environmental Services Juan Hernandez (951) 579-1657 juan@hernandezenvironmental.com		130/13	2			

13. Eldorado, Lugo, Mohave Transmission Line Upgrade Project 20-acre Pre-Project Survey. Hesperia, CA to Laughlin, NV to Boulder City, NV. Desert Tortoise Biologist. 5/12/17 – 5/15/17	Insignia Environmental Stephanie Hansen (650) 321-6787 shansen@insigniaenv.com						
14. USFWS Supervised Practice of Health Assessments for Desert Tortoise, Large-Scale Translocation Site (LSTS), Jean, NV, 5/24/16 – 5/25/16	USFWS Roy Averill-Murray (775) 861-6362 roy_averill-murray@fws.gov Cristina Jones (623) 236-7767 cajones@azgfd.gov						
15. Silver State Solar South, Primm, NV, Project Field Manager, 4/20/15 – 11/13/2015	NewFields Sean Milne, (585) 269-0054 smilne@newfields.com		8/2	1	2/8	21	
16. Copper Mountain Solar 4, Ivanpah Valley, NV, Project Field Manager, 10/16/15	Sean Milne, (585) 269-0054, smilne@newfields.com						
17. Copper Mountain Solar 5, Ivanpah Valley, NV, Project Field Manager, 10/5/15 – 10/15/15	Sean Milne, (585) 269-0054, smilne@newfields.com				1/4		
18. San Diego Zoo Institute for Conservation Research Health Examinations w/ Blood Work, Las Vegas, NV, Volunteer, 8/6/15 – 8/7/15	Jeanette Perry, (702) 278-1001 jperry@sandiegozoo.org						
19. AIYA Solar Project, Moapa, NV, Project Field Manager, 5/23/15 – 5/29/15	Sean Milne, (585) 269-0054 smilne@newfields.com				2/5		

20. Moapa Paiute Solar Project Health Examinations w/ Blood Work, Moapa, NV, Volunteer, Environmental Scientist, 4/14/15 – 4/15/15	Scott Hoffman, (702) 875-2243 scott.hoffmann@cardno.com						
21. Boulder City By-Pass, Boulder City, NV, Federal Communications Representative/ Project Field Manager, 2/18/15 – 4/17/15	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/45		0/3	2	
22. Dry Lake Solar Energy Zone, Presence/ Absence Survey, North Las Vegas, NV, Environmental Scientist, 9/8/14 – 10/17/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/20		1/11		
23. Paiute Snow Mountain Solar, 5m Presence/ Absence Survey, Las Vegas, NV, Environmental Scientist, 9/27/14 – 10/10/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		110/11		3/8		
24. Silver State Solar North, Construction Monitoring, Ivanpah Valley, NV, Environmental Scientist, 9/30/14 - 10/1/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
25. Paiute Lyttle Solar Energy Project, Moapa, NV, Construction Monitoring, Environmental Scientist, 9/29/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
26. Copper Mountain Solar 4, Presence/ Absence Survey, Environmental Scientist, 5/23/14 – 5/28/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		60/6				
27. Snow Mountain Paiute Reservation Solar Project, Project Presence/ Absence Survey, Environmental Scientist, 5/14/14 – 5/18/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		50/5		1/9		

28. Boulder City Conservation Easement Occupancy Sampling 2014, Environmental Scientist, 4/9/14 – 5/30/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		160/16		0/8		
29. Copper Mountain Solar 3, Eldorado Valley, NV, Federal Communications Representative, 8/19/13 – 5/11/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		468/39				
30. Boulder City By-Pass, Boulder City, NV, Presence/ Absence, Tortoise Crew Leader, 4/7/14 – 5/10/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10		1/9		
31. Silver State Solar North Relocation Pens Tracking, Ivanpah Valley, NV, Environmental Scientist, 4/4/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		10/1		2/6		
32. Mark-Recapture Study, Marine Corps Air Ground Combat Center, Johnson Valley, CA, Environmental Scientist, 4/16/13 – 5/14/13	Dr. Alice Karl, (530) 304-4121, heliophile@mindspring.com				0/11		
33. Boulder City Conservation Easement Occupancy Sampling Pilot Study, Environmental Scientist, 3/18/13 – 4/6/13	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com				2/7		
34. Boulder Solar Project (formerly Dry Lake) Pre-Project Presence/ Absence Survey, Environmental Scientist, 4/16/12 – 4/28/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com				1/0		
35. Townsite Solar Pre-Project Presence/ Absence Survey, Environmental Scientist, 4/1/12 – 4/15/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						

36. Tortoise Population Connectivity Research, Ivanpah Valley; Environmental Scientist, 2/8/12- 2/10/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
37. Desert Tortoise Conservation Center Construction Monitoring, Environmental Scientist, 4 /2011	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10				
38. Silver State Solar North Project Clearance Survey, Environmental Scientist, 2/17/11 – 4/5/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/20	5	3/2	3	
39. Copper Mountain 2 (Formerly Nextlight) Solar Project Clearance Survey, Environmental Scientist, 1/9/12 – 1/13/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		50/5	10	0/4	4	
40. Mesquite Regional Park, Hardy Way Construction Monitoring, Environmental Scientist, 10/18/11-10/21/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		40/4				
41. Mesquite Regional Park, Hardy Way Clearance Survey, Environmental Scientist, 5/5/11 – 5/13/11 & 10/3/11-10/12/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		150/15	28	2/7	17	
42. Techren Boulder City Solar Pre-Project Presence/ Absence Survey, Environmental Scientist, 5/2/11 - 5/4/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		30/3				
43. Ivanpah Airport Geo-tech Monitoring, Environmental Scientist, June 2010	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10				

44. Kitty Hawk Road North Modified Retention Facility, Environmental Scientist, November 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				
45. Nextlight Boulder City Solar Project, Environmental Scientist, October 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		60/5		0/2		
46. Jean, NV Geotech Surveys (Klienfelder), Environmental Monitor, July 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		20/2				
47. Town Wash Flood Control, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		16/2				
48. Mesquite Highway Interchange, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		16/2				
49. Cactus Avenue & I-15 Interchange, Pre-Project Presence/ Absence Survey, Environmental Scientist, June 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		16/2				
50. Mesquite 11-Acres, Pre-Project Presence/ Absence Survey, Environmental Scientist, May 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				
51. Lincoln County 230kV Transmission Line, Environmental Scientist, April -May, 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		200/25		1/3		

52. Mesquite Regional Park, Environmental Scientist, Pre-Project Presence/ Absence Survey,January 3rd, 7th and 8th, 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		30/3		1/1	2	0
53. Floyd Lamb Park at Tule Springs, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 11th and 12th, 2007.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				
54. Laughlin River Village-19 Acre, Pre-Project Presence/ Absence Survey, Environmental Scientist, May 12th, 2007.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				

Experience by project and activity (continued): Each project number should correspond with the project listed on the previous page

Project Number (Corresponds to previous page)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/Days)	Oversee project compliance (Hrs/Days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
1. Southern Bighorn South and North Health Study				80/8, 4		
2. Mother Lode Exploration Project				150/15		
3. Southern Bighorn South and North Pre-Clearance Surveys				110/11, 12		
4. Fort Cady Mine Presence/ Absence Surveys				40/4, 4		
5. Copper Rays Solar Presence/ Absence Surveys						
6. North Bullfrog Exploration Project Modification #2				12/1, 1		
7. Eagle Shadow Mountain Health Assessment for Translocation	10			364/28 Staff-6		

8. Undisclosed Mineral Exploration Project Presence/ Absence Survey				25/3 Staff-1		
9. Eagle Shadow Mountain Health Assessment for Translocation				240/24, Staff-1		
10. Eagle Shadow Mountain Presence/ Absence Survey						
11. Techren Solar 1						
12. Mesquite Gold Mine Clearance Surveys						
13. Eldorado, Lugo, Mohave Transmission Line Upgrade Project						
14. USFWS Supervised Practice of Health Assessments for Desert Tortoise, Large-Scale Translocation Site						
15. Silver State Solar South	20	803/73	803/73	803/73, Staff-22	180/15	
16. Copper Mountain Solar 4				24/2, Staff-5		
17. Copper Mountain Solar 5				80/8, Staff-5		

18. San Diego Zoo Institute for Conservation Research Health Examinations w/ Blood Work						
19. AIYA Solar Project				60/6, Staff-5		
20. Moapa Paiute Solar Project Health Examinations w/ Blood Work						
21. Boulder City By-Pass		450/45	450/45	450/45, Staff-12		27
22. Dry Lake Solar Energy Zone				200/20, Staff-8		
23. Paiute Snow Mountain Solar				110/11, Staff-8		
24. Silver State Solar North		20/2	20/2		20/2	2
25. Paiute Lyttle Solar Energy Project		10/1	10/1	10/1, Staff-1		
26. Copper Mountain Solar 4				60/6, Staff-5		
27. Snow Mountain Paiute Solar Project				100/10, Staff-6		

28. Boulder City Conservation Easement Occupancy Sampling 2014					150/15, Staff-4		
29. Copper Mountain Solar 3			490/49	490/49	490/49, Staff-18	250/25	14
30. Boulder City By-Pass					90/9, Staff-6		
31. Silver State Solar North					10/1, Staff-2		
32. Mark-Recapture Study, Marine Corps Air Ground Combat Center							
33. Boulder City Conservation Easement Occupancy Sampling Pilot Study							
34. Boulder City Solar Project					13/130, Staff-4		
35. Townsite Solar					16/160, Staff-4		
36. Ivanpah Valley							
37. Desert Tortoise Conservation Center			100	100/10			

38. Silver State Solar North		20/2		200/20,Staff-20	20/2	20
39. Copper Mountain 2				50/5, Staff-4		
40. Mesquite Regional Park	2	40/4	40/4	40/4, Staff-10	40/4	5
41. Mesquite Regional Park		150/15	150/15	150/15,Staff-12	150/15	25
42. Techren Boulder City Solar				30/3, Staff-8		
43. Ivanpah Airport		100/10	100/10	100/10, Staff-2		20
44. Kitty Hawk Road North Modified Retention Facility						
45. Nextlight Boulder City Solar				5/60, Staff-5		
46. Jean, NV		20/2	20/2			
47. Town Wash Flood Control				16/2, Staff-1		

48. Mesquite Highway Interchange				16/2, Staff-1		
49. Cactus Avenue & I-15 Interchange		300+/30+	300+/30+			
50. Mesquite 11-Acres						
51. Lincoln County 230kV Transmission Line						
52. Mesquite Regional Park				160/20, Staff-1		
53. Floyd Lamb Park at Tule Springs			2		20/2	2
54. Laughlin River Village-19 Acre						

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours
OR total number of 8-hour days: _____Over 6,000 hours_____

Total number of miles/kilometers walked conducting survey transects:
Over 1500 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: __46___

≥100 mm: __319___

Additional desert tortoise experience:

Project	No.
Health Examinations Including Sub-Carapacial Venipuncture	84
Health Examinations Assist Sub-Carapacial Venipuncture	22
Desert Tortoise Tracking	Over 600
Transmitter Placement or Removal	79

Additional supervisory experience other than with desert tortoise work

Project	Hours	Staff (No.)
Gulf Coast BP Oil Spill Sediment and Water Quality Survey	700+	Approx. 30
Las Vegas Ski and Snowboard Resort Projects	1000+	Approx. 10
Numerous U.S. Army Corps of Engineers Section 404 Surveys	1000+	Approx. 3
Numerous Biological Assessments	500+	Approx. 3+
Numerous Invasive Species Mitigation Projects	1000+	Approx. 15

Additional references for individuals whom have held **less than three** positions working with desert tortoise

Project Name **Job Title** **Date of Employmenet**	**Supervisor/ Project Contact** **Name** **Phone** **Email Address**

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.
I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: _____ Date: 14JUN2021

2

ATTACHMENT M

DESERT TORTOISE PRESENCE/ ABSENCE SURVEY REPORT, BNSF ALTERNATIVES FEASIBILITY ASSESSMENT, 246 ACRES – BARSTOW, CALIFORNIA, AUGUST 2022



Desert Tortoise

Presence/ Absence Survey Report

BNSF Alternatives Feasibility Assessment

246 Acres - Barstow, California

Prepared for:

BNSF RAILWAY & ROCKS BIOLOGICAL CONSULTING

Prepared by:

EcoVita

August 2022

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Figure 1: Project Overview Map

Appendices

Appendix A: Datasheets
Appendix B: Survey Photos
Appendix C: Qualifications Form

1.0 Executive Summary

The BNSF Alternatives Feasibility Assessment is located on private land in Lenwood, California, approximately 4.5 miles west of downtown Barstow. A desert tortoise (*Gopherus agassizii*) presence/ absence survey was conducted over 246 acres (survey area). The surveys occurred June 15, 2022, through June 16, 2022, and followed the United States Fish and Wildlife Service's (USFWS) *Mojave Desert Tortoise Pre-project Survey Protocols* (USFWS 2019). The survey area can be viewed on the **Figure 1: Project Overview Map**.

See **Appendix A: Datasheets**, **Appendix B: Survey Photos**, and **Appendix C: Qualifications Form** for survey documentation.

Below are the results of the June 2022 surveys:

- No desert tortoise sign;
- No live desert tortoise.

2.0 Introduction

2.1 Project Location

The survey area is in Lenwood, California, approximately 4.5 miles west of downtown Barstow, on private land, in San Bernardino County (**Figure 1: Project Overview Map**). The survey area includes the following Sections, Townships, and Ranges within the San Bernardino Meridian:

- Township 8 North, Range 3 West, Sections 7 and 8
- Township 8 North, Range 3 West, Sections 12,13, 14, 15, 22, and 23
- Township 9 North, Range 2 West, Section 9

2.2 Survey Area

The survey area represented in this report is 246 acres of the larger BNSF Alternatives Feasibility Assessment project. The survey area can be viewed on the **Figure 1: Project Overview Map**. The survey area is approximately 4.4 miles south and 6.0 miles west of desert tortoise USFWS Critical Habitat and Bureau of Land Management Area of Critical Environmental Concern.

3.0 Environmental Setting

3.1 Land Cover

The Classification and Assessment with LANDSAT of Visible Ecological Groupings (CALVEG) classification system and field survey reconnaissance reveal that survey area includes desert scrub, alkali desert scrub, agriculture, and urban landscapes within the survey area (Databasin 2022).

Invasive plant species were pervasive throughout the survey area and include redstem filaree (*Erodium cicutarium*), Sahara mustard (*Brassica tournefortii*), tumble mustard (*Sisymbrium altissimum*), cheatgrass (*Bromus tectorum*), foxtail brome (*Bromus madritensis*), and Mediterranean grass (*Schismus barbatus*).

3.2 Land Use

The habitat within the survey area and the immediate surroundings is a mixture of open desert, urban, industrial, and agricultural habitat that is highly disturbed from human activity. Railroad tracks run through or adjacent to the survey area and the National Trails Highway acts as the southern border.

2.3 Topography and Soils

The topography of the survey area is nearly flat with an elevation of 2,418 feet (737 meters) in the west to 2,198 feet (670 meters) in the east. Data from the U.S. Department of Agriculture National Resources Conservation Service online Web Soil Survey (Soil Survey Staff 2022) show the soils as alluvium with gravelly sand, loamy sand, loamy fine sand, and sandy soils.

4.0 Methodology

4.1 Personnel

The desert tortoise surveys were led by Adam Hamburg of Eco Vita Environmental Compliance. Mr. Hamburg possesses 15 years of desert tortoise field experience and has been authorized by the USFWS on numerous projects to conduct desert tortoise surveys. A USFWS Desert Tortoise Qualifications Form for the lead biologist can be found in **Appendix C: Qualifications Form**.

4.2 Survey Methodology

The desert tortoise presence/ absence surveys were conducted June 15, 2022 through June 16, 2022. The survey followed the USFWS “large project” desert tortoise survey protocols. The “large project” protocol was appropriate for the 246-acre survey because it is part of a larger project area that is being surveyed incrementally. Belt-transects were spaced 10 meters apart and covered 100 percent of the survey area. Garmin Global Positioning System units were used to guide the surveys. Fulcrum digital datasheets and photographs were used to record all sign of desert tortoise presence. Tortoise sign includes burrows, pallets, scat, tracks, courtship rings, drinking depressions, carcasses, and live tortoises. The conditions recorded for each desert tortoise burrow, carcass, and scat observation were classified according to the USFWS 2009 protocol classification system (**Table 1: Desert Tortoise Sign Classification Index**). All observed burrows were examined using flashlights.

5.0 Survey Results

The survey area can be viewed on the **Figure 1: Project Overview Map**. See **Appendix A: Datasheets** and **Appendix B: Survey Photos** for survey documentation.

Below are the results of the June 2022 surveys:

- No desert tortoise sign;
- No live desert tortoise.

6.0 References

Databasin. 2022. California Augmented Multisource Landcover 2010. Accessed August 2022. https://databasin.org/datasets/f12a901528c0498ba63ca291b8e6627b/. Allan D. Hollander, Information Center for the Environment, University of California, Davis.

United States Fish and Wildlife Service (USFWS)da. 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). Region 8, Sacramento, California.

USFWS. 2011. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). Region 8, Sacramento, California.

USFWS. 2019. Preparing for Any Action That May Occur Withing the Range of the Mojave Desert Tortoise. Region 8, Sacramento, California.

Figures

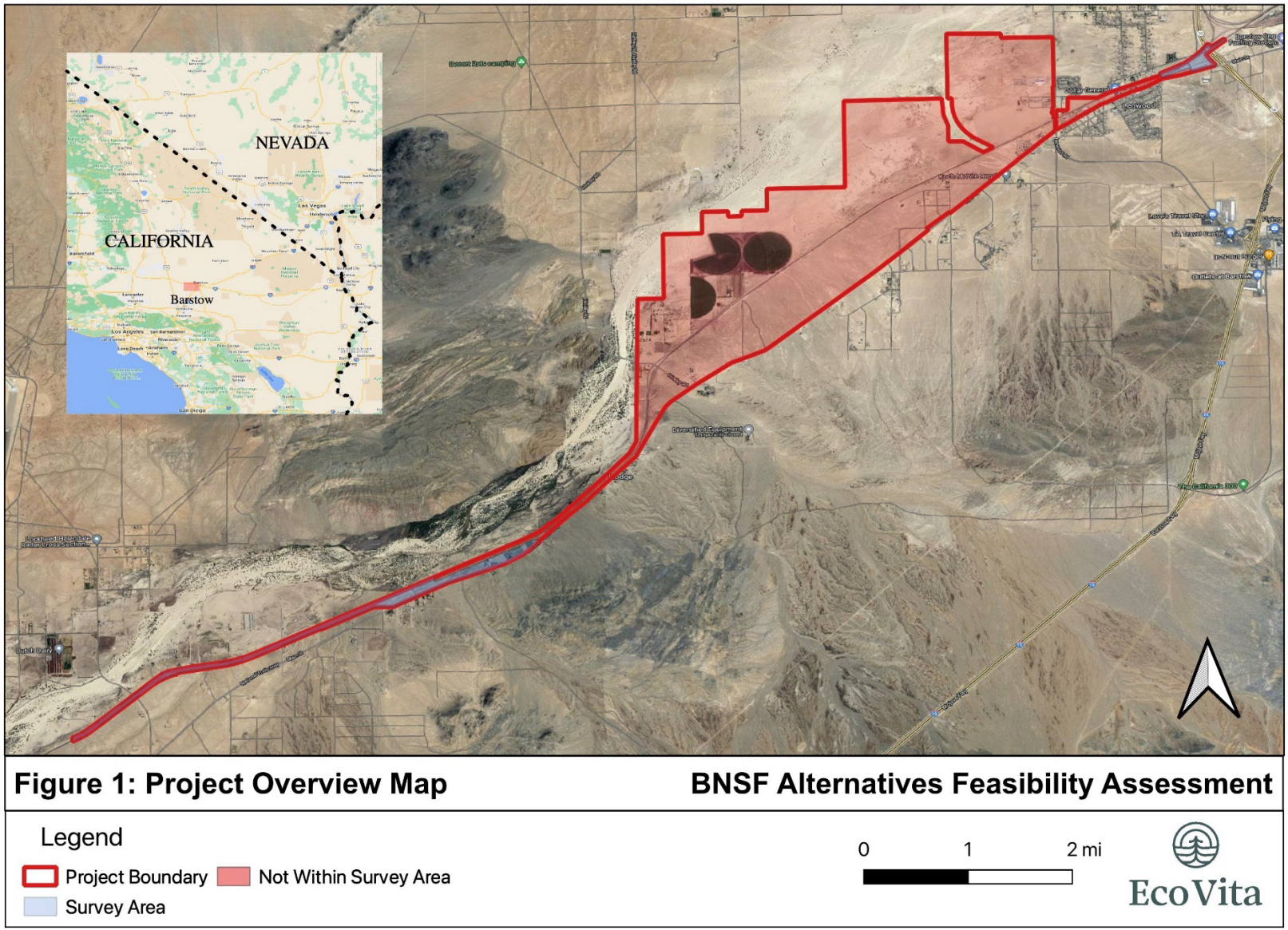


Figure 1: Project Overview Map

Tables

Sign	Class	Definition
Burrows and Pallets		
	1	Definitely Tortoise (Fresh tracks, tortoise inside, freshly disturbed soil)
	2	Definitely Tortoise (Good condition, no evidence of recent use)
	3	Definitely Tortoise (Deteriorated condition, maybe used by another animal)
	4	Possibly Tortoise (Condition good, maybe used by another animal)
	5	Possibly Tortoise (Deteriorated condition)
Scat		
	1	This year (Wet or fresh, dark color, odiferous, with glaze)
	2	This year (Dried, possible glaze on part, dark on unexposed surface)
	3	This year (Dried, no glaze, at least partially faded color)
	4	Not this year (Dried, no glaze, mostly faded color)
	5	Not this year (Dried, loosening, pale or bleached)
Carcass		
	1	1st Year (Unexposed scutes normal color and sheen, adhere tightly, exposed scutes paling and may be lifting off. Unexposed bone waxy and solid, odor)
	2	1-2 Years (Unexposed scutes normal color with slight sheen, mostly tightly attached. Exposed scutes slightly pale with no sheen and no to slight growth ring peeling, no odor, unexposed scutes silky)
	3	2-3 Years (Unexposed scutes normal color to slightly pale, no sheen, no peeling. Exposed scutes pale with slight peeling. Scutes loose, off and/ or tight. Bone sutures generally tight)
	4	4 years (Unexposed scutes normal color to slightly pale, no sheen, no peeling. Exposed scutes loose, pale dull, with moderate peeling. Sutures separating and bone surface is fissured, edges are roughened and chip fairly easily)
	5	Greater than 4 years (Disarticulated and disarticulating. Bone edges chip and crumble easily. Scutes are peeling and curled)

Table 1: Desert Tortoise Sign Classification Index

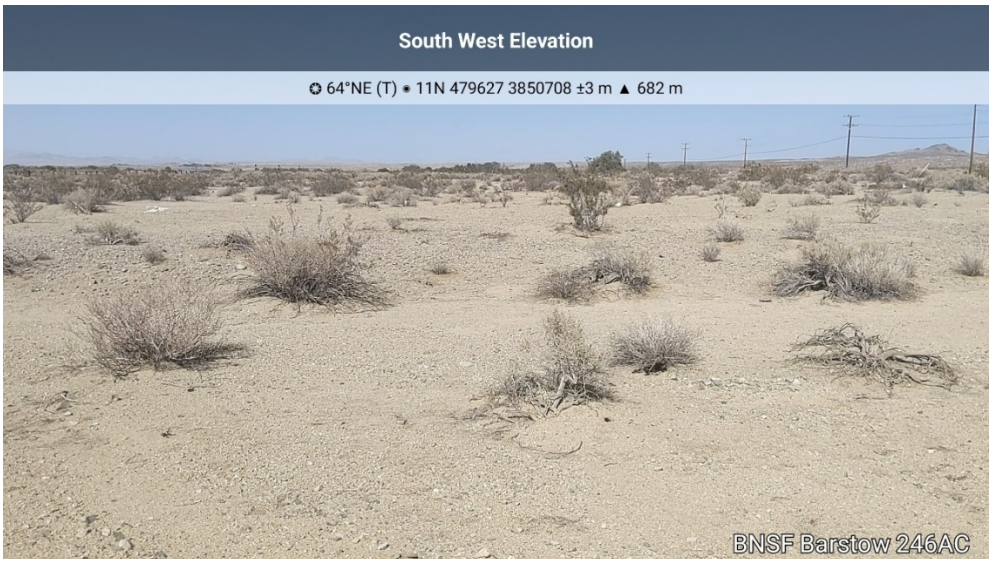
Appendix A: Datasheets

Start / End of Day Data Sheet

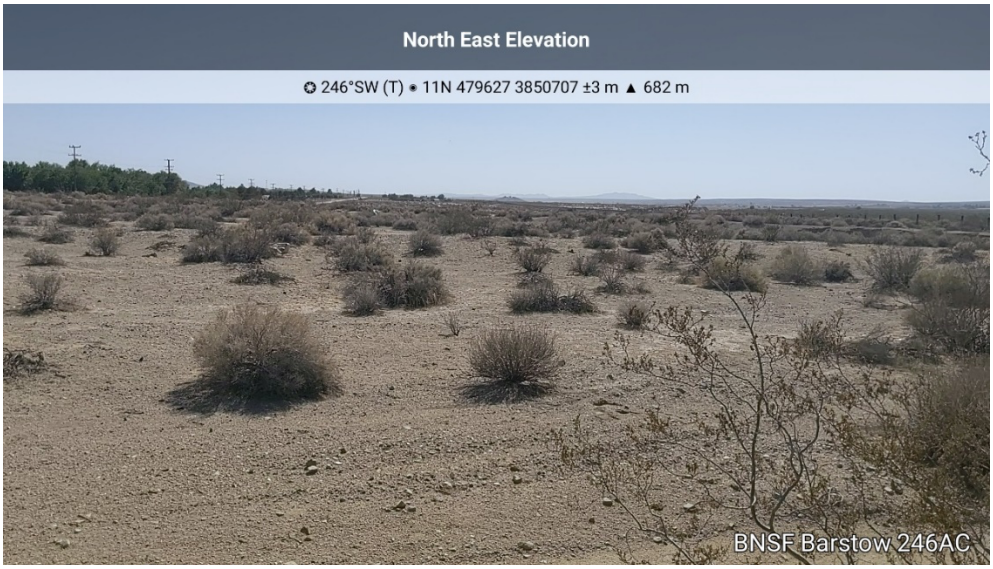
Site Description (Project, size, general location):	BNSF Alternatives Feasability Assessment - Barstow, 246 acres, Lenwood, CA	County:	San Bernardino	Quad:	Hodge, Barstow

date	start time	start temp (c)	start location utm nad83	start altitude (m)	survey biologists	100% coverage or sampling	end time	end temp (c)	end location utm nad83	end altitude (m)
6/15/22	15:10	36	479201 3850468	712	Adam Hamburg, Shane McKinney	100% Coverage	16:51	38	479201 3850468	712
6/16/22	8:00	27	491363 3860199	673	Adam Hamburg, Shane McKinney	100% Coverage	10:30	32	479485 3850768	678

Appendix B: Survey Photos



Photograph 1: Representative habitat in western end of survey area.



Photograph 2: Representative habitat in western end of survey area.



Photograph 3: Representative habitat in eastern end of survey area.



Photograph 4: Representative habitat in eastern end of survey area.

Appendix C: Qualifications Form

GENERAL DESERT TORTOISE QUALIFICATIONS STATEMENT

This form should be used to provide your qualifications to agency officials if you wish to undertake the duties of an authorized biologist with regard to desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10(a)(1)(B) (i.e. Habitat Conservation Plans) of the Endangered Species Act.

(If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required. Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at http://www.fws.gov/forms/3-200-55.pdf.)

1. Contact Information:

Name	Adam L. Hamburg
Address	596 California Ave, Apt A
City, State, Zip Code	Reno, NV 89509
Phone Number(s)	(702) 556-2500
Email Address	ahamburg@EcoVitaEnv.com

2. Date:

3. Areas in which authorization is requested (check all that apply):

□ San Bernardino, Kern, and Los Angeles Counties, California (Ventura office)
□ Riverside and Imperial Counties, California (Carlsbad office)
□ Nevada □ Utah □ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP Permit No.		
Project Name		
Federal Agency		
Proponent or Contractor		

5. If you hold, or have held, any relevant state or federal wildlife permits provide the following:

Species	Dates	State (specify) or Federal Permit Number	Authorized Activities
Desert Tortoise	05/31/2016	USFWS authorization required for each project	Sub-carapacial venipuncture, epicoelomic fluid administration, blood sample processing.

6. Education: Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
Northern Arizona University	May 2004 to December 2006	Environmental Sciences, Management	Bachelor of Science

7. Desert Tortoise Training:

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1. Classes- Desert Tortoise Handling Workshop	November 3-4, 2007	Ridgecrest, California	Desert Tortoise Council
2. USFWS Desert Tortoise Health Assessments for Translocation Projects Training Workshop	April 3-5, 2012	Desert Tortoise Conservation Center, Las Vegas, Nevada	Kimberleigh Field
3. USFWS Supervised Practice of Health Assessments for Desert Tortoises	May 24-25, 2016	Large-Scale Translocation Site, Southern Nevada	Roy C. Averill-Murray and Kimberleigh Field

8. Experience – Include only those positions relevant to the requested work with desert tortoises. Distinguish between Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5. List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project supervisor or other contact that can verify your skills and experience in relation to your job performance.** Attach additional sheets as necessary.

Experience by project and activity:

Project Name, Job Title, Dates of Employment	Project Contact name, phone no., & Email address	Conduct Clearance Surveys (Hrs/Days)	Excavate DT burrows (No.)	Locate DT No. < 100mm / ≥ 100mm	Relocate DTs (No.)	Excavate, and relocate DT nests (No.)
1. Southern Bighorn South and North Health Study, 2,800-acres, Moapa, NV. Health Assessor. 5/12 – 5/20/2021.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com					
2. Mother Lode Exploration Project Presence/ Absence Surveys, 4703-acres, Beatty, NV. Project lead. 5/1 – 5/25/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com					
3. Southern Bighorn South and North Pre-Clearance Surveys, 2,800-acres, Moapa, NV. Desert tortoise Biologist. 4/13 – 4/16/2021.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com	110/11		0/7		
4. Undisclosed Mineral Exploration Project Presence/ Absence Survey, 640-acres, Newberry Springs, CA. Project Lead. 4/13-4/16/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com					
5. Copper Rays Solar Presence/ Absence Surveys, 6,000-acres, Pahrump, NV. Desert Tortoise Biologist. 4/1/2021 - 4/8/2021	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com			0/7		
6. North Bullfrog Exploration Project Modification #2, Presence/ Absence Surveys, 20-acres, Beatty, NV. Project lead. 3/6/2021.	Eco Vita Environmental Adam Hamburg (702) 556-2500 ahamburg@ecovitaenv.com					

7. Eagle Shadow Mountain Health Assessment for Translocation, 3000-acres. Moapa River Indian Reservation, Clark County, NV. Lead Health Assessor. 04/01/20 – 04/28/20 and 08/01/20 – 10/15/20.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com					39	
8. Undisclosed Mineral Exploration Project Presence/ Absence Survey, 35-miles. Beatty, NV. Project Lead Biologist. 06/16/2020 – 06/18/20.	McGinley and Associates Gareth Blakemore (775) 432-4792 gblakemore@mcgin.com						
9. Eagle Shadow Mountain Health Assessment for Translocation, 3000-acres. Moapa River Indian Reservation, Clark County, NV. Desert Tortoise Biologist. 09/16/19 – 11/06/19.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com				2/16 (Found while tracking or moving between health exams, not line surveying)		
10. Eagle Shadow Mountain Presence/ Absence Survey, 3,000-acres. Moapa River Indian Reservation, Clark County, NV. Desert Tortoise Biologist. 9/24/18 – 10/3/18.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com		120/10		0/5		
11. Techren Solar 1 Clearance Survey, 2,300-acres. Boulder City, NV. Desert Tortoise Biologist. 5/1/18 – 5/5/18.	NewFields Justin Romanowitz, (480) 231-3539 jromanowitz@newfields.com		50/5				
12. Mesquite Gold Mine Clearance Surveys, 1,800-acres. Brawley, CA. Desert Tortoise Biologist. 5/16/17 – 5/23/17.	Hernandez Environmental Services Juan Hernandez (951) 579-1657 juan@hernandezenvironmental.com		130/13	2			

13. Eldorado, Lugo, Mohave Transmission Line Upgrade Project 20-acre Pre-Project Survey. Hesperia, CA to Laughlin, NV to Boulder City, NV. Desert Tortoise Biologist. 5/12/17 – 5/15/17	Insignia Environmental Stephanie Hansen (650) 321-6787 shansen@insigniaenv.com						
14. USFWS Supervised Practice of Health Assessments for Desert Tortoise, Large-Scale Translocation Site (LSTS), Jean, NV, 5/24/16 – 5/25/16	USFWS Roy Averill-Murray (775) 861-6362 roy_averill-murray@fws.gov Cristina Jones (623) 236-7767 cajones@azgfd.gov						
15. Silver State Solar South, Primm, NV, Project Field Manager, 4/20/15 – 11/13/2015	NewFields Sean Milne, (585) 269-0054 smilne@newfields.com		8/2	1	2/8	21	
16. Copper Mountain Solar 4, Ivanpah Valley, NV, Project Field Manager, 10/16/15	Sean Milne, (585) 269-0054, smilne@newfields.com						
17. Copper Mountain Solar 5, Ivanpah Valley, NV, Project Field Manager, 10/5/15 – 10/15/15	Sean Milne, (585) 269-0054, smilne@newfields.com				1/4		
18. San Diego Zoo Institute for Conservation Research Health Examinations w/ Blood Work, Las Vegas, NV, Volunteer, 8/6/15 – 8/7/15	Jeanette Perry, (702) 278-1001 jperry@sandiegozoo.org						
19. AIYA Solar Project, Moapa, NV, Project Field Manager, 5/23/15 – 5/29/15	Sean Milne, (585) 269-0054 smilne@newfields.com				2/5		

20. Moapa Paiute Solar Project Health Examinations w/ Blood Work, Moapa, NV, Volunteer, Environmental Scientist, 4/14/15 – 4/15/15	Scott Hoffman, (702) 875-2243 scott.hoffmann@cardno.com						
21. Boulder City By-Pass, Boulder City, NV, Federal Communications Representative/ Project Field Manager, 2/18/15 – 4/17/15	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/45		0/3	2	
22. Dry Lake Solar Energy Zone, Presence/ Absence Survey, North Las Vegas, NV, Environmental Scientist, 9/8/14 – 10/17/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/20		1/11		
23. Paiute Snow Mountain Solar, 5m Presence/ Absence Survey, Las Vegas, NV, Environmental Scientist, 9/27/14 – 10/10/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		110/11		3/8		
24. Silver State Solar North, Construction Monitoring, Ivanpah Valley, NV, Environmental Scientist, 9/30/14 - 10/1/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
25. Paiute Lyttle Solar Energy Project, Moapa, NV, Construction Monitoring, Environmental Scientist, 9/29/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
26. Copper Mountain Solar 4, Presence/ Absence Survey, Environmental Scientist, 5/23/14 – 5/28/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		60/6				
27. Snow Mountain Paiute Reservation Solar Project, Project Presence/ Absence Survey, Environmental Scientist, 5/14/14 – 5/18/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		50/5		1/9		

28. Boulder City Conservation Easement Occupancy Sampling 2014, Environmental Scientist, 4/9/14 – 5/30/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		160/16		0/8		
29. Copper Mountain Solar 3, Eldorado Valley, NV, Federal Communications Representative, 8/19/13 – 5/11/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		468/39				
30. Boulder City By-Pass, Boulder City, NV, Presence/ Absence, Tortoise Crew Leader, 4/7/14 – 5/10/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10		1/9		
31. Silver State Solar North Relocation Pens Tracking, Ivanpah Valley, NV, Environmental Scientist, 4/4/14	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		10/1		2/6		
32. Mark-Recapture Study, Marine Corps Air Ground Combat Center, Johnson Valley, CA, Environmental Scientist, 4/16/13 – 5/14/13	Dr. Alice Karl, (530) 304-4121, heliophile@mindspring.com				0/11		
33. Boulder City Conservation Easement Occupancy Sampling Pilot Study, Environmental Scientist, 3/18/13 – 4/6/13	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com				2/7		
34. Boulder Solar Project (formerly Dry Lake) Pre-Project Presence/ Absence Survey, Environmental Scientist, 4/16/12 – 4/28/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com				1/0		
35. Townsite Solar Pre-Project Presence/ Absence Survey, Environmental Scientist, 4/1/12 – 4/15/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						

36. Tortoise Population Connectivity Research, Ivanpah Valley; Environmental Scientist, 2/8/12- 2/10/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com						
37. Desert Tortoise Conservation Center Construction Monitoring, Environmental Scientist, 4 /2011	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10				
38. Silver State Solar North Project Clearance Survey, Environmental Scientist, 2/17/11 – 4/5/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		200/20	5	3/2	3	
39. Copper Mountain 2 (Formerly Nextlight) Solar Project Clearance Survey, Environmental Scientist, 1/9/12 – 1/13/12	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		50/5	10	0/4	4	
40. Mesquite Regional Park, Hardy Way Construction Monitoring, Environmental Scientist, 10/18/11-10/21/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		40/4				
41. Mesquite Regional Park, Hardy Way Clearance Survey, Environmental Scientist, 5/5/11 – 5/13/11 & 10/3/11-10/12/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		150/15	28	2/7	17	
42. Techren Boulder City Solar Pre-Project Presence/ Absence Survey, Environmental Scientist, 5/2/11 - 5/4/11	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		30/3				
43. Ivanpah Airport Geo-tech Monitoring, Environmental Scientist, June 2010	Ken MacDonald, (702) 952-2072, kmacdonald@newfields.com		100/10				

44. Kitty Hawk Road North Modified Retention Facility, Environmental Scientist, November 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	8/1				
45. Nextlight Boulder City Solar Project, Environmental Scientist, October 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	60/5		0/2		
46. Jean, NV Geotech Surveys (Klienfelder), Environmental Monitor, July 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	20/2				
47. Town Wash Flood Control, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	16/2				
48. Mesquite Highway Interchange, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 2009.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	16/2				
49. Cactus Avenue & I-15 Interchange, Pre-Project Presence/ Absence Survey, Environmental Scientist, June 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	16/2				
50. Mesquite 11-Acres, Pre-Project Presence/ Absence Survey, Environmental Scientist, May 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	8/1				
51. Lincoln County 230kV Transmission Line, Environmental Scientist, April -May, 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com	200/25		1/3		

52. Mesquite Regional Park, Environmental Scientist, Pre-Project Presence/ Absence Survey,January 3rd, 7th and 8th, 2008.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		30/3		1/1	2	0
53. Floyd Lamb Park at Tule Springs, Pre-Project Presence/ Absence Survey, Environmental Scientist, April 11th and 12th, 2007.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				
54. Laughlin River Village-19 Acre, Pre-Project Presence/ Absence Survey, Environmental Scientist, May 12th, 2007.	Ken MacDonald, 702-952-2072, kmacdonald@newfields.com		8/1				

Experience by project and activity (continued): Each project number should correspond with the project listed on the previous page

Project Number (Corresponds to previous page)	Construct Artificial Burrows (No.)	Monitor project equipment and activities (Hrs/Days)	Oversee project compliance (Hrs/Days)	Supervise DT field staff (Hrs/Days) and No. staff supervised	DT fence installation and inspection (Hrs/Days)	Present DT Awareness Training (No.)
1. Southern Bighorn South and North Health Study				80/8, 4		
2. Mother Lode Exploration Project				150/15		
3. Southern Bighorn South and North Pre-Clearance Surveys				110/11, 12		
4. Fort Cady Mine Presence/ Absence Surveys				40/4, 4		
5. Copper Rays Solar Presence/ Absence Surveys						
6. North Bullfrog Exploration Project Modification #2				12/1, 1		
7. Eagle Shadow Mountain Health Assessment for Translocation	10			364/28 Staff-6		

8. Undisclosed Mineral Exploration Project Presence/ Absence Survey				25/3 Staff-1		
9. Eagle Shadow Mountain Health Assessment for Translocation				240/24, Staff-1		
10. Eagle Shadow Mountain Presence/ Absence Survey						
11. Techren Solar 1						
12. Mesquite Gold Mine Clearance Surveys						
13. Eldorado, Lugo, Mohave Transmission Line Upgrade Project						
14. USFWS Supervised Practice of Health Assessments for Desert Tortoise, Large-Scale Translocation Site						
15. Silver State Solar South	20	803/73	803/73	803/73, Staff-22	180/15	
16. Copper Mountain Solar 4				24/2, Staff-5		
17. Copper Mountain Solar 5				80/8, Staff-5		

18. San Diego Zoo Institute for Conservation Research Health Examinations w/ Blood Work						
19. AIYA Solar Project				60/6, Staff-5		
20. Moapa Paiute Solar Project Health Examinations w/ Blood Work						
21. Boulder City By-Pass		450/45	450/45	450/45, Staff-12		27
22. Dry Lake Solar Energy Zone				200/20, Staff-8		
23. Paiute Snow Mountain Solar				110/11, Staff-8		
24. Silver State Solar North		20/2	20/2		20/2	2
25. Paiute Lyttle Solar Energy Project		10/1	10/1	10/1, Staff-1		
26. Copper Mountain Solar 4				60/6, Staff-5		
27. Snow Mountain Paiute Solar Project				100/10, Staff-6		

28. Boulder City Conservation Easement Occupancy Sampling 2014					150/15, Staff-4		
29. Copper Mountain Solar 3			490/49	490/49	490/49, Staff-18	250/25	14
30. Boulder City By-Pass					90/9, Staff-6		
31. Silver State Solar North					10/1, Staff-2		
32. Mark-Recapture Study, Marine Corps Air Ground Combat Center							
33. Boulder City Conservation Easement Occupancy Sampling Pilot Study							
34. Boulder City Solar Project					13/130, Staff-4		
35. Townsite Solar					16/160, Staff-4		
36. Ivanpah Valley							
37. Desert Tortoise Conservation Center			100	100/10			

38. Silver State Solar North		20/2		200/20,Staff-20	20/2	20
39. Copper Mountain 2				50/5, Staff-4		
40. Mesquite Regional Park	2	40/4	40/4	40/4, Staff-10	40/4	5
41. Mesquite Regional Park		150/15	150/15	150/15,Staff-12	150/15	25
42. Techren Boulder City Solar				30/3, Staff-8		
43. Ivanpah Airport		100/10	100/10	100/10, Staff-2		20
44. Kitty Hawk Road North Modified Retention Facility						
45. Nextlight Boulder City Solar				5/60, Staff-5		
46. Jean, NV		20/2	20/2			
47. Town Wash Flood Control				16/2, Staff-1		

48. Mesquite Highway Interchange				16/2, Staff-1		
49. Cactus Avenue & I-15 Interchange		300+/30+	300+/30+			
50. Mesquite 11-Acres						
51. Lincoln County 230kV Transmission Line						
52. Mesquite Regional Park				160/20, Staff-1		
53. Floyd Lamb Park at Tule Springs			2		20/2	2
54. Laughlin River Village-19 Acre						

Summary of experience:

Total time spent for all desert tortoise-related field activities (referenced above):
Specify total number of hours
OR total number of 8-hour days: _____Over 6,000 hours_____

Total number of miles/kilometers walked conducting survey transects:
Over 1500 miles

Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm: __46___

≥100 mm: __319___

Additional desert tortoise experience:

Project	No.
Health Examinations Including Sub-Carapacial Venipuncture	84
Health Examinations Assist Sub-Carapacial Venipuncture	22
Desert Tortoise Tracking	Over 600
Transmitter Placement or Removal	79

Additional supervisory experience other than with desert tortoise work

Project	Hours	Staff (No.)
Gulf Coast BP Oil Spill Sediment and Water Quality Survey	700+	Approx. 30
Las Vegas Ski and Snowboard Resort Projects	1000+	Approx. 10
Numerous U.S. Army Corps of Engineers Section 404 Surveys	1000+	Approx. 3
Numerous Biological Assessments	500+	Approx. 3+
Numerous Invasive Species Mitigation Projects	1000+	Approx. 15

Additional references for individuals whom have held **less than three** positions working with desert tortoise

Project Name **Job Title** **Date of Employmenet**	**Supervisor/ Project Contact** **Name** **Phone** **Email Address**

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.
I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: _____ Date: 14JUN2021

2

ATTACHMENT N

PROTOCOL DESERT TORTOISE SURVEY RESULTS FOR THE BARSTOW INTERNATIONAL GATEWAY PROJECT IN AND ADJACENT TO BARSTOW, SAN BERNARDINO COUNTY, CALIFORNIA

NOMAD
BIOLOGICAL

November 3, 2023

Keoni Calantas, Project Manager
Rocks Biological Consulting, Inc
4312 Rialto Street
San Diego, CA 92107

Subject: Protocol Desert Tortoise Survey Results for the Barstow International Gateway Project in and Adjacent to Barstow, San Bernardino County, California.

Dear Mr. Calantas,

This report presents the methods and results of protocol desert tortoise (*Gopherus agassizii*) surveys conducted by Nomad Biological LLC (Nomad Bio) for Rocks Biological Consulting (RBC) for the Barstow International Gateway Project (Project) located in and adjacent to the City of Barstow, in unincorporated San Bernardino County, California. The purpose of the survey was to document the presence and abundance of desert tortoises within 588 fragmented acres of the Project site that had not been previously surveyed within the last two years for the Project.

Project Description

BNSF Railway plans to construct an approximately 4,500-acre integrated rail facility west of Barstow, consisting of a rail yard, intermodal facility and warehouses for transloading freight from international containers to domestic containers. The facility will allow the direct transfer of containers from ships at the Ports of Los Angeles and Long Beach, to trains for transport through the Alameda Corridor on the BNSF mainline to Barstow. Once the containers reach the Barstow International Gateway, they will be processed at the facility using clean-energy powered cargo-handling equipment, and then staged and loaded onto trains travelling east via BNSF's interstate network of rail lines. Westbound freight will be similarly processed at the facility, to bring cargo more efficiently to Pacific ports and other California terminals.

Project Location

The Project is located in and adjacent to the City of Barstow, the census-designated place of Lenwood, and the unincorporated community of Hodge, as well as additional portions of unincorporated San Bernardino County, California, on private and public lands (Figure 1: Project Location). The Project is located north of National Trails Highway/CA Route 66, south of CA Highway 58, and west of Interstate 15. Specifically, the Project is located within the *Barstow, Barstow SE, Hinkley, Hodge,* and *Wild Crossing* U.S. Geological Survey (USGS) 7.5-minute quadrangles.

Desert Tortoise Habitat Requirements

The Mojave population of the desert tortoise (Agassiz's desert tortoise) occurs west and north of the Colorado River within California, Nevada, Arizona, and Utah. In California specifically, the desert tortoise occurs within the Mojave and Sonoran (Colorado) Deserts (USFWS 1990). Desert tortoises live in a variety of habitats, including sandy flats, rocky foothills, alluvial fans, canyons, and washes where soils must be soft enough for burrow construction but also appropriately firm so that the burrows do not collapse (Anderson et al., 2001).

Most desert tortoise habitat is below 4,500 feet in elevation and within the creosote bush-white bursage (*Larrea tridentata-Ambrosia dumosa*) scrub vegetation community. Desert tortoises may also inhabit salt bush scrub (*Atriplex* spp.) at lower elevations and Joshua tree (*Yucca brevifolia*) woodlands at higher elevations.

Methods

Desktop Review

Prior to conducting focused desert tortoise surveys, a literature and existing data review was conducted for the Project site and vicinity to assess the historical occupancy and potential for desert tortoise to occupy the Survey Area. The reviews consisted of a search of California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2023), United States Geological Survey (USGS) topographic maps, aerial imagery (Google 2023). Additionally, four reports documenting methods and results of previous protocol desert tortoise surveys conducted in separate areas of the Project site were also reviewed (Eco Vita 2021, Eco Vita 2022a, Eco Vita 2022b, Eco Vita 2022c).

Protocol Survey

Nomad Bio biologists conducted protocol desert tortoise surveys in May, September, and October 2023. The Survey Area consisted of 588 acres of non-contiguous parcels that had not been previously surveyed for desert tortoise in 2021 and 2022, when desert tortoise surveys occurred on the majority of the Project site. The 2023 desert tortoise surveys were conducted in accordance with the guidelines and requirements described in the *Desert Tortoise Field Manual* (USFWS 2009) and *Preparing for any Action that May Occur Within the Range of the Mojave Desert Tortoise* (*Gopherus Agassizii*) (Revised Protocol) (USFWS 2019) (Table 1: Survey Dates and Personnel). Approximately 233 acres of the 588-acre Survey Area was not surveyed due to access constraints or lack of desert tortoise habitat (developed lands) (Figure 2: Survey Area). Access constraints included fences, No Trespassing signage, and other private property without approved access. Developed areas included paved driveways, fenced, and graded areas and landscaped yards. The May surveys were conducted during the second pass of focused western burrowing owl (*Athene cunicularia hypugaea*) surveys and the September survey was conducted during focused surveys for Mojave fringe-toed lizard (*Uma scoparia*). Transects were spaced 10 meters apart during all surveys. The biologists searched for and recorded any sign of occupancy by desert tortoise, including live individuals, burrows, carcasses, scat, tracks, and eggshell fragments. Sign was classified based on the ratings described in the *Desert Tortoise Field Manual* (Table 2: Desert Tortoise Sign Classification).

Table 1. Survey Dates and Personnel

Date	Start Time	End Time	Temperature (°F)	Wind (MPH)	Cloud Cover (%)	Personnel
04-May	07:00	17:00	41-62	4-15	0-10	K. Koeper, A. Omlid, P. Livingston, E. Bowen, C. Scanlon
05-May	07:30	17:00	41-62	4-15	0-10	K. Koeper, A. Omlid, P. Livingston, E. Bowen, C. Scanlon
10-May	07:00	17:00	55-78	8-14	0	R. Layden, P. Livingston

22-Sep	07:00	14:00	62-84	3-8	0	M. Baker, T. Toelkes
25-Sep	07:00	17:00	63-89	2-0	0	M. Baker, T. Toelkes, A. Omlid
26-Sep	07:00	16:45	58-88	5-0	0	M. Baker, T. Toelkes, A. Omlid
10-Oct	16:15	17:30	86-80	10	0	A. Layden, T. Toelkes, A. Goodman, H. Swarthout
11-Oct	07:00	15:45	59-72	13-5	0	A. Layden, T. Toelkes, A. Goodman, H. Swarthout, K. Woldt
25-Oct	11:00	14:00	76-78	8-15	0-5	A. Layden

Table 2. Desert Sign Classification

Sign Type	Class	Description
Burrow/Pallet	1	Currently active, with desert tortoise (DT) or recent DT sign
	2	Good condition; definitely DT, no recent use
	3	Deteriorated; definitely DT
	4	Good condition; possibly DT
	5	Deteriorated condition; possibly DT
Carcass	1	Fresh or putrid
	2	Normal color, scutes attached
	3	Scutes peeling off bone
	4	Shell bone falling apart and scute rings peeling
	5	Disarticulated, scattered
Scat	1	Wet or freshly dried; obvious odor
	2	Dried with glaze; some odor; dark brown
	3	Dried, no glaze or odor, signs of bleaching; tight material
	4	Dried, light brown to pale yellow, loose material, scaly
	5	Bleached, or only consisting of plant fiber

Results

Existing Conditions

The Project is in the Mojave Desert, an area that covers more than 40,000 acres within California, Arizona, Nevada, and Utah, and acts as the transitional zone between the hot, low-elevation Sonoran Desert to the south and the relatively cooler, higher-elevation Great Basin to the north. The Project area is characterized by hot summers with minimal precipitation and cold winters with extreme temperature swings. The Mojave River is located immediately north and flows parallel to the Project. The topography with the Survey Area is mostly flat, and elevation ranges from 2,200 feet above mean sea level (amsl) in the eastern end to 4,400 amsl in the

western end. Vegetation communities that occur in the Survey Area include allscale scrub, creosote bush scrub, tamarisk thickets, agricultural, developed, and disturbed. The Survey Area occurs on privately-owned land. The east end of the Project is within the community of Lenwood and consists of developed land that includes commercial and residential properties. The central and western portions of the Project are predominantly undeveloped, with vacant lands and scattered private residences throughout. Land uses within and adjacent to the Project include commercial, residential, agricultural, transportation, and open space.

The Project is located within the Western Recovery Unit for desert tortoise, as defined in the *Revised Recovery Plan for the Mojave Population of the Desert Tortoise (Gopherus agassizii*) (Recovery Plan) (USFWS 2011). The Rainfall in the Western Mojave Recovery unit mostly occurs in the fall and winter seasons, which is unique compared to other recovery units which receive monsoonal spring and summer rains. This results in different foraging and activity patterns, and life characteristics for the desert tortoise in the Western Recovery Unit compared to other recovery units (USFWS 2011). The Western Mojave Recovery Unit is located entirely in California and is the largest of the four recovery units. The Recovery Plan also established Tortoise Conservation Areas (TCAs) to serve as recovery areas for the Mojave population of the desert tortoise. TCAs include U.S. Fish and Wildlife Service (USFWS) designated critical habitat, Desert Wildlife Management Areas (DWMAs), Areas of Critical Environmental Concern (ACECs), as well as other important conservation areas and habitat linkages managed for desert tortoise. These TCAs serve as study areas for range-wide population monitoring of desert tortoise. The Project is located approximately 3.0 miles from the Fremont-Kramer ACEC, 0.2-miles from the Superior-Cronese ACEC, and 6.5 miles from the Ord-Rodman ACEC. Additionally, USFWS-designed critical habit for desert tortoise is located within portions of these three ACECs (Figure 3: Desert Tortoise Conservation Areas).

Focused Desert Tortoise Surveys

No desert tortoises were observed within the Survey Area. One Class 2, two Class 4, and seven Class 5 burrows were observed. The Class 2 burrow, burrow #9, was the only definitive desert tortoise burrow that exhibited the typical half-moon shape of a desert tortoise burrow. Class 2 scat was also observed at and near the burrow. The remaining Class 4 and Class 5 burrows were all constructed by species other than desert tortoise, including desert kit fox (*Vulpes macrotis*), coyote (*Canis latrans*), or ground squirrel (*Spermophilus* spp.) Although these burrows have the potential to be modified and used by a desert tortoise, they currently lack desert tortoise sign.

Table 3. Survey Results

Burrows								
ID	Burrow Class	Dimensions			Sign	Easting	Northing	Comments
		Width	Height	Length				
1	Class 4	200	300	>1 meter	None	484574	3856158	Four entrances
2	Class 5	180	90	1 meter	None	491303	3860035	Filled with trash, no active sign.
3	Class 5	140	100	Unknown	None	484654	3856237	4 entrances within 10m
4	Class 5	160	150	1 m	None	489552	3857983	Unknown canid burrow

Burrows								
ID	Burrow Class	Dimensions			Sign	Easting	Northing	Comments
		Width	Height	Length				
5	Class 5	100	280	> 500, back not visible	None	491651	3860608	3 entrances about 10 m apart, but the other two are filled in
6	Class 5	160	100	750	None	491866	3860552	Likely ground squirrel. Half dome shaped entrance, but round tunnel
7	Class 5	400	400	>1 meter	None	482720	3853815	
8	Class 5	180	120	380	None	482701	3853785	
9	Class 3	270	160	>1 meter	Scat	482773	3853834	
10	Class 4	480	220	500	None	491890	3860937	Likely canid

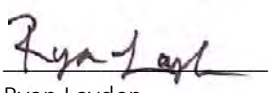
Desert Tortoise Scat			
Location	Scat Class	Easting	Northing
Burrow	Class 2	482771	3853843
Open	Class 2	482772	3853815

Discussion

Abundance estimates for the 2023 Survey Area were not calculated since no live adult desert tortoises were observed and the area surveyed totaled 355 acres, which is less than the 500-acre threshold described in the Revised Protocol. Although no desert tortoises were observed within the 2023 Survey Area, one Class 2 burrow with associated Class 2 scat was observed, indicating the presence of at least one desert tortoise in the Survey Area. Additionally, previous survey efforts conducted in 2021 and 2022 documented the presence of desert tortoises within the Project site outside of the 2023 Survey Area. (Eco Vita – 2021, 2022a, 2022b). Desert tortoise habitat, in the form of creosote bush scrub and allscale scrub is patchy throughout the 2023 Survey Area, broken up by developed areas. However, desert tortoise habitat is present throughout much of the greater Project site and tortoises may move into areas that were documented to be unoccupied during 2023.

If you have any questions regarding this report, please contact me at ryan@nomadbiological.com.

Sincerely,



Ryan Layden
Principal Biologist

Attachments

Attachment A — Figures
Attachment B — Representative Photographs

References

Andersen, M. C., J. M. Watts, J. E. Freilich, S. R. Yool, G. I. Wakefield, J. F. McCauley and P. B. Fahnestock. 2000. Regression-tree modeling of desert tortoise habitat in the central Mojave Desert. Ecological Applications 10(3).

Eco Vita. 2021. Desert Tortoise Presence/Absence Survey Report. December.

Eco Vita. 2022a. Desert Tortoise Presence/Absence Survey Report. March.

Eco Vita. 2022b. Desert Tortoise Presence/Absence Survey Report. June.

Eco Vita. 2022c. Desert Tortoise Presence/Absence Survey Report. August.

Google. 2023. Google Earth Pro. Imagery dated 10/5/2022.

Sawyer, J.O., Jr. and T. Keeler-Wolf. 2009. A manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento, California.

U. S. Fish and Wildlife Service (USFWS). 1990. Endangered and threatened wildlife and plants: Determination of threatened status for the Mojave population of the desert tortoise. USFWS. Ventura, CA. 50 CFR Part 17.

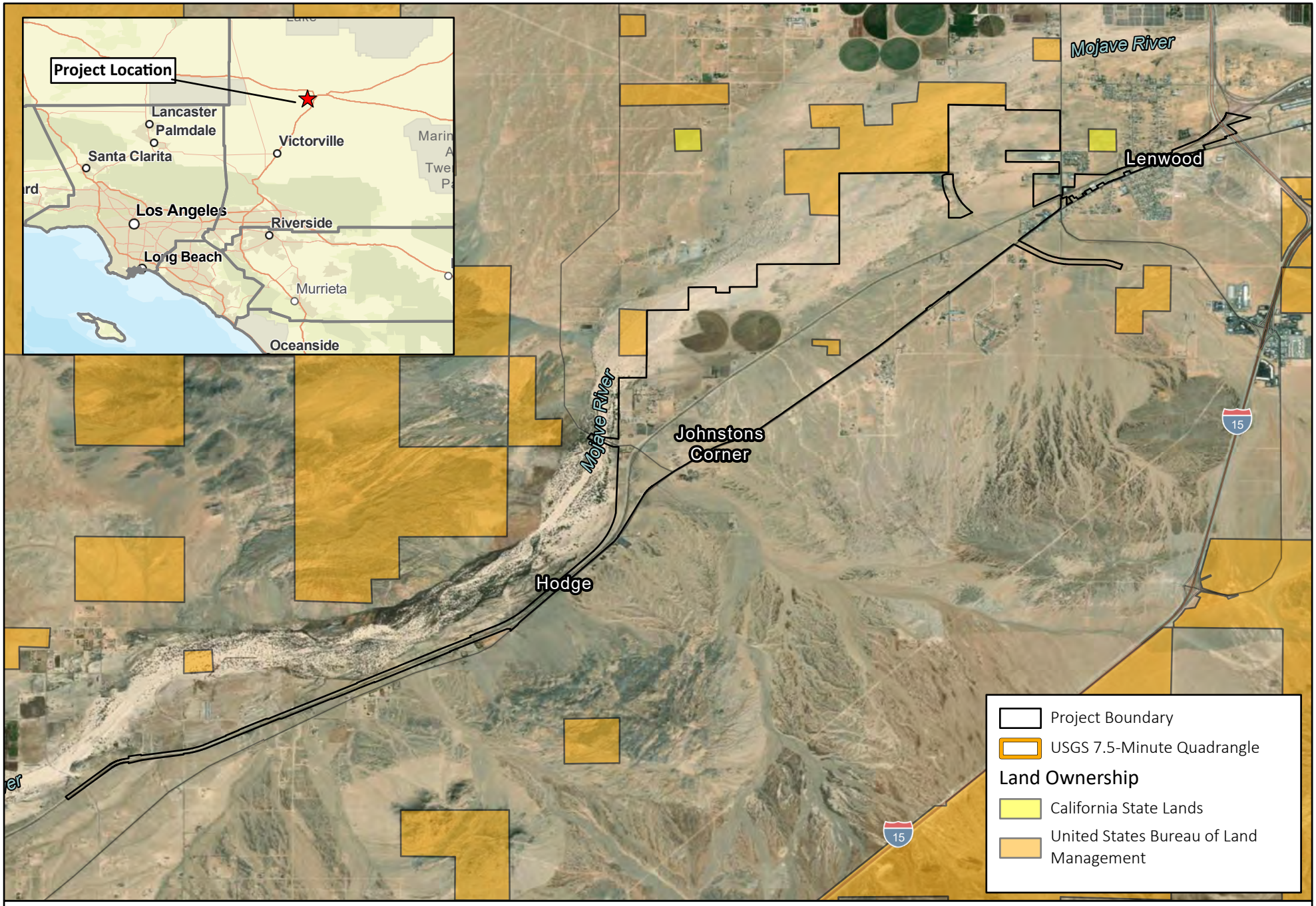
U.S. Fish and Wildlife Service (USFWS). 2009. Desert Tortoise (Mojave Population) Field Manual (*Gopherus agassizii*). Region 8, Sacramento, California.

U.S. Fish and Wildlife Service (USFWS). 2011. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California.

U.S. Fish and Wildlife Service (USFWS). 2015. Range-Wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2013 and 2014 Annual Reports. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

U.S. Fish and Wildlife Service (USFWS). 2019. Preparing for any Action that may Occur within the Range of the Mojave Desert Tortoise. U.S. Fish and Wildlife Service, Las Vegas, Nevada.

Attachment A
Figures



NOMAD BIOLOGICAL

N

0 0.5 1 2 Miles

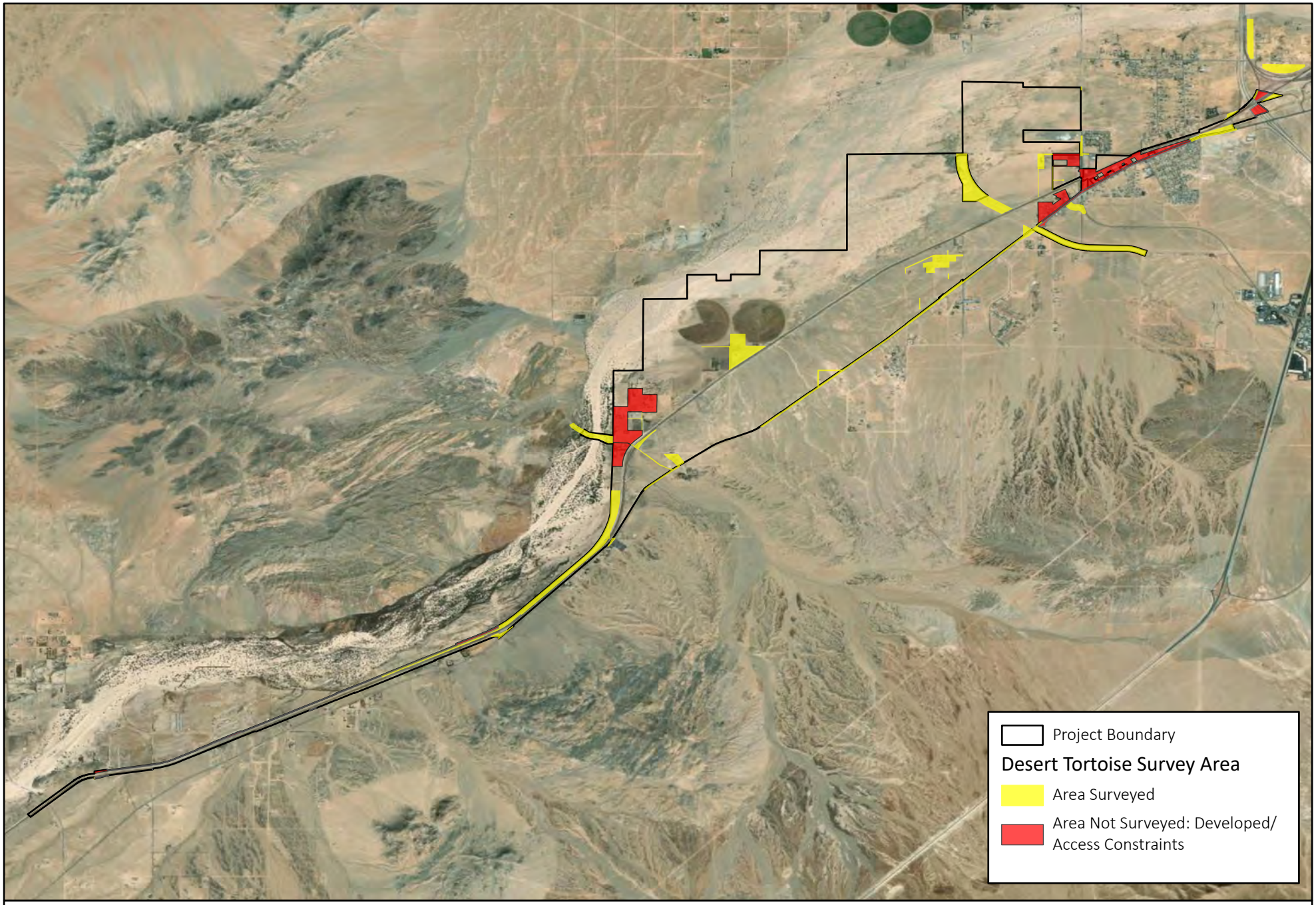
1:90,000 NAD83 UTM Zone 11N

ESRI Basemap 2021

Figure 1 - Project Location

Desert Tortoise Survey Report

Barstow International Gateway

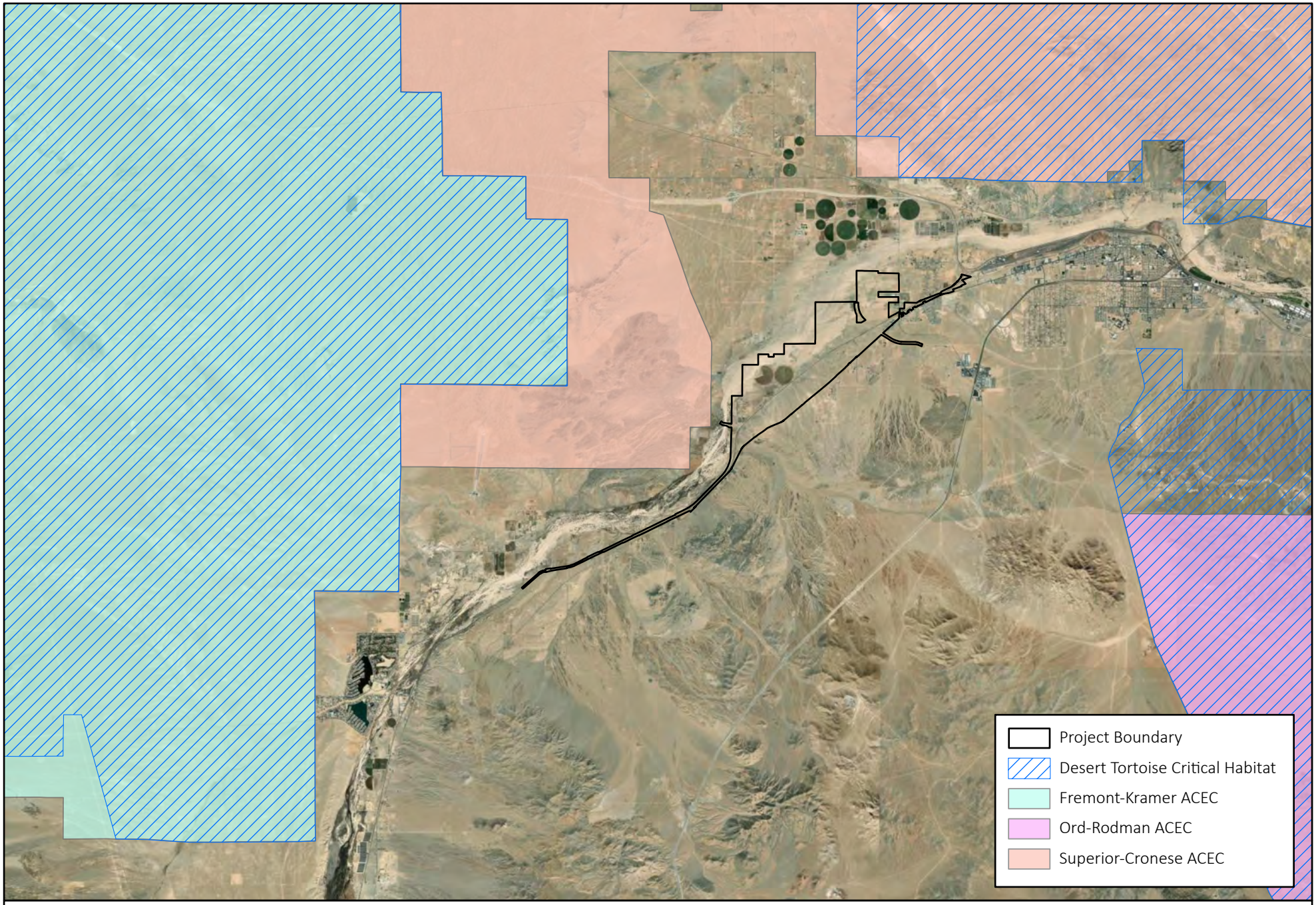


NOMAD BIOLOGICAL

Figure 2 - Survey Area

Desert Tortoise Survey Report

Barstow International Gateway



NOMAD BIOLOGICAL

Figure 3 - Desert Tortoise Conservation Areas

Desert Tortoise Survey Report

Barstow International Gateway

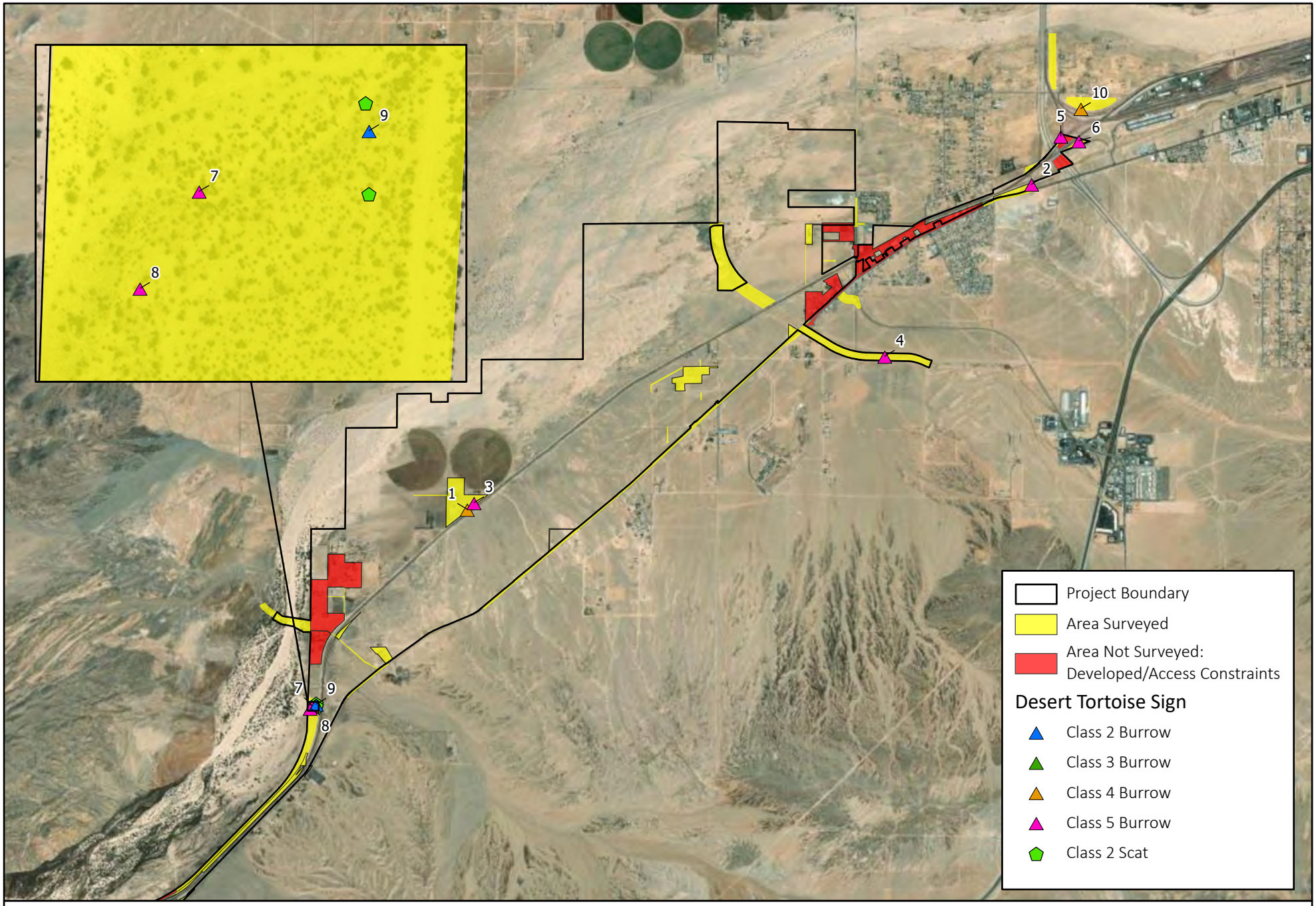


Figure 4 - Survey Results

Desert Tortoise Survey Report

Barstow International Gateway

Attachment B
Representative Photographs



Photo 1. East-facing view of Survey Area associated with storm channel adjacent to burrow #4.



Photo 2. South-facing view of desert tortoise habitat near Class 2 burrow #9.



Photo 3. South-facing view of Class 4 burrow #10.

ATTACHMENT O

PROTOCOL DESERT TORTOISE SURVEY RESULTS FOR THE TORTILLA SUBSTATION PROJECT IN BARSTOW, SAN BERNARDINO COUNTY, CALIFORNIA

NOMAD
BIOLOGICAL

November 8, 2023

Keoni Calantas, Project Manager
Rocks Biological Consulting, Inc
4312 Rialto Street
San Diego, CA 92107

Subject: Protocol Desert Tortoise Survey Results for the Tortilla Substation Project in Barstow, San Bernardino County, California.

Dear Mr. Calantas,

This report presents the methods and results of a protocol desert tortoise (*Gopherus agassizii*) survey conducted by Nomad Biological LLC (Nomad Bio) for Rocks Biological Consulting (RBC) on October 10, 2023, for the Tortilla Substation Project (Project) located in the City of Barstow, San Bernardino County, California. The purpose of the survey was to document the presence of desert tortoises within the Project footprint and a 150-meter buffer (Survey Area).

Project Description and Location

The Project is part of offsite improvements for the proposed Barstow International Gateway Project, and will include an expansion of the existing Tortilla Substation and a new distribution line that will connect the substation to the proposed project.

The Project is located in the City of Barstow, San Bernardino County, California, on private lands and lands managed by the Bureau of Land Management (BLM) (Figure 1: Project Location). The Project is located south and east of Interstate 15 and west of Barstow Rd. Specifically, the Project is located within the *Barstow SE, California* U.S. Geological Survey (USGS) 7.5-minute quadrangle and within

Desert Tortoise Habitat Requirements

The Mojave population of the desert tortoise (Agassiz's desert tortoise) occurs west and north of the Colorado River within California, Nevada, Arizona, and Utah. In California specifically, the desert tortoise occurs within the Mojave and Sonoran (Colorado) Deserts (USFWS 1990). Desert tortoises live in a variety of habitats, including sandy flats, rocky foothills, alluvial fans, canyons and washes where soils must be soft enough for burrow construction but also appropriately firm so that the burrows do not collapse (Anderson et al., 2001). Most desert tortoise habitat is below 4,500 feet in elevation and within the creosote bush-white bursage (*Larrea tridentata-Ambrosia dumosa*) scrub vegetation community. Desert tortoises may also inhabit salt bush scrub (*Atriplex* spp.) at lower elevations and Joshua tree (*Yucca brevifolia*) woodlands at higher elevations.

Methods

Desktop Review

Prior to conducting focused desert tortoise surveys, a literature and existing data review was conducted for the Project site and vicinity to assess the historical occupancy and potential for desert tortoise to occupy the

Project site. The review consisted of a search of California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2023) data search and a review of United States Geological Survey (USGS) topographic maps and aerial imagery (Google 2023).

Protocol Survey

Nomad Bio biologists Audrey Layden and Travis Toelkes, with assistance from RBC biologists Alec Goodman, Kelsey Woldt, and Hannah Swarthout, conducted protocol desert tortoise surveys on October 10, 2023. Surveys were conducted in accordance with the linear and small project guidelines described in the *Desert Tortoise Field Manual* (USFWS 2009) and *Preparing for any Action that May Occur Within the Range of the Mojave Desert Tortoise* (*Gopherus agassizii*) (USFWS 2019) (Table 1: Survey Dates and Personnel). Under these protocols, desert tortoise abundance estimates are not calculated for linear projects and projects less than 500 acres because they are less likely to include the entire home range of desert tortoises. Instead, the purpose of the surveys on linear or small project footprints is to document if and where most desert tortoises will occur within the Project. The linear project survey protocol was followed for the distribution line component of the Project. Under this protocol the action area is defined as "the right-of-way and the adjacent areas on both sides of the right-of-way where tortoises may be moved from harm's way during implementation of the project". If needed, it is expected that tortoises would be moved within 150 meters from the edge of the Project footprint, therefore the action area includes a 150-meter buffer on both sides of the 25-meter-wide Project footprint, resulting in a 325-meter action area. Following the linear project protocol, one 10-meter-wide transect was conducted for every 100 meters of action area width, resulting in four transects within the 325-meter-wide action area. The survey transects were located along the edge of the Project footprint and 100 meters from each side of the footprint (Figure 5: Survey Transects).

Following the small project protocol, full-coverage pedestrian transects spaced 10 meters apart were conducted within the substation footprint and 150-meter buffer. The fenced substation and adjacent water tank were excluded from the survey due to access constraints.

During the surveys the biologists searched for and recorded any sign of occupancy by desert tortoise, including live individuals, burrows, carcasses, scat, tracks, and eggshell fragments. Sign was classified based on the ratings described in the *Desert Tortoise Field Manual* (Table 2: Desert Tortoise Sign Classification).

Table 1. Survey Dates and Personnel

Date	Start Time	End Time	Temperature (°F)	Wind (MPH)	Cloud Cover (%)	Personnel
10/10/2023	07:35	15:40	65-86	8-10	0	A. Layden, T. Toelkes, A. Goodman, K. Woldt, H. Swarthout

Table 2. Desert Sign Classification

Sign Type	Class	Description
Burrow/Pallet	1	Currently active, with desert tortoise (DT) or recent DT sign
	2	Good condition; definitely DT, no recent use
	3	Deteriorated; definitely DT
	4	Good condition; possibly DT
	5	Deteriorated condition; possibly DT
Carcass	1	Fresh or putrid
	2	Normal color, scutes attached
	3	Scutes peeling off bone
	4	Shell bone falling apart and scute rings peeling
	5	Disarticulated, scattered
Scat	1	wet or freshly dried; obvious odor
	2	dried with glaze; some odor; dark brown
	3	dried, no glaze or odor, signs of bleaching; tight material
	4	dried, light brown to pale yellow, loose material, scaly
	5	bleached, or only consisting of plant fiber

Results

Existing Conditions

Regional Setting

The Project is in the Mojave Desert, an area that covers more than 40,000 acres within California, Arizona, Nevada, and Utah, and acts as the transitional zone between the hot, low-elevation Sonoran Desert to the south and the relatively cooler, higher-elevation Great Basin to the north. The Project area is characterized by hot summers with minimal precipitation and cold winters with extreme temperature swings. The topography within the access road and within the west side of the substation is mostly flat, while on the east end of the substation steep and rolling hills occur. Several small drainages flow from south to north throughout the entire Project area with one large streambed present in the center of the site perpendicular to the access road. Elevation within the Project site ranges from 2,490 feet above mean sea level (amsl) in the northwestern end to 2,740 feet amsl in the southeastern end. The Project primarily occurs on privately-owned land, with BLM-managed land located on the southern end. The Project is bordered by residential and other development to the west, north, and east, with mostly undeveloped BLM-managed land occurring to the south. Land uses adjacent to the Project include a residential neighborhood, Barstow Community College, and undeveloped open space.

The Project is located within the Western Recovery Unit for desert tortoise, as defined in the Revised Recovery Plan for the Mojave Population of the Desert Tortoise (Gopherus agassizii) (Recovery Plan) (USFWS 2011). The rainfall in the Western Mojave Recovery unit mostly occurs in the fall and winter seasons, which is unique compared to other recovery units which receive monsoonal spring and summer rains. This results in different foraging and activity patterns, and life characteristics for the desert tortoise in the Western Recovery Unit compared to other recovery units (USFWS 2011). The Western Mojave Recovery Unit is located entirely in California and is the largest of the four recovery units. The Recovery Plan also established Tortoise Conservation

Areas (TCAs) to serve as recovery areas for the Mojave population of the desert tortoise. TCAs include U.S. Fish and Wildlife Service (USFWS) designated critical habitat, Desert Wildlife Management Areas (DWMAs), Areas of Critical Environmental Concern (ACECs), as well as other important conservation areas and habitat linkages managed for desert tortoise. These TCAs serve as study areas for range-wide population monitoring of desert tortoise. The Project is located approximately 3 miles from the Superior-Cronese ACEC, 4 miles from the Ord-Rodman ACEC, and 0.7-mile from USFWS-designed critical habit for desert tortoise (Figure 3: Desert Tortoise Conservation Areas).

Soils

The Project contains two general soil types per the United States General Soils Map: Nebona-Mirage-Joshua-Cajon and Wasco-Rosamond-Cajon (Figure 4: Soils and Vegetation Communities). The Nebona-Mirage-Joshua-Cajon association consists of fine to sandy loam, primarily derived from granitic alluvium. It is classified as a well-drained soil, indicating water is readily, but not rapidly, removed from the soil. The Wasco-Rosamond-Cajon association consists of sandy to coarse loam derived from granitic and igneous alluvium. It is classified as a somewhat excessively-drained soil, indicating water is removed from the soil rapidly.

Vegetation Communities

Vegetation communities within the Survey Area were previously mapped by RBC botanists using *A manual of California Vegetation, 2nd Edition* (Sawyer et al. 2009). Four vegetation communities and land cover types were mapped within the Project site (Table 3: Vegetation Communities; Figure 3: Soils and Vegetation Communities). The majority of the Survey Area consists of creosote bush scrub (*Larrea tridentata* Shrubland Alliance) and is suitable to support desert tortoises.

Table 3. Vegetation Communities

Vegetation Communities / Land Cover Type	Acreage within Survey Area
Creosote Bush Scrub	181.7
Creosote Bush Scrub - Disturbed	1.6
Developed	8.0
Disturbed Habitat	23.8
Unvegetated Channel	1.1
Total Acreage	**216.2**

Focused Desert Tortoise Surveys

The 2023 protocol desert tortoise survey resulted in the documentation of one adult desert tortoise (≥180 mm MCL) (Figure 6: Desert Tortoises and Sign). No sub-adult desert tortoises (<180 MCL, not young-of-year) or desert tortoise hatchlings (young-of-year) were observed. Biologists also recorded seven Class 1, one Class 2, four Class 3, one Class 4, and three Class 5 burrows (Figure 7: Desert Tortoise Burrows). Desert tortoise scat was observed at five burrows and desert tortoise eggshell fragments were observed at one burrow.

No additional special-status species were observed. Several wildlife species common to the Project area were observed, including common side-blotched lizard (*Uta stansburiana*), Great Basin whiptail (*Aspidoscelis tigris*

tigris), leopard lizard (*Gambelia wislizenii*), American kestrel (*Falco sparverus*), blue-gray gnatcatcher (*Polioptila caerulea*), common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), yellow-rumped warbler (*Setophaga coronate*), and white-tailed antelope ground squirrel (*Ammospermophilus leucurus*).

Table 4. Desert Tortoise Survey Results

Desert Tortoise Sign Type	Sign Class					Total
	1	2	3	4	5	
Burrow/Pallet	7	1	4	1	3	16
Scat	0	6	1	1	0	8
Tracks	N/A	N/A	N/A	N/A	N/A	1

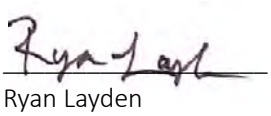
Live Desert Tortoise	Desert Tortoise Age			Total
	Adult	Sub-Adult	Hatchling	
	1	0	0	1

Discussion

The presence of a live desert tortoise, desert tortoise sign, and suitable burrows indicate that desert tortoises are present and active within the Project area. The observed desert tortoise sign was concentrated towards the southeastern end of the Project around the substation footprint and corresponds to the area where full coverage (10-meter) transects were conducted (Figure 5: Survey Transects). Although no desert tortoise sign or burrows were observed while conducting the linear project survey along the substation access road, desert tortoise habitat in the form of creosote bush scrub is present throughout the majority of the Project and desert tortoises likely inhabit the entire Project area. Additionally, two desert tortoises, three desert tortoise burrows, scat, and carcasses were recorded by RBC biologists while conducting additional special-status species surveys in June 2023 (Figure 8: Incidental Desert Tortoises and Sign) within the Project Area. While these surveys were conducted at 20-meter spacing and do not provide the same survey coverage as a 10-meter desert tortoise survey, they do confirm that desert tortoise are active along the access road and proposed linear distribution line, and may be present during Project activities.

If you have any questions regarding this report, please contact me at ryan@nomadbiological.com.

Sincerely,



Ryan Layden
Principal Biologist

Attachments

Attachment A — Figures
Attachment B — Photo Log
Attachment C — Survey Data

References

Andersen, M. C., J. M. Watts, J. E. Freilich, S. R. Yool, G. I. Wakefield, J. F. McCauley and P. B. Fahnestock. 2000. Regression-tree modeling of desert tortoise habitat in the central Mojave Desert. Ecological Applications 10(3).

Sawyer, J.O., Jr. and T. Keeler-Wolf. 2009. A manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento, California.

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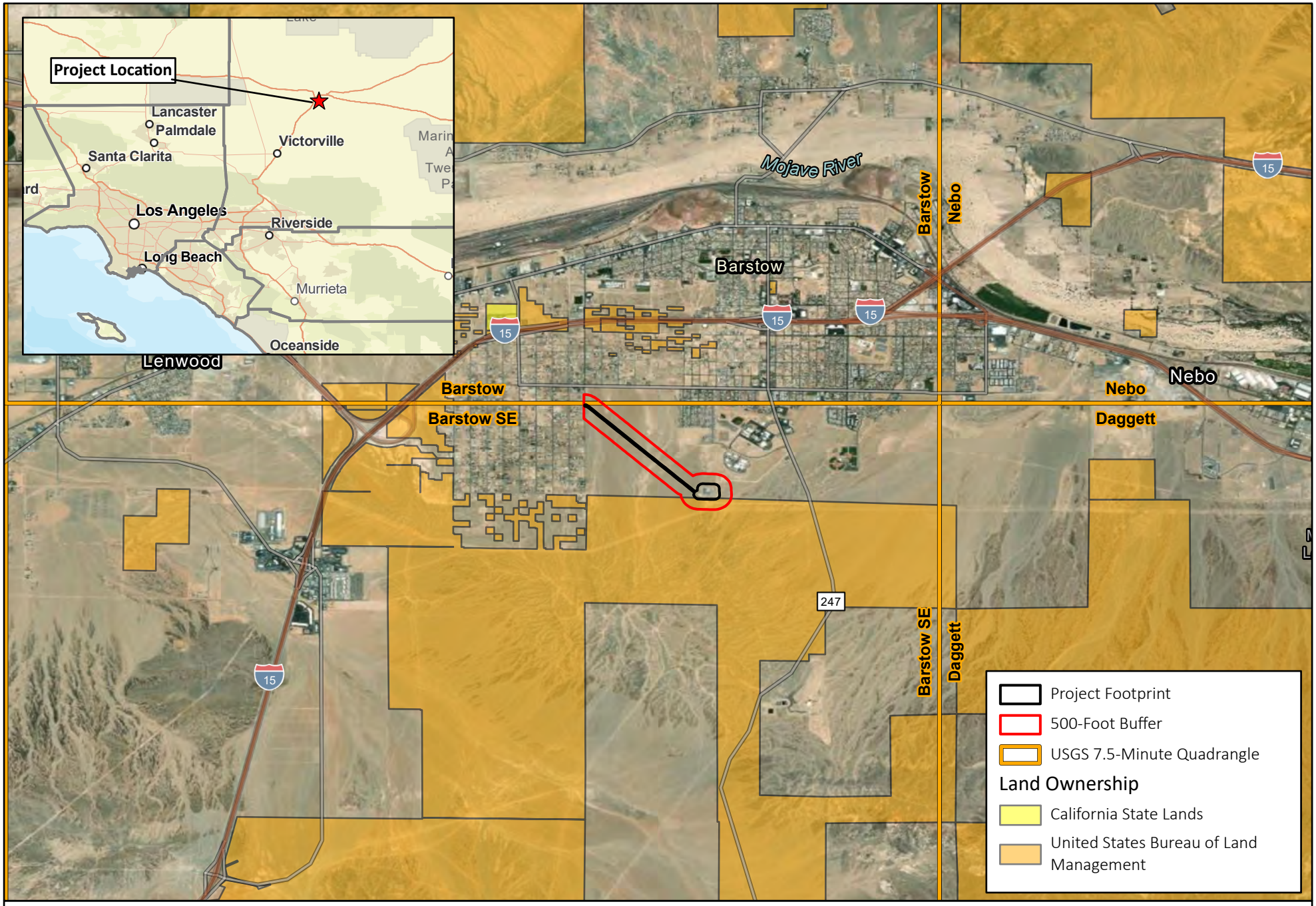
U.S. Fish and Wildlife Service (USFWS). 2009. Desert Tortoise (Mojave Population) Field Manual (*Gopherus agassizii*). Region 8, Sacramento, California.

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U.S. Fish and Wildlife Service (USFWS). 2015. Range-Wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2013 and 2014 Annual Reports. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

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Attachment A
Figures

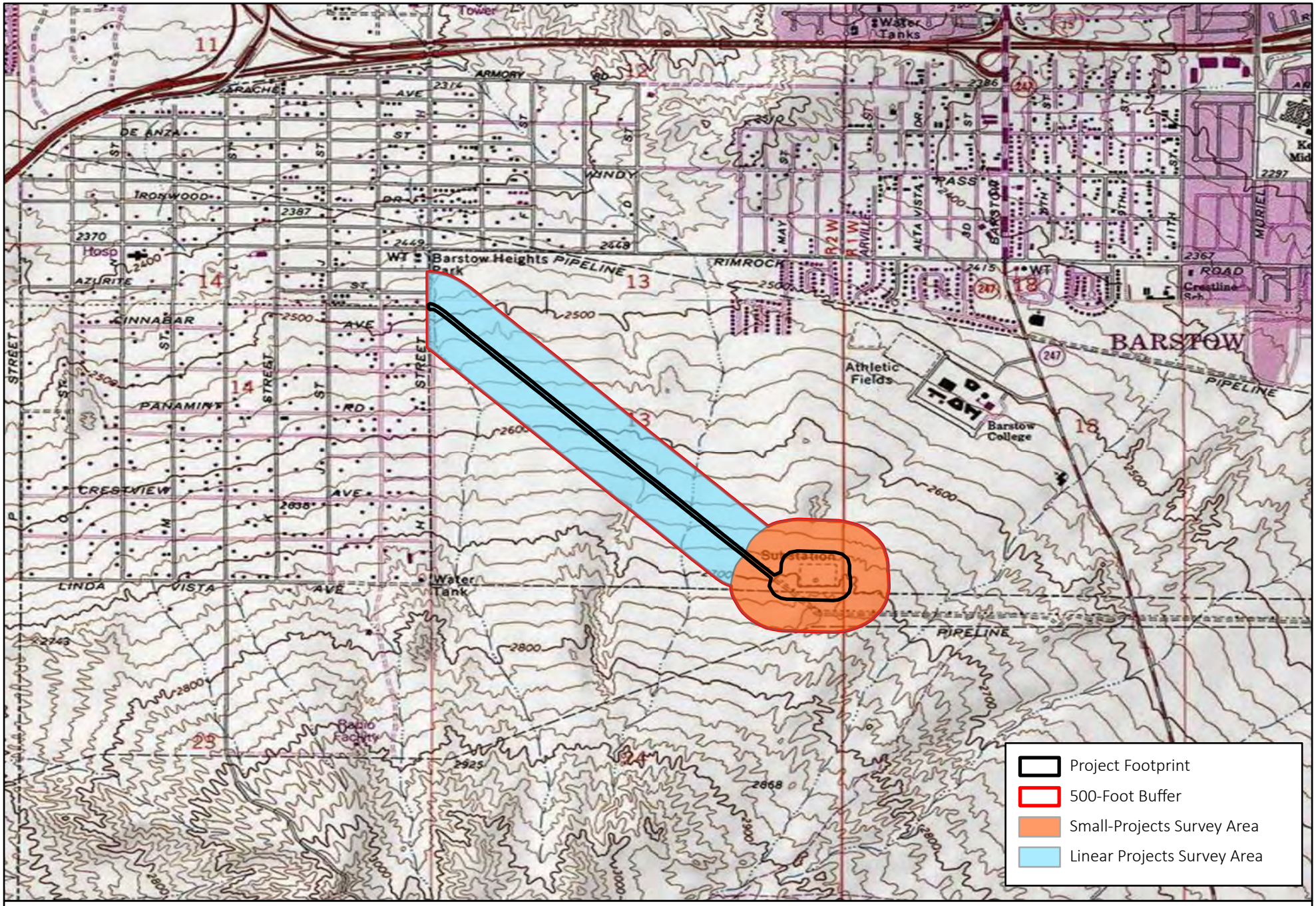


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Figure 1 - Project Location

Desert Tortoise Survey Report

Tortilla Substation

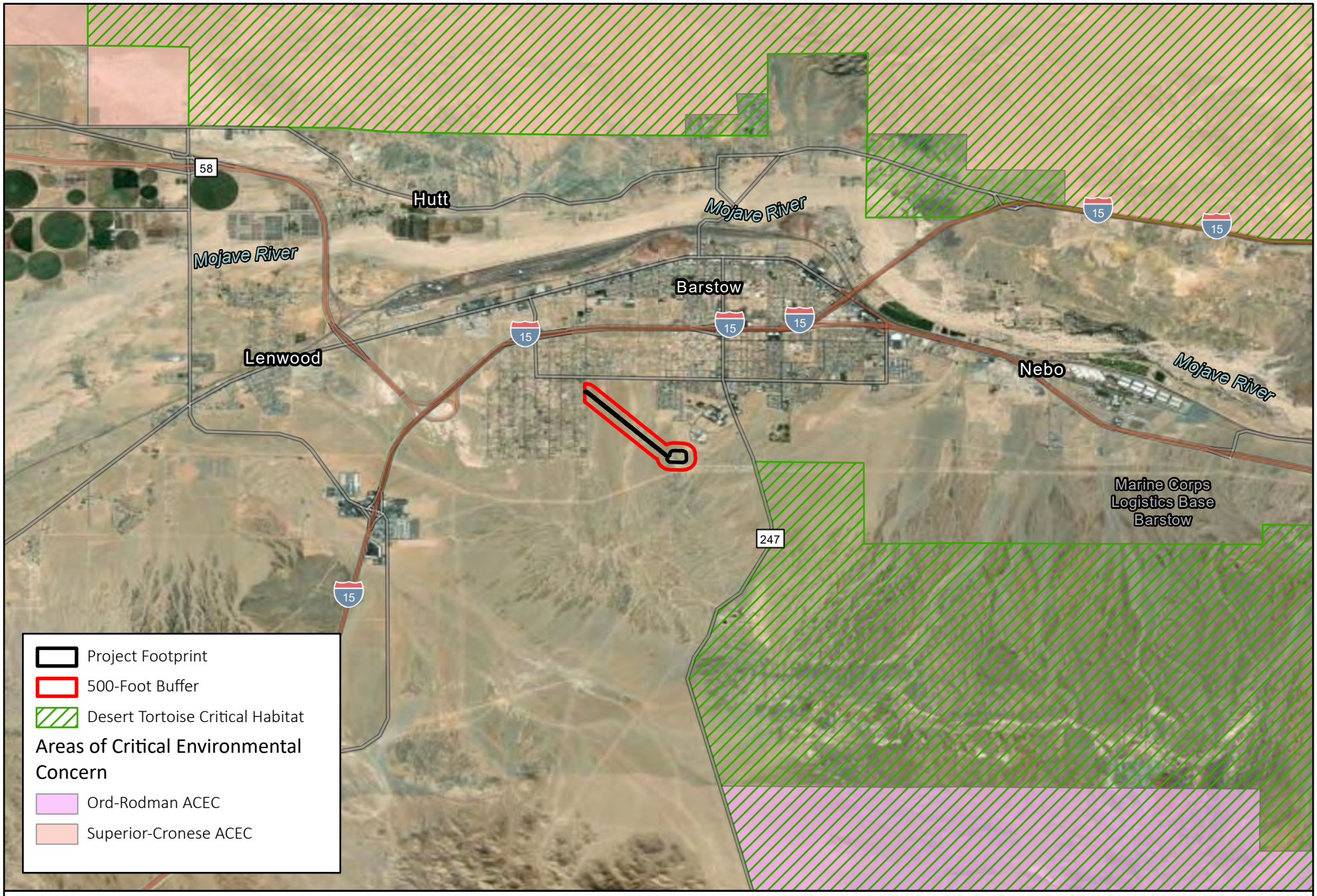


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Figure 2- Survey Area

Desert Tortoise Survey Report

Tortilla Substation

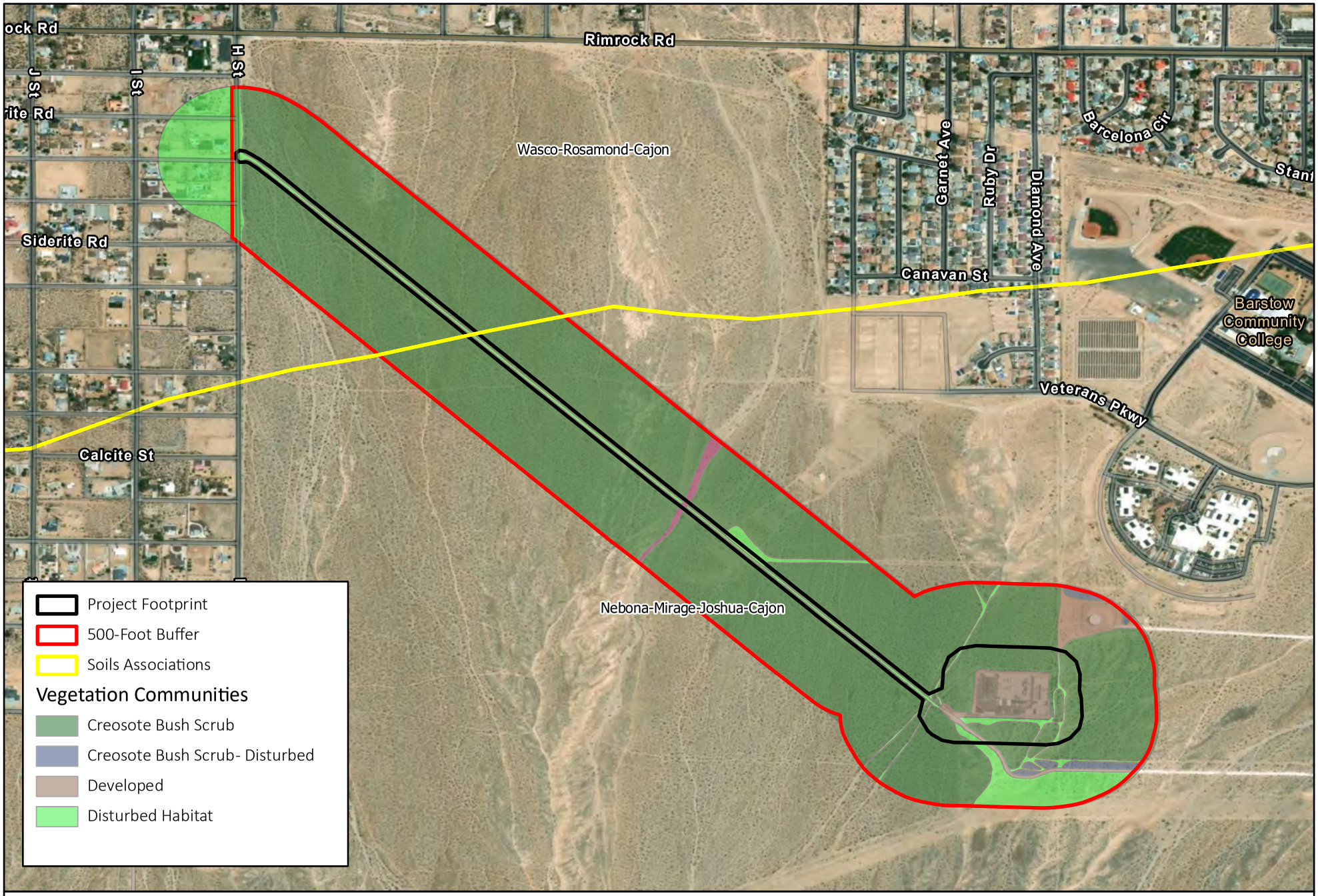


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Figure 3 - Desert Tortoise Conservation Areas

Desert Tortoise Survey Report

Tortilla Substation



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0 500 1,000 2,000 Feet

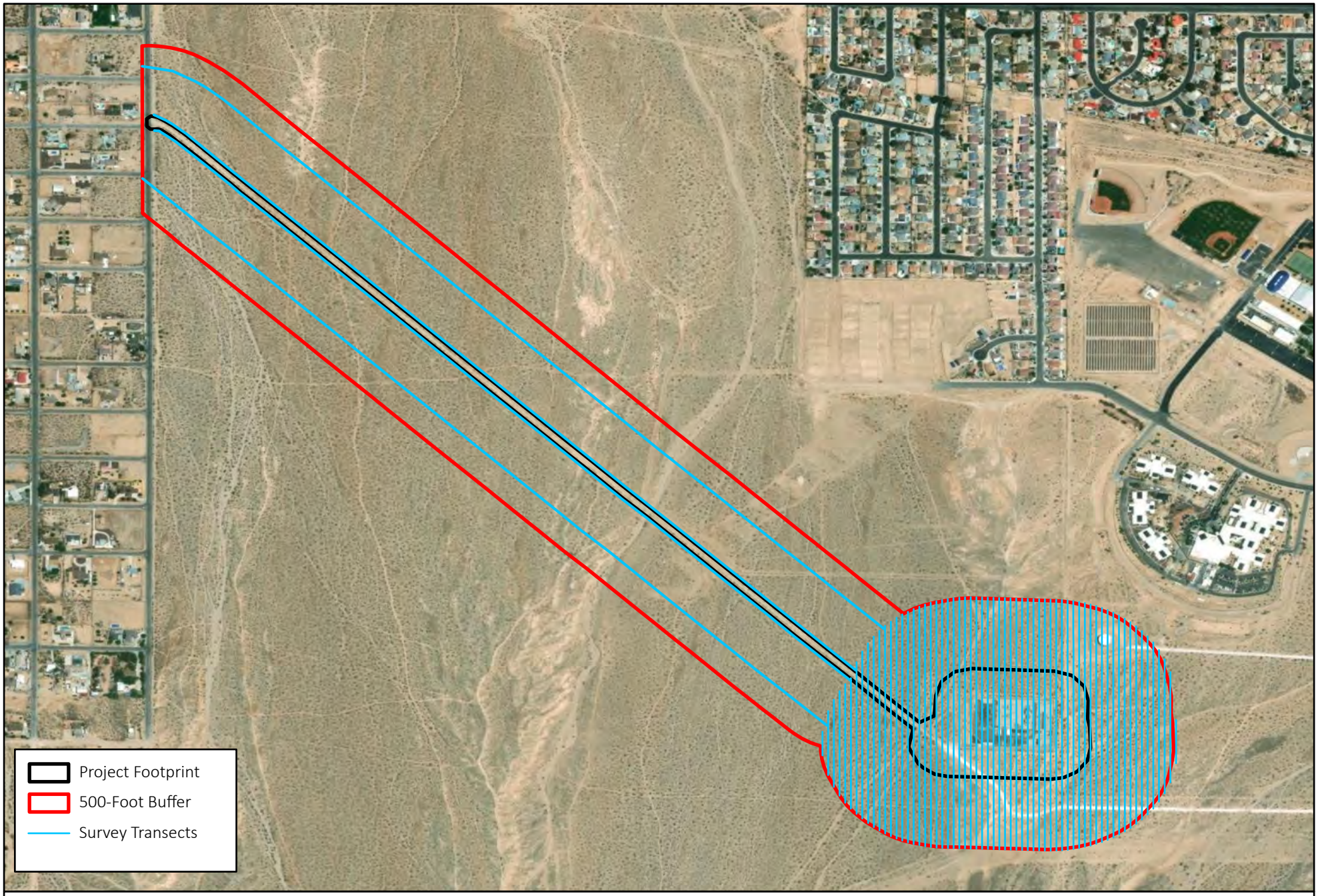
1:12,000 NAD83 UTM Zone 11N

ESRI Basemap 2021

Figure 4 - Soils and Vegetation Communities

Desert Tortoise Survey Report

Tortilla Substation

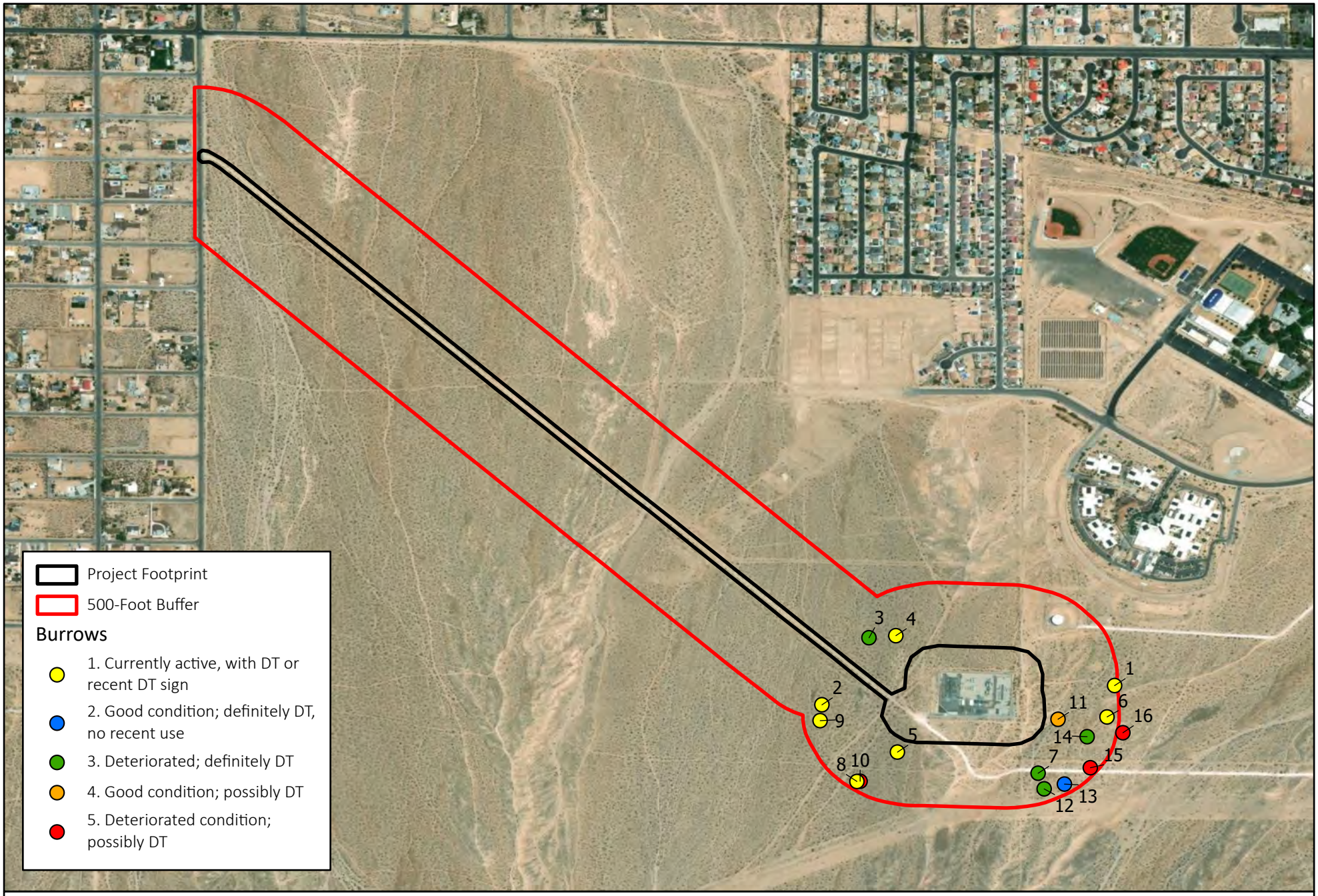


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Figure 5 - Survey Transects

Desert Tortoise Survey Report

Tortilla Substation

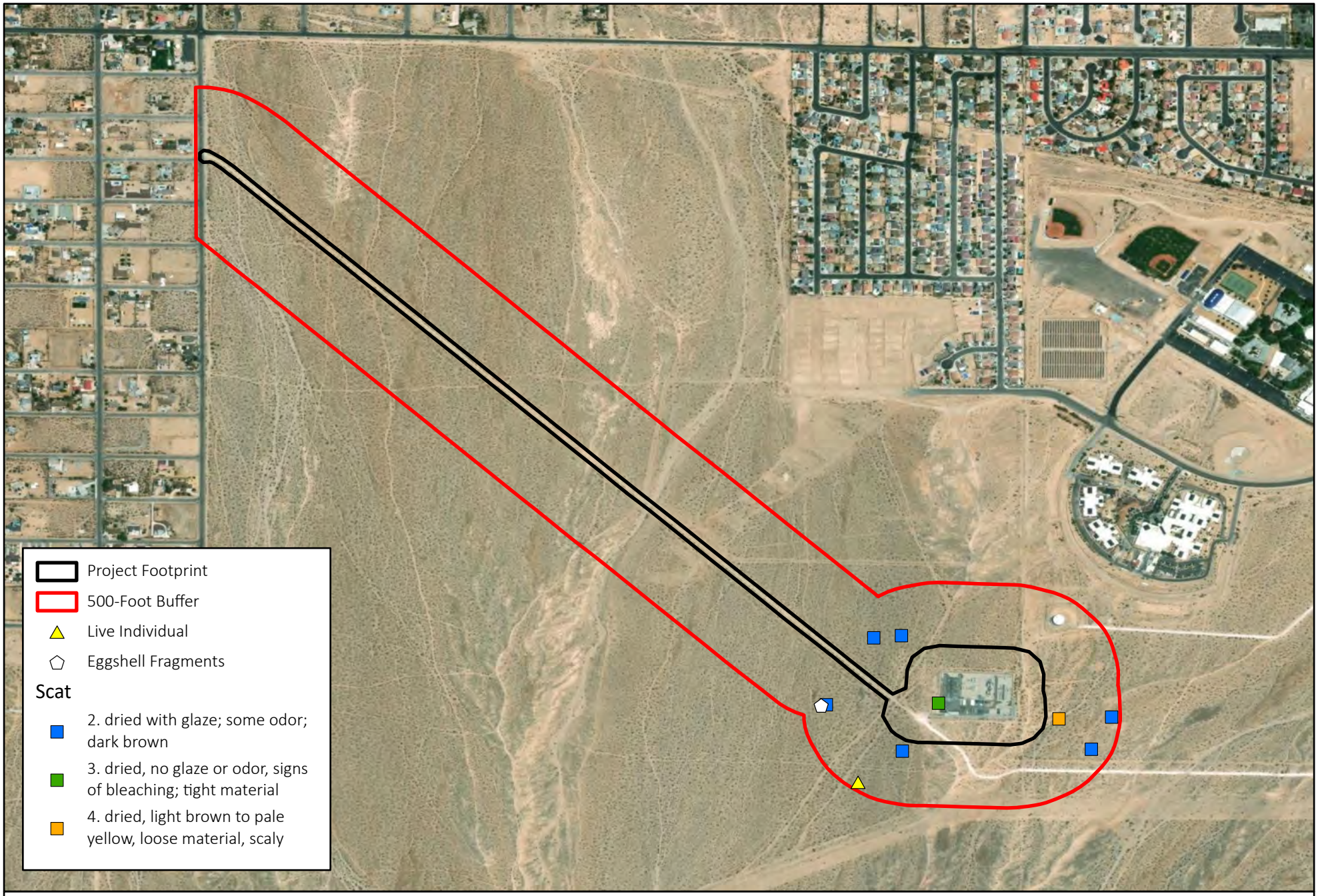


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Figure 6 - Desert Tortoise Burrows

Desert Tortoise Survey Report

Tortilla Substation

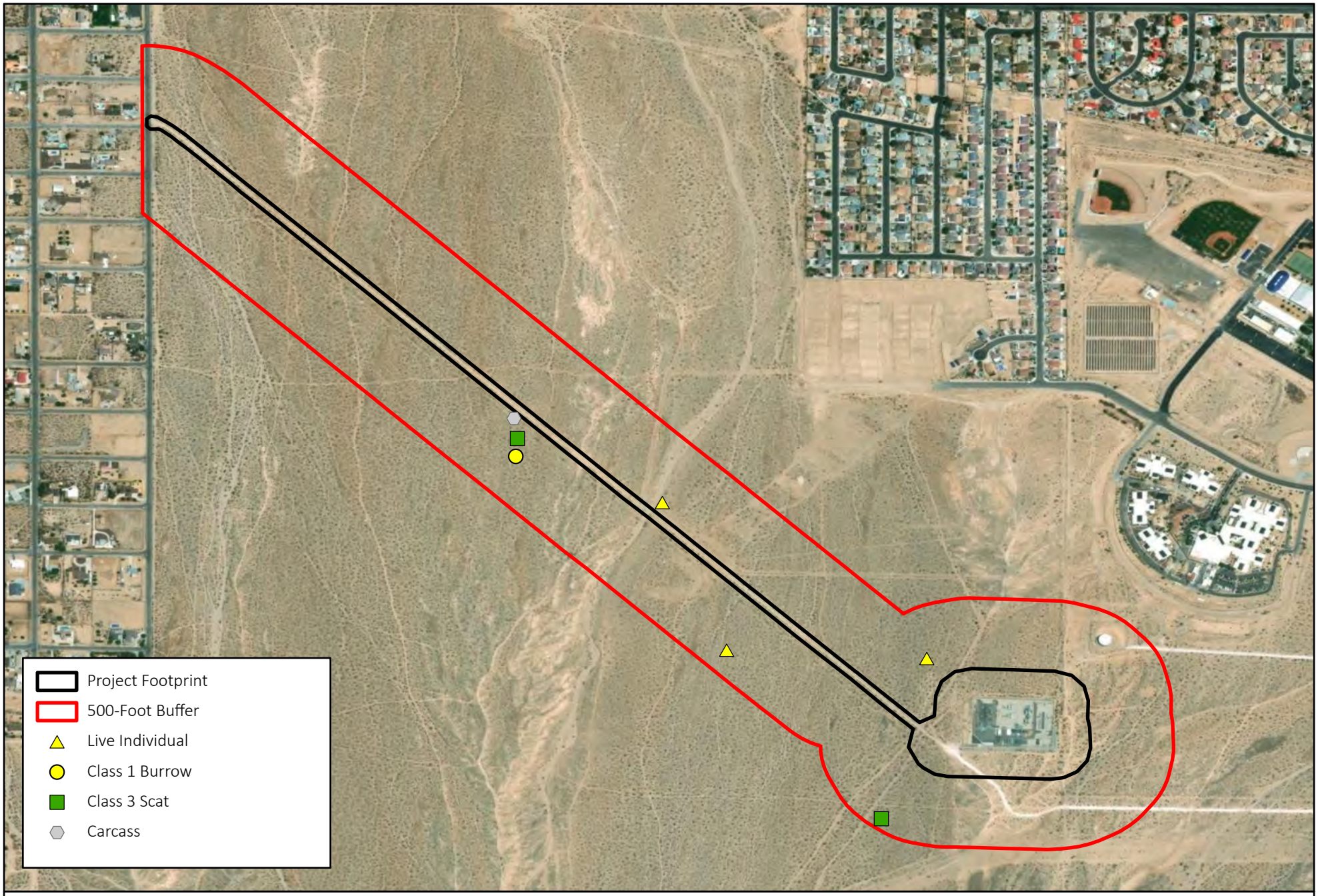


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Figure 7 - Desert Tortoises and Sign

Desert Tortoise Survey Report

Tortilla Substation



NOMAD BIOLOGICAL

Figure 8 - Incidental Desert Tortoises and Sign

Desert Tortoise Survey Report

Tortilla Substation

Attachment B
Photo Log



Photo 1. Representative view of Survey Area near the existing substation, facing north.



Photo 2. Representative view of the Survey Area, facing northwest.



Photo 3. View of adult desert tortoise observed in Burrow 8.



Photo 4. View of the same adult desert tortoise observed in the open.

Attachment C
Survey Results

Observed Burrows										
Burrow ID	**Burrow Class**	**Easting**	**Northing**	**Width (mm)**	**Height (mm)**	**Length (mm)**	**Associated DETO Sign**	**Biologist**	**Date**	**Comments**
1	Class 1	497448	3857893	240	100	350	Tracks	Travis Toelkes	10/10/2023	
2	Class 1	496875	3857847	270	140	500	Scat, Eggshell Fragments, Tracks	Kelsey Woldt	10/10/2023	Several pieces of this year's scat, 2 small eggshell fragments on apron
3	Class 3	496967	3858006	280	90	300	Scat	Travis Toelkes	10/10/2023	
4	Class 1	497020	3858011	300	160	>1m	Scat	Audrey Layden	10/10/2023	>20 pieces of scat on apron.
5	Class 1	497023	3857735	270	180	>1m	Scat	Audrey Layden	10/10/2023	>20 pieces of scat
6	Class 1	497433	3857818	260	110	>1m	Scat	Alec Goodman	10/10/2023	Scat covers burrow floor, 40+ pieces
7	Class 3	497298	3857685	260	70	270	None	Hannah Swarthout	10/10/2023	Roots obstructing entrance
8	Class 1	496944	3857665	250	110	300	Live Individual, Tracks	Audrey Layden	10/10/2023	Class 5 burrow 1m E
9	Class 1	496872	3857810	230	80	40	None	Audrey Layden	10/10/2023	Fresh pallet
10	Class 5	496950	3857666	340	100	>300, back not visible	None	Travis Toelkes	10/10/2023	Adjacent to burrow with live tortoise
11	Class 4	497337	3857813	200	150	500	None	Alec Goodman	10/10/2023	Scat point 2m away, but not on apron, on other side of large ephedra.
12	Class 3	497310	3857648	280	130	0, back of burrow open/dug out	None	Audrey Layden	10/10/2023	
13	Class 2	497349	3857659	290	230	> 1 meter	None	Travis Toelkes	10/10/2023	
14	Class 3	497394	3857771	230	110	750, back not visible	None	Travis Toelkes	10/10/2023	Pallet next to this burrow, <100mm deep
15	Class 5	497400	3857698	240	150	collapsed, back not visible	None	Travis Toelkes	10/10/2023	
16	Class 5	497464	3857781	230	110	280	None	Audrey Layden	10/10/2023	

Desert Tortoise Sign						
Sign Type	**MCL**	**Scat Age**	**Date**	**Biologist**	**Easting**	**Northing**
Live Individual	210	N/A	10/10/2023	Travis Toelkes	496944	3857665
Scat	N/A	3. dried, no glaze or odor, signs of bleaching; tight material	10/10/2023	Alec Goodman	497101	3857851
Scat	N/A	4. dried, light brown to pale yellow, loose material, scaly	10/10/2023	Alec Goodman	497337	3857814
Scat	N/A	2. dried with glaze; some odor; dark brown	10/10/2023	Alec Goodman	497400	3857742
Scat	N/A	2. dried with glaze; some odor; dark brown	10/10/2023	Audrey Layden	496882	3857847
Scat	N/A	2. dried with glaze; some odor; dark brown	10/10/2023	Audrey Layden	496975	3858006
Scat	N/A	2. dried with glaze; some odor; dark brown	10/10/2023	Audrey Layden	497029	3858011
Scat	N/A	2. dried with glaze; some odor; dark brown	10/10/2023	Audrey Layden	497030	3857737
Scat	N/A	2. dried with glaze; some odor; dark brown	10/10/2023	Audrey Layden	497440	3857818
Eggshell Fragments	N/A	N/A	10/10/2023	Audrey Layden	496872	3857846

ATTACHMENT P

PROTOCOL DESERT TORTOISE SURVEY RESULTS FOR THE BARSTOW INTERNATIONAL GATEWAY – SOLAR EAST AND ADDITIONAL PROJECT AREAS IN AND ADJACENT TO BARSTOW, CALIFORNIA

NOMAD
BIOLOGICAL

June 3, 2024

Keoni Calantas, Project Manager
Rocks Biological Consulting, Inc
4312 Rialto Street
San Diego, CA 92107

Subject: Protocol desert tortoise survey results for the Barstow International Gateway - Solar East and Additional Project Areas in and adjacent to Barstow, California.

Dear Mr. Calantas,

This report presents the methods and results of protocol desert tortoise (*Gopherus agassizii*) surveys conducted by Nomad Biological LLC (Nomad Bio) for Rocks Biological Consulting (RBC) in 2024 for the proposed Barstow International Gateway (Project) located in and adjacent to the City of Barstow, San Bernardino County, California. The purpose of the survey was to document the presence of desert tortoise within portions of the revised Project footprint and associated buffers that were not included in previous surveys.

Project Description and Location

BNSF Railway plans to construct an approximately 4,500-acre integrated rail facility west of Barstow, consisting of a rail yard, intermodal facility, and warehouses for transloading freight from international containers to domestic containers. The facility will allow the direct transfer of containers from ships at the Ports of Los Angeles and Long Beach, to trains for transport through the Alameda Corridor on the BNSF mainline to Barstow. Once the containers reach the Barstow International Gateway, they will be processed at the facility using clean-energy powered cargo-handling equipment, and then staged and loaded onto trains travelling east via BNSF's interstate network of rail lines. Westbound freight will be similarly processed at the facility, to bring cargo more efficiently to Pacific ports and other California terminals.

The Project is located in and adjacent to Barstow, San Bernardino County, California (Figure 1: Project Location). Specifically, the Project is centered along W Main St. between the unincorporated community of Lenwood and the census-designated place of Hodge, CA. The Project limits continue west of Hodge along the BNSF railway corridor for approximately six miles, and east of Lenwood for approximately four miles to Southern California Edison's Tortilla Substation. Specifically, the Project is located within the *Wild Crossing, Hodge, Hinkley, Barstow, and Barstow SE* U.S. Geological Survey (USGS) 7.5-minute quadrangles.

Survey Area

The survey area for the 2024 surveys is defined as areas within the revised Project footprint that were not included in previous surveys conducted from 2021 to 2023. The survey area includes approximately 200 acres of private parcels directly south of W. Main St. (Figure 2, Sheet 1) that are proposed for the Solar East offsite solar energy facility. The survey area also includes small (less than five acres) isolated polygons located along W. Main St. and Lenwood Blvd., as well as an approximately 20-foot-wide linear corridor along W. Main St. and residential streets.

Desert Tortoise Habitat Requirements

The Mojave population of the desert tortoise (Agassiz's desert tortoise) occurs west and north of the Colorado River within California, Nevada, Arizona, and Utah. In California specifically, the desert tortoise occurs within the Mojave and Sonoran (Colorado) Deserts (USFWS 1990). Desert tortoises live in a variety of habitats, including sandy flats, rocky foothills, alluvial fans, canyons, and washes where soils must be soft enough for burrow construction but also appropriately firm so that the burrows do not collapse (Anderson et al., 2001). Most desert tortoise habitat is below 4,500 feet in elevation and within the creosote bush-white bursage (*Larrea tridentata-Ambrosia dumosa*) scrub vegetation community. Desert tortoises may also inhabit salt bush scrub (*Atriplex* spp.) at lower elevations and Joshua tree (*Yucca brevifolia*) woodlands at higher elevations.

Methods

Desktop Review

Prior to conducting focused desert tortoise surveys, a literature and existing data review was conducted for the Project site and vicinity to assess the historical occupancy and potential for desert tortoise to occupy the Survey Area. The reviews consisted of a search of California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2024), United States Geological Survey (USGS) topographic maps, aerial imagery (Google 2024). Additionally, reports documenting methods and results of previous protocol desert tortoise surveys conducted in separate areas of the Project site were also reviewed (Eco Vita 2021, Eco Vita 2022a, Eco Vita 2022b, Eco Vita 2022c, and Nomad Bio 2023).

Protocol Survey

Nomad Bio and RBC biologists conducted a protocol tortoise survey on April 12 and May 3, 2024. The survey was conducted in accordance with the guidelines and requirements described in the *Desert Tortoise Field Manual* (USFWS 2009) and *Preparing for any Action that May Occur Within the Range of the Mojave Desert Tortoise* (*Gopherus Agassizii*) (Revised Protocol) (USFWS 2019) (Table 1: Survey Dates and Personnel). Approximately 33 acres of the Survey Area were not surveyed due to lack of desert tortoise habitat (developed lands) or inaccessible areas adjacent to Highway 58 (Figure 2: Survey Area). The survey crew walked 10-meter spaced belt transects and searched for and recorded any sign of occupancy by desert tortoise, including live individuals, burrows, carcasses, scat, tracks, and eggshell fragments. Potential sign was classified based on the ratings described in the *Desert Tortoise Field Manual.*

Table 1. Survey Dates and Personnel

Date	Start Time	End Time	Temperature (°F)	Wind (MPH)	Cloud Cover (%)	Personnel
4/12	07:45	14:45	60-79	0-3; 10-20	20-10	A. Layden, A. Goodwin, H. Swarthout, K. Woldt
5/3	15:45	18:15	92-90	3-8	0-0	R. Layden

Results

Existing Conditions

The Project is in the Mojave Desert, an area that covers more than 40,000 acres within California, Arizona, Nevada, and Utah, and acts as the transitional zone between the hot, low-elevation Sonoran Desert to the south and the relatively cooler, higher-elevation Great Basin to the north. The Project area is characterized by hot summers with minimal precipitation and cold winters with extreme temperature swings. The topography within the Survey Area is mostly flat with more prominent hills and an increase in elevation throughout the eastern portion. The elevation ranges from 2,200 feet above mean sea level (amsl) in the western and central survey area to nearly 2,500 amsl on the eastern end. Land cover types that occur in the survey area include creosote bush scrub, allscale scrub, developed, and disturbed habitats and land uses include commercial, residential, agricultural, transportation, and open space.

The Project is located within the Western Recovery Unit for desert tortoise, as defined in the *Revised Recovery Plan for the Mojave Population of the Desert Tortoise (Gopherus agassizii*) (Recovery Plan) (USFWS 2011). The Recovery Plan established Tortoise Conservation Areas (TCAs) to serve as recovery areas for the Mojave population of the desert tortoise. TCAs include U.S. Fish and Wildlife Service (USFWS) designated critical habitat, Desert Wildlife Management Areas (DWMAs), Areas of Critical Environmental Concern (ACECs), as well as other important conservation areas and habitat linkages managed for desert tortoise. The Project is located approximately 0.7-mile from USFWS critical habitat, and 0.12-mile from the Superior Cronese ACEC (Figure 3: Desert Tortoise Conservation Areas).

Focused Desert Tortoise Surveys

No desert tortoises or sign were observed within the survey area. Most of the survey area contains fragments of potential desert tortoise habitat, mainly adjacent to paved roads or private residences. The westernmost portion of the survey area contains approximately 137 acres of desert tortoise habitat, is adjacent to additional undeveloped desert tortoise habitat, and has the highest potential to support this species. However, no desert tortoise sign was observed in this area and recorded burrows include two canid burrows and one ground squirrel ground burrow (Figure 4: Survey Results).

Although no desert tortoises were observed within the survey area, previous survey efforts conducted in 2021, 2022, and 2023 documented the presence of desert tortoises in areas of the Project adjacent to the 2024 Survey Area (Eco Vita – 2021, 2022a, 2022b; Nomad Bio 2024). Desert tortoise habitat, in the form of creosote bush scrub is present within fragmented portions of the survey area and desert tortoises may move into these areas.

If you have any questions regarding this report, please contact me at ryan@nomadbiological.com.

Sincerely,

Ryan Layden
Principal Biologist

Attachments

Attachment A — Figures
Attachment B — Representative Photographs

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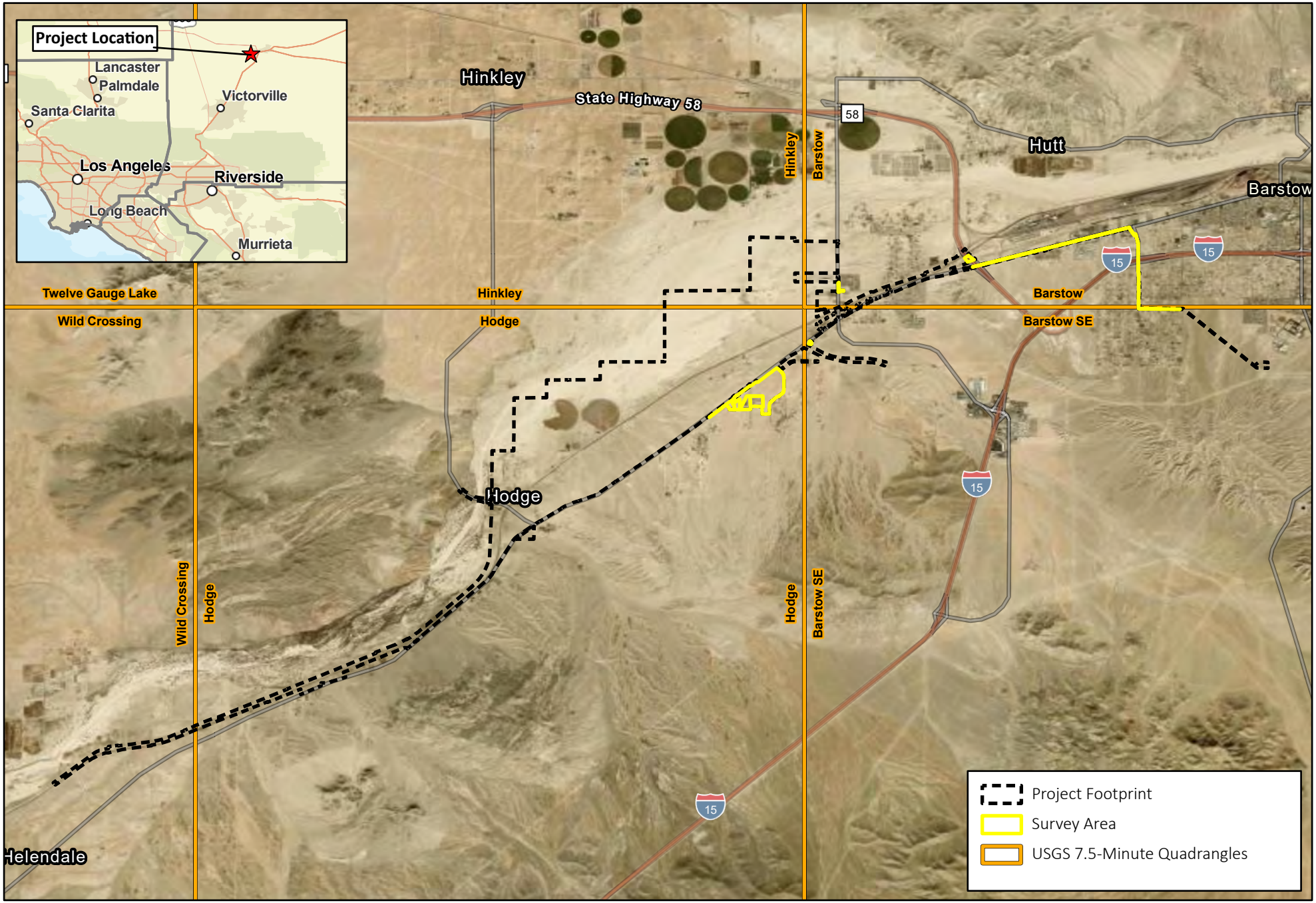
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Attachment A
Figures



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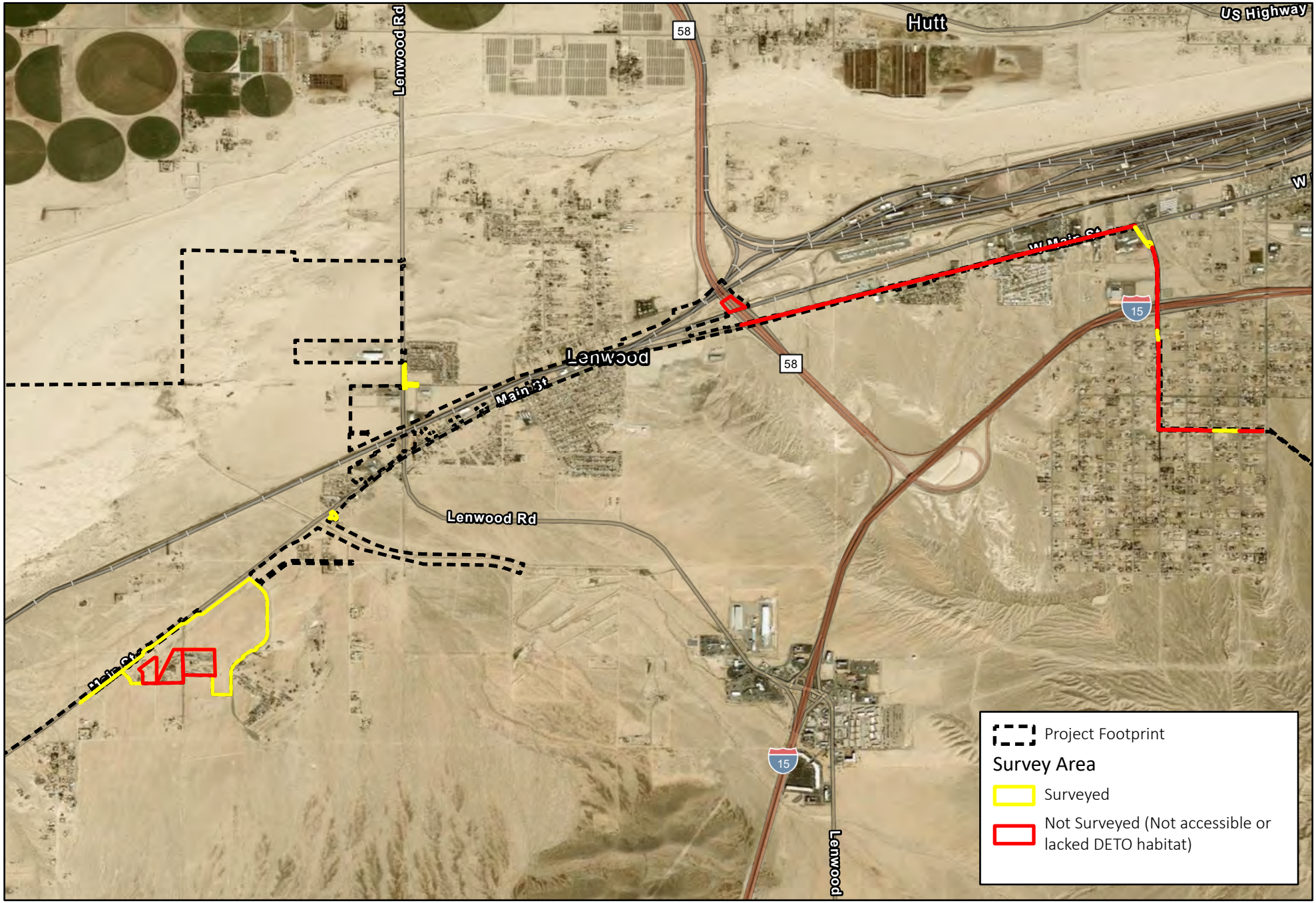
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ESRI Basemap 2024

Figure 1 - Project Location

Desert Tortoise Survey Report

Barstow International Gateway- Solar East and Additional Project Areas



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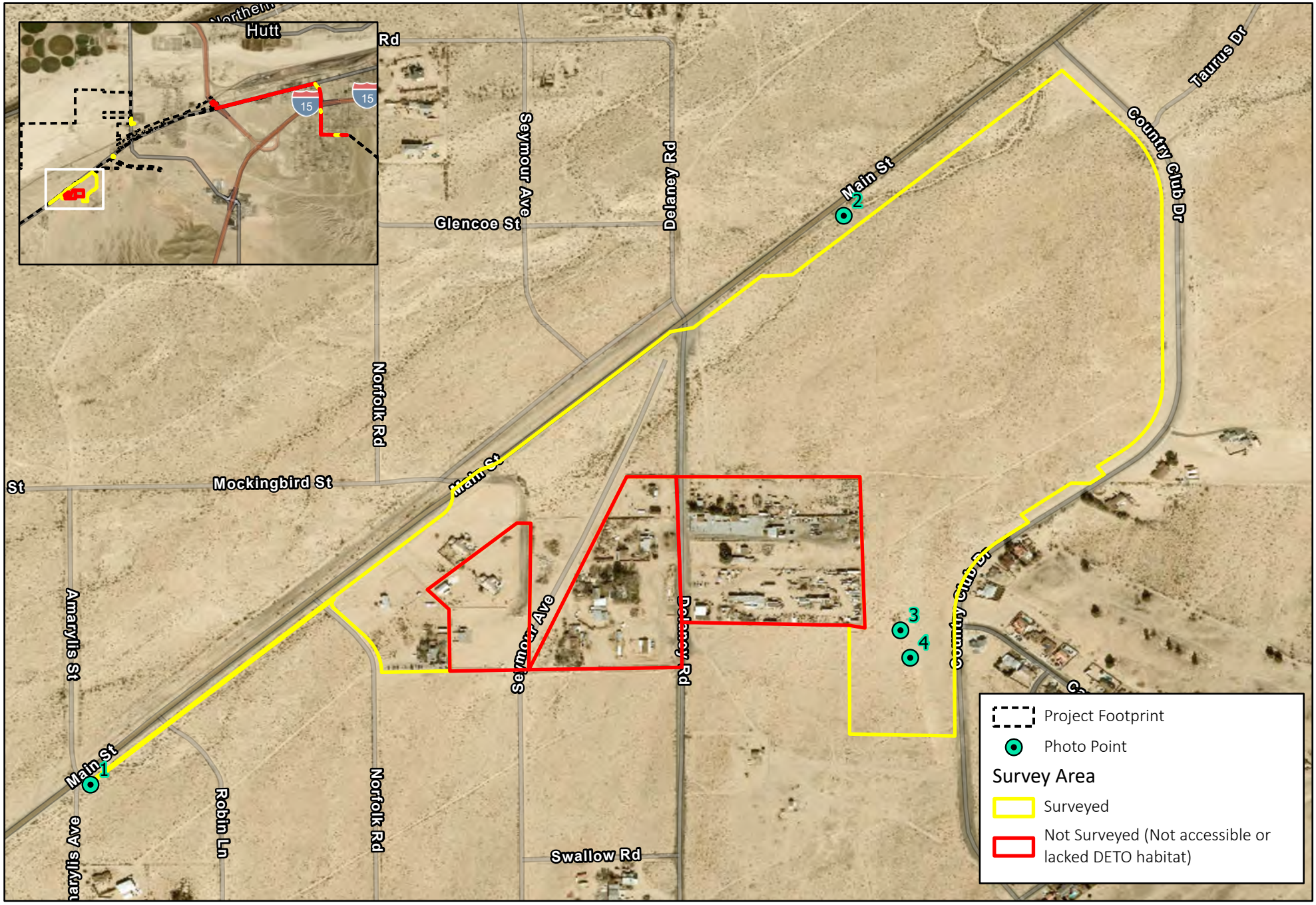
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Figure 2 - Survey Area

Overview

Desert Tortoise Survey Report

Barstow International Gateway- Solar East and Additional Project Areas



NOMAD BIOLOGICAL

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1:8,000 NAD83 UTM Zone 11N

ESRI Basemap 2024

Figure 2 - Survey Area

Sheet 1 of 6

Desert Tortoise Survey Report

Barstow International Gateway- Solar East and Additional Project Areas



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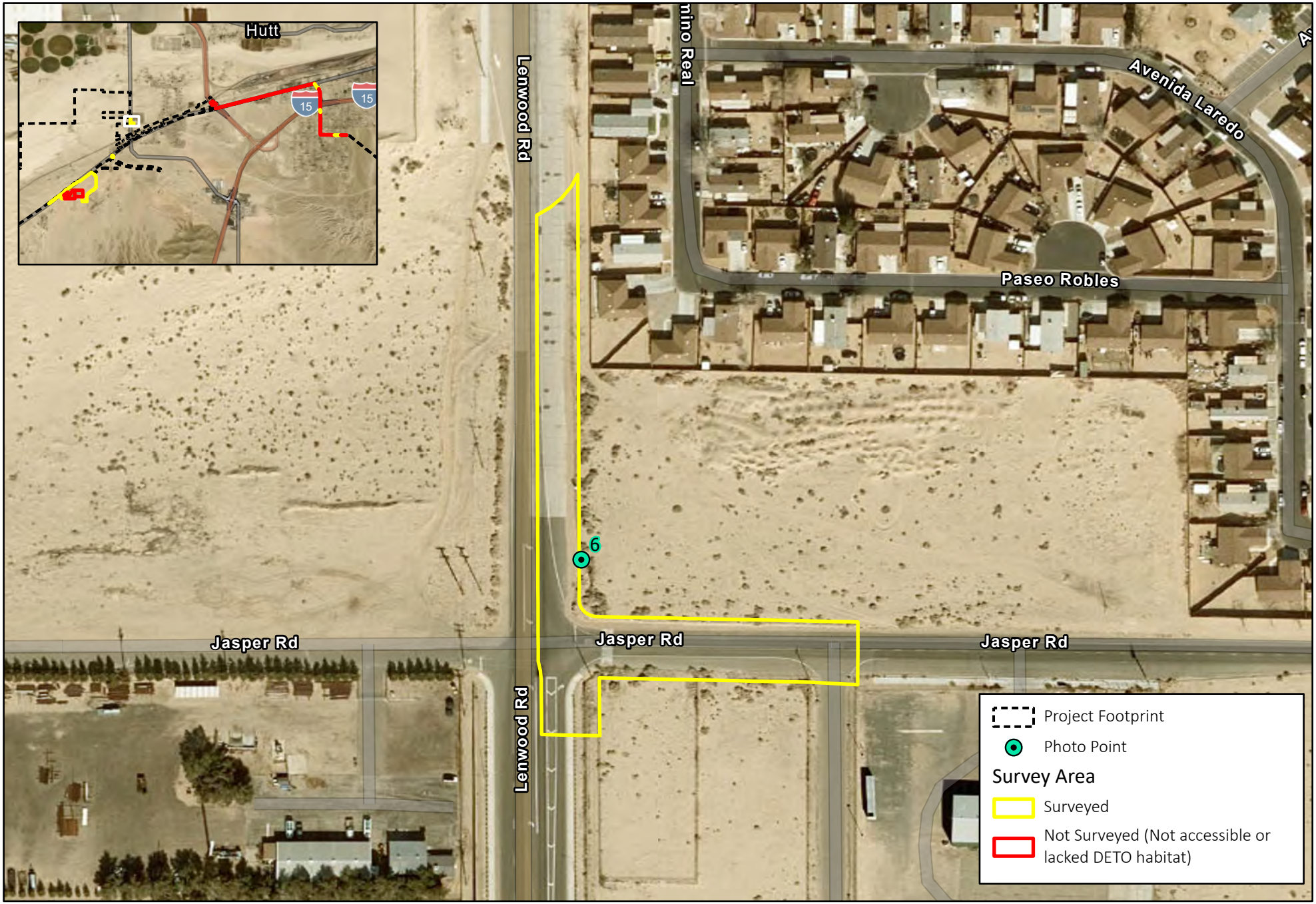
ESRI Basemap 2024

Figure 2 - Survey Area

Sheet 2 of 6

Desert Tortoise Survey Report

Barstow International Gateway- Solar East and Additional Project Areas



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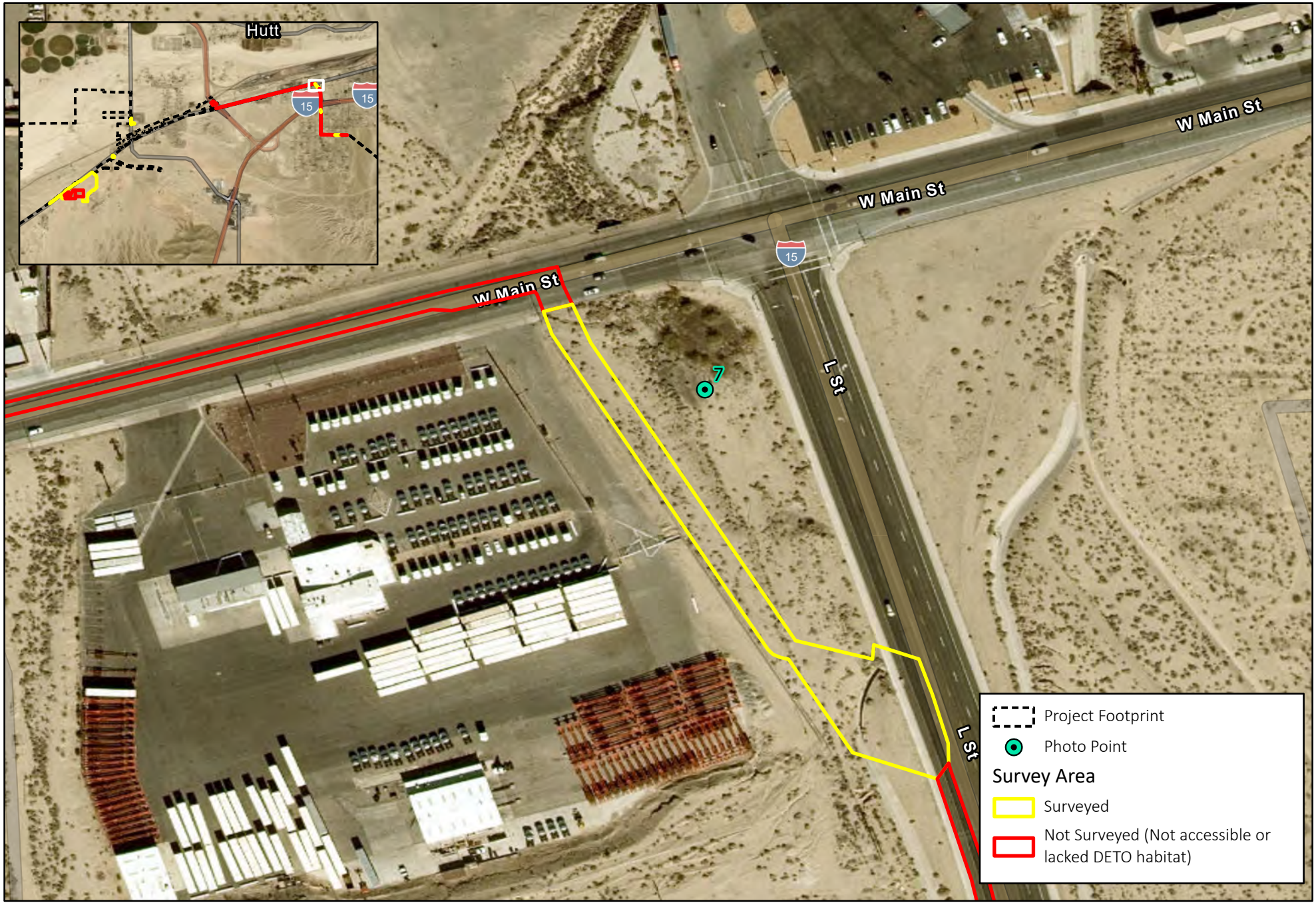
ESRI Basemap 2024

Figure 2 - Survey Area

Sheet 3 of 6

Desert Tortoise Survey Report

Barstow International Gateway- Solar East and Additional Project Areas



NOMAD BIOLOGICAL

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1:2,000 NAD83 UTM Zone 11N

ESRI Basemap 2024

Figure 2 - Survey Area

Sheet 4 of 6

Desert Tortoise Survey Report

Barstow International Gateway- Solar East and Additional Project Areas



NOMAD BIOLOGICAL

N

0 125 250 500 Feet

1:2,000 NAD83 UTM Zone 11N

ESRI Basemap 2024

Figure 2 - Survey Area

Sheet 5 of 6

Desert Tortoise Survey Report

Barstow International Gateway- Solar East and Additional Project Areas



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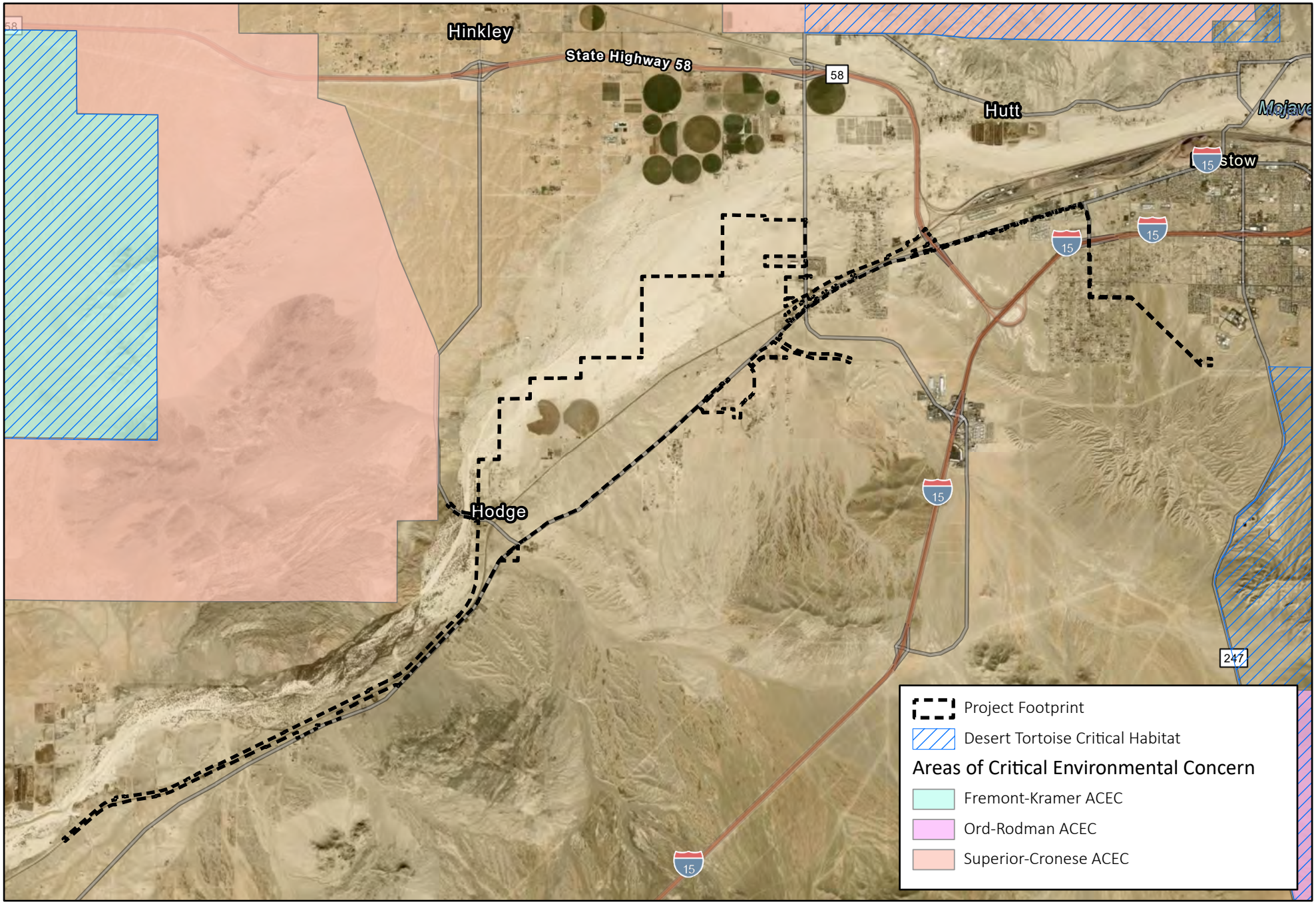
ESRI Basemap 2024

Figure 2 - Survey Area

Sheet 6 of 6

Desert Tortoise Survey Report

Barstow International Gateway- Solar East and Additional Project Areas



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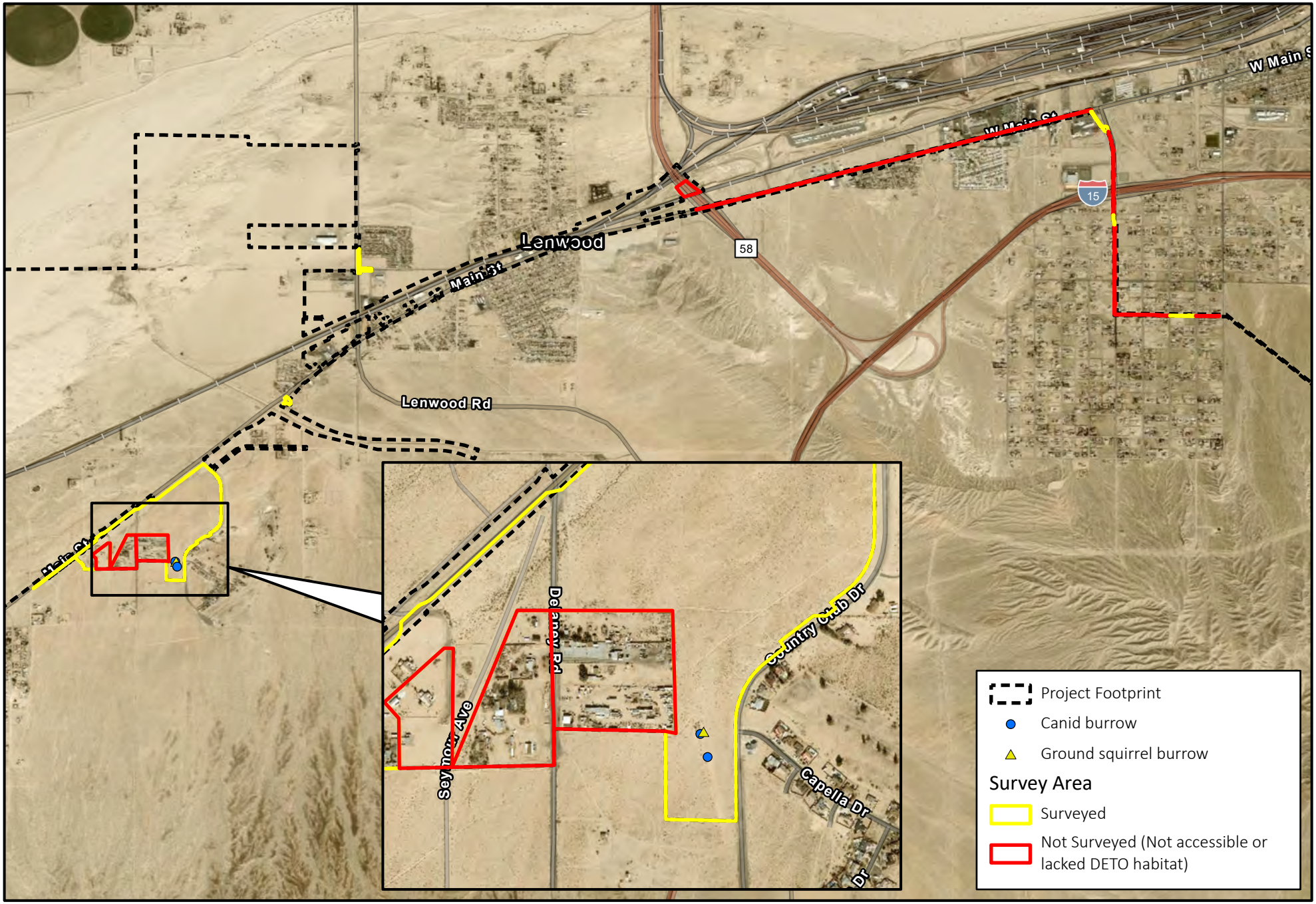
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ESRI Basemap 2024

Figure 3 - Desert Tortoise Conservation Areas

Desert Tortoise Survey Report

Barstow International Gateway- Proposed Solar and Additional Project Areas



NOMAD BIOLOGICAL

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1:45,627 NAD83 UTM Zone 11N

ESRI Basemap 2024

Figure 4 - Survey Results

Desert Tortoise Survey Report

Barstow International Gateway- Solar East and Additional Project Areas

Attachment B
Representative Photographs



Photo 1. East-facing view of additional survey on the western side of the survey area along Main St.



Photo 2. South-east view facing view of desert tortoise habitat within the proposed Solar East development area.



Photo 3. North-east-facing view of canid burrow B1.



Photo 4. South-east facing view of canid burrow B2.



Photo 5. View of potential desert tortoise habitat in small, fenced in lot along Main St.



Photo 6. View of an undeveloped lot on Lenwood Blvd. Potential desert tortoise habitat is present in the form of allscale scrub.



Photo 7. South-facing view of survey area at intersection of W. Main St. and L St.



Photo 8. East-facing view of undeveloped lot in the Barstow Heights neighborhood with potential desert tortoise habitat in the form of creosote bush scrub.

ATTACHMENT Q

DESERT TORTOISE SURVEY REPORT - BARSTOW INTERNATIONAL GATEWAY PROJECT

DESERT TORTOISE SURVEY REPORT

BARSTOW INTERNATIONAL GATEWAY PROJECT



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December 6, 2024

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1. Introduction

This report presents the methods and results of protocol desert tortoise (*Gopherus agassizii,* tortoise) surveys conducted by Nomad Biological, LLC (Nomad Bio) for Rocks Biological Consulting (RBC) for the Barstow International Gateway Project (Project), located in and adjacent to the City of Barstow, San Bernardino County, California. Protocol desert tortoise surveys were previously conducted over several years within various Project areas. The purpose of this survey is to provide updated tortoise occurrence distribution within the proposed rail yard, lead track extension, and Tortilla Substation Project footprints and provide an tortoise density estimate within the rail yard portion of the Project.

1.1 Project Description

BNSF Railway plans to construct an approximately 5,000-acre integrated rail facility west of Barstow. The Project will consist of a rail yard, including an intermodal facility, transfer warehouse center, and ancillary rail areas (container yard, chassis storage, maintenance right of way). The Project will also include an offsite solar electric generating facility and several rail and non-rail improvements, including lead track extension, roadways, drainage, and utilities. The facility will allow the direct transfer of containers from ships at the Ports of Los Angeles and Long Beach, to trains for transport through the Alameda Corridor on the BNSF mainline to Barstow. Once the containers reach the Barstow International Gateway, they will be processed at the facility using clean-energy powered cargo-handling equipment, and then staged and loaded onto trains travelling east via BNSF's interstate network of rail lines. Westbound freight will be similarly processed at the facility, to bring cargo more efficiently to Pacific ports and other California terminals.

1.2 Project Location and Survey Area

The Project is located on private lands within and adjacent to the City of Barstow, the census-designated place of Lenwood, and the unincorporated community of Hodge, as well as additional portions of unincorporated San Bernardino County, California (Figure 1: Project Location). Specifically, the Project is located within the *Barstow, Barstow SE, Hinkley, Hodge,* and *Wild Crossing* U.S. Geological Survey (USGS) 7.5-minute quadrangles. Township, Section, and Range information is provided in Table 1, below.

Table 1. Township, Range, and Section Information

Township	Range	Section
9N	1W	18, 19
	2W	7, 8, 9, 10, 11, 13, 17, 18, 19, 20, 24
	3W	12, 13, 14, 22, 23, 24, 25, 26, 27, 28, 33, 34
8N	3W	3, 4, 5, 7, 8, 9,
	4W	12, 13, 14, 15

The Survey Area for the 2024 protocol surveys is defined as the Project limits of the rail yard, lead track expansion, and Tortilla Substation work areas. In areas where access was permitted, a 150-meter buffer was included (Figure 2: Survey Area). Approximately 200 acres of 5,437-acre the Survey Area were not surveyed due to access restrictions including private property, fences and very dense patches of *Salsola tragus* within fallow agriculture fields.

1.3 Desert Tortoise Species Profile

The Mojave population of the desert tortoise (Agassiz's desert tortoise) occurs west and north of the Colorado River within California, Nevada, Arizona, and Utah. In California specifically, the desert tortoise occurs within the Mojave and Sonoran (Colorado) Deserts (USFWS 1990). The desert tortoise lives in a variety of habitats, including sandy flats, rocky foothills, alluvial fans, canyons and washes where soils must be soft enough for burrow construction but also appropriately firm so that the burrows do not collapse (Anderson et al., 2001). Most desert tortoise habitat is below 4,500 feet in elevation and within the creosote bush-white bursage scrub vegetation community. Desert tortoises may also inhabit salt bush scrub (*Atriplex* spp.) at lower elevations and Joshua tree (*Yucca brevifolia*) woodlands at higher elevations.

2. Methods

Nomad Bio biologists, with assistance from RBC and Insignia Environmental biologists, conducted protocol desert tortoise surveys from September 9, 2024 to October 16, 2024, in accordance with the guidelines and requirements described in the *Desert Tortoise Field Manual* (Field Manual) (USFWS 2009) and *Preparing for any Action that May Occur Within the Range of the Mojave Desert Tortoise* (*Gopherus agassizii*) (Survey Protocol) (USFWS 2019) (Table 2: Survey Dates and Personnel). The survey crew walked 10-meter spaced belt transects within the Survey Area. The biologists searched for and recorded all sign of occupancy by desert tortoise, including live individuals, burrows, carcasses, scat, tracks, and eggshell fragments. Sign was classified based on the ratings described in the Field Manual (Table 3: Desert Tortoise Sign Classification).

Table 2. Summary of Survey Dates and Personnel

Date	Start Time	End Time	Temperature (°F)	Wind (MPH)	Cloud Cover (%)	Personnel
9-Sep	7:00	15:45	90-101	0-3; 3-6	50-0	R. Layden; M. Toelkes, T. Toelkes, A. Trexler, S. Carlton
10-Sep	6:15	15:15	77-101	0-3; 8-12	100-80	R. Layden; M. Toelkes, T. Toelkes, A. Trexler, S. Carlton
11-Sep	6:15	16:00	66-98	0-3; 10-15	0-50	R. Layden; M. Toelkes, T. Toelkes, A. Trexler, S. Carlton
12-Sep	6:15	15:30	68-95	3-6; 3-6	0-0	R. Layden; M. Toelkes, T. Toelkes, A. Trexler, S. Carlton
13-Sep	6:15	16:00	66-96	1-3; 1-3	0-0	R. Layden; M. Toelkes, T. Toelkes, A. Trexler, S. Carlton
14-Sep	7:15	16:30	64-97	0-3; 5-8	0-0	M. Toelkes, T. Toelkes, K. Koeper
15-Sep	7:15	16:00	66-91	0-3; 18-24	0-20	M. Toelkes, T. Toelkes, K. Koeper
16-Sep	7:15	16:45	57-73	0-3; 5-10	0-10	A. Layden, T. Toelkes, M. Toelkes, L. Omlid, A. Trexler

Date	Start Time	End Time	Temperature (°F)	Wind (MPH)	Cloud Cover (%)	Personnel
17-Sep	7:00	16:30	52-80	0-3; 0-3	0-0	A. Layden, T. Toelkes, M. Toelkes, L. Omlid, A. Trexler, A. Goodwin, H. Swarthout
18-Sep	7:00	17:00	54-86	0-3; 3-6	0-20	A. Layden, T. Toelkes, M. Toelkes, L. Omlid, A. Trexler, A. Goodwin, H. Swarthout
19-Sep	7:00	16:30	56-83	0-3; 5-10	70-20	A. Layden, T. Toelkes, M. Toelkes, L. Omlid, A. Trexler
20-Sep	7:00	17:00	56-72	0-3; 6-10	15-20	A. Layden, T. Toelkes, M. Toelkes, A. Trexler, A. Goodwin, H. Swarthout, I. Badar
21-Sep	7:30	17:10	60-91	0-3; 0-3	0-0	M. Toelkes, T. Toelkes, K. Koeper,
22-Sep	7:00	15:30	60-95	0-3; 0-3	0-0	M. Toelkes, T. Toelkes, K. Koeper, A. Marciano
23-Sep	7:00	15:45	67-95	0-3; 0-3	0-0	R. Layden; M. Toelkes, T. Toelkes, A. Trexler, S. Carlton
24-Sep	6:30	16:00	64-103	0-3; 3-6	0-0	R. Layden; M. Toelkes, T. Toelkes, A. Trexler, S. Carlton, K. Otto, C. Hentz
25-Sep	6:30	16:00	63-99	0-3; 5-8	0-0	R. Layden; M. Toelkes, T. Toelkes, A. Trexler, S. Carlton, K. Otto, C. Hentz
26-Sep	6:30	16:00	68-96	0-3; 0-3	0-0	R. Layden; M. Toelkes, T. Toelkes, A. Trexler, S. Carlton, K. Otto, C. Hentz
27-Sep	6:30	15:45	61-100	0-3; 0-3	0-0	M. Toelkes, T. Toelkes, A. Trexler, S. Carlton
28-Sep	6:45	15:30	63-102	0-3; 0-3	0-0	M. Toelkes, T. Toelkes, K. Koeper,
29-Sep	6:45	13:30	59-92	0-1; 0-3	0-0	M. Toelkes, T. Toelkes, K. Koeper, A. Marciano
30-Sep	7:00	17:00	60-100	0-3; 5-10	0-0	A. Layden, L. Omlid
1-Oct	6:30	16:30	70-103	0-3; 3-6	0-0	A. Layden, L. Omlid, H. Swarthout, K. Woldt
2-Oct	6:30	16:30	71-104	0-3; 3-6	0-0	A. Layden, L. Omlid, H. Swarthout, K. Woldt, S. Harris, G. Moss

Date	Start Time	End Time	Temperature (°F)	Wind (MPH)	Cloud Cover (%)	Personnel
3-Oct	6:30	16:30	67-98	0-3; 5-8	0-0	A. Layden, L. Omlid, S. Harris, A. Goodman, I. Badar
4-Oct	6:30	16:30	65-102	0-3; 3-6	0-0	A. Layden, S. Harris, A. Goodman, I. Badar
5-Oct	06:30	16:30	64-100	0-3; 0-3	0-0	S. Harris, A. Marciano
6-Oct	06:30	16:30	66-96	0-3; 0-3	0-0	S. Harris, A. Marciano
7-Oct	12:30	16:30	96-95	0-3; 6-10	0-0	R. Layden
8-Oct	7:00	16:00	64-98	0-3; 0-3	0-0	R. Layden, H. Swarthout, K. Woldt, A. Goodman, I. Hirschler
9-Oct	06:30	16:00	60-96	0-3; 3-8	0-0	R. Layden, H. Swarthout, K. Woldt, A. Goodman,
10-Oct	06:30	15:00	60-91	0-3; 3-8	0-0	R. Layden, H. Swarthout, K. Woldt, A. Goodman
15-Oct	08:00	16:20	62-90	0-3; 0-3	0-0	R. Layden, I. Hirschler, T. Whitney
16-Oct	07:00	17:30	61-87	0-3; 3-6	0-20	R. Layden, T. Whitney, H. Swarthout, K. Woldt, A. Goodman,

Table 3. Desert Tortoise Sign Classification

Sign Type	Class	Description
Burrow/Pallet	1	Currently active, with desert tortoise or recent sign
	2	Good condition; definitely tortoise, no recent use
	3	Deteriorated; definitely tortoise
	4	Good condition; possibly tortoise
	5	Deteriorated condition; possibly tortoise
Carcass	1	Fresh or putrid
	2	Normal color, scutes attached
	3	Scutes peeling off bone
	4	Shell bone falling apart and scute rings peeling
	5	Disarticulated, scattered
Scat	1	wet or freshly dried; obvious odor
	2	dried with glaze; some odor; dark brown
	3	dried, no glaze or odor, signs of bleaching; tight material
	4	dried, light brown to pale yellow, loose material, scaly
	5	bleached, or only consisting of plant fiber

3. Results

3.1 Site Characteristics

The Project is in the Mojave Desert, an area that covers more than 40,000 acres within California, Arizona, Nevada, and Utah, and acts as the transitional zone between the hot, low-elevation Sonoran Desert to the south and the relatively cooler, higher-elevation Great Basin to the north. The Project area is characterized by hot summers with minimal precipitation and cold winters with extreme temperature swings. The Mojave River is located immediately north of of the Project. The topography within the Survey Area varies and includes rolling hills, sand dunes, and flat, desert scrublands. The Project occurs on privately-owned land and the majority of the Project site is undeveloped. Land uses within and adjacent to the Project include residential, agricultural, transportation, and open space.

The Project is located within the Western Recovery Unit for desert tortoise as defined in the *Revised Recovery Plan for the Mojave Population of the Desert Tortoise (Gopherus agassizii*) (Recovery Plan) (USFWS 2011). Rainfall in the Western Mojave Recovery unit mostly occurs in the fall and winter seasons, which is unique compared to other recovery units which receive monsoonal spring and summer rains (right?). This results in different foraging and activity patterns, and life characteristics for the desert tortoise in the Western Recovery Unit compared to other recovery units (USFWS 2011). The Western Mojave Recovery Unit is located entirely in California and is the largest of the four recovery units. The Recovery Plan also established Tortoise Conservation Areas (TCAs) with the recovery units to serve as recovery areas for the Mojave population of the desert tortoise. TCAs include U.S. Fish and Wildlife Service (USFWS) designated critical habitat, Desert Wildlife Management Areas (DWMAs), Areas of Critical Environmental Concern (ACECs), as well as other important conservation areas and habitat linkages managed for desert tortoise. These TCAs serve as study areas for desert tortoise range-wide population monitoring. The Project is located approximately 1.2 miles from the

Fremont-Kramer ACEC, 6.5 miles from the Superior-Cronese ACEC, and 7.6 miles from the Ord-Rodman ACEC. Additionally, USFWS-designed critical habit is located within portions of these three ACECs (Figure 3: Desert Tortoise Conservation Areas).

3.2 Protocol Surveys

The 2024 protocol desert tortoise survey resulted in the documentation of three adult desert tortoises (≥180 mm midline carapace length [MCL]) (Figure 4: Desert Tortoises and Sign Observed). Two tortoises were observed within the Tortilla Substation Project area, and one was observed in the lead track extension Project area. No tortoises were observed within the approximately 4,500-acre proposed rail yard; however, one Class 1 burrow and several Class 2 burrows were observed, indicating that at least one tortoise is present in this area. One 125mm MCL subadult tortoise Class 2 carcass was observed approximately 50 meters from where a similar sized tortoise was observed during 2023 surveys. This is likely the same individual observed in 2023. Biologists also recorded 4 Class 1 desert tortoise burrows, 19 Class 2 desert tortoise burrows, and four Class 3 desert tortoise burrows (Figure 5: Desert Tortoise Burrows). A total of 13 Class 4 and 5 "possible" desert tortoise burrows were also identified. Desert tortoise scat, carcasses, and tracks, were also identified and recorded (Table 4: Desert Tortoise Survey Results).

Table 4. Desert Tortoise Survey Results

Desert Tortoise Sign Type	Sign Class					Total
	1	2	3	4	5	
Burrow/Pallet	4	19	4	7	6	42
Carcass		1			8	9
Scat		8	7	1	1	17
Live Desert Tortoise	Desert Tortoise Age					Total
	Adult		Sub-Adult		Hatchling	
	3		0		0	3

3.2.2 Density Estimate

Density estimates are used to estimate the number of desert tortoises within an area since not all tortoises may be detectable during protocol surveys. Density estimates were calculated using the survey results from the rail yard survey area only. Survey results from the lead track extension and Tortilla Substation survey areas were excluded from the density estimate calculation as these Project areas are considered small (less than 500 acres) or linear; thus, less likely to include the entire home ranges of desert tortoise. Therefore, desert tortoises that use these areas may have been offsite during surveys and undetected. Density estimates can only be calculated with live tortoise observations. Although no live tortoises were observed within the proposed rail yard, one active Class 1 burrow was observed. The following calculation uses the Class 1 burrow as a proxy for an adult tortoise.

Density estimated were calculated using the formula provided in *Table 2 MDT Pre-Project Survey Protocol 2020* of the revised protocol *Preparing for Any Action That May Occur within the Range of The Mojave Desert Tortoise* (USFWS 2019) and is calculated as follows:

$$\left(\begin{array}{c}\text{Estimated number of tortoises}\\ \text{within action area}\end{array}\right) = \frac{\left(\begin{array}{c}\text{Number of tortoises}\\ \text{observed above ground}\end{array}\right)}{\left(\begin{array}{c}\text{Probability that}\\ \text{a tortoise is}\\ \text{above ground } (P_a)\end{array}\right)\left(\begin{array}{c}\text{Probability of}\\ \text{detecting a tortoise,}\\ \text{if above ground } (P_d)\end{array}\right)}\left(\frac{\text{Size of action area}}{\text{Size of area surveyed}}\right)$$

The probability that a tortoise is above ground (P_a) is directly related to the amount of rainfall that an area receives from the previous October to March. Using precipitation data from the Western Regional Climate Center's Barstow Fire Station weather station, a P_a value of 0.85 was used, because the total rainfall was 158mm, greater than the 40mm threshold. The standard value of 0.63 was used for the probability of detecting a tortoise if above ground (P_d) as outlined in the protocol. An average transect length of 2.57 kilometers was used in the calculation. Based on this information and using the density estimate calculation, there are an estimated 1.7 adult desert tortoises within the Project footprint with a lower 95% confidence interval (CI) of 0.33 and an upper 95% CI of 8.81 adult desert tortoises. An estimated 2.2 hatchlings (young-of-year) and 8.8 sub-adult (<180 MCL, not young-of-year) are estimated within the Project footprint. This results in an estimated density of 0.1 adult tortoises/km^2 in the Survey Area (Appendix D: Density Estimate; Table 5: Density Estimate).

Table 5: Density Estimate

Survey Area	Acres	Number of Adult Tortoises		Number of Hatchling Tortoises	Number of Sub-Adult Tortoises	Density (adult tortoises/km^2)	Western Mojave Recovery Unit Average Density (adult tortoises/ km^2)
		Lower 95% CI	Upper 95% CI				
Project Footprint	4,189	1.7		2.2	8.8	0.1	2.8
		0.33	8.81				
Protocol Survey Area	4,743	1.9		2.5	10		
		0.37	9.97				

4. Discussion

Desert tortoise density within the Survey Area is calculated to be 0.1 adult tortoises/km^2, which is considerably lower than the most recent average density of 2.8 adult tortoises/km^2 calculated for the Western Mojave Recovery Unit. The value for average density is based on the results from the *Range-Wide Monitoring of the Mojave Desert Tortoise (Gopherus agassizii): 2013 and 2014 Annual Reporting* (USFWS 2015). Recent monitoring conducted from 2019-2021 in the adjacent TCAs reveals similar densities to the larger Western Mojave Recovery Unit. Specifically, the Superior-Cronese ACEC had a density of 1.9 adult tortoises/km^2 in 2019 (USFWS 2020), the Ord-Rodman ACEC had a density of 2.5 adult tortoises/km^2 in 2021 (USFWS 2022a), and the Fremont-Kramer ACEC had a density of 1.7 adult tortoises/km^2 in 2020 (USFWS 2022b).

The Project encompasses nearly 5,000 acres and includes desert tortoise habitat of varying quality. The land surrounding the Tortilla Substation is likely the highest quality based on native plant coverage, existing

disturbance and presence of tortoise sign. Portions of the proposed rail yard between Main Street and the existing main line railroad also provide areas of high-quality desert tortoise habitat, although movement to and from this area is constrained by paved roads, the railroad, and development associated with the community of Lenwood. A small amount of desert tortoise habitat is also found west of Hinkley road, along the east end of the lead track expansion Project area. The remaining portion of the lead track and underground utility areas occur in mostly developed areas and lack substantial tortoise habitat. Additionally, the portion of the rail yard that occurs north of the existing main railroad line is of marginal quality for desert tortoise. Most of this area is dominated by nonnative vegetation (*Salsola tragus)* and is comprised of stabilized and active sand dunes that do not provide adequate substrate for burrow construction. Although no definitive desert tortoise sign was observed in these areas, higher-quality tortoise habitat surrounds these areas outside of the Project limits and tortoises may move throughout these lands in the future.

5. References

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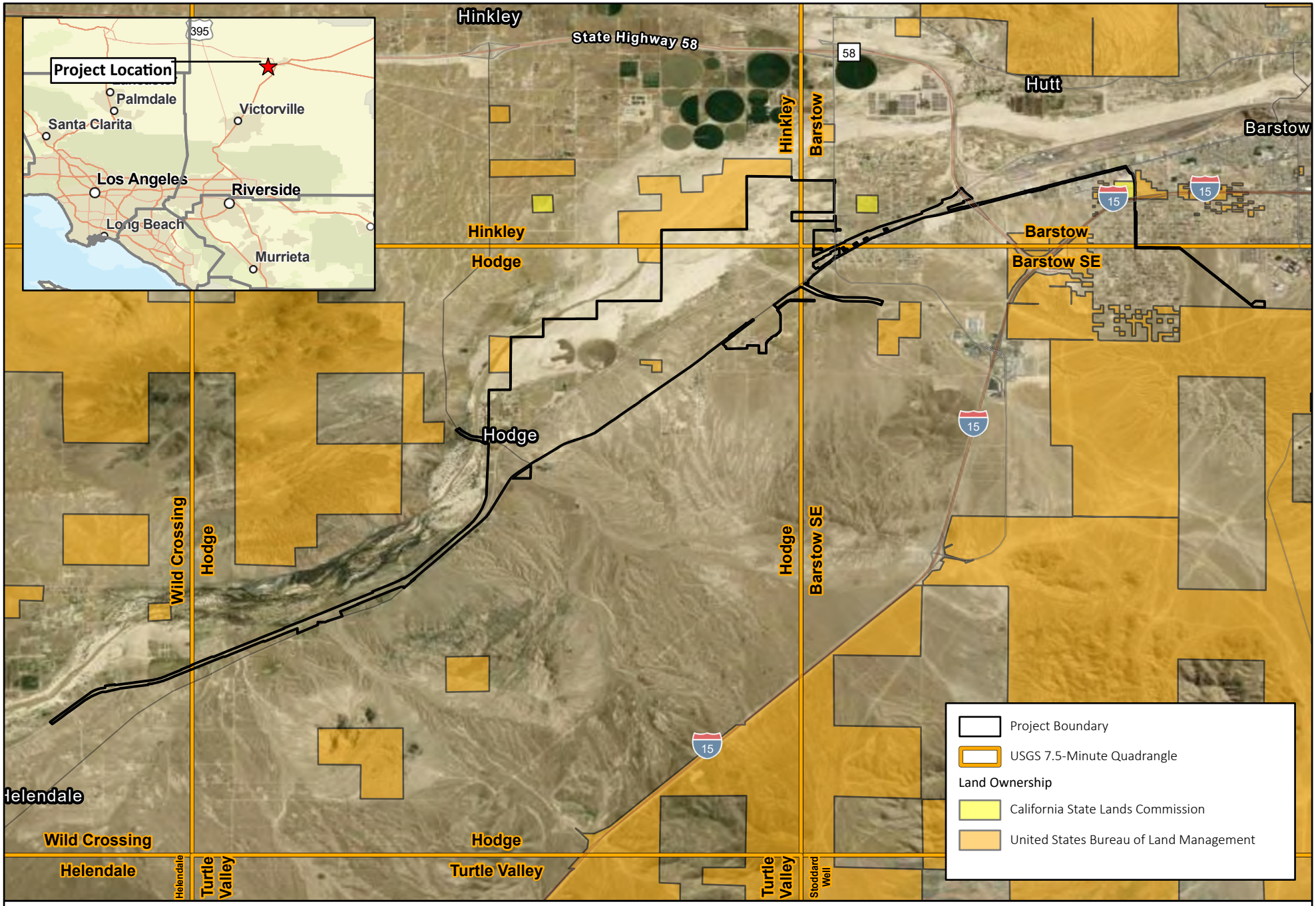
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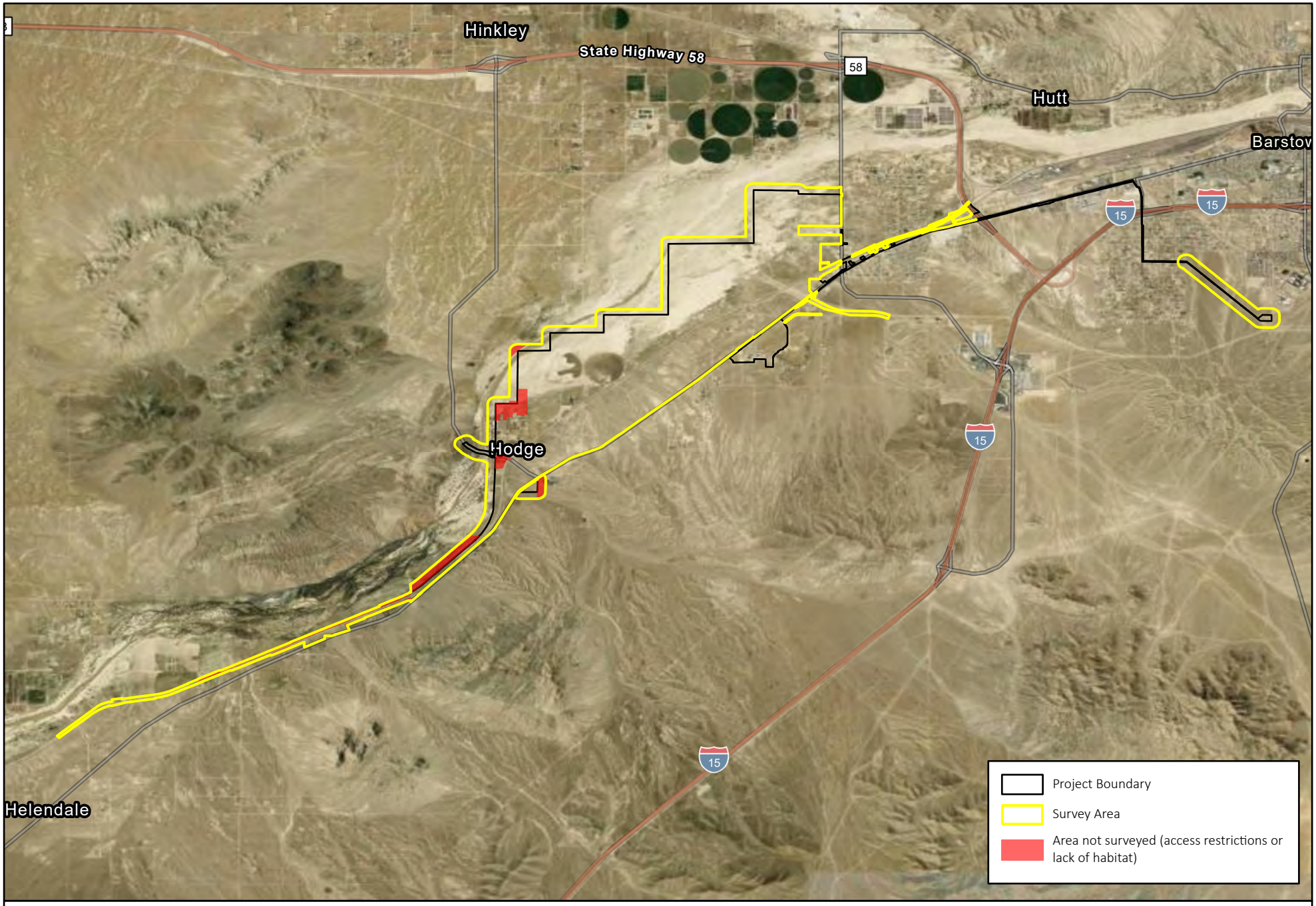
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Figure 1 - Project Location

Desert Tortoise Survey Report

Barstow International Gateway

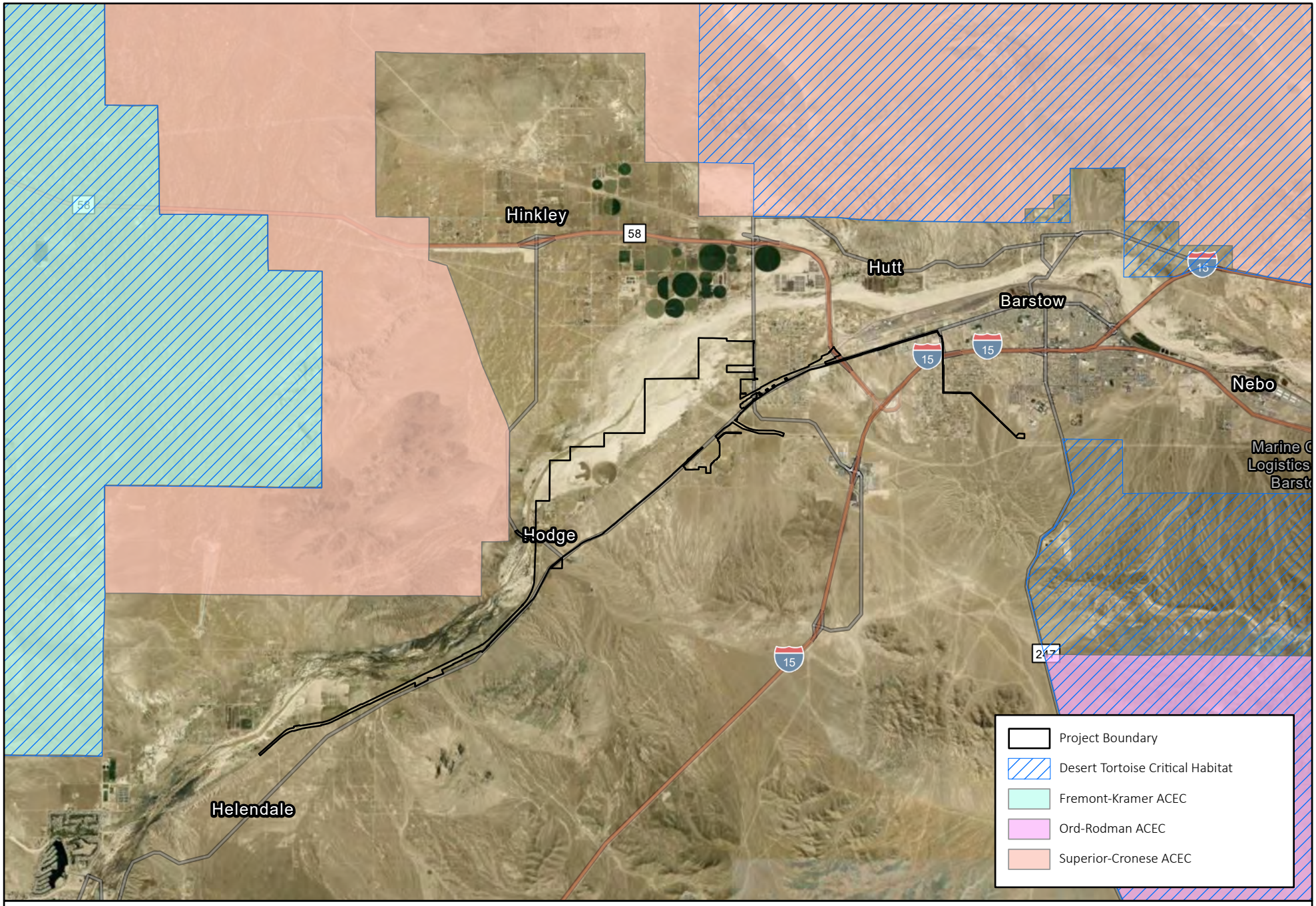


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Figure 2 - Survey Area

Desert Tortoise Survey Report

Barstow International Gateway

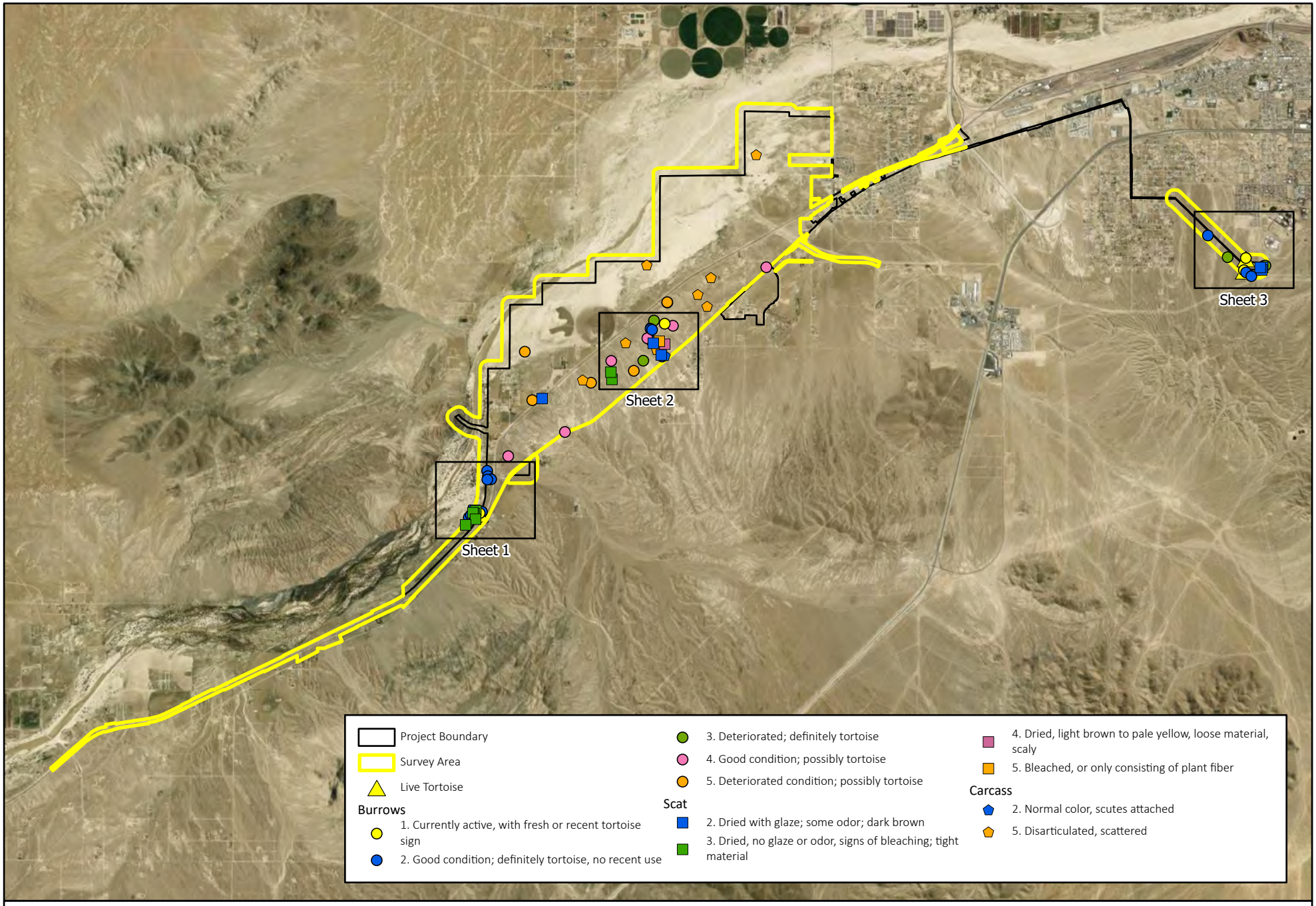


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Figure 3 - Desert Tortoise Conservation Areas

Desert Tortoise Survey Report

Barstow International Gateway

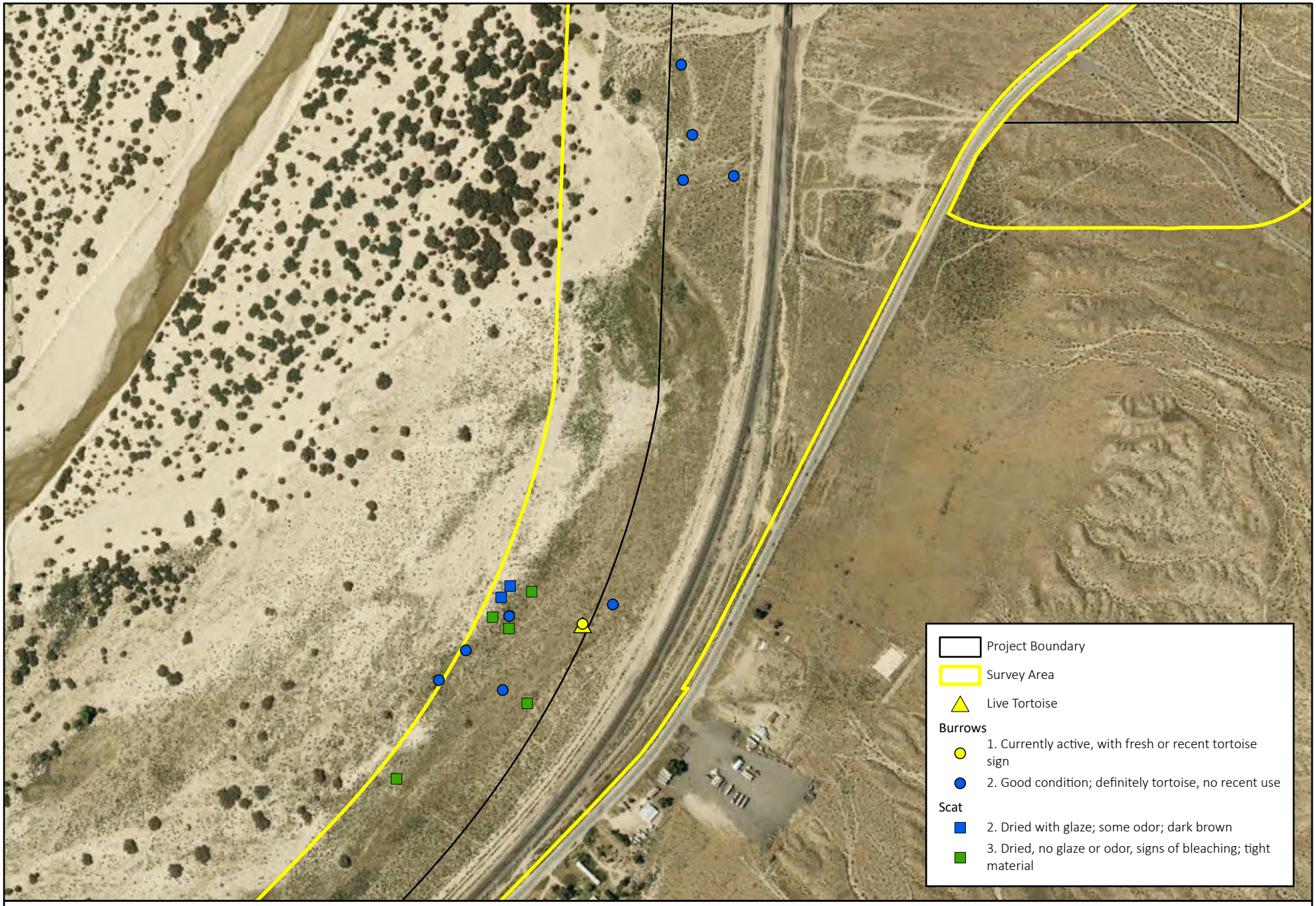


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Figure 4 - Survey Results, Overview

Desert Tortoise Survey Report

Barstow International Gateway

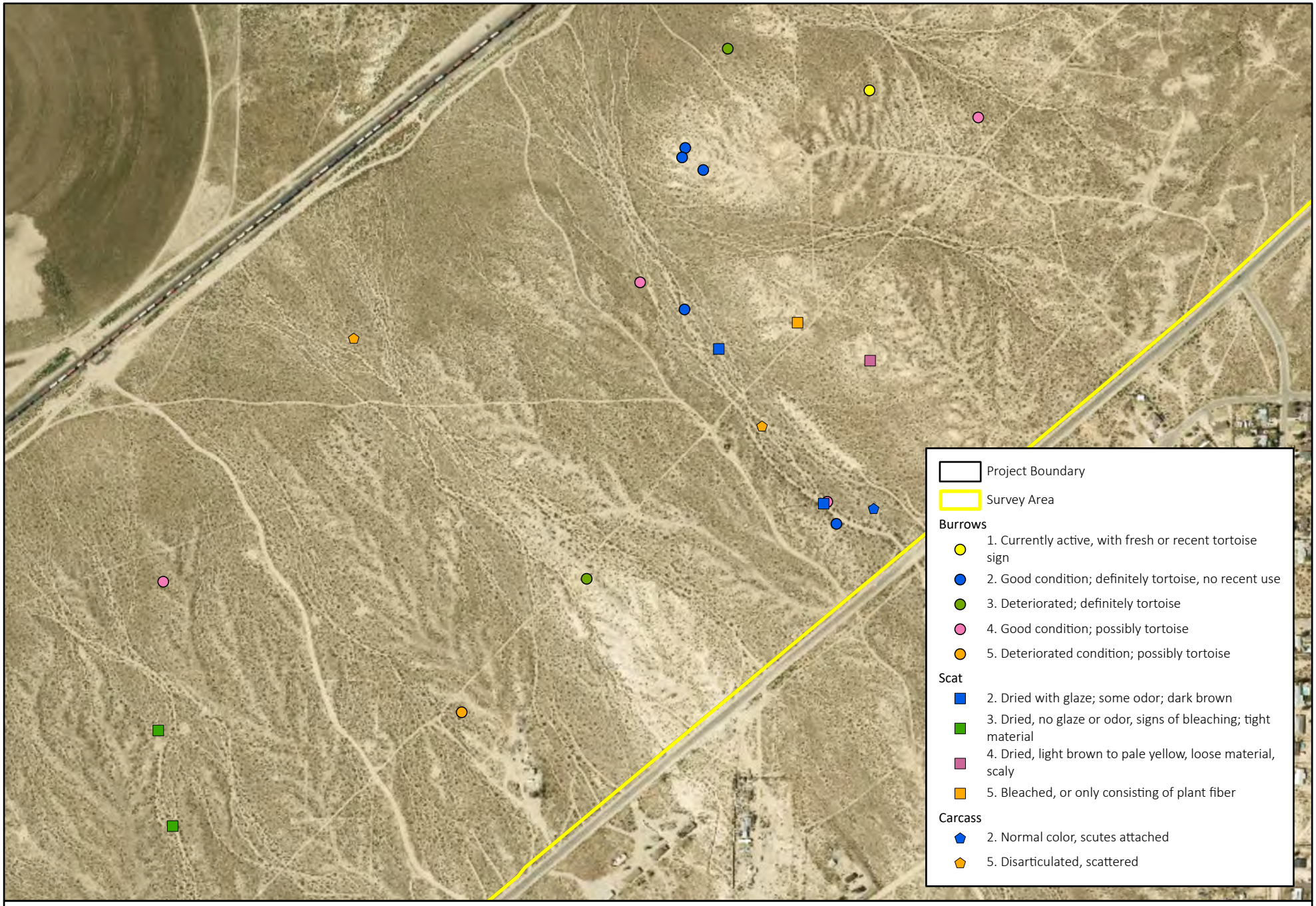


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Figure 4 - Survey Results, Sheet 1

Desert Tortoise Survey Report

Barstow International Gateway

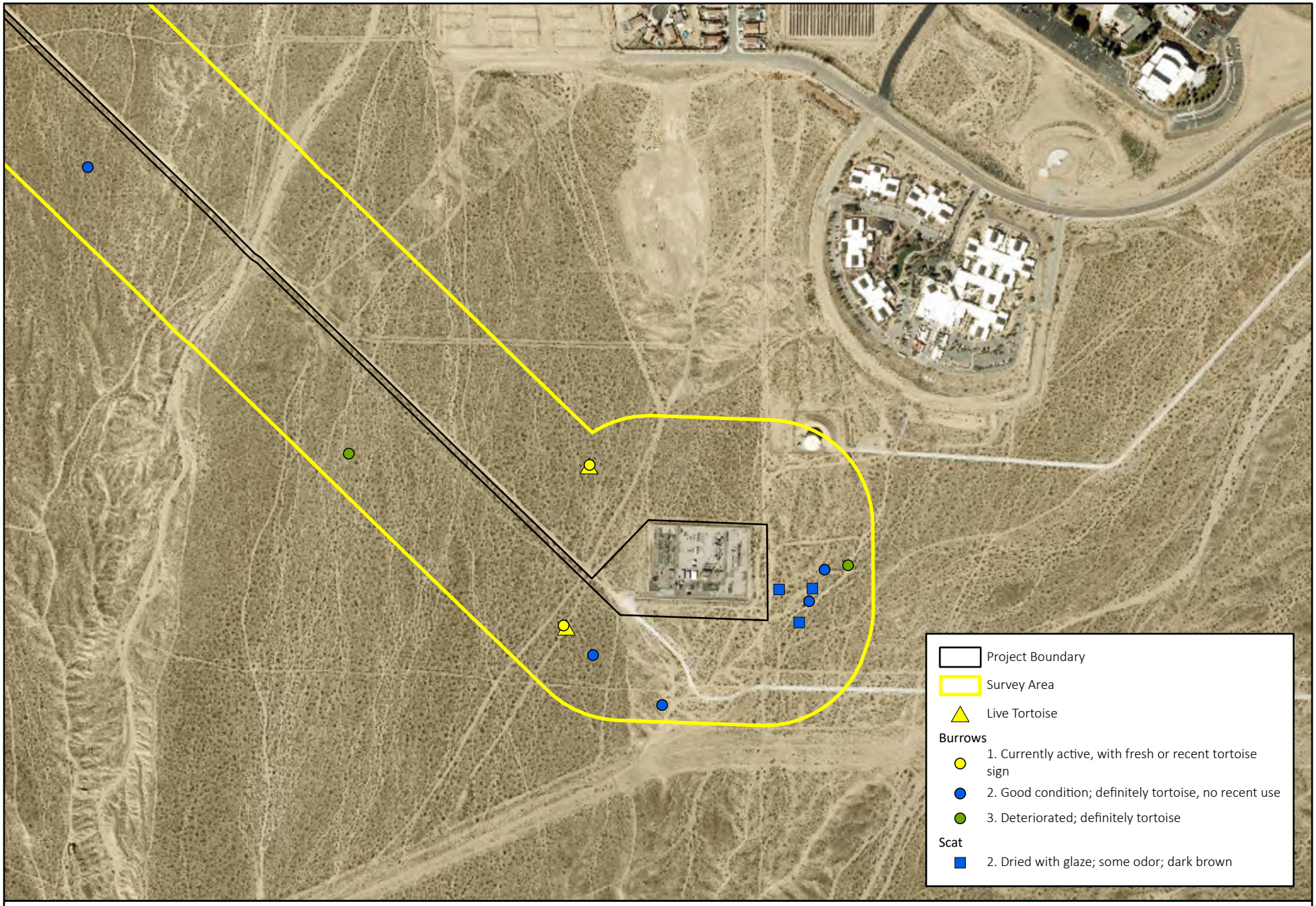


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Figure 4 - Survey Results, Sheet 2

Desert Tortoise Survey Report

Barstow International Gateway



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Figure 4 - Survey Results, Sheet 3

Desert Tortoise Survey Report

Barstow International Gateway



Photo 1. View of Class 1 burrow observed in the rail yard portion of the Project.



Photo 2. View of Class 2 burrow observed in the rail yard portion of the Project.



Photo 3. View of adult desert tortoise in Class 1 burrow adjacent to the Tortilla Substation.



Photo 4. View of desert tortoise in Class 1 burrow observed in the lead track expansion portion of the Project.



Photo 5. View of a Class 2 sub-adult carcass observed near Main Street in the rail yard portion of the Project.



Photo 6. View of Class 4 Scat observed near the rail yard portion of the Project.



Photo 7. View of Class 1 burrow occupied by a desert tortoise near the Tortilla Substation.



Photo 8. View of Class 5 carcass observed within the rail yard portion of the Project.

Observed Burrows								
Burrow Class	Easting	Northing	Width (mm)	Height (mm)	Length (mm)	Associated DETO Sign	Biologist	Date
1	486047	3856771	300	55	1,000	Scat, tracks	Kristin Koeper	9/22/2024
1	482554	3853194	140	340	300	Scat	Alec Goodman	10/9/2024
1	496982	3857781	280	120	500		Ryan Layden	10/16/2024
1	497019	3858011	340	120	2	Scat	Ryan Layden	10/16/2024
2	482695	3853993	310	180	650	Scat, tracks	Sean Harris	10/6/2024
2	482711	3853893	270	90	230		Averi Marciano	10/6/2024
2	482770	3853834	340	170	560	Scat	Sean Harris	10/6/2024
2	482698	3853828	320	170	600		Sean Harris	10/6/2024
2	497355	3857861	280	110	100	Scat	Ryan Layden	10/16/2024
2	485779	3856675	290	120	<1,000		Amy Trexler	9/23/2024
2	486000	3856151	120	70	1,000		Ryan Layden	9/22/2024
2	482597	3853222	380	160	750		Alec Goodman	10/9/2024
2	482449	3853205	380	160	1,000		Kelsey Woldt	10/9/2024
2	482348	3853114	360	130	800	Scat	Ryan Layden	10/9/2024
2	482440	3853099	280	50	1,000		Hannah Swarthout	10/9/2024
2	482387	3853156	340	130	1,000	Scat	Ryan Layden	10/9/2024
2	496302	3858436	310	140	900		Ryan Layden	10/16/2024
2	497024	3857739	270	180	2,000	Scat	Ryan Layden	10/16/2024
2	497123	3857668	300	100	300		Alec Goodman	10/16/2024
2	497333	3857816	300	150	2,000		Alec Goodman	10/16/2024
2	485784	3856689	290	120	1,000	Scat, tracks	Susan Carlton	9/23/2024
2	485783	3856458	290	150	<1,000	Scat	Susan Carlton	9/23/2024
2	485810	3856657	300	140	400	Scat	Travis Toelkes	9/23/2024
3	496675	3858027	310	140	350		Ryan Layden	10/16/2024
3	485845	3856830	200	140	400		Mary Toelkes	9/23/2024
3	485643	3856073	310	155	300		Ryan Layden	9/23/2024
3	497389	3857867	360	130	400		Ryan Layden	10/16/2024
4	483093	3854270	500	190	2,000		Alicia Omlid	9/30/2024
4	487965	3857837	420	150	1,000		Mary Toelkes	9/15/2024
4	486203	3856732	270	160	400		Mary Toelkes	9/22/2024

Observed Burrows								
Burrow Class	Easting	Northing	Width (mm)	Height (mm)	Length (mm)	Associated DETO Sign	Biologist	Date
4	485987	3856183	225	140	560		Mary Toelkes	9/22/2024
4	485719	3856496	350	150	1000		Mary Toelkes	9/23/2024
4	485038	3856069	190	90	,1000	Scat	Susan Carlton	9/24/2024
4	484164	3854726	330	140	1,000		Travis Toelkes	9/26/2024
5	483406	3856242	250	100	230		Alec Goodman	10/4/2024
5	483547	3855327	440	100	700		Audrey Layden	10/3/2024
5	486096	3857170	160	90	200		Kristin Koeper	9/22/2024
5	486095	3857176	330	170	450		Mary Toelkes	9/22/2024
5	485464	3855882	210	110	200		Mary Toelkes	9/23/2024
5	484655	3855657	250	50	300		Ryan Layden	9/24/2024

Desert Tortoises and Sign						
Sign Type	Easting	Northing	MCL	Sign Class	Date	Biologist
Live Tortoise	482554	3853194	Unknown, Adult	--	10/9/2024	Alec Goodman
Live Tortoise	496986	3857780	Unknown, Adult	--	10/16/2024	Ryan Layden
Live Tortoise	497018	3858011	Unknown, Adult	--	10/16/2024	Hannah Swarthout
Carcass	487775	3859967	--	5. Disarticulated, scattered	9/18/2024	Mary Toelkes
Carcass	486920	3857648	--	5. Disarticulated, scattered	9/20/2024	Mary Toelkes
Carcass	486847	3857106	--	5. Disarticulated, scattered	9/20/2024	Travis Toelkes
Carcass	486672	3857330	--	5. Disarticulated, scattered	9/21/2024	Travis Toelkes
Carcass	486053	3856174	--	2. Normal color, scutes attached	9/22/2024	Kristin Koeper
Carcass	485894	3856291	--	5. Disarticulated, scattered	9/23/2024	Amy Trexler
Carcass	484498	3855715	--	5. Disarticulated, scattered	9/24/2024	Susan Carlton
Carcass	485310	3856417	--	5. Disarticulated, scattered	9/24/2024	Ryan Layden
Carcass	485709	3857886	--	5. Disarticulated, scattered	9/25/2024	Amy Trexler
Scat	486048	3856384	--	4. dried, light brown to pale yellow, loose material, scaly	9/22/2024	Kristin Koeper

Desert Tortoises and Sign						
Sign Type	Easting	Northing	MCL	Sign Class	Date	Biologist
Scat	485944	3856439	--	5. bleached, or only consisting of plant fiber	9/22/2024	Mary Toelkes
Scat	485982	3856180	--	2. dried with glaze; some odor; dark brown	9/22/2024	Travis Toelkes
Scat	485832	3856401	--	2. dried with glaze; some odor; dark brown	9/23/2024	Susan Carlton
Scat	485051	3855719	--	3. dried, no glaze or odor, signs of bleaching; tight material	9/24/2024	Travis Toelkes
Scat	485031	3855856	--	3. dried, no glaze or odor, signs of bleaching; tight material	9/24/2024	Mary Toelkes
Scat	483734	3855358	--	2. dried with glaze; some odor; dark brown	9/27/2024	Amy Trexler
Scat	482437	3853232	--	2. dried with glaze; some odor; dark brown	10/9/2024	Ryan Layden
Scat	482450	3853248	--	2. dried with glaze; some odor; dark brown	10/9/2024	Ryan Layden
Scat	482481	3853240	--	3. dried, no glaze or odor, signs of bleaching; tight material	10/9/2024	Ryan Layden
Scat	482449	3853188	--	3. dried, no glaze or odor, signs of bleaching; tight material	10/9/2024	Ryan Layden
Scat	482425	3853204	--	3. dried, no glaze or odor, signs of bleaching; tight material	10/9/2024	Ryan Layden
Scat	482475	3853080	--	3. dried, no glaze or odor, signs of bleaching; tight material	10/9/2024	Ryan Layden
Scat	482288	3852972	--	3. dried, no glaze or odor, signs of bleaching; tight material	10/9/2024	Ryan Layden
Scat	497338	3857834	--	2. dried with glaze; some odor; dark brown	10/16/2024	Ryan Layden
Scat	497319	3857786	--	2. dried with glaze; some odor; dark brown	10/16/2024	Ryan Layden
Scat	497290	3857833	--	2. dried with glaze; some odor; dark brown	10/16/2024	Ryan Layden

Table 2. USFWS Desert Tortoise Pre-Project Survey Guidance

What is the estimated number of tortoises in the action area and project footprint?

INSTRUCTIONS ***Use this tab when all your transects were of equal length.***

Enter the appropriate values from the survey into the yellow cells below. The number of tortoises for the action area and project footprint will be calculated.

	Action area	Project footprint
Number of tortoises > 180 mm MCL =	1.9	1.7
Lower 95%CI =	0.37	0.33
Upper 95%CI =	9.97	8.81
Number of hatchlings (young-of-year) =	2.5	2.2
Number of tortoises < 180 mm MCL, not young-of-year =	10	8.8
Project-impacted area (acres)	**4743**	**4189**
D (tortoises/km2) in surveyed area =	0.1	
Average density in Recovery Unit =	2.8	

Project/site name	**Barstow International Gateway Rail Yard**
Desert tortoise Recovery Unit	**West Mojave**
Survey start date	**9/9/2024**
Survey end date	**10/16/2024**
Pre-survey Oct-March rainfall (mm)	**158**
Total length of transects walked (L, km) =	**1867**
Transect length (km)	**2.56**
Number of transects walked (k) =	**730**
Number of tortoises found during surveys (n) =	**1**

Number of tortoises ≥ 180 mm MCL (n_i)	Number of transects on which (n_i) tortoises were seen
0	729
1	1
2	0
3	0

ATTACHMENT R

45-DAY REPORT FOR LEAST BELL'S VIREO SURVEYS FOR THE BNSF BARSTOW INTERNATIONAL GATEWAY PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA, AUGUST 25, 2021

ROCKS
BIOLOGICAL CONSULTING

August 25, 2021

U.S. Fish and Wildlife Service
Attn: Ms. Stacey Love
Carlsbad Fish and Wildlife Office
2177 Salk Ave., Ste. 250
Carlsbad, CA 92008

Subject: 45-Day Report for Least Bell's Vireo Surveys for the BNSF Barstow International Gateway Project, San Bernardino County, California

Ms. Love:

This letter is a summary of the protocol least Bell's vireo (*Vireo bellii pusillus*; LBVI) presence/absence surveys conducted by Rocks Biological Consulting (RBC) for the proposed BNSF Railway Company (BNSF) Barstow International Gateway Project (BIG; project) in unincorporated San Bernardino County, California. Survey results were negative for LBVI.

Introduction

The project is generally located along the existing BNSF main line tracks and south and west of State Route 58 (SR-58) within the City of Barstow and unincorporated San Bernardino County jurisdictions including the communities of Lenwood and Hodge. The project is located in the United States Geological Survey (USGS) 7.5-minute Hodge and Barstow quadrangle maps (Figure 1).

The project study area totals approximately 494 acres running parallel along the northern/western side of the existing BNSF main line tracks. The 494 acre study area includes a 1,000-foot buffer from the BIG footprint to the west.

Life History

The least Bell's vireo is a small, gray, migrant songbird that is federally and state-listed as endangered. LBVI breeds in northern Baja California and California (March 15 – August 31), and winters in southern Baja California. Historically LBVI's breeding grounds stretched from northwestern Baja California, north to Tehama County, California (Franzreb 1989). Habitat loss caused LBVI populations to drastically decline throughout the late 1900s, reducing breeding populations to 300 pairs restricted to the counties south of Santa Barbara County (Allen et al. 2018; Kus, 2002). Since its listing as federally endangered in 1986, U.S. populations of LBVI have increased from 291 to 2,968 known territories (USFWS 2006).

LBVI typically nest in dense willow-dominated riparian vegetation communities and will occasionally nest in upland transitional habitats. LBVI-occupied vegetation communities include

mixed willow riparian, willow-cottonwood, willow-sycamore, sycamore-oak, riparian scrub, upland scrub, and non-native dominated habitats. Typical plant species of LBVI-occupied habitats include willows (*Salix* spp.), mule fat (*Baccharis salicifolia*), Fremont's cottonwood (*Populus fremontii*), California sycamore (*Platanus racemosa*), and coast live oak (*Quercus agrifolia*) (Allen et al. 2018).

LBVI nests are typically built within three feet of the ground, suspended in the horizontal fork of a branch, surrounded by dense understory. Although LBVI are commonly associated with riparian habitat, small numbers of nesting pairs have been documented using transitional upland scrub habitats (e.g., coastal sage scrub and chaparral habitats near floodplains) which may be used based on availability of suitable nesting habitat and other various nest-site factors (Kus 1989). The LBVI breeding season extends from approximately March 15 through August 31, with peak nesting activity typically occurring from April through July.

Methods

RBC biologists Ian Hirschler and Linette Davenport conducted LBVI surveys in accordance with survey methods outlined in the United States Fish and Wildlife Service (USFWS) *Least Bell's Vireo Survey Guidelines* (USFWS 2001). Within the study area, approximately 139 acres of suitable habitat was identified towards the southern portion of the study area, on the north side of the BNSF main line tracks near or along the Mojave River (Figure 2). RBC conducted eight surveys between April 19 and July 8, 2021. Surveys were conducted at least 10 days apart between dawn and 1100 during suitable weather conditions. Surveys were not conducted during periods of excessive cold, heat, wind, rain, or other inclement weather. Surveyors did not survey more than 3 linear kilometers or 50 hectares of suitable LBVI during any survey.

Mr. Hirschler and Ms. Davenport are qualified biologists familiar with the songs, whisper songs, calls, scolds, and plumage characteristics of adult and juvenile LBVI. Biologists used binoculars (10x42) to identify LBVI and other sympatric bird species during each survey. Any LBVI observations were recorded in the Geographic Information System (GIS) application ArcGIS Collector. Table 1 presents the survey dates and conditions of the protocol surveys.

Table 1. Protocol LBVI Survey Dates and Conditions

Survey Number	Survey Date	Time (Start-End)	Temperature °F (Start-End)	Cloud Cover (%) (Start-End)	Wind Speed (mph) (Start-End)	Surveyor
1	4/19/21	0745-1100	59-77	0-0	0-3; 0-3	Ian Hirschler
2	5/4/21	0630-1100	54-86	0-25	0-1; 3-4	Linette Davenport
3	5/14/21	0700-1100	69-85	0-0	1-4; 0-1	Ian Hirschler
4	5/25/21	0630-1100	64-82	15-30	1-4; 2-5	Ian Hirschler

5	6/4/21	0630-1100	73-96	0-0	1-4; 3-7	Ian Hirschler
6	6/15/21	0615-1100	70-89	25-5	1-4; 0-2	Ian Hirschler
7	6/28/21	0615-1030	80-100	0-0	0-1; 0-1	Ian Hirschler
8	7/8/21	0630-1030	82-101	0-0	0-2; 0-2	Ian Hirschler

Results

RBC did not observe LBVI within the survey area during 2021 protocol surveys.

The 494 acre study area supports approximately 139 acres of suitable LBVI habitat consisting primarily of tamarisk thickets. The tamarisk thickets occur within and along the banks of the Mojave River where Hinkley Road crosses the river within the study area. This non-native riparian habitat is dominated by tamarisk (*Tamarix ramosissima*) with an open canopy between stands. Native shrubs such as honey mesquite (*Prosopis glandulosa*) and mule fat were interspersed throughout the tamarisk thickets. The southern extent of the suitable LBVI habitat is composed of willows and Fremont's cottonwoods as well as additional isolated stands of tamarisk.

Unsuitable habitat within the survey area included disturbed roadways alongside the BNSF mainline track as well as the expansive landscape of allscale scrub dominated by allscale (*Atriplex polycarpa*) and other shrubs such as creosote bush (*Larrea tridentata*) and ephedra (*Ephedra* sp.). Representative site photographs are included as Attachment A and a list of the 46 bird species observed during the surveys is included as Attachment B.

Conclusion

RBC did not document LBVI within the survey area during 2021 protocol surveys. Within the study area, suitable habitat was sparse within the BIG footprint and occurred mostly within the 1,000-foot buffer in the southern portion of the survey area.

Please do not hesitate to contact us at (619) 701-6798 if you have any questions or concerns regarding this report.

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

Ian Hirschler

Linette Davenport

Enclosures:
Figure 1 – LBVI Study Area
Figure 2 – Survey Location
Attachment A – Site Photographs
Attachment B – Bird Species Observed During Protocol Least Bell's Vireo Surveys for the BNSF Barstow International Gateway

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Allen, Lisa D., Scarlett L. Howell, and Barbara E. Kus. 2018. Distribution and Abundance of Least Bell's Vireos (*Vireo bellii pusillus*) and Southwestern Willow Flycatchers (*Empidonax traillii extimus*) on the Middle San Luis Rey River, San Diego County, Southern California—2017 Data Summary. No. 1082. US Geological Survey.

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Kus, B.; Miner, Karen L. 1989. Use of Non-Riparian Habitats by Least Bell's Vireos. In: Abell, Dana L., Technical Coordinator. 1989. Proceedings of the California Riparian Systems Conference: protection, management, and restoration for the 1990s; 1988 September 22-24; Davis, CA. Gen. Tech. Rep. PSW-GTR-110. Berkeley, CA: Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; p. 299-304

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U.S. Fish and Wildlife Service. 2001. Least Bell's Vireo Survey Guidelines.

U.S. Fish and Wildlife Service. 2006. Least Bell's Vireo 5-Year Review Summary and Evaluation.

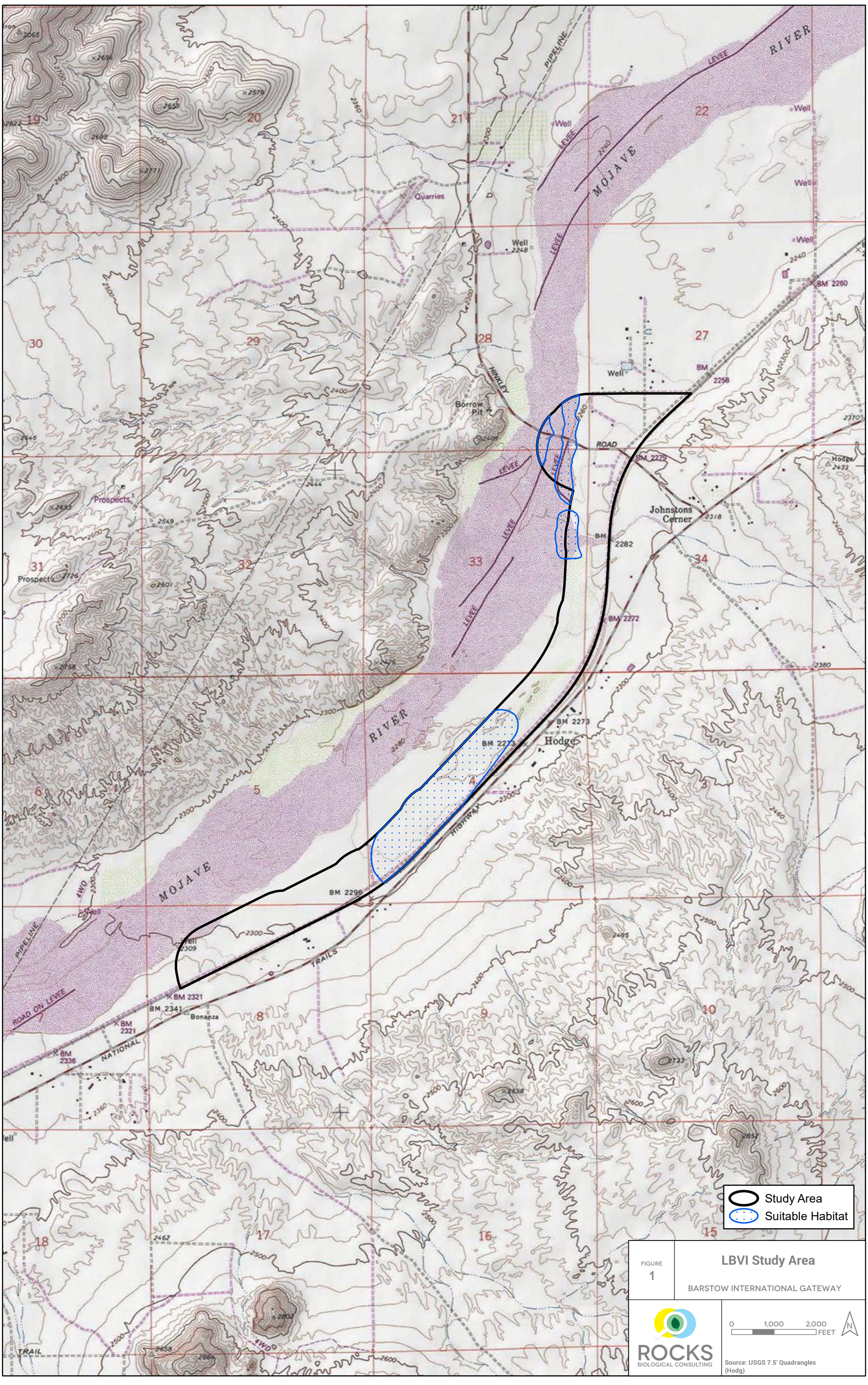


FIGURE 1

LBVI Study Area

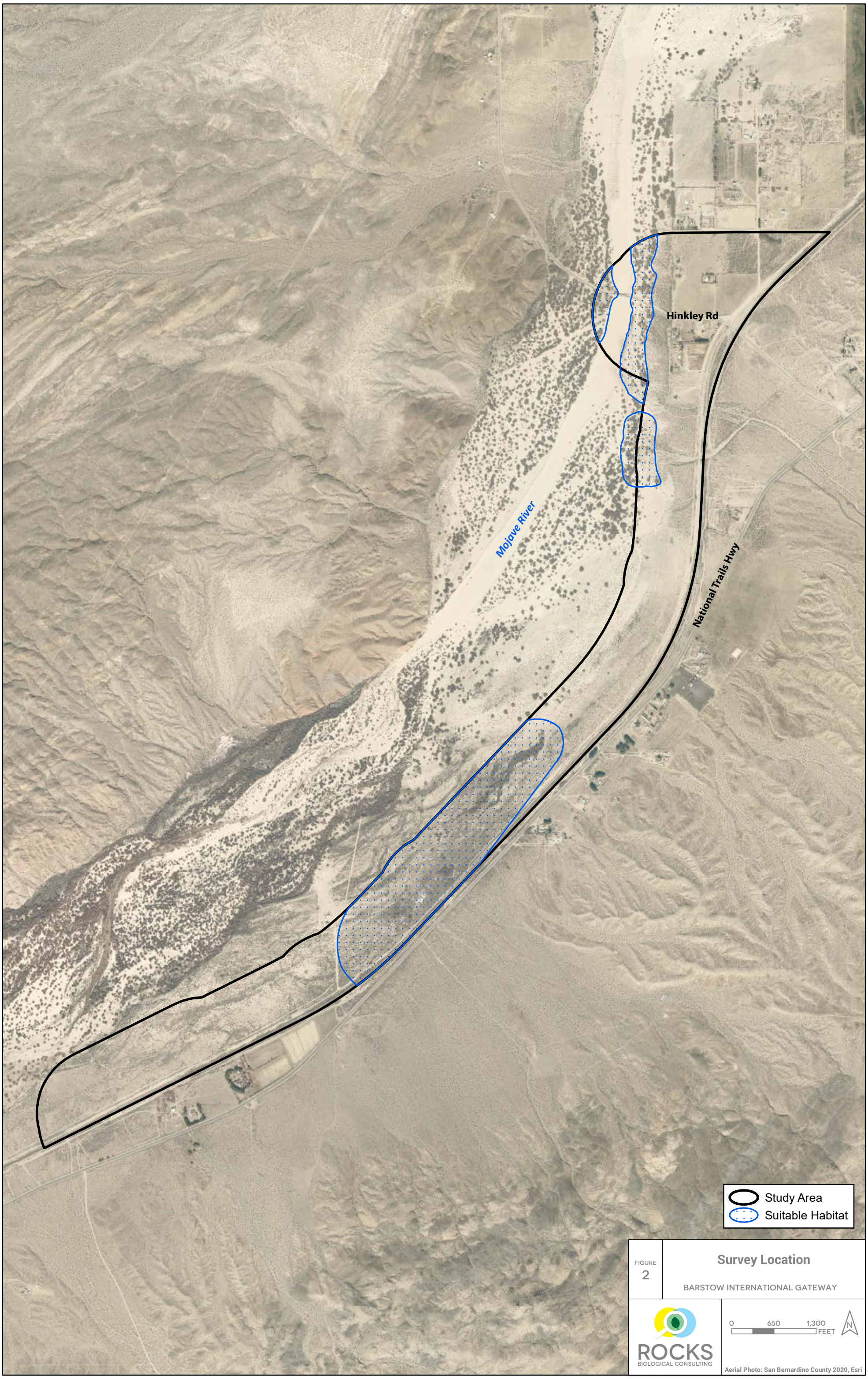
BARSTOW INTERNATIONAL GATEWAY

ROCKS BIOLOGICAL CONSULTING

0 1,000 2,000 FEET

N

Source: USGS 7.5' Quadrangles (Hodg)


Hinkley Rd
Mojave River
National Trails Hwy
Study Area
Suitable Habitat
FIGURE
2
Survey Location
BARSTOW INTERNATIONAL GATEWAY
ROCKS
BIOLOGICAL CONSULTING
0
650
1,300
FEET
N
Aerial Photo: San Bernardino County 2020, Esri

Attachment A – Site Photographs



Photo 1. View of a strip of riparian habitat in the 1000-foot buffer, facing west. RBC listened for LBVI in this area from a BNSF access road within the BIG footprint. April 19, 2021



Photo 2. View of the tamarisk and mesquite within the Mojave River in the 1,000-foot buffer near Hinkley Road, facing west. April 19, 2021.



Photo 3. View tamarisk and mesquite in the 1,000-foot buffer near Hinkley Road with an individual Fremont's cottonwood in the background, facing west. April 19, 2021.



Photo 4. View of the scattered tamarisk and mesquite within the 1,000-foot buffer, facing west. May 25, 2021.

Attachment B

Bird Species Observed During Protocol Least Bell's Vireo Surveys for the BNSF
Barstow International Gateway

Family	Common Name	Scientific Name
Alaudidae	horned lark	*Eremophila alpestris*
Caprimulgidae	lesser nighthawk	*Chordeiles acutipennis*
Cardinalidae	black-headed grosbeak	*Pheucticus melanocephalus*
Cardinalidae	western tanager	*Piranga ludoviciana*
Cathartidae	turkey vulture	*Cathartes aura*
Charadriidae	killdeer	*Charadrius vociferus*
Columbidae	Eurasian collared-dove	*Streptopelia decaocto*
Columbidae	mourning dove	*Zenaida macroura*
Corvidae	American crow	*Corvus brachyrhynchos*
Corvidae	common raven	*Corvus corax*
Cuculidae	greater roadrunner	*Geococcyx californianus*
Falconidae	prairie falcon (WL) †	*Falco mexicanus*
Fringillidae	house finch	*Haemorhous mexicanus*
Fringillidae	lesser goldfinch	*Spinus psaltria*
Hirundinidae	cliff swallow	*Petrochelidon pyrrhonota*
Icteridae	Bullock's oriole	*Icterus bullockii*
Mimidae	northern mockingbird	*Mimus polyglottos*
Mimidae	Le Conte's thrasher (SSC)	*Toxostoma lecontei*
Mimidae	California thrasher	*Toxostoma redivivum*
Odontophoridae	California quail	*Callipepla californica*
Parulidae	Wilson's warbler	*Cardellina pusilla*
Parulidae	MacGillivray's warbler	*Geothlypis tolmiei*
Parulidae	hermit warbler	*Setophaga occidentalis*
Parulidae	yellow warbler (SSC) †	*Setophaga petechia*
Parulidae	Townsend's warbler	*Setophaga townsendi*
Passerellidae	Bell's sparrow (WL)	*Artemisiospiza bellii*
Passerellidae	lark sparrow	*Chondestes grammacus*
Passerellidae	California towhee	*Melozone crissalis*
Passerellidae	Brewer's sparrow	*Spizella breweri*
Passerellidae	white-crowned sparrow	*Zonotrichia leucophrys*
Picidae	Nuttall's woodpecker	*Picoides nuttallii*
Polioptilidae	black-tailed gnatcatcher (WL)	*Polioptila*
Ptiliogonatidae	phainopepla	*Phainopepla nitens*
Regulidae	ruby-crowned kinglet	*Regulus calendula*
Remizidae	verdin	*Auriparus flaviceps*
Sturnidae	European starling*	*Sturnus vulgaris*
Trochilidae	Anna's hummingbird	*Calypte anna*

Family	Common Name	Scientific Name
Troglodytidae	Bewick's wren	*Thryomanes bewickii*
Tyrannidae	olive-sided flycatcher (SSC)†	*Contopus cooperi*
Tyrannidae	dusky flycatcher	*Empidonax oberholseri*
Tyrannidae	ash-throated flycatcher	*Myiarchus cinerascens*
Tyrannidae	black phoebe	*Sayornis nigricans*
Tyrannidae	western kingbird	*Tyrannus verticalis*
Tyrannidae	Cassin's kingbird	*Tyrannus vociferans*
Vireonidae	warbling vireo	*Vireo gilvus*

*: Non-native species
SSC: California Department of Fish and Wildlife (CDFW) Species of Special Concern
WL: California Department of Fish and Wildlife (CDFW) Watch List Species
†: This species is considered WL or SSC only if nesting. No nesting by these species was observed during surveys.

ATTACHMENT S

FOCUSED PRESENCE/ ABSENCE SURVEY FOR LEAST BELL'S VIREO, COMMUNITIES OF LENWOOD AND HODGE, SAN BERNARDINO COUNTY, CALIFORNIA, SEPTEMBER 26, 2022

ROCK-004
September 26, 2022

Jim Rocks
Owner, Principal Biologist
Rocks Biological Consulting
4312 Rialto Street, San Diego, CA 92107

Subject: Focused Presence/Absence Survey for Least Bell's Vireo, Communities of Lenwood and Hodge, San Bernardino County, California.

Dear Mr. Rocks:

Borrego Biological was retained by Rocks Biological Consulting to conduct a focused presence/absence survey for least Bell's vireo (*Vireo bellii pusillus*; LBVI), at a linear project site and a buffer near the communities of Lenwood and Hodge in San Bernardino County, CA (Survey Area; Attachment 1). The results of the surveys are presented below.

Survey Area

Surveys for LBVI in 2022 were conducted in the same survey area as in 2021 (Rocks Biological Consulting 2021) plus additional suitable habitat for a total of approximately 142 acres (Attachment 2). This survey location was within the California United States Geological Survey 7.5-minute *Hodge* topographic quadrangle, and the elevation was approximately 690 meters above mean sea level (Attachment 1). The Survey Area occurred within Assessor's Parcel Numbers 0420082230000, 0420082270000, 0420091020000, 0420082080000, 0420121010000, 0420121110000, 042012103000, 0421021070000, and 0421021080000 (San Bernardino County Assessor-Recorder-Clerk 2022).

Methods

Qualified biologists conducted a focused presence/absence survey for LBVI according to the *Least Bell's Vireo Survey Guidelines* (USFWS 2001) with minor modifications: due to a security incident during the last scheduled survey pass in July, the last survey pass instead took place in August.

Eight survey passes were conducted at least 10 days apart during favorable weather conditions between morning civil twilight and 1200 hours. Surveys were not conducted during excessive heat, cold, wind, rain, or other inclement weather that would be reasonably expected to reduce bird activity and consequential detection. No more than 3 linear kilometers or 50 hectares (120 acres) were covered during each survey day by one biologist; thus, each survey pass took two mornings to complete or were conducted by two biologists. No biologist conducted a survey for another target species concurrently with the LBVI survey.

During each survey pass, the biologist walked paths throughout all suitable habitat looking and listening for LBVI, stopping at optimal stationary locations to look and listen for the target species without harming any other wildlife species in the area. To reduce bias from environmental conditions, the route taken each survey day varied between survey passes. If LBVI were detected, the location, numbers, status, and demographic data were recorded.

Plant communities and associations were recorded in accordance with the categories described in *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009) (Attachment 3). The United States Fish and Wildlife Service (UFWS) Critical Habitat Mapper and File Data (USFWS 2022) was reviewed to determine if the Survey Area was within designated critical habitat for LBVI.

The locations of any LBVI and other special status species were documented and mapped (Attachment 4), and California Natural Diversity Database (CNDDB) forms were submitted (Attachment 5). If leg bands

were observed, they were noted. Observations and numbers of brown-headed cowbirds also were noted and mapped (Attachment 4). All observed wildlife animal species were recorded for each survey day (Attachment 6). Site photographs and species photographs were taken (Attachment 7).

Results

Survey conditions are presented in Table 1.

Table 1. Survey Conditions

Survey Pass	Surveyor(s)	Date 2022	Time (Start/End)	Temperature (Start/End) °F	Wind Speed (Start/End) mph	Cloud Cover (Start/End) %	Precipitation (Start/End)	Comments
1a	Linette Davenport (LD)	4/25	0630/1115	45/70	0/0	0/0	0/0	
1b	LD	4/26	6015/1100	53/71	1(2)/2(3)	30/90	0/0	
2a	LD	5/5	0600/1100	55/84	0/4(8)	0/0	0/0	
2b	LD	5/6	0555/1045	60/80	3(5)/3(7)	30/10	0/0	
3a	LD	5/19	0530/1015	63/85	0(1)/2(5)	0/0	0/0	
3b	LD	5/20	0545/1145	65/76	5(8)/3(8)	15/0	0/0	Paused survey from 0810-0835 and 0925-0955 due to high winds
4a	LD	5/31	0520/1105	58/82	4(8)/0	0/0	0/0	
4b	LD	6/1	0540/1100	53/89	3/2	0/0	0/0	
5a	LD	6/14	0515/1005	63/83	0/3	0/0	0/0	
5b	LD	6/15	0515/1050	60/90	1/2	0/0	0/0	
6a	Alec Goodman (AG)	7/7	0600/0915	65/76	5-8/2-5	0/0	0/0	
6b	AG	7/8	0600/0915	68/83	1-3/3-5	0/0	0/0	
7	Ian Hirschler, Hannah Swarthout	7/18	0600/1000	79/95	1-3/0-2	30/0	0/0	
8a	Arthur Davenport (AD)	8/17	0530/1030	78/95	3/4	10/10	0/0	
8b	AD	8/18	0530/1000	70/90	3/4	5/5	0/0	

Habitat

Suitable habitat within the Survey Area included Tamarisk Thickets, fragments of Black Willow Thickets, and small stands of honey mesquite (*Prosopis glandulosa*) and Fremont cottonwood (*Populus fremontii*)

(Attachment 3). (The suitable habitat in the southernmost portion of the Survey Area was surrounded by Fourwing Saltbush Scrub.)

Tamarisk Thickets (127 acres): Vegetation within the banks of the Mojave River in the Survey Area was dominated by tamarisk (*Tamarix ramosissima*) with a generally open canopy between small stands. Native shrubs were sparse: an occasional mulefat shrub (*Baccharis salicifolia*) and screwbean mesquite (*Prosopis pubescens*) were observed. The herbaceous layer was sparse, especially as it was a drought year. The soils were comprised of coarse sand riverwash of the Mojave Riverbed.

During other riparian bird surveys in late May and June, it was observed that the tamarisk began to defoliate, and very large swarms of tamarisk beetle (*Diorhabda* sp.) spread throughout the Survey Area in mid-June (L. Davenport 2022). Almost all the tamarisk stands were defoliating by July (Attachment 7). No native shrubs appeared to be negatively impacted.

Black Willow Thickets (5 acres): Fragments of Black Willow Thickets occurred southwest of the Hinkley Road bridge and in the southernmost section of the Survey Area. Black willow (*Salix goodingii*), occasional Fremont cottonwood, and occasional honey mesquite and screwbean mesquite trees were surrounded by Tamarisk Thickets or Fourwing Saltbush Scrub. The herbaceous layer was sparse, with patches of desert saltgrass (*Distichlis spicata*) present in the alkaline soils in the southernmost section of the Survey Area.

Critical Habitat

The Survey Area is not within USFWS-designated critical habitat for LBVI (USFWS 2022).

Least Bell's Vireo

No LBVI were detected during any of the survey passes.

Other Special Status Species

One yellow warbler (*Setophaga petechia*) and one Lucy's warbler (*Leiothlypis luciae*) were observed on April 26, and olive-sided flycatchers (*Contopus cooperi*) were observed on May 5 and May 20. All three species are California Department of Fish and Wildlife (CDFW) Species of Special Concern. One peregrine falcon (*Falco pereginus*), a California Fully Protected Species, was observed on August 18. The individuals observed appeared to be migrating or dispersing through the Survey Area and did not appear to be nesting within the Survey Area, and thus were not reported to the CNDDB.

One willow flycatcher (*Empidonax traillii*; WIFL) was observed foraging in a stand of honey mesquite in the southernmost portion of the Survey Area on 5/20, 6/1, and 6/15. It was not exhibiting nesting behavior in the Survey Area and was not detected during focused surveys for southwestern willow flycatcher (*Empidonax traillii extimus*; SWFL) in the Survey Area in 2022 (Davenport 2022). Another WIFL was observed in a lone red willow (*Salix laevigata*) tree within a large stand of tamarisk on 5/20. It also was not exhibiting nesting behavior. These incidental observations were included in the report for the SWFL survey in the Survey Area (Attachments 4 and 5, and Davenport 2022).

Brown-headed Cowbirds

Brown-headed cowbirds were heard twice during surveys, generally heard coming from the residential areas to the east of the Survey Area (Attachment 4).

Discussion

During surveys in late May and June, the extensive Tamarisk Thickets throughout the Survey Area were heavily impacted and defoliated by tamarisk beetle. This appears to be the first year that tamarisk beetle invaded the region, since tamarisk defoliation was not documented during SWFL surveys in 2021 in the Survey Area (Attachment 7; L. Davenport 2021). Even though tamarisk is invasive and negatively impacts

negative vegetation and animals, it still can provide habitat for LBVI, WIFL, and other riparian birds. The possible impacts of widespread defoliation of tamarisk by tamarisk beetle on riparian birds are unknown and may vary, but it is possible that it could be detrimental unless active restoration of native vegetation also occurs prior to complete eradication of tamarisk in the region (Paxton et al 2011).

Conclusion

No LBVI were found to be nesting in the Survey Area. Tamarisk beetles were newly discovered in the Survey Area in 2022 and may have negative impacts on riparian birds unless they are addressed within the region.

Please do not hesitate to contact me at (714) 721-4621 or borregobiological@gmail.com if you have any questions.

Sincerely,



Linette Davenport
Borrego Biological

References

Davenport, Linette
2021 Focused Presence/Absence Survey for Southwestern Willow Flycatcher, Communities of Lenwood and Hodge, San Bernardino County, California. Submitted to Rocks Biological Consulting, San Diego, California, July 30, 2021.

2022 Focused Presence/Absence Survey for Southwestern Willow Flycatcher, Communities of Lenwood and Hodge, San Bernardino County, California. In submittal.

Paxton, Eben H., Tad C. Theimer, and Mark K. Sogge
2011 Tamarisk Biocontrol using Tamarisk Beetles: Potential Consequences for Riparian Birds in the Southwestern United States. The Condor, Volume 113, Issue 2, Pages 255–265. Retrieved from the American Ornithological Society website: https://doi.org/10.1525/cond.2011.090226

Rocks Biological Consulting
2021 45-Day Report for Least Bell's Vireo Surveys for the BNSF Barstow International Gateway Project, San Bernardino County, CA. August 25, 2021.

San Bernardino County Assessor-Recorder-Clerk
2022 Parcel Access and File Data. Retrieved from the San Bernardino County Assessor-Recorder-Clerk website: https://arcpropertyinfo.sbcounty.gov/

Sawyer, J.O., Jr., T. Keeler-Wolf, and J. Evens
2009 *A Manual of California Vegetation, Second Edition*. California Native Plant Society. Sacramento, California.

United States Fish and Wildlife Service (USFWS)
2001 Least Bell's Vireo Survey Guidelines. Carlsbad Fish and Wildlife Office.

2022 Critical Habitat Mapper and File Data. Retrieved from the USFWS Critical Habitat Mapper website: https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77

Attachments

1 – Survey Area

2 – Survey Location

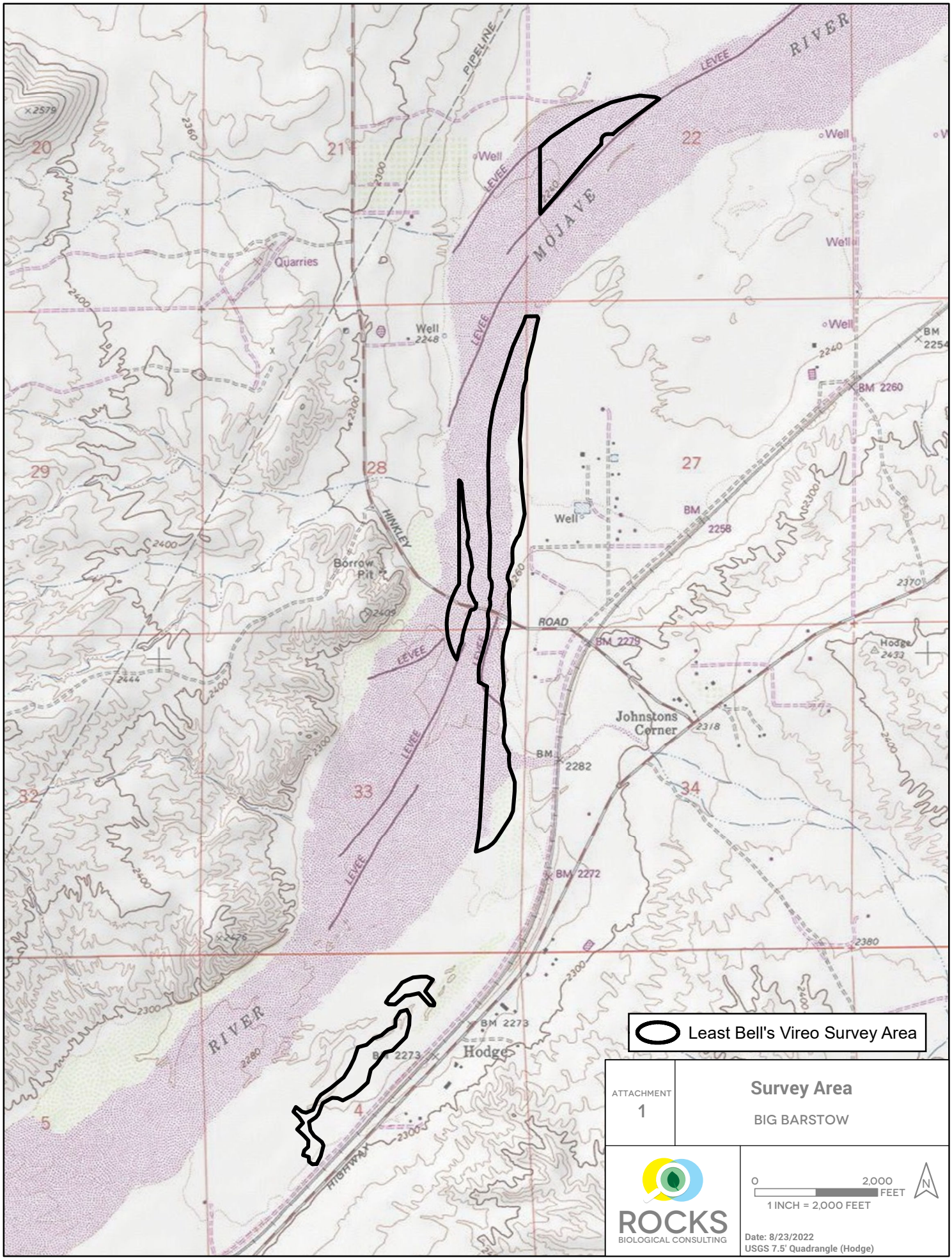
3 – Vegetation

4 – Willow Flycatcher And Brown-headed Cowbird Observations

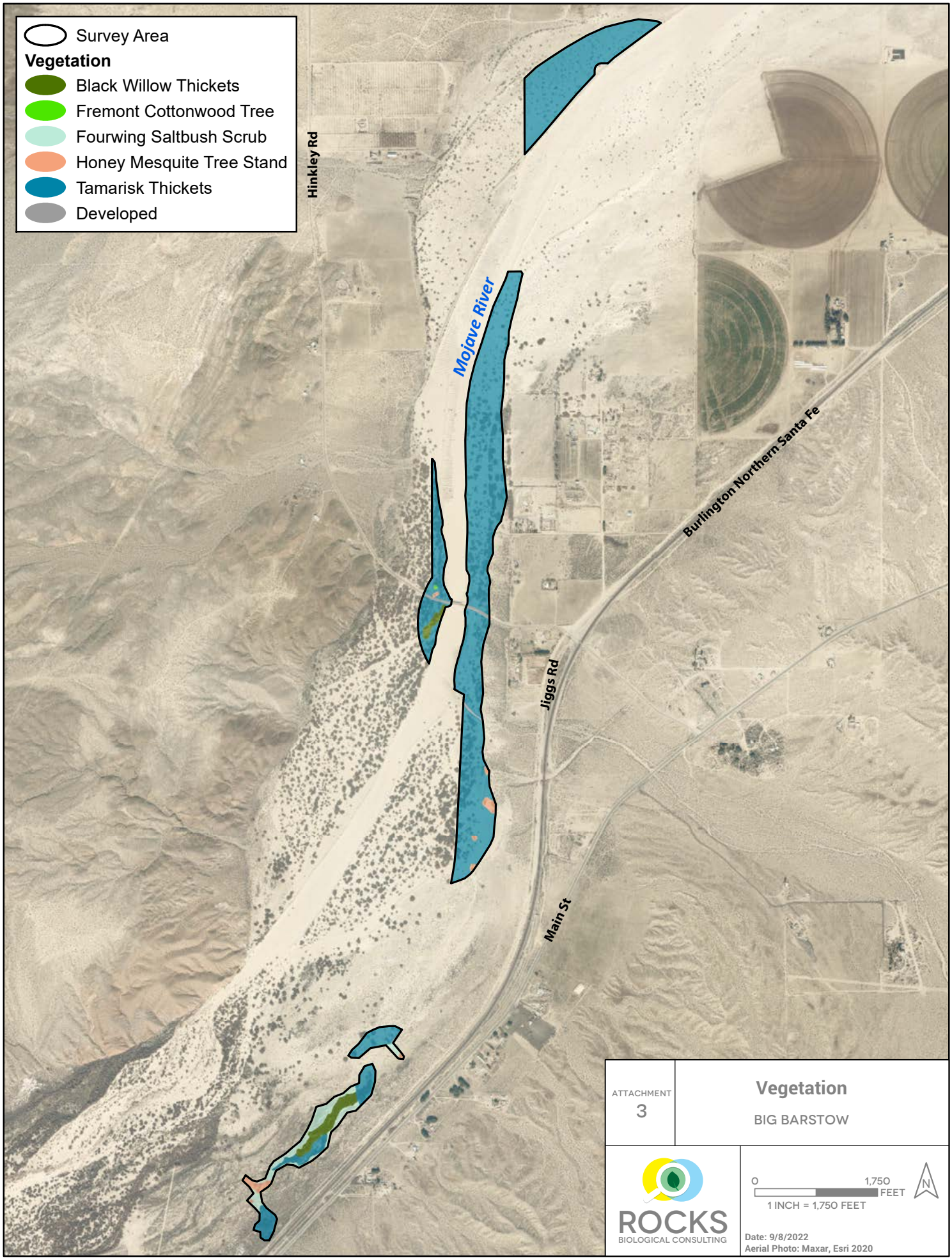
5 – CNDDB Forms

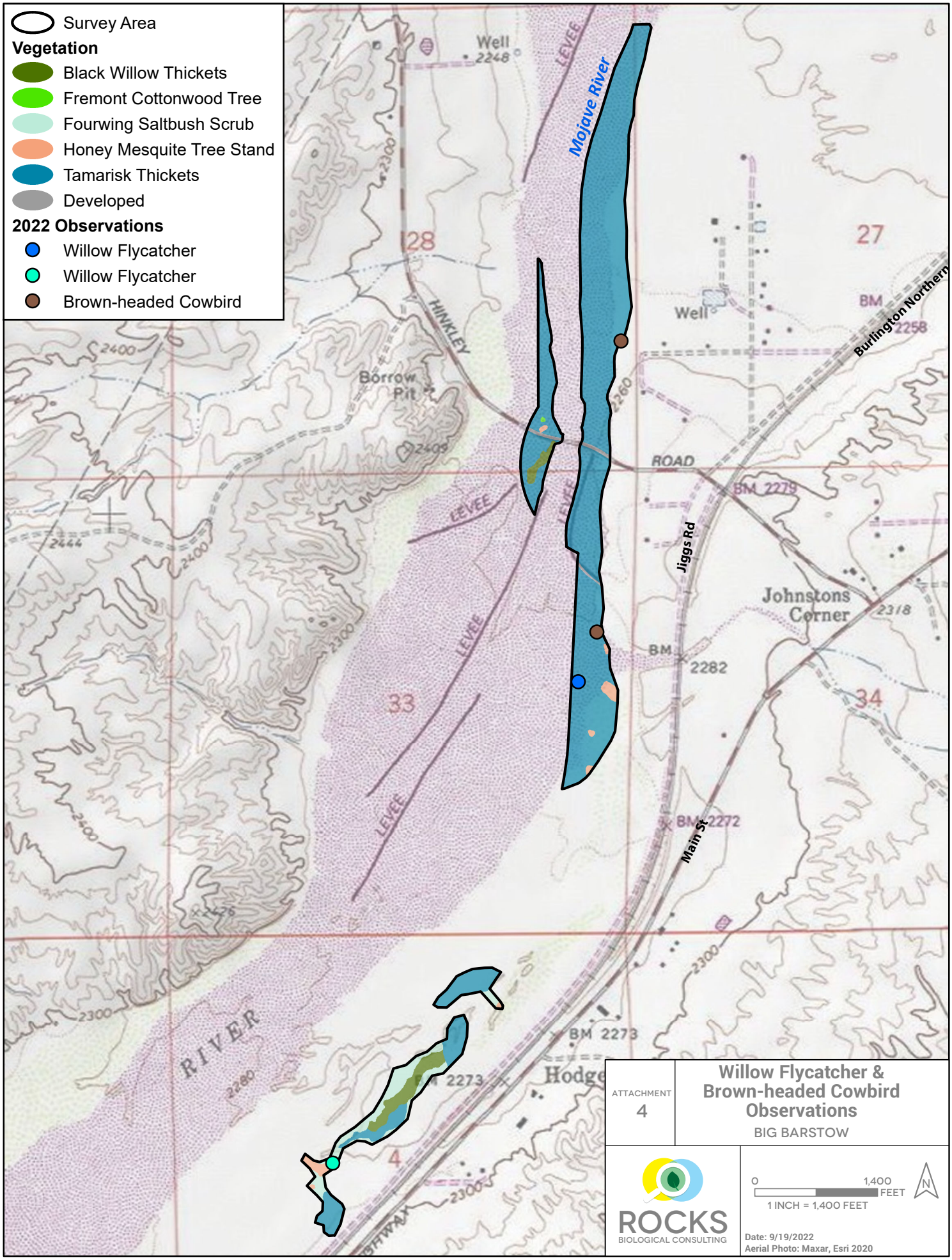
6 – Animal Species Observed

7 – Survey Photographs


Least Bell's Vireo Survey Area
ATTACHMENT 1
Survey Area
BIG BARSTOW
ROCKS
BIOLOGICAL CONSULTING
0 2,000 FEET
1 INCH = 2,000 FEET
Date: 8/23/2022
USGS 7.5' Quadrangle (Hodge)
MOJAVE RIVER
LEVEE
PIPELINE
HINKLEY
ROAD
HIGHWAY
Quarries
Borrow Pit
Well
BM 2254
BM 2260
BM 2258
BM 2279
BM 2282
BM 2272
BM 2273
Johnstons Corner
Hodge
20
21
22
27
28
29
32
33
34
4
5


Hinkley Rd
Mojave River
Burlington Northern Santa Fe
Jiggs Rd
Main St
Least Bell's Vireo Survey Area
ATTACHMENT
2
Survey Location
BIG BARSTOW
ROCKS
BIOLOGICAL CONSULTING
0
2,000
FEET
1 INCH = 2,000 FEET
N
Date: 8/23/2022
Aerial Photo: Maxar, Esri 2020


Survey Area
Vegetation
Black Willow Thickets
Fremont Cottonwood Tree
Fourwing Saltbush Scrub
Honey Mesquite Tree Stand
Tamarisk Thickets
Developed
Hinkley Rd
Mojave River
Burlington Northern Santa Fe
Jiggs Rd
Main St
ATTACHMENT
3
Vegetation
BIG BARSTOW
ROCKS
BIOLOGICAL CONSULTING
0
1,750
FEET
1 INCH = 1,750 FEET
N
Date: 9/8/2022
Aerial Photo: Maxar, Esri 2020


Survey Area
Vegetation
Black Willow Thickets
Fremont Cottonwood Tree
Fourwing Saltbush Scrub
Honey Mesquite Tree Stand
Tamarisk Thickets
Developed
2022 Observations
Willow Flycatcher
Willow Flycatcher
Brown-headed Cowbird
Mojave River
LEVEE
HINKLEY
Borrow Pit
ROAD
Jiggs Rd
Johnstons Corner
Main St
Burlington Northern
Well
BM 2279
BM 2282
BM 2272
BM 2273
28
27
33
34
4
RIVER
ATTACHMENT 4
Willow Flycatcher & Brown-headed Cowbird Observations
BIG BARSTOW
ROCKS BIOLOGICAL CONSULTING
0 1,400 FEET
1 INCH = 1,400 FEET
Date: 9/19/2022
Aerial Photo: Maxar, Esri 2020

Attachment 5

CNDDB Forms

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code DAV22F0003
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Empidonax traillii*

Common name: willow flycatcher

Date of field work (mm-dd-yyyy): 08-11-2022

Comment about field work date(s): Observations took place from 5/17/22 - 6/15/22 and on 8/11/22.

OBSERVER INFORMATION

Observer: Linette Davenport

Affiliation: Borrego Biological

Address: 5820 Alpine Woods Dr. , Anchorage, AK 99516

Email: borregobiological@gmail.com

Phone: (714) 721-4621

Other observers: Arthur Davenport

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: 2 identified by Arthur Davenport incidentally on 8/11 during YBCU survey

Other: Familiarity with vocalizations and visual markings

Identification explanation: Individuals were observed visually and aurally. Identification was confirmed by "fitz-bew" vocalizations. Photos were taken as feasible.

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: 5 SWFL survey passes following USGS 2010 guidelines; incidental observations also made during LBVI and YBCU surveys. Observations occurred 5/17-6/15 during SWFL & LBVI surveys, then 2 WIFL were observed on 8/11 during a YBCU survey.

Total number of individuals: At least 13

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Heard calling then seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
9				

Age class comment:

Bird site use:

☐ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☑ **Other**

Site use description: Migrating

What was the observed behavior? Foraging. Individuals were observed during surveys from 5/17 - 6/15, then not observed during rest of SWFL surveys or other LBVI surveys. No nesting behavior obs. On 8/11, 2 WIFL observed could have been migrating or maybe SWFL that bred in the region.

Describe any evidence of reproduction: None observed.

SITE INFORMATION

Habitat description: Tamarisk Thickets dominated by tamarisk (Tamarix ramosissima) with a generally open canopy between small tamarisk stands within the banks of the Mojave River. Occasional honey mesquite, Fremont cottonwood, and black willow scattered.

Slope:

Aspect:

Land owner/manager: Private, San Bernardino County Flood Control

Site condition + population viability: Poor

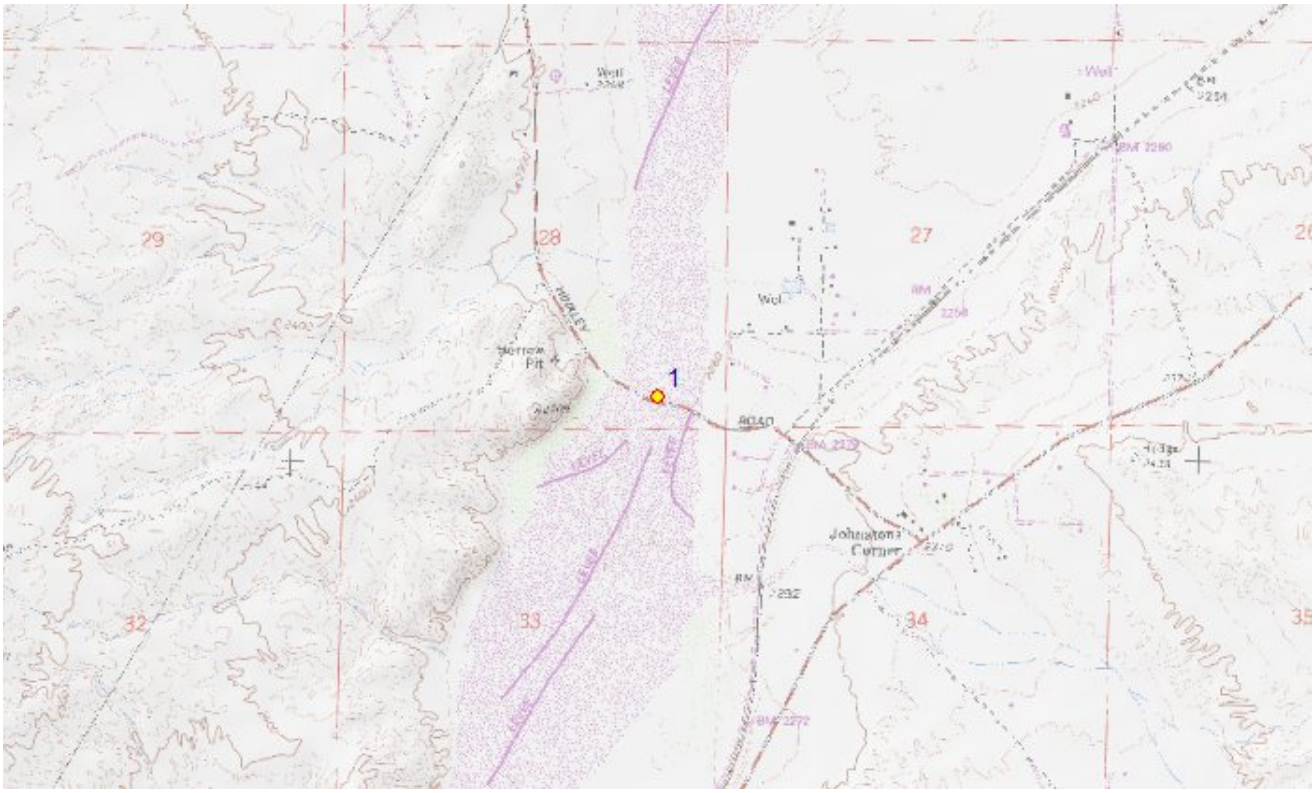
Immediate & surrounding land use: Mojave River, residential properties, a livestock corral, a railroad, and Route 66 to the east.

Visible disturbances: Non-native vegetation, scouring, trash, OHV use

Threats: OHV use; also, in June 2022 large swarms of Diorhabda sp. were observed within the entire survey area. Almost all stands of tamarisk, which dominate the survey area, became deciduous and defoliated. This was not observed during surveys in 2021.

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2262	34.83580	-117.19239	482409	3854851	11

1	Public Land Survey	Feature Comment
	S T09N R03W 28	

The mapped feature is accurate within: 1000 m

Source of mapped feature: GPS, +/- 16 feet accuracy

Mapping notes:

Location/directions comments:

Attachment(s): WIFL_DetectionForm_Excel_LDavenport_20220817.pdf, Form with additional location and other survey info.

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code DAV22F0004
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Empidonax traillii*

Common name: willow flycatcher

Date of field work (mm-dd-yyyy): 08-11-2022

Comment about field work date(s): Observations took place from 5/17/22 - 6/15/22 and on 8/11/22.

OBSERVER INFORMATION

Observer: Linette Davenport

Affiliation:

Address: 5820 Alpine Woods Dr. , Anchorage, AK 99516

Email: borregobiological@gmail.com

Phone: (714) 721-4621

Other observers: Arthur Davenport

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: 1 identified by Arthur Davenport incidentally on 8/11 during YBCU survey

Other: Familiarity with vocalizations and visual markings

Identification explanation: Individuals were observed visually and aurally. Identification was confirmed by "fitz-bew" vocalizations. Photos were taken as feasible.

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: 5 SWFL survey passes following USGS 2010 guidelines; incidental observations also made during LBVI and YBCU surveys. Observations occurred 5/17-6/15 during SWFL & LBVI surveys, then 1 WIFL was observed on 8/11 during a YBCU survey.

Total number of individuals: At least 4

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Heard calling then seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
4				

Age class comment:

Bird site use:

☐ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☑ **Other**

Site use description: Migration

What was the observed behavior? Foraging. Individuals were observed during surveys from 5/17 - 6/15, then not observed during rest of SWFL surveys or other LBVI surveys. No nesting behavior obs. On 8/11, 1 WIFL observed could have been migrating or maybe SWFL that bred in the region.

Describe any evidence of reproduction: None observed.

SITE INFORMATION

Habitat description: Black Willow Thickets and Tamarisk Thickets with occasional stand of honey mesquite. Suitable habitat is surrounded by Fourwing Saltbush Scrub.

Slope: Land owner/manager: Private

Aspect:

Site condition + population viability: Poor

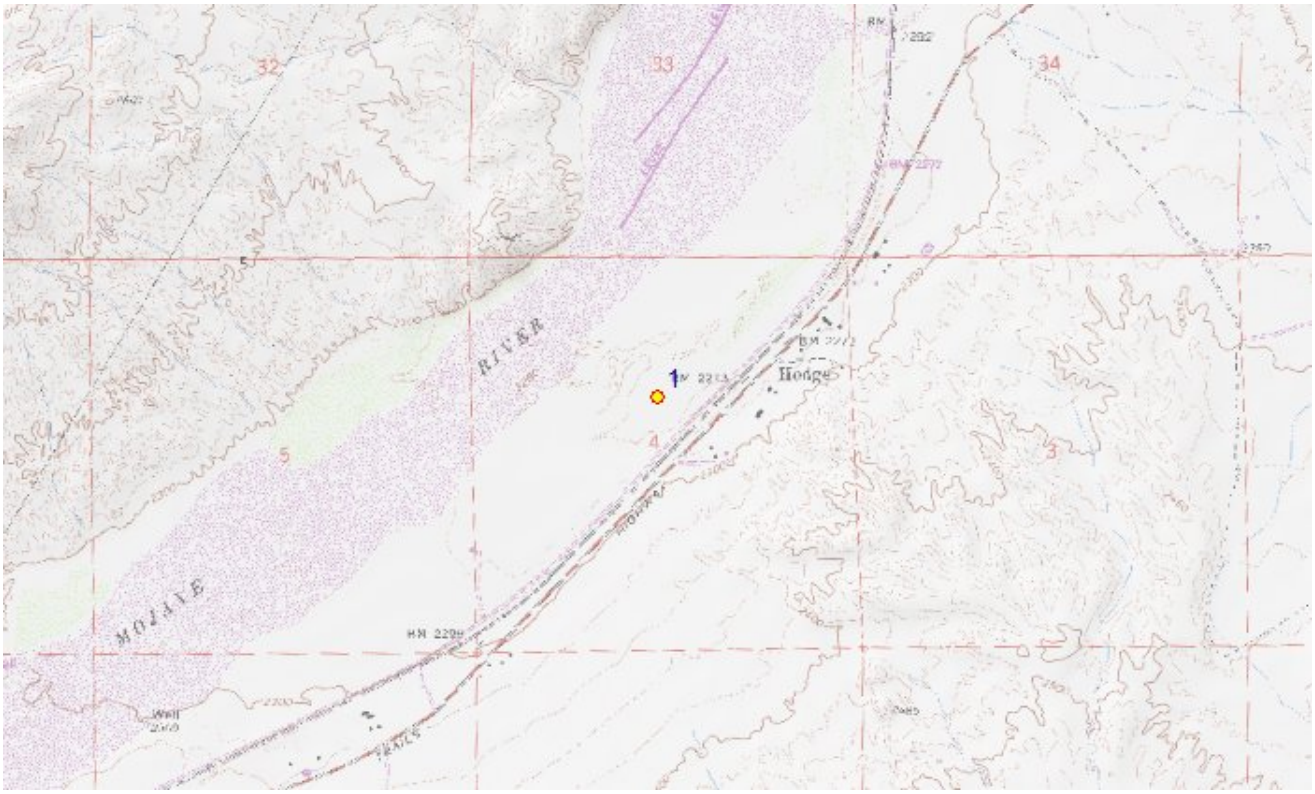
Immediate & surrounding land use: Mojave River to west, railroad and Route 66 to east, some residential and commercial properties to west and south.

Visible disturbances: Non-native vegetation, historic grazing

Threats: In June 2022 large swarms of Diorhabda sp. were observed within the entire survey area. Almost all stands of tamarisk, which dominate the survey area, became deciduous and defoliated. This was not observed during surveys in 2021.

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2282	34.81481	-117.19847	481848	3852525	11

ID	Public Land Survey	Feature Comment
1	S T08N R03W 4	

The mapped feature is accurate within: 500 m

Source of mapped feature: GPS, +/- 16 feet accuracy

Mapping notes:

Location/directions comments:

Attachment(s): WIFL_DetectionForm_Excel_LDavenport_20220817.pdf, orm with additional location and other survey info.

Attachment 6

Animal Species Observed

Scientific Name	Common Name
CLASS REPTILIA	REPTILES
FAMILY PHRYNOSOMATIDAE	HORNED AND SPINY LIZARDS
Uta stansburiana	Common side-blotched lizard
Sceloporus occidentalis	Western fence lizard
Sceloporus uniformis	Yellow-backed spiny lizard
Callisaurus draconoides	Zebra-tailed lizard
FAMILY TEIIDAE	WHIPTAILS AND RELATIVES
Aspidoscelis tigris tigris	Great Basin whiptail
CLASS AVES	BIRDS
ANATIDAE	SWANS, GEESE, AND DUCKS
Branta canadensis	Canada Goose
FAMILY ODONTOPHORIDAE	QUAIL
Callipepla californica	California quail
FAMILY COLUMBIDAE	DOVES, PIGEONS
Zenaida macroura	Mourning dove
Streptopelia decaocto	Eurasian collared-dove
FAMILY CUCULIDAE	CUCKOOS AND RELATIVES
Geococcyx californianus	Greater roadrunner
FAMILY CAPRIMULGIDAE	NIGHTJARS AND RELATIVES
Chordeiles acutipennis	Lesser nighthawk
FAMILY TROCHILIDAE	HUMMINGBIRDS
Archilochus alexandri	Black-chinned hummingbird
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
FAMILY CHARADRIIDAE	SANDPIPERS AND RELATIVES
Charadrius vociferus	Killdeer
FAMILY ARDEIDAE	HERONS AND EGRETS
Ardea herodias	Great blue heron
FAMILY CATHARTIDAE	VULTURES AND RELATIVES
Cathartes aura	Turkey vulture
FAMILY PANDIONIDAE	OSPREY
Pandion haliaetus	Osprey
FAMILY ACCIPTRIDAE	HAWKS, KITES, EAGLES, AND ALLIES
Buteo jamaicensis	Red-tailed hawk
FAMILY PICIDAE	WOODPECKERS
Picoides scalaris	Ladder-backed woodpecker
Picoides nuttallii	Nuttall's woodpecker
FAMILY FALCONIDAE	FALCONS
Falco sparverius	American kestrel

Scientific Name	Common Name
Falco peregrinus	Peregrine falcon
FAMILY TYRANNIDAE	TYRANT FLYCATCHERS
Contopus cooperi	Olive-sided flycatcher
Contopus sordidulus	Western wood-pewee
Empidonax traillii	Willow flycatcher
Empidonax wrightii	Gray flycatcher
Empidonax difficilis	Pacific-slope flycatcher
Sayornis nigricans	Black phoebe
Sayornis saya	Say's phoebe
Myiarchus cinerascens	Ash-throated flycatcher
Tyrannus vociferans	Cassin's kingbird
Tyrannus verticalis	Western kingbird
FAMILY VIREONIDAE	VIREOS
Vireo cassinii	Cassin's vireo
Vireo gilvus	Warbling vireo
FAMILY CORVIDAE	CROWS, RAVENS, AND RELATIVES
Corvus corax	Common raven
FAMILY ALAUDIDAE	LARKS
Eremophila alpestris	Horned lark
FAMILY TROGLODYTIDAE	WRENS
Thryomanes bewickii	Bewick's wren
FAMILY POLIOPTILIDAE	GNATCATCHERS
Polioptila melanura	Black-tailed gnatcatcher
FAMILY REMIZIDAE	VERDIN
Auriparus flaviceps	Verdin
FAMILY AEGITHALIDAE	BUSHTITS
Psaltriparus minimus	Bushtit
FAMILY TURDIDAE	THRUSHES
Catharus ustulatus	Swainson's thrush
FAMILY MIMIDAE	THRASHERS, MOCKINGBIRDS, AND RELATIVES
Toxostoma redivivum	California thrasher
Mimus polyglottos	Northern mockingbird
FAMILY PTILOGONATIDAE	SILKY FLYCATCHERS
Phainopepla nitens	Phainopepla
FAMILY PARULIDAE	WOOD WARBLERS
Leiothlypis celata	Orange-crowned warbler
Leiothlypis luciae	Lucy's warbler
Geothlypis tolmiei	MacGillivray's warbler
Geothlypis trichas	Common yellowthroat
Setophaga petechia	Yellow warbler
Setophaga coronata	Yellow-rumped warbler
Setophaga townsendi	Townsend's warbler

Scientific Name	Common Name
Cardellina pusilla	Wilson's warbler
FAMILY EMBERIZIDAE	SPARROWS AND RELATIVES
Chondestes grammacus	Lark sparrow
Artemisiospiza belli	Bell's sparrow
Zonotrichia leucophrys	White-crowned sparrow
Junco hyemalis	Dark-eyed junco
FAMILY CARDINALIDAE	CARDINALS, GROSBEAKS, AND ALLIES
Piranga ludoviciana	Western tanager
Pheucticus melanocephalus	Black-headed grosbeak
Passerina caerulea	Blue grosbeak
Passerina amoena	Lazuli bunting
FAMLIY ICTERIDAE	BLACKBIRDS AND RELATIVES
Molothrus ater	Brown-headed cowbird
Icterus bullockii	Bullock's oriole
Icterus cucullatus	Hooded oriole
FAMILY FRINGILLIDAE	FINCHES
Haemorhous mexicanus	House finch
Spinus psaltria	Lesser goldfinch
FAMILY PASSERIDAE	OLD WORLD SPARROWS
Passer domesticus	House sparrow
CLASS MAMMALIA	MAMMALS
FAMILY LEPORIDAE	RABBITS AND HARES
Sylvilagus audubonii	Audubon's cottontail
Lepus californicus	Black-tailed jackrabbit
FAMILY SCIURIDAE	SQUIRREL, CHIPMUNKS, AND MARMOTS
Ammospermophilus leucurus	White-tailed antelope ground squirrel
FAMILY CANIDAE	FOXES, WOLVES, AND RELATIVES
Canis latrans	Coyote
FAMILY FELIDAE	CATS
Lynx rufus	Bobcat

Attachment 7
Survey Photographs

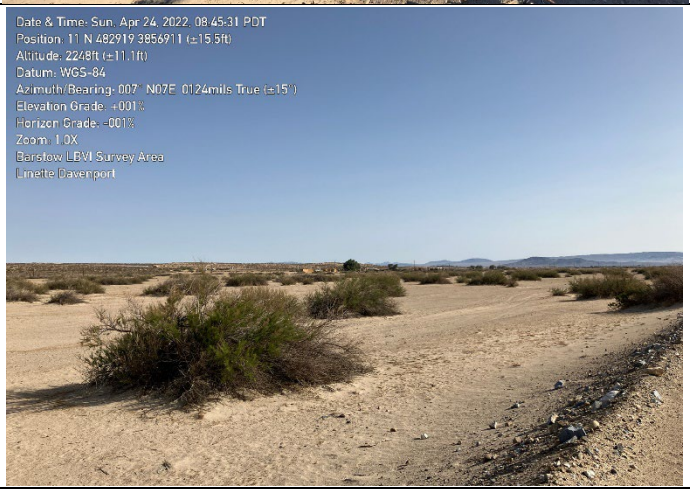
	Photo 1. Southernmost section of Survey Area depicting a Fremont cottonwood within Black Willow Thickets. Photo taken June 30, 2022.
	Photo 2. Survey Area south of Hinkley Road depicting Tamarisk Thickets that made up most of the Survey Area. Photo taken May 25, 2021.
	Photo 3. Northernmost section of Survey Area showing sparse Tamarisk Thickets. Photo taken April 24, 2022.

	Photo 4. Survey Area south of Hinkley Road on July 15, 2021, showing un-impacted stands of tamarisk.
	Photo 5. Survey Area south of Hinkley Road on July 13, 2022 showing impacted tamarisk throughout the survey area.
	Photo 6. Photo of tamarisk beetle (*Diorhabda* sp.*)* on June 16, 2022.

ATTACHMENT T

2023 FOCUSED PRESENCE/ ABSENCE SURVEY FOR LEAST BELL'S VIREO, BARSTOW INTERNATIONAL GATEWAY, COMMUNITY OF HODGE, SAN BERNARDINO COUNTY, CALIFORNIA

DRAFT September 9, 2023

Jim Rocks
Owner, Principal Biologist
Rocks Biological Consulting
4312 Rialto Street, San Diego, CA 92107

Subject: 2023 Focused Presence/Absence Survey for Least Bell's Vireo, Barstow International Gateway, Community of Hodge, San Bernardino County, California.

Dear Mr. Rocks:

Borrego Biological was retained by Rocks Biological Consulting to conduct a focused presence/absence survey for least Bell's vireo (*Vireo bellii pusillus*; LBVI), at a portion of the Barstow International Gateway (BIG) project site added after 2022 and a 1000-foot buffer near the community of Hodge in San Bernardino County, CA (Survey Area; Attachments 1 and 2). The results of the survey are presented below.

Least Bell's Vireo

The LBVI is a federally and California state-listed as endangered subspecies of Bell's vireo (*Vireo bellii*). The LBVI subspecies breeds within California and northern Baja California, Mexico. The wintering range of the subspecies includes southern Baja California, Mexico.

The LBVI is a small, active passerine with generally drab gray plumage throughout, two pale wing bars, and a faint white eye ring. Its preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are proximate to surface water. Although it inhabits riparian woodlands, it was found that individuals benefited from using both riparian and non-riparian ecosystems (Kus et al. 2010). Habitats may include willow woodlands, dense mule fat (*Baccharis salicifolia*), brushy fields, scrub oak (*Quercus berberidifolia*), coastal chaparral, and mesquite (*Prosopis* spp.) patches with dense, early successional understories. Two major factors in the decline of LBVI populations are loss of habitat and nest parasitism by the brown-headed cowbird (*Molothrus ater*) (Kus et al. 2010).

Survey Area

Surveys for LBVI in suitable habitat within the BIG project site and 1000-buffer were conducted in 2021 and 2022 (Rocks Biological Consulting 2021, Davenport 2022a). The 2023 survey took place within suitable habitat for LBVI present within a portion of the BIG project site that was added after the 2022 survey season plus a 1000-foot buffer. Suitable habitat was assessed by consulting vegetation maps and aerial photos of this area prior to the survey, and then ground-truthing the assessment during the first survey pass. The Survey Area was within the California United States Geological Survey 7.5-minute *Hodge* topographic quadrangle, and the elevation was approximately 704 meters above mean sea level (Attachment 1). The Survey Area was approximately 60 acres occurring within Assessor's Parcel Number 0420151010000 (San Bernardino County Assessor-Recorder-Clerk 2023).

Methods

Qualified biologist Linette Davenport conducted a focused presence/absence survey for LBVI according to the *Least Bell's Vireo Survey Guidelines* (USFWS 2001). Eight survey passes were conducted at least 10 days apart between April 10 and July 31 during favorable weather conditions between morning civil twilight and 1100 hours. The survey was not conducted during excessive heat, cold, wind, rain, or other inclement weather that would be reasonably expected to reduce bird activity and consequential detection. No more

than 3 linear kilometers or 50 hectares (120 acres) were covered during each survey day. Ms. Davenport did not conduct any survey for another target species concurrently with the LBVI survey.

During each survey pass, Ms. Davenport walked paths throughout all suitable habitat looking and listening for LBVI, stopping at optimal stationary locations to look and listen for the target species without harming any other wildlife species in the area. To reduce bias from environmental conditions, the route taken each survey day varied between survey passes. If LBVI were detected, the location, numbers, status, and demographic data were recorded.

Plant communities and associations were recorded in accordance with the categories described in *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009) (Attachment 3). The United States Fish and Wildlife Service (UFWS) Critical Habitat Mapper and File Data (USFWS 2023) was reviewed to determine if the Survey Area was within designated critical habitat for LBVI.

The locations of any LBVI and other special status species were documented and mapped (Attachment 4), and California Natural Diversity Database (CNDDB) forms were submitted (Attachment 5). If leg bands were observed, they were noted. Observations and numbers of brown-headed cowbirds also were noted and mapped (Attachment 4). All observed wildlife animal species were recorded for each survey day (Attachment 6). Site photographs and species photographs were taken (Attachment 7).

Results

Survey conditions are presented in Table 1.

Table 1. Survey Conditions

Survey Pass	Date 2023	Time (Start/End)	Temperature (Start/End) °F	Wind Speed (Start/End) mph	Cloud Cover (Start/End) %	Precipitation (Start/End)
1	4/10	0700/1015	52/72	0/1(2)	0/0	0/0
2	5/2	6050/1010	49/64	3(4)/8(11)	10/50	0/0
3	5/12	0645/1000	53/78	2/2(3)	0/0	0/0
4	5/22	0555/0945	61/82	0(1)/2	0/0	0/0
5	6/1	0535/0930	58/77	4(6)/4(6)	0/0	0/0
6	6/12	0550/1000	57/74	2/5(6)	0/0	0/0
7	6/29	0550/0930	61/83	2(3)/1(2)	0/0	0/0
8	7/24	0540/0850	76/84	2(3)/1	75/10	0/0

Habitat

Suitable habitat within the Survey Area was made up of Tamarisk Thickets (Attachment 3).

Tamarisk Thickets (60 acres): Vegetation within the banks of the the Survey Area was dominated by tamarisk (*Tamarix ramosissima*) with a generally open canopy between small stands. Honey mesquite (*Prosopis glandulosa*) trees and small stands of sandbar willow (*Salix exigua*) were occasionally present, and one small stand of giant reed (*Arundo donax*) was present. An herbaceous layer was present in April and May due to significant rainfall during the previous winter season, consisting of various native annual plants including devil's lettuce (*Amsinckia tessellata*), desert dandelion (*Malacothrix glabrata*), and birdcage

evening primrose (*Oenothera deltoides*). One small seep in the northern portion of the Survey Area contained water all survey passes through July, likely fed by snowmelt of local mountains (Attachment 7).

Swarms of tamarisk beetle (*Diorhabda* sp.) heavily impacted the Tamarisk Thickets surveyed in 2022, which are downstream of the current Survey Area (Davenport 2022b). Tamarisk beetle larvae were observed in the current Survey Area in 2023 (Attachment 7) but only a very small number of adult beetles were observed. Approximately 10% or less of the tamarisk in the 2023 Survey Area appeared to be defoliated. In contrast, the tamarisk stands in the 2021 and 2022 survey area appeared severely impacted in 2023 (Attachment 7). No native shrubs appeared to be negatively impacted.

Critical Habitat

The Survey Area is not within USFWS-designated critical habitat for LBVI (USFWS 2023).

Least Bell's Vireo

No LBVI were detected during any of the survey passes.

Other Special Status Species

At least one loggerhead shrike (*Lanius ludovicianus*), a California Species of Special Concern (SSC), was observed during several survey passes in June. No nesting behavior was confirmed, but based on timing and range it is possible it was breeding in the vicinity. Up to 20 Swainson's hawks (*Buteo swainsoni*), a California state-listed as threatened species, were observed during surveys from June 12 through June 30. Most of the Swainson's hawks appeared to be second-year birds with a small number of adults that did not appear to be breeding. They were foraging on the numerous grasshoppers onsite and along the Mojave River that appeared to be a result of significant rainfall during the previous winter. The loggerhead shrike and Swainson's hawk observations were submitted to the CNDDB (Attachment 5).

Brown-headed Cowbirds

Brown-headed cowbirds were heard during several surveys, usually flying overhead going from the Mojave River to the residential areas along Route 66 or vice versa (Attachment 4).

Discussion

Tamarisk beetle was observed in the Survey Area, but it did not appear to have impacted the tamarisk in this upstream section as severely as the surveyed areas downstream yet. Even though tamarisk is invasive and negatively impacts native vegetation and animals, it still can provide habitat for LBVI, WIFL, and other riparian birds. In order to alleviate negative impacts of overly rapid tamarisk loss and also to maximize the benefit of removing this invasive species, it is still recommended to actively restore native trees and shrubs prior to the complete eradication of tamarisk in the region (Paxton et al 2011).

Conclusion

No LBVI were found to be nesting in the Survey Area.

Please do not hesitate to contact me at (714) 721-4621 or borregobiological@gmail.com if you have any questions.

Sincerely,



Linette Davenport
Borrego Biological

References

Davenport, Linette

2022a Focused Presence/Absence Survey for Least Bell's Vireo, Barstow International Gateway, San Bernardino County, California. Submitted to Rocks Biological Consulting, San Diego, California, October 11, 2022.

2022b Focused Presence/Absence Survey for Southwestern Willow Flycatcher, Barstow International Gateway, San Bernardino County, California. Submitted to Rocks Biological Consulting, San Diego, California, October 11, 2022.

Kus, Barbara, Steven L. Hopp, R. Roy Johnson and Bryan T. Brown

2020 Bell's Vireo (*Vireo bellii*), Birds of the World. Cornell Lab of Ornithology, Ithaca, NY, USA. Retrieved from the Birds of the World website: https://doi.org/10.2173/bow.belvir.01

Paxton, Eben H., Tad C. Theimer, and Mark K. Sogge

2011 Tamarisk Biocontrol using Tamarisk Beetles: Potential Consequences for Riparian Birds in the Southwestern United States. The Condor, Volume 113, Issue 2, Pages 255–265. Retrieved from the American Ornithological Society website: https://doi.org/10.1525/cond.2011.090226

Rocks Biological Consulting

2021 45-Day Report for Least Bell's Vireo Surveys for the BNSF Barstow International Gateway Project, San Bernardino County, CA. August 25, 2021.

San Bernardino County Assessor-Recorder-Clerk

2023 Parcel Access and File Data. Retrieved from the San Bernardino County Assessor-Recorder-Clerk website: https://arcpropertyinfo.sbcounty.gov/

Sawyer, J.O., Jr., T. Keeler-Wolf, and J. Evens

2009 *A Manual of California Vegetation, Second Edition*. California Native Plant Society. Sacramento, California.

United States Fish and Wildlife Service (USFWS)

2001 Least Bell's Vireo Survey Guidelines. Carlsbad Fish and Wildlife Office.

2023 Critical Habitat Mapper and File Data. Retrieved from the USFWS Critical Habitat Mapper website: https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77

Attachments

1 – Survey Area

2 – Survey Location

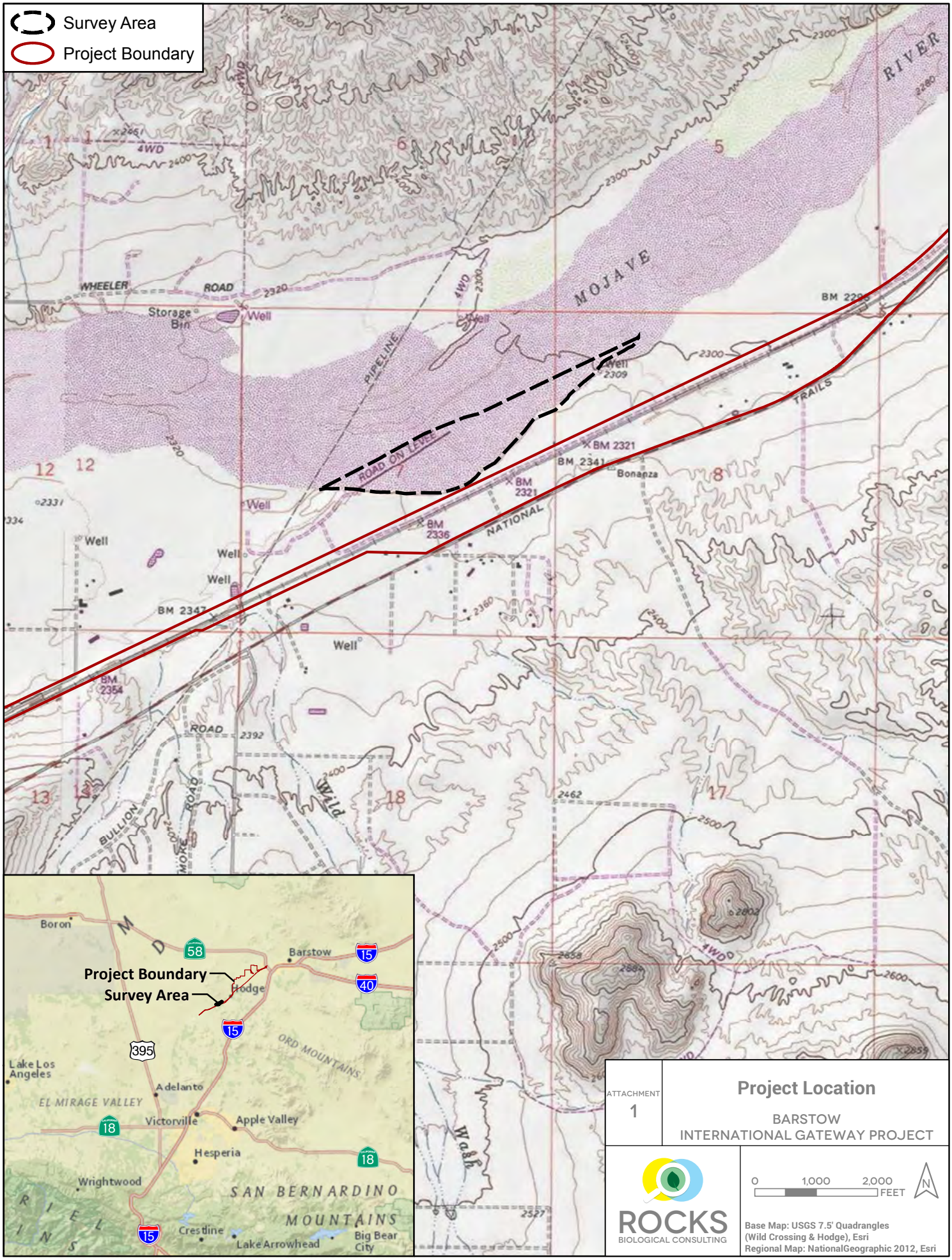
3 – Vegetation

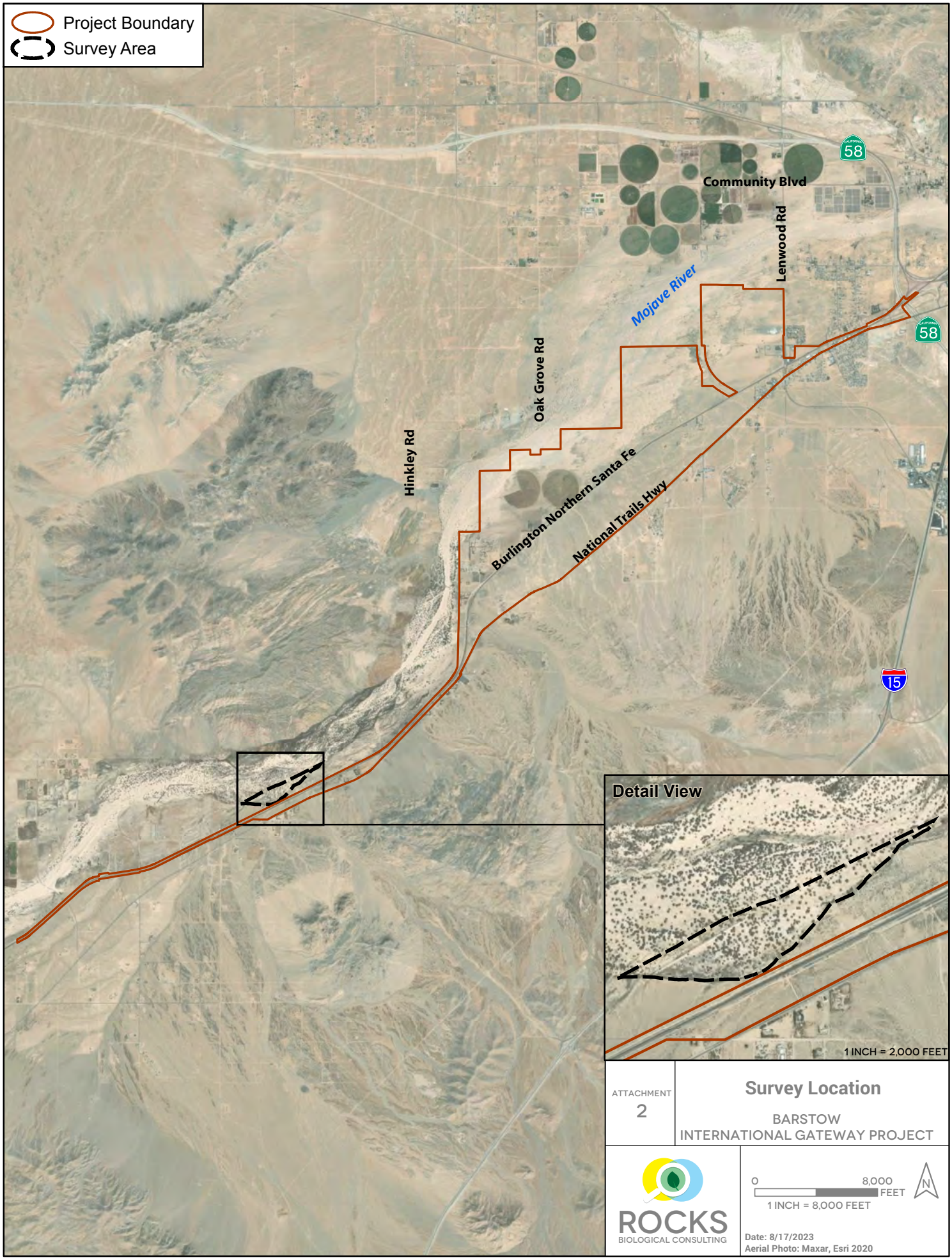
4 – Special Status Species And Brown-headed Cowbird Observations

5 – CNDDB Forms

6 – Animal Species Observed

7 – Survey Photographs


Survey Area
Project Boundary
WHEELER
ROAD
Storage Bin
Well
PIPELINE
MOJAVE
RIVER
TRAILS
NATIONAL
BM 2321
BM 2341
Bonanza
BM 2336
BM 2347
BM 2354
ROAD
BULLION
MOJAVE
Wild
Wash
Boron
Barstow
Hodge
Project Boundary
Survey Area
Lake Los Angeles
Adelanto
EL MIRAGE VALLEY
Victorville
Apple Valley
Hesperia
Wrightwood
SAN BERNARDINO MOUNTAINS
Crestline
Lake Arrowhead
Big Bear City
ORD MOUNTAINS
ATTACHMENT 1
Project Location
BARSTOW
INTERNATIONAL GATEWAY PROJECT
ROCKS
BIOLOGICAL CONSULTING
0 1,000 2,000 FEET
Base Map: USGS 7.5' Quadrangles
(Wild Crossing & Hodge), Esri
Regional Map: NationalGeographic 2012, Esri



ATTACHMENT 2

Survey Location

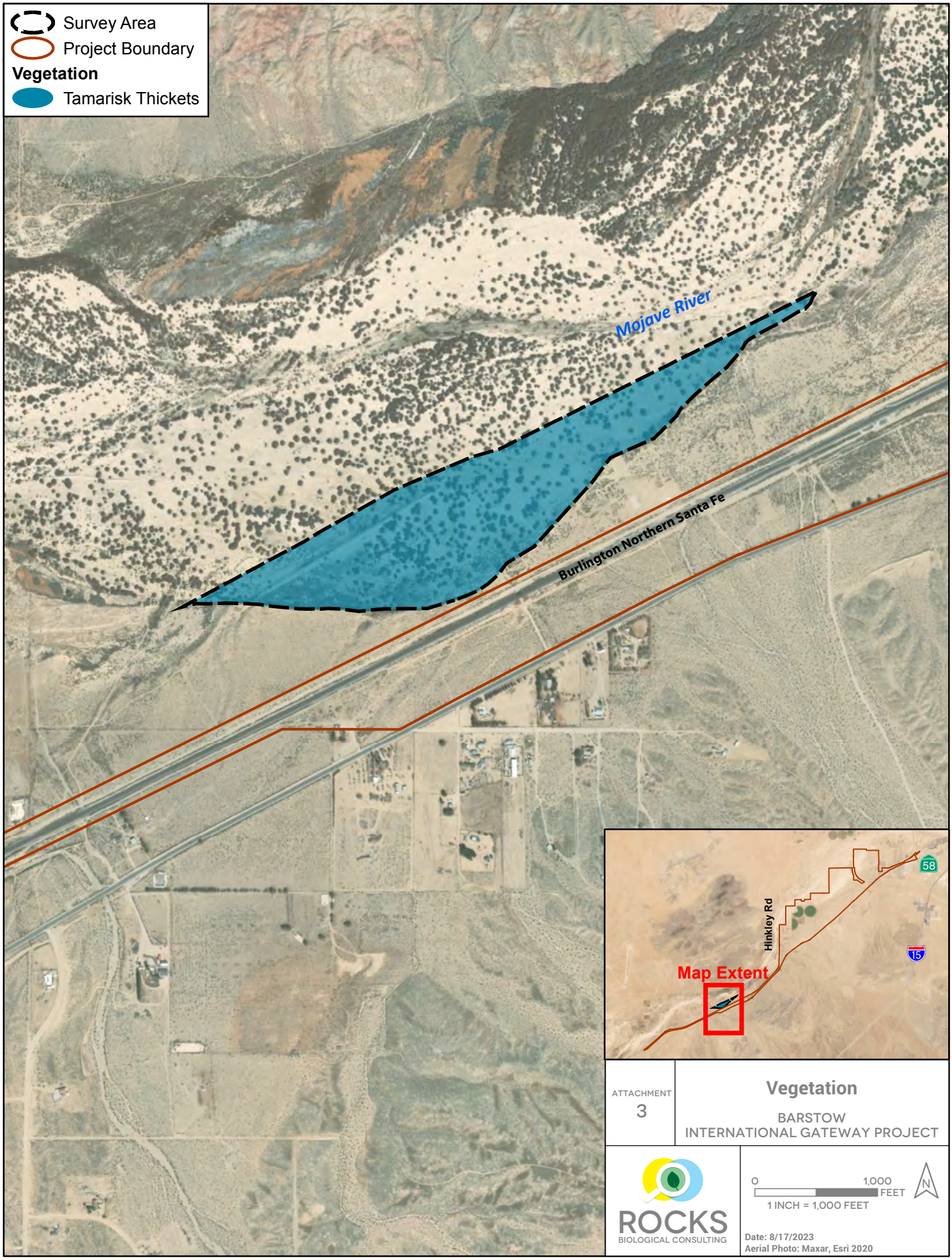
BARSTOW
INTERNATIONAL GATEWAY PROJECT

ROCKS
BIOLOGICAL CONSULTING

0 8,000 FEET
1 INCH = 8,000 FEET

N

Date: 8/17/2023
Aerial Photo: Maxar, Esri 2020



ATTACHMENT 3

Vegetation

BARSTOW INTERNATIONAL GATEWAY PROJECT

ROCKS BIOLOGICAL CONSULTING

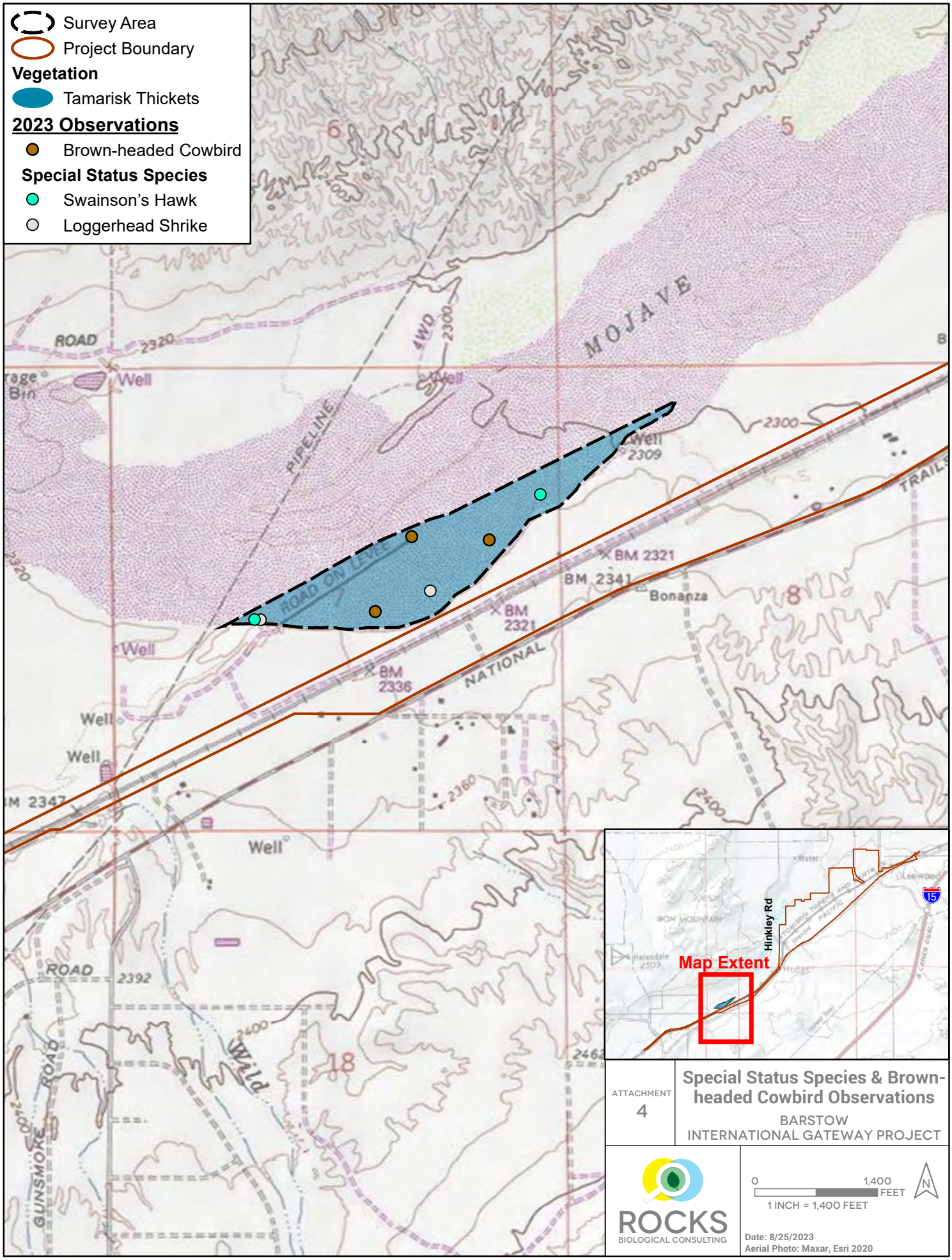
0 1,000 FEET

1 INCH = 1,000 FEET

N

Date: 8/17/2023

Aerial Photo: Maxar, Esri 2020



ATTACHMENT 4

Special Status Species & Brown-headed Cowbird Observations

BARSTOW INTERNATIONAL GATEWAY PROJECT

ROCKS BIOLOGICAL CONSULTING

0 1,400 FEET

1 INCH = 1,400 FEET

Date: 8/25/2023

Aerial Photo: Maxar, Esri 2020

Attachment 5

CNDDB Forms

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code DAV23F0002
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Lanius ludovicianus*

Common name: loggerhead shrike

Date of field work (mm-dd-yyyy): 07-16-2023

Comment about field work date(s): Observations made on 6/13, 6/29, 6/30, 7/3, 7/10, 7/16

OBSERVER INFORMATION

Observer: Linette Davenport

Affiliation:

Address: 1120 Huffman Rd Suite 24 #285, Anchorage, AK 99515

Email: borregobiological@gmail.com

Phone: (714) 721-4621

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: Arthur Davenport observed the species on 7/3 and 7/16

Other: Familiarity with vocalizations and visual markings

Identification explanation: Individuals were observed visually and aurally

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Incidental observations made during focused surveys for least Bell's vireo, southwestern willow flycatcher, and yellow-billed cuckoo.

Total number of individuals: 1 or 2

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Heard calling then seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
2				

Age class comment:

Bird site use:

☐ Nesting ☐ Rookery ☐ Nesting colony ☐ Burrow site ☐ Lek

☐ Non-breeding (over-wintering) ☐ Communal roost ☑ Other

Site use description: At least one, possibly two individuals observed over a month-long period. No nesting behavior confirmed, but based on timing and range it is possible it was breeding in the vicinity.

What was the observed behavior? Foraging, calling

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description: Tamarisk Thickets dominated by tamarisk (Tamarix ramosissima) with a generally open canopy between small tamarisk stands within the banks of the Mojave River. Occasional honey mesquite and sandbar willow present.

Slope: Land owner/manager: Private

Aspect:

Site condition + population viability: Fair

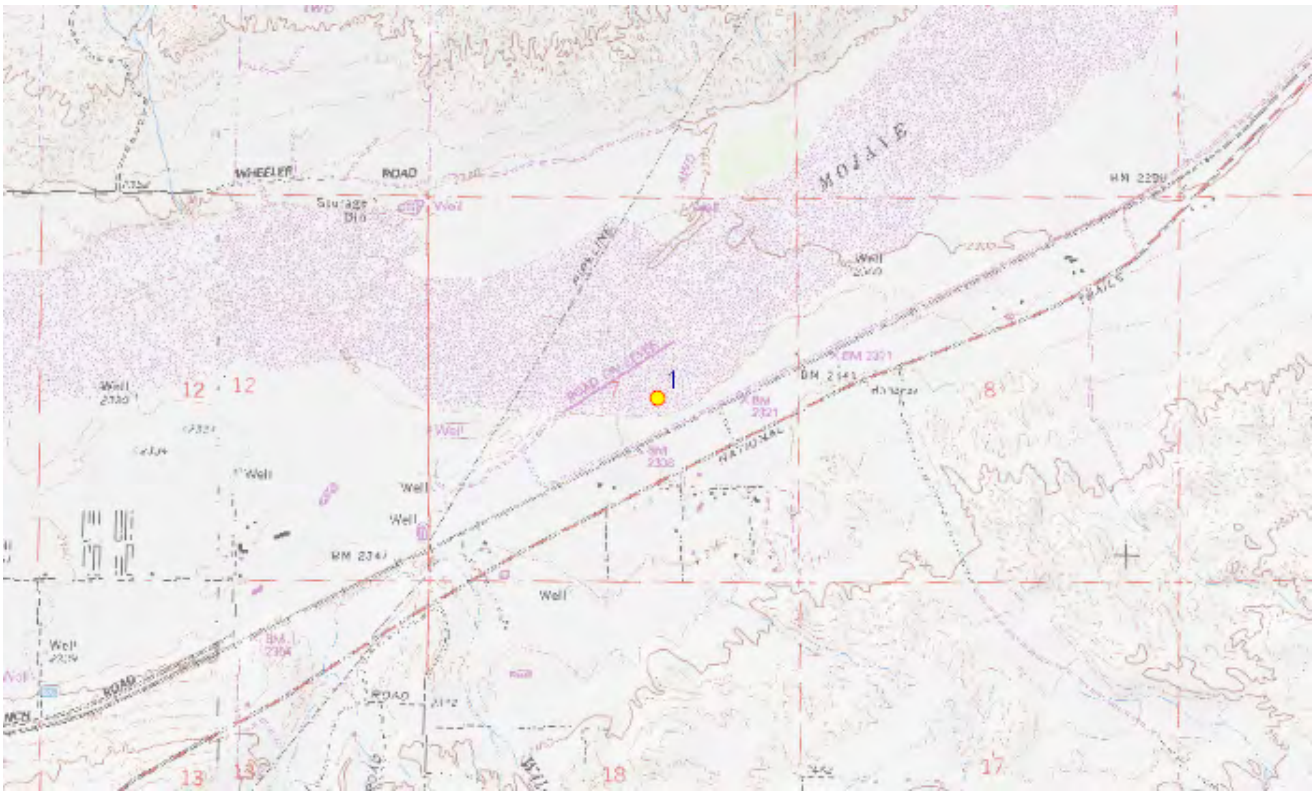
Immediate & surrounding land use: Mojave River, residential properties, a railroad, and Route 66 to the east.

Visible disturbances: Non-native vegetation, scouring, trash, OHV use

Threats: OHV use; also, small numbers of tamarisk beetle (Diorhabda sp.) causing defoliation of some tamarisk trees in the immediate vicinity, and defoliation of most tamarisk downstream around Hinkley Rd.

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2307	34.79760	-117.23074	478893	3850623	11
1	**Public Land Survey**	**Feature Comment**						
	S T08N R03W 7							

The mapped feature is accurate within: 5 m

Source of mapped feature: GPS Horizontal Accuracy: ± 15 ft Vertical Accuracy: ± 12 ft

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
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Sacramento, CA 95814
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Source code DAV23F0003
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Buteo swainsoni*

Common name: Swainson's hawk

Date of field work (mm-dd-yyyy): 06-30-2023

Comment about field work date(s): Observations made on 6/12, 6/13, 6/19, 6/30

OBSERVER INFORMATION

Observer: Linette Davenport

Affiliation:

Address: 1120 Huffman Rd Suite 24 #285, Anchorage, AK 99515

Email: borregobiological@gmail.com

Phone: (714) 721-4621

Other observers: Arthur Davenport

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in: Sibley Birds V2 app for iPhone

By another person:

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Incidental observations made during focused surveys for least Bell's vireo, southwestern willow flycatcher, and yellow-billed cuckoo

Total number of individuals: 3 to 20

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Photograph

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
2	18			

Age class comment: Most individuals appeared to be 2nd-year/immature birds, with 2 or so full adults.

Bird site use:

☐ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☑ **Other**

Site use description: Group was foraging on numerous grasshoppers along the Mojave River that were likely present due to significant precipitation from the previous winter.

What was the observed behavior? Individuals on the ground or perched in trees, foraging, or kettling in the air. Individuals were highly skittish and flushed when observer was within 200 feet.

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description: Tamarisk Thickets dominated by tamarisk (Tamarix ramosissima) with a generally open canopy between small tamarisk stands within the banks of the Mojave River. Occasional honey mesquite and sandbar willow present.

Slope:

Land owner/manager: Private

Aspect:

Site condition + population viability: Fair

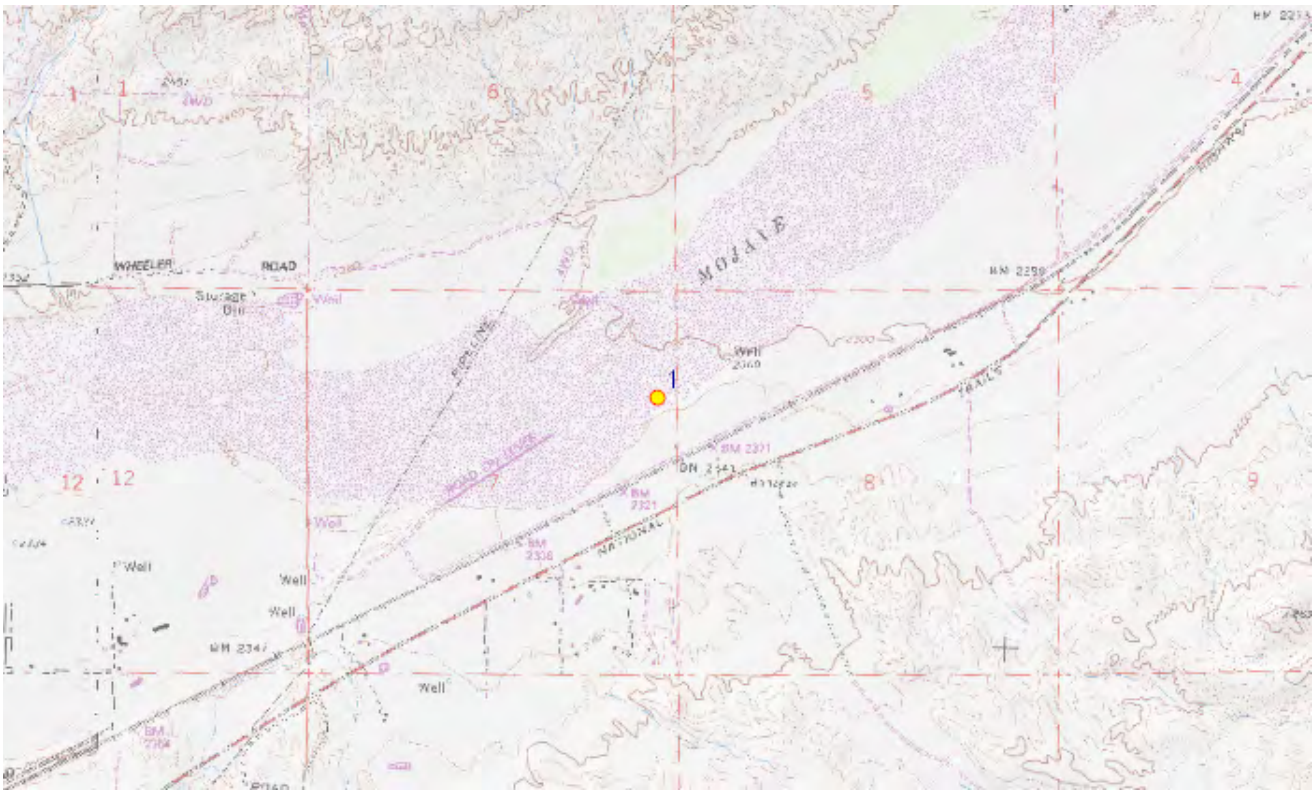
Immediate & surrounding land use: Mojave River, residential properties, a railroad, and Route 66 to the east.

Visible disturbances: Non-native vegetation, scouring, trash, OHV use

Threats: OHV use; also, small numbers of tamarisk beetle (Diorhabda sp.) causing defoliation of some tamarisk trees in the immediate vicinity, and defoliation of most tamarisk downstream around Hinkley Rd.

General comments: Very large numbers of grasshoppers present in May and June 2023.

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2304	34.80111	-117.22519	479401	3851011	11

1	Public Land Survey	Feature Comment
	S T08N R03W 7	

The mapped feature is accurate within: 5 m

Source of mapped feature: GPS Horizontal Accuracy: ± 12 ft Vertical Accuracy: ± 10 ft

Mapping notes:

Location/directions comments:

Attachment(s): 9.JPG, Molting 2nd-year Swainson's Hawk

Attachment 6

Animal Species Observed

Least Bell's Vireo Survey

Scientific Name	Common Name
CLASS REPTILIA	REPTILES
FAMILY IGUANIDAE	IGUANAS
Dipsosaurus dorsalis	Desert iguana
FAMILY PHRYNOSOMATIDAE	HORNED AND SPINY LIZARDS
Uta stansburiana	Common side-blotched lizard
Sceloporus uniformis	Yellow-backed spiny lizard
FAMILY TEIIDAE	WHIPTAILS AND RELATIVES
Aspidoscelis tigris tigris	Great Basin whiptail
CLASS AVES	BIRDS
FAMILY ODONTOPHORIDAE	QUAIL
Callipepla californica	California quail
FAMILY COLUMBIDAE	DOVES, PIGEONS
Zenaida macroura	Mourning dove
Streptopelia decaocto	Eurasian collared-dove
FAMILY CUCULIDAE	CUCKOOS AND RELATIVES
Geococcyx californianus	Greater roadrunner
FAMILY CAPRIMULGIDAE	NIGHTJARS AND RELATIVES
Chordeiles acutipennis	Lesser nighthawk
FAMILY CHARADRIIDAE	SANDPIPERS AND RELATIVES
Charadrius vociferus	Killdeer
FAMILY CATHARTIDAE	VULTURES AND RELATIVES
Cathartes aura	Turkey vulture
FAMILY ACCIPTRIDAE	HAWKS, KITES, EAGLES, AND ALLIES
Buteo swainsoni	Swainson's hawk
Buteo jamaicensis	Red-tailed hawk
FAMILY TYRANNIDAE	TYRANT FLYCATCHERS
Myiarchus cinerascens	Ash-throated flycatcher
Tyrannus vociferans	Cassin's kingbird
Tyrannus verticalis	Western kingbird
FAMILY LANIIDAE	SHRIKES
Lanius ludovicianus	Loggerhead shrike
FAMILY VIREONIDAE	VIREOS
Vireo gilvus	Warbling vireo
FAMILY CORVIDAE	CROWS, RAVENS, AND RELATIVES
Corvus corax	Common raven
FAMILY ALAUDIDAE	LARKS
Eremophila alpestris	Horned lark

Scientific Name	Common Name
FAMILY HIRUNDINIDAE	SWALLOWS
Hirundo rustica	Barn swallow
FAMILY TROGLODYTIDAE	WRENS
Thryomanes bewickii	Bewick's wren
FAMILY REMIZIDAE	VERDIN
Auriparus flaviceps	Verdin
FAMILY MIMIDAE	THRASHERS, MOCKINGBIRDS, AND RELATIVES
Toxostoma redivivum	California thrasher
FAMILY PARULIDAE	WOOD WARBLERS
Leiothlypis celata	Orange-crowned warbler
Geothlypis trichas	Common yellowthroat
Cardellina pusilla	Wilson's warbler
FAMILY EMBERIZIDAE	SPARROWS AND RELATIVES
Pipilo chlorurus	Green-tailed towhee
Chondestes grammacus	Lark sparrow
Artemisiospiza belli	Bell's sparrow
Zonotrichia leucophrys	White-crowned sparrow
FAMILY CARDINALIDAE	CARDINALS, GROSBEAKS, AND ALLIES
Piranga ludoviciana	Western tanager
Pheucticus melanocephalus	Black-headed grosbeak
Passerina caerulea	Blue grosbeak
Passerina amoena	Lazuli bunting
FAMLIY ICTERIDAE	BLACKBIRDS AND RELATIVES
Molothrus ater	Brown-headed cowbird
FAMILY FRINGILLIDAE	FINCHES
Haemorhous mexicanus	House finch
Spinus psaltria	Lesser goldfinch
FAMILY PASSERIDAE	OLD WORLD SPARROWS
Passer domesticus	House sparrow
CLASS MAMMALIA	MAMMALS
FAMILY LEPORIDAE	RABBITS AND HARES
Sylvilagus audubonii	Audubon's cottontail
Lepus californicus	Black-tailed jackrabbit
FAMILY SCIURIDAE	SQUIRREL, CHIPMUNKS, AND MARMOTS
Ammospermophilus leucurus	White-tailed antelope ground squirrel

Attachment 7
Survey Photographs

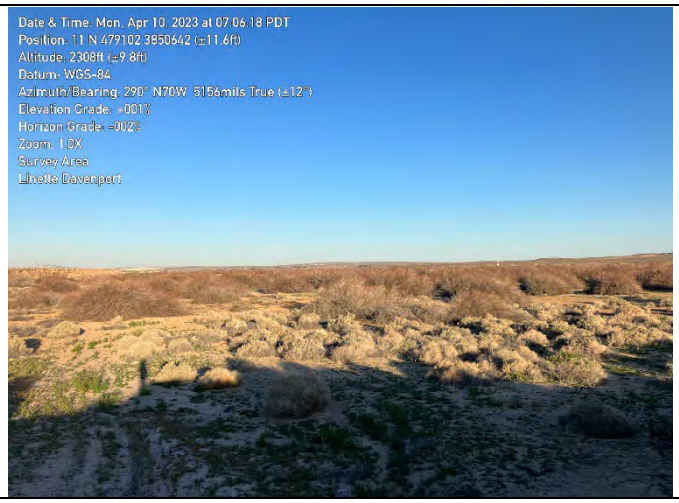
		Photo 1. Western portion of the Survey Area. Photo taken from the south side of the Survey Area facing northwest. Photo taken on April 10, 2023.
		Photo 2. Eastern portion of the Survey Area. Photo taken from the south side of the Survey Area facing northeast. Photo taken on April 10, 2023.
		Photo 3. Seep present in northern portion of Survey Area. Photo taken on June 29, 2023.

		Photo 4. Tamarisk beetle (*Diorhabda* sp.) larva on a tamarisk. Photo taken on June 12, 2023.
		Photo 5. Tamarisk Thickets south of Hinkley Road downstream of the 2023 Survey Area. Photo taken May 25, 2021, prior to the arrival of tamarisk beetles.
		Photo 6. Tamarisk Thickets south of Hinkley Road downstream of the 2023 Survey Area showing severe defoliation from tamarisk beetles. Photo taken July 24, 2023.

ATTACHMENT U

MOHAVE GROUND SQUIRREL HABITAT ASSESSMENT, BNSF RAILWAY COMPANY (BNSF) BARSTOW INTERNATIONAL GATEWAY (BIG) PROJECT, PHIL BRYLSKI, PH.D., FEBRUARY 22, 2022

Mohave Ground Squirrel Habitat Assessment
BNSF Railway Company (BNSF) Barstow International Gateway (BIG) Project
Phil Brylski, Ph.D., February 22, 2022

This memo summarizes the results of a habitat assessment for the Mohave ground squirrel (MGS, *Xerospermophilus mohavensis*) on an approximately 4,500-acre site in the Mojave River Valley, San Bernardino County. The proposed project would expand the existing rail car facilities by constructing additional rail tracks, buildings, parking lots, transports rigs, and staging areas to support railway operations.

The site extends from the railroad tracks southwest of the Hinkley Road /Johnstons Corner area of San Bernardino County approximately 8.6 miles northeast to the Lenwood neighborhood of Barstow. The site is located on the U.S. Geological Survey (USGS) Hodge, Barstow, and Barstow SE 7.5-minute topographic quadrangles. Figures 1 and 2 show the project site on a topographic map and an aerial photo, respectively. Table 1 lists the township, range, and section information. The elevation ranges from approximately 2,220 to 2,370 feet above mean sea level. The UTM coordinates for the approximate center of the site are 11S 484472E, 3856295N. Appendix 1 contains site photographs.

Table 1. USGS Topographic Quadrangles of Project Site

USGS 7.5' Quad	Township	Range	Sections
Barstow	9N	2W	7, 18, 19
Barstow SE	9N	2W	17, 18
Hodge	9N	2W	18, 19
Hodge	9N	3W	13, 22-27, 34
Hodge	8N	3W	4, 5, 8

Site Description

The site is within the Mojave River Valley south of Hinkley, and extends from the Lenwood neighborhood of Barstow southwest to Hinkley Rd, where the project boundary narrows along the existing railroad tracks for another 3.1 miles. Two important features of the site are the Mojave River north of the existing railroad tracks and a bench with desert scrub vegetation that slopes from Route 66 (Main St.) to the railroad tracks. Active farmland is restricted to the southern part of the site. Residential and commercial land uses are concentrated in Lenwood in the northern part of the site; a few rural residences are found on the bench.

Background on the Mohave Ground Squirrel

The MGS is a small ground squirrel (approximately 9 inches long) that inhabits the Mojave Desert, in parts of Inyo, Kern, Los Angeles and San Bernardino counties. The historical range of the MGS covered approximately 5 million acres from Palmdale in the south to Owens Lake in the north, and from the eastern edge of the Sierra Nevada to the Mojave River Valley (Gustafson 1993, Leitner 2008).

MGS occur in a range of open desert habitats, most commonly in creosote scrub but also in Joshua tree woodland, desert saltbush scrub, desert sink scrub, desert greasewood scrub, and

shadscale scrub (Gustafson, 1993). MGS typically occur in areas with open vegetative cover and small bushes (< 0.6 meter [2 feet] in height) spaced approximately 6 to 9 meters (20 to 30 feet) apart. MGS consume leaves, forbs, shrubs, and grasses of several species and genera, including creosote (*Larrea tridentata*), winter fat (*Krascheninnikovia lanata*), spiny hop-sage (*Grayia spinosa*), saltbush (*Atriplex* spp.), golden linanthus (*Linanthus aureus*), Mediterranean grass (*Schismus arabicus*), box thorn (*Lycium* spp.), and several other plant species (Best 1995). Winter fat, spiny hop-sage, and saltbush are thought to make up approximately 60% of the species' shrub diet, indicating that these are important food sources when forbs are unavailable. These diet data are based on observations in the northern part of the species' range, and the extent that they are the same or differ in the southern part of the range has not been analyzed, apart from limited observations (Leitner 2002).

MGS dig burrows in sandy and gravelly soils on flat to moderately sloping terrain. The burrows are used to avoid predators and high temperatures, and for aestivating during winter months. MGS are active only during the spring-summer months and spend most of the year (approximately seven months) below ground.

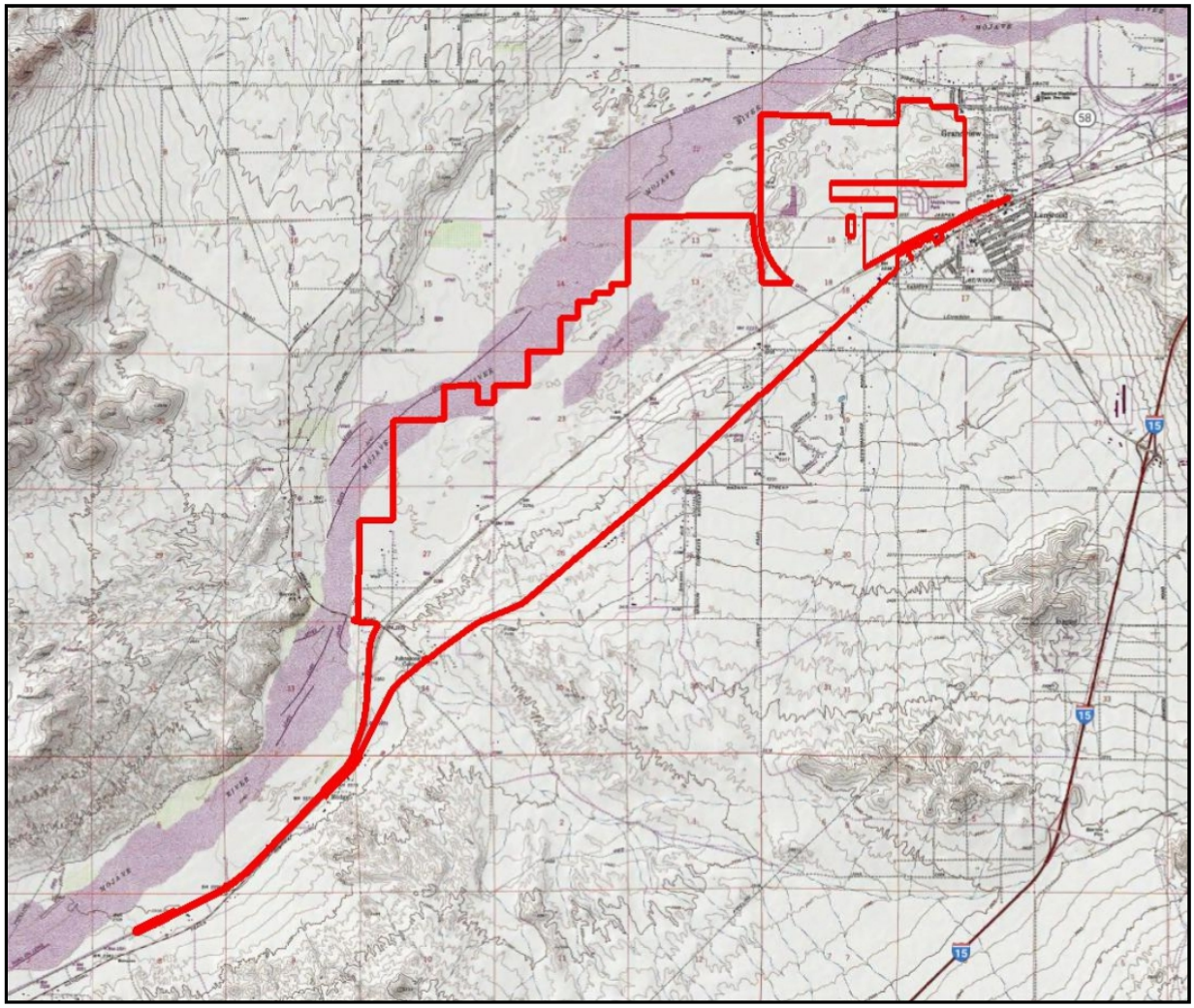


Figure 1. Site (red line) on USGS topographic aerial.

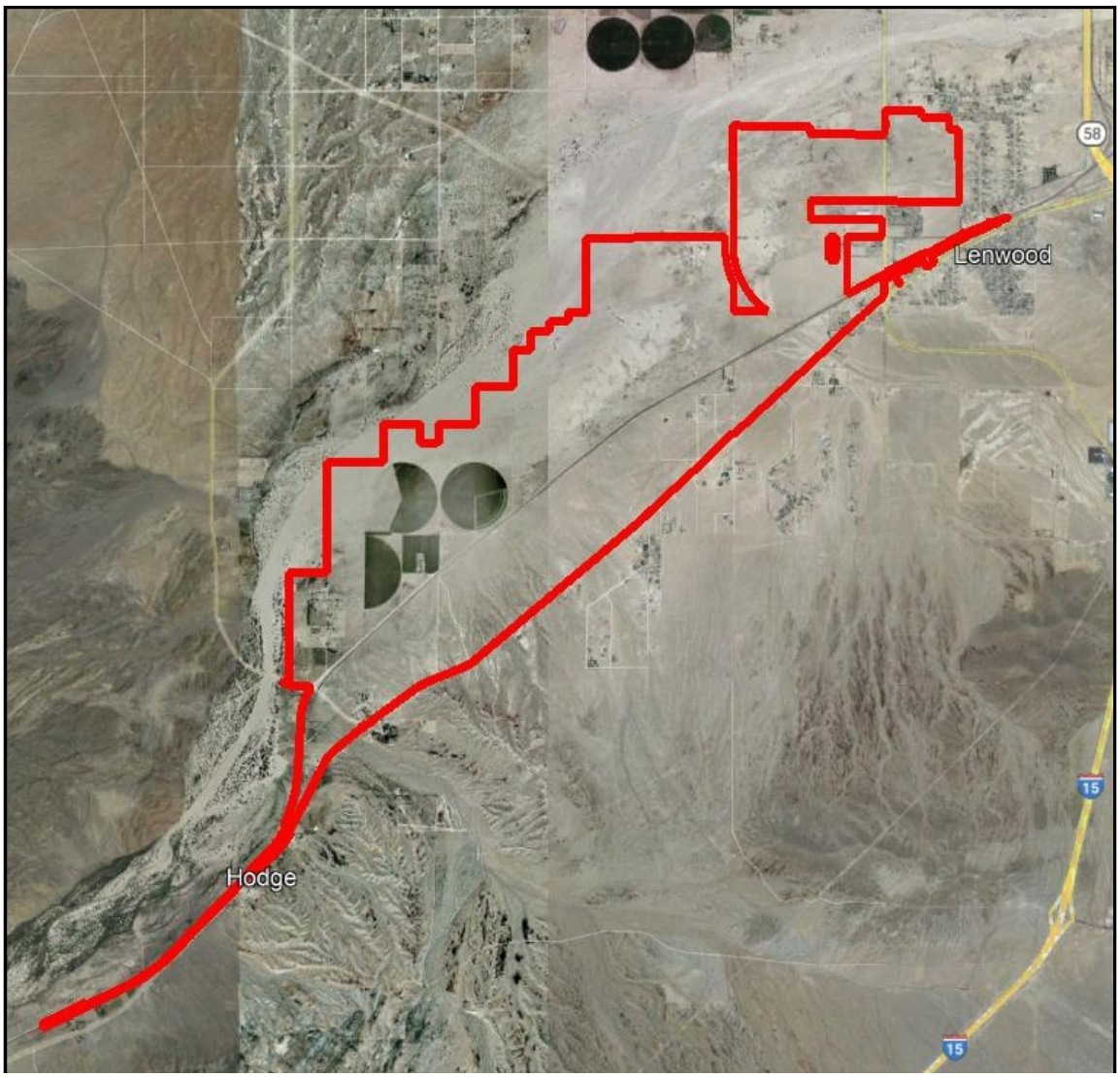


Figure 2. Site (red line) on aerial photo.

Methods

A field-based habitat assessment that examined soil, vegetation, topography and disturbance features was carried out to assess the suitability of habitat for MGS on the site. The field assessment involved windshield surveys and walking in all parts of the site, noting plant species, plant communities, and soil/slope/disturbance factors that affect MGS suitability. The field assessment was carried out on November 9, 2021 and January 3, 2022 by Phil Brylski, Ph.D., who holds a California Department of Fish Wildlife (CDFW) Memorandum of Understanding (MOU) to trap and handle MGS.

The literature reviewed included the following:

- Summaries of MGS survey trends in the project region for the periods 2013-2020, 2008-2012, and 1998-2007 (Leitner 2021, 2015, 2008), and an MGS habitat assessment for the DesertX train project that includes the project site (Leitner 2007),

- Records in the California Natural Diversity Database (CNDDB, CDFW 2022) and an online database of museum mammal specimens (Vertnet 2022); and

- The California Department of Fish and Wildlife Mohave ground squirrel Conservation Strategy (CDFW 2019).

Results

Vegetation

The plant communities on the project site include allscale scrub, creosote bush scrub, riverbed and active desert dunes, agriculture, and developed/disturbed. The distribution of the plant communities on the project site are shown in Figures 3-1 to 3-4. Descriptions of the plant communities are as follows.

- Allscale scrub (Photos 1, 2). Allscale scrub areas support widely spaced stands of allscale (*Atriplex polycarpa*). Mixed allscale scrub-creosote bush scrub occurs within the allscale and creosote scrub communities (Photos 3-5).

- Creosote bush scrub (Photo 6). Creosote bush scrub occurs on alluvial fans, bajadas, and upland slopes, and is dominated by creosote bush (*Larrea tridentata*) of varying densities.

- Desert dune and riverbed (Photos 7, 8). Active desert dunes support large areas of bare soils and minimal vegetation cover. Soils consist of fine aeolian sand and shrub cover is primarily comprised of thistle (*Salsola* sp.). There are also hummocky areas with scattered creosote bush and scalebroom (*Lepidospartum* sp.), and several remnant tamarisk (*Tamarix* spp.) stands

- Ruderal/disturbed (Photos 9, 10). Large portions of the northeastern part of the project site have ruderal/disturbed cover dominated by thistle (*Salsola* sp.). These are areas of former alfalfa farms that were abandoned by the mid-1990s. Disturbed areas include those with very sparse plant cover (Photo 8);

- Agriculture (Figure 2, Photo 11). Agriculture is currently restricted to the southern part of the project area; and

- Developed/disturbed (Photo 12). Developed areas include roadways, graded areas, parking lots and buildings. Photo 12 shows developed land along railroad tracks in northern part of project site. Disturbed areas include where the habitat is ruderal (see above), but is sparse (Photo 8) or where land has been cleared and has not been developed or restored.



Figure 3-1. Plant communities.



Figure 3-2. Plant communities.



Figure 3-3. Plant communities.

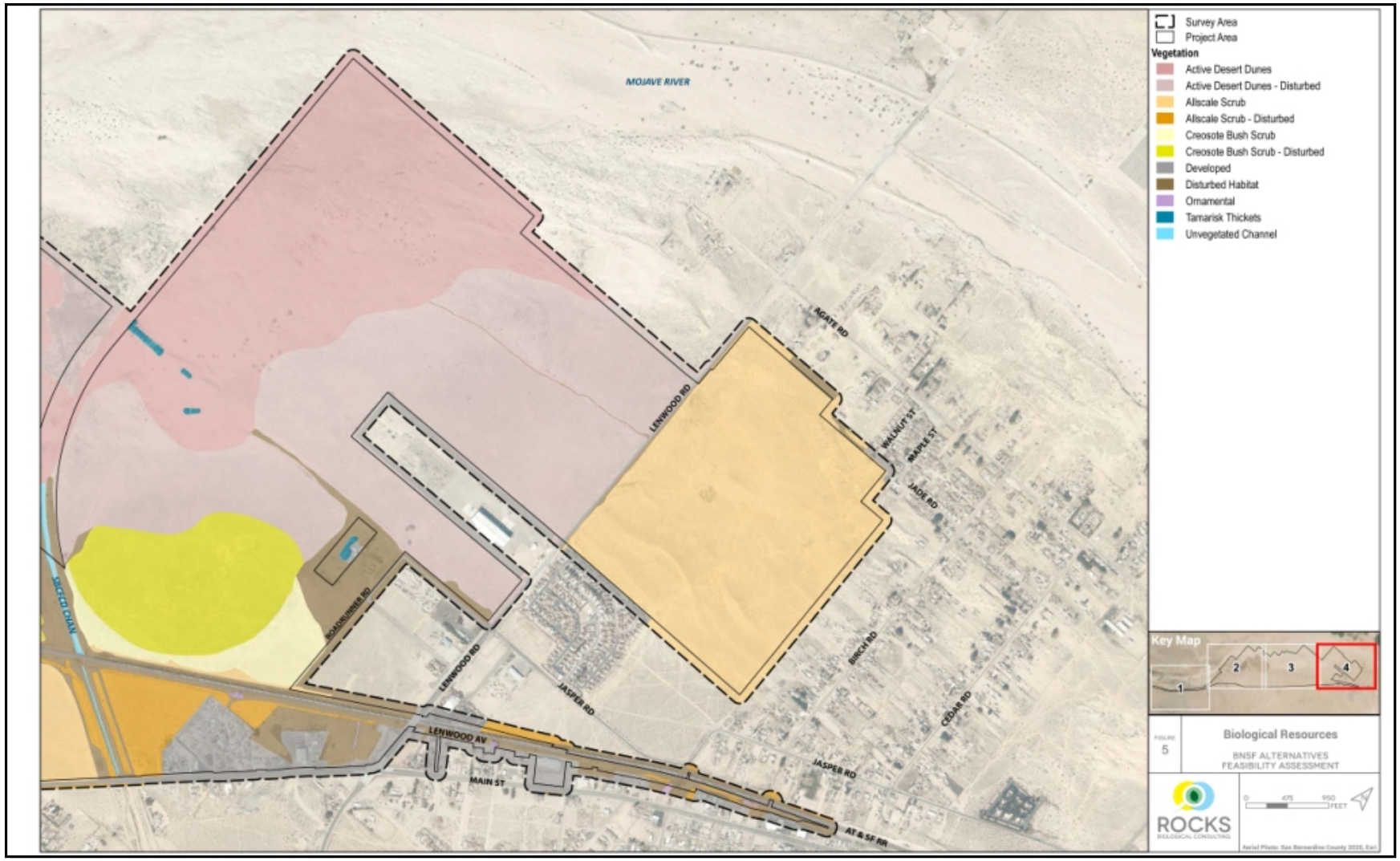


Figure 3-4. Plant communities.

The soils on the site are predominantly sands and loams. Along the Mojave River, the soils are largely Villa loamy sand, hummocky, with smaller contributions of riverwash and dune land. Away from the river, the soils are largely Victorville sandy loams, Villa loamy sands, and Cajon sands, with a small area of rock outcrop (NRCS 2022).

Project Site History

Historical aerial photos were used to study agricultural development in the project site (California State Long Beach. 2022). In 1953, agricultural development was restricted to the southern part of the project site where Hinkley Rd crosses the river, in the Johnstons Corner area, and residential /commercial development was restricted to the northern part in Lenwood. Figure 4 shows the maximum extent of agricultural development, based on a google earth aerial image from 1985, and a 1963 aerial photo of the northern part of the site showing farmland west and northwest of the current intersection of Lenwood Dr and Main St. By 1983, agricultural development extended east of this area. Currently, intensive agriculture is restricted to the southern part of the project area (Figure 2).

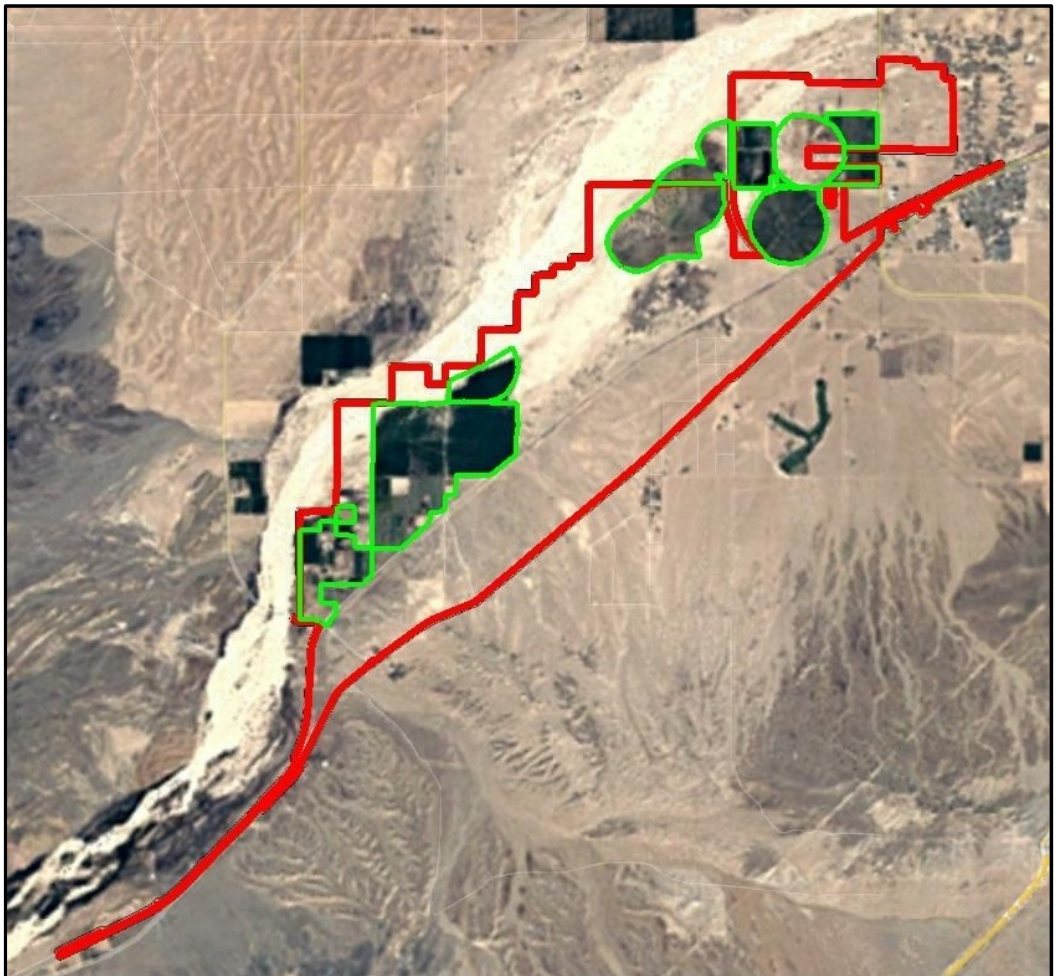


Figure 4. Project site (red line) on aerial showing agricultural fields (green lines), based on Google Earth image dated December 1985 and other historical aerial photos (e.g., shown in Figure 5).

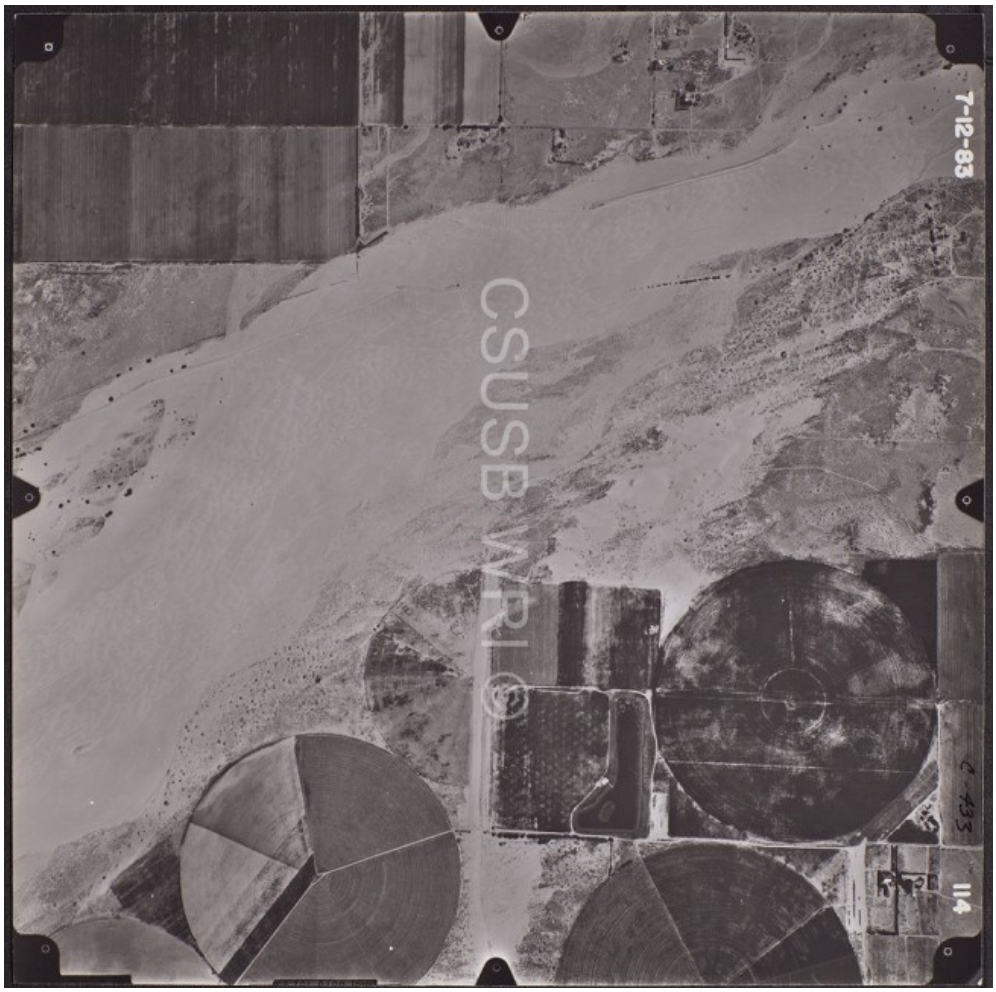


Figure 5. Aerial photo of the northern part of the project site in July 1963. Photo shows farmlands west and northwest of the current intersection of Lenwood Dr. and Main St. (Route 66).

History of MGS in the Project Region

MGS Occurrences in Project Area Based upon CNDDB and Museum Records

There are few records in the project vicinity since the middle of the last century, when MGS appears to have ranged further east than is currently known. The records from the project area (CNDDB, CDFW 2022; Vertnet 2022) are as follows:

- Lenwood, 5.4 mi S, 6.2 mi W; Hodge Rd, T8N, R3W, $SW^{1/4}$ S8 (CNDDB occurrence No. 374). This is not an MGS locality record. Wessman (1977) reported this 1977 museum specimen as a round-tailed ground squirrel (RTGS, *Xerospermophilus tereticaudus*), which the CNDDB recorded as a possible hybrid MGS/RTGS. This locality is approximately 0.38 miles south of the southern end of the project site;

- E side Depue Airport. One individual was collected in 1949 (CNDDB occurrence No. 456). The specimen is apparently in the San Bernardino County Museum and should be verified. This locality is approximately 1.5 miles east of the project boundary;

- Intersection of Lenwood Rd and Community Blvd, Hinkley Valley (CNDDB occurrence No. 277). This is an observational record that is in question (Leitner and Macoque, Ms). This locality is approximately 1.1 miles north of the northern end of the project site; and

- 15 mi SW of Barstow (exact location unknown) (CNDDB occurrence No. 455). One male collected July 25, 1935 (SBCM #761). This locality is approximately 2.3 miles south/southwest of the southeastern end of the project site.

The museum records from 1935 and 1949 are from a time when MGS occurred east of the Mojave River in the project area.

MGS Survey Results in Project Area from 1998 to 2020

Leitner (Leitner (2008, 2015, 2021) compiled the results of regional and protocol MGS surveys throughout the species' range. The surveys from 1998 to 2020 include 17 regional or protocol surveys in the vicinity of the project site, none of which recorded MGS. The results of the surveys for the three time periods are as follows:

- The 1998-2007 surveys included five MGS protocol surveys southwest of Barstow along the east side of the Mojave River in the project vicinity, which yielded captures of RTGS and no MGS (Leitner 2008).

- The 2008-2012 surveys did not include MGS surveys on the project site, but there were five regional MGS surveys within one mile north of the project site, on the northern side of the Mojave River below SR-58, which yielded RTGS captures and no MGS captures (Leitner 2015); and

- The 2013 to 2020 surveys included one regional survey east of the project site and six regional surveys in the Hinkley area within two miles north of the project site. RTGS were recorded in six surveys, with no MGS captures in any survey. Three other protocol surveys in Barstow yielded no MGS captures (Leitner 2021).

In addition to these studies, Leitner and Matocq (Ms) found no MGS occurrences from trapping surveys in the Barstow area from 1914 to 2009, including data from surveys in the project area, and concluded that the observational records (i.e., without captures) in the CNDDB from the Barstow area are unreliable. Figure 6 shows that the ground squirrel records from the project area are RTGS rather than MGS (Leitner and Matocq, Ms). The report concludes that the eastern boundary of the Mohave ground squirrel range lies west of the Mojave River outside of Barstow.

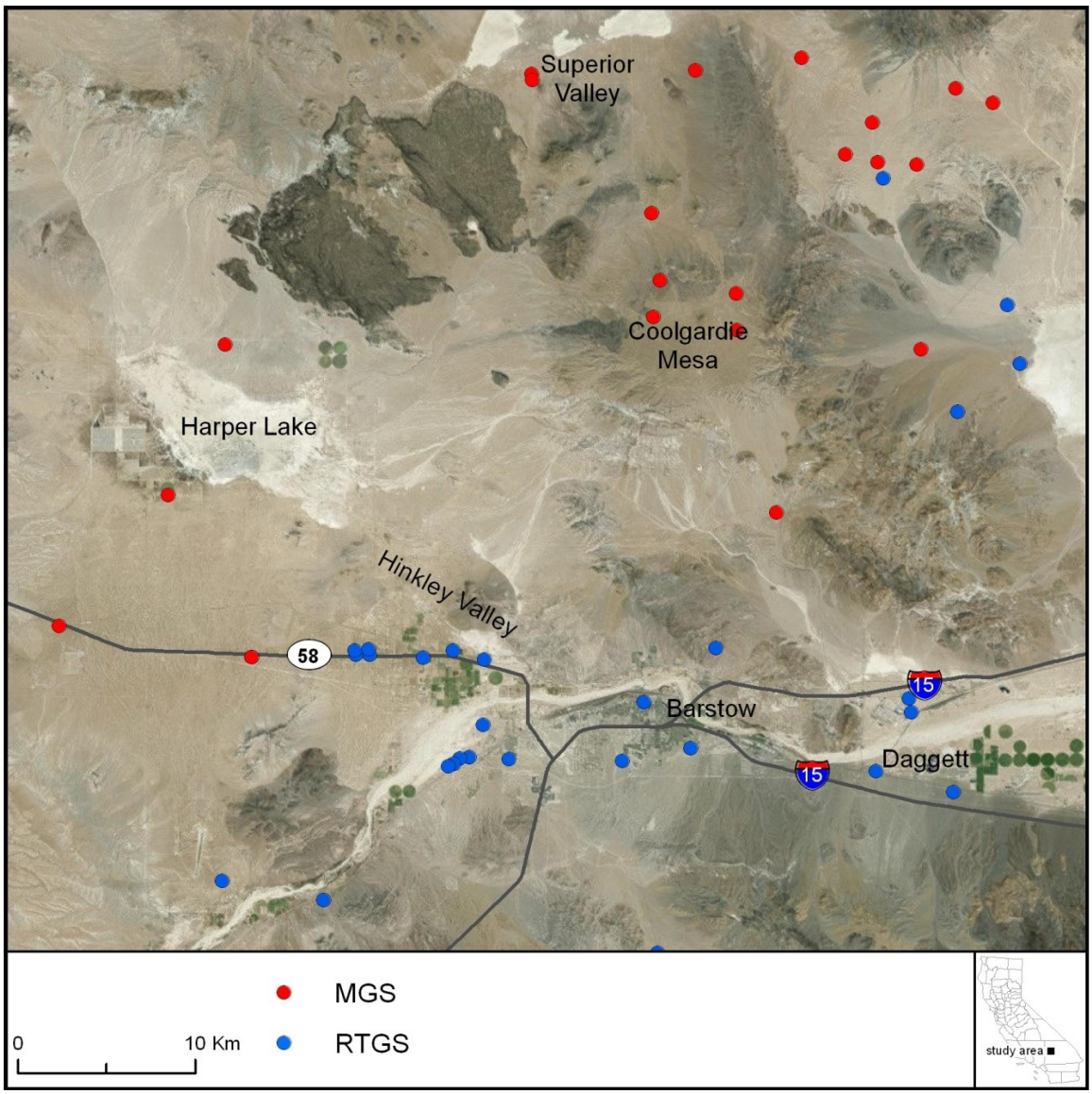


Figure 6. Distribution of Mohave ground squirrel (red circles) and round-tailed ground squirrel (blue circles) trapping records from the Barstow area, 1914-2009 (from Leitner and Matocq, Ms)

Project Site in Relation to MGS Range

The project site is at the southeastern edge of the range of the species (CDFW 2019). In the project region, MGS occurs west of the Mojave River. Westman (1977) mapped the project site as being within the range of the round-tailed ground squirrel (RTGS). Since 1977, MGS has not been confirmed from Barstow or east of the Mojave River in the Lenwood area. At the same time, the RTGS range has extended westward, and now overlaps the range of MGS along the Mojave River near Barstow and along Highway 58 west of Barstow.

Two areas in the project vicinity are considered hybridization zones where MGS populations to the west hybridize with RTGS to the east. One is Hinkley Valley, which is one to two miles

north of the project site and west of Barstow. The other is in the Helendale area, approximately seven miles south of the project site.

Project Site in Relation to the MGS Conservation Strategy

The project site is not within or near a priority conservation area, defined as an MGS population area (core population area, peripheral population area, or linkage area) in the MGS Conservation Strategy (CDFW 2019).

Mohave ground squirrel habitat suitability

The riverbed, dune, agricultural, and developed lands on the project site are unsuitable habitat for MGS. The allscale scrub and creosote bush scrub habitats that occur on the bench west of Route 66 and in the northeastern corner of the project site are potentially suitable for MGS. These habitats have low shrub diversity and lack food plants known to be important for MGS such as winter fat, spiny hop-sage, and box thorn. Therefore, the project site is considered low quality habitat for MGS. The habitat potentially suitable for MGS, based on soils, slopes, and plant community considerations covers approximately 1,220 acres. Figure 7 shows the distribution of potentially suitable habitat for MGS on the project site. However, the analysis of the project site in relation to MGS range (see the previous section) concludes that the project site is not within the range of MGS based on recent and historical records.

Therefore, while much of the atriplex and creosote bush scrub habitat on the site is considered potentially suitable for MGS, the site is east of the currently recognized range of MGS and the species is not expected to occur there.

Discussion

The allscale scrub and creosote bush scrub habitats that occur on the project site comprise approximately 1,220 acres of potentially suitable habitat for MGS. These habitats are considered low quality habitat for MGS because of their low shrub diversity and scarcity of winter fat, spiny hop-sage, and box thorn, which are food plants known to be important for MGS.

Although the site contains potentially suitable habitat for MGS, it appears to be outside of the species' current range, based on the following: (1) Wessman (1977) mapped the project site as being within the range of the RTGS rather than MGS, (2) 17 MGS surveys in the project region from 1998 to 2020 yielded only RTGS captures (Leitner 2008, 2015, 2021), and (3) an analysis of trapping results from 1914 to 2009 yielded MGS captures only west of the Mojave River, and only RTGS in the project region (defined here as the project site, north to Hinkley Valley and Barstow). On the other hand, the CNDDB (CDFW 2022) contains two MGS museum records at localities east of the Mojave River dating from 1935 and 1949, when MGS may have ranged further east than it does today. Also, a 1977 museum specimen from south of the project site has been considered a possible MGS/RTGS hybrid. This has not been confirmed as a hybrid, but if correct would indicate that MGS occurred in the region at that time.

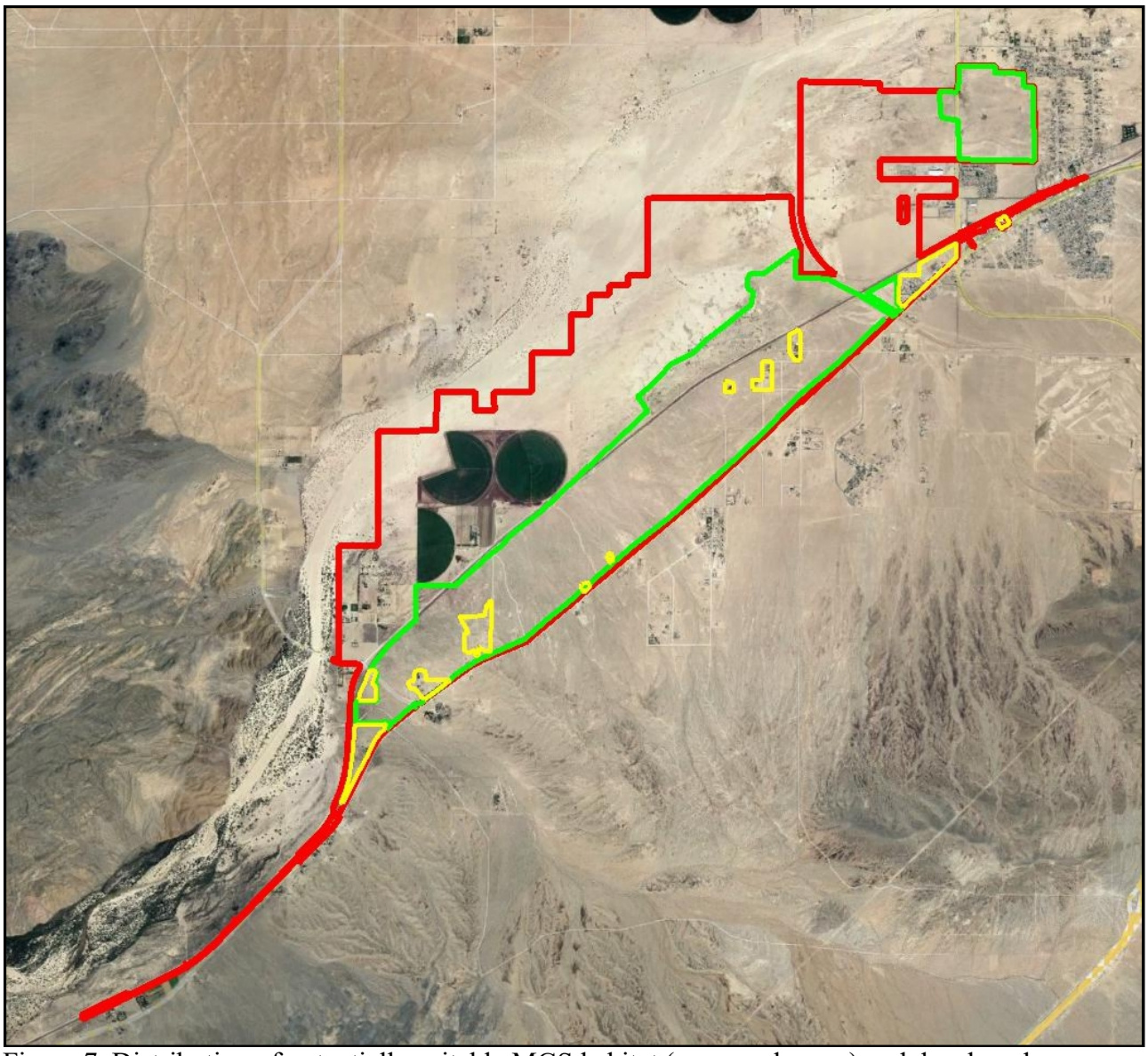


Figure 7. Distribution of potentially suitable MGS habitat (green polygons) and developed or graded areas (unsuitable MGS habitat, yellow polygons) on the project site.

The CDFW requests that live-trapping surveys be conducted at sites proposed for development within or near to the range of MGS where suitable habitat is present. Even though the project site may be east of the current range of MGS, CDFW will likely request that MGS surveys be carried out.

There are several considerations for MGS surveys on the project site. The proposed project and its impacts would be implemented in phases over several years or more whereas MGS surveys have a shelf life of one year. Therefore, the MGS surveys should be carried out in potential habitats within the area covered by the earliest or next planned construction. Also, the surveys should sample the different suitable habitats on the site.

References

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the southeastern portion of its range. California Department of Fish and Game Wildlife Management Branch Admin. Report.15 pp + Appendices

Appendix 1. Site photos



Photo 1. Allscale scrub in northern part of site west of Lenwood Ave, looking northeast



Photo 2. Sparse allscale scrub in northeastern part of site east side of Lenwood Ave, looking east.



Photo 3. Allscale scrub-creosote bush scrub in central part of site north of railroad tracks, looking north.



Photo 4. Allscale-creosote bush scrub in southern part of site, looking west/northwest.



Photo 5. Allscale scrub atriplex/creosote bush scrub in southern part of project site, looking west.



Photo 6. Creosote bush scrub on north side of Route 66, looking north/northwest.



Photo 7. Dunes with scalebroom shrubs (foreground) and Mojave River (background) in northwestern part of the site, looking north/northwest.



Photo 8. Dunes (foreground) and ruderal habitat (background) in central part of the site, looking west.



Photo 9. Ruderal habitat in northeastern part of project site, looking south.



Photo 10. Ruderal habitat in northeastern part of project site, looking south.



Photo 11. Agricultural land in southern part of the site, looking north.



Photo 12. Developed/disturbed land along railroad tracks in northern part of project site (Lenwood), looking northeast.

ATTACHMENT V

MOHAVE GROUND SQUIRREL SURVEY FOR THE BNSF BARSTOW INTERNATIONAL GATEWAY (BIG) PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA, PHIL BRYLSKI, PH.D., DECEMBER 27, 2022

December 27, 2022

Jim Rocks
Rocks Biological Consulting
2621 Denver Street, Suite B
San Diego, CA 92110-3300

Subject: Mohave ground squirrel survey for the BNSF Barstow International Gateway Project, San Bernardino County, California

Dear Mr. Rocks,

This memo summarizes the results of a live-trapping survey for the state-Threatened Mohave ground squirrel (MGS, *Xerospermophilus mohavensis*) on an approximately 4,500-acre site in the Mojave River Valley, San Bernardino County. The proposed project would expand the existing rail car facilities by constructing additional rail tracks, buildings, parking lots, transports rigs, and staging areas to support railway operations.

The project site is at the southeastern edge of the range of MGS (CDFW 2019). The larger project site extends from the railroad tracks southwest of the Hinkley Road /Johnstons Corner area of San Bernardino County approximately 8.6 miles northeast to the Lenwood neighborhood of Barstow. The site is located on the U.S. Geological Survey (USGS) Hodge, Barstow, and Barstow SE 7.5-minute topographic quadrangles. Figures 1 and 2 show the project site and the locations of two trapping grids on the Hodge 7.5' topographic map. Figure 3 shows the project site and trapping grids on an aerial photo. The elevation of the project site ranges from approximately 2,220 to 2,370 feet above mean sea level. Appendix 1 contains site photographs.

Background on the Mojave Ground Squirrel

The MGS is a small ground squirrel (approximately 9 inches long) that inhabits the Mojave Desert, in parts of Inyo, Kern, Los Angeles and San Bernardino counties. The historical range of the MGS covered approximately 5 million acres from Palmdale in the south to Owens Lake in the north, and from the eastern edge of the Sierra Nevada to the Mojave River Valley (Gustafson 1993, Leitner 2008).

MGS occur in a range of open desert habitats, most commonly in creosote scrub but also in Joshua tree woodland, desert saltbush scrub, desert sink scrub, desert greasewood scrub, and shadscale scrub (Gustafson, 1993). MGS typically occur in areas with open vegetative cover and small bushes (< 0.6 meter [2 feet] in height) spaced approximately 6 to 9 meters (20 to 30 feet) apart. MGS consume leaves, forbs, shrubs, and grasses of several species and genera, including creosote (*Larrea tridentata*), winter fat (*Krascheninnikovia lanata*), spiny hop-sage (*Grayia spinosa*), saltbush (*Atriplex* spp.), golden linanthus (*Linanthus aureus*), Mediterranean grass (*Schismus arabicus*), box thorn (*Lycium* spp.), and several other plant species (Best 1995). Winter fat, spiny hop-sage, and saltbush are thought to make up approximately 60% of the species' shrub diet, indicating that these are important food sources when forbs are unavailable. It has been suggested that habitats where winter fat and hop-sage are absent may be suboptimal for MGS (Desert Managers MGS Working Group, 2011).

MGS dig burrows in sandy and gravelly soils on flat to moderately sloping terrain. The burrows are used to avoid predators and high temperatures, and for aestivating during winter months. MGS are active only during the spring-summer months and spend most of the year (approximately seven months) below ground.

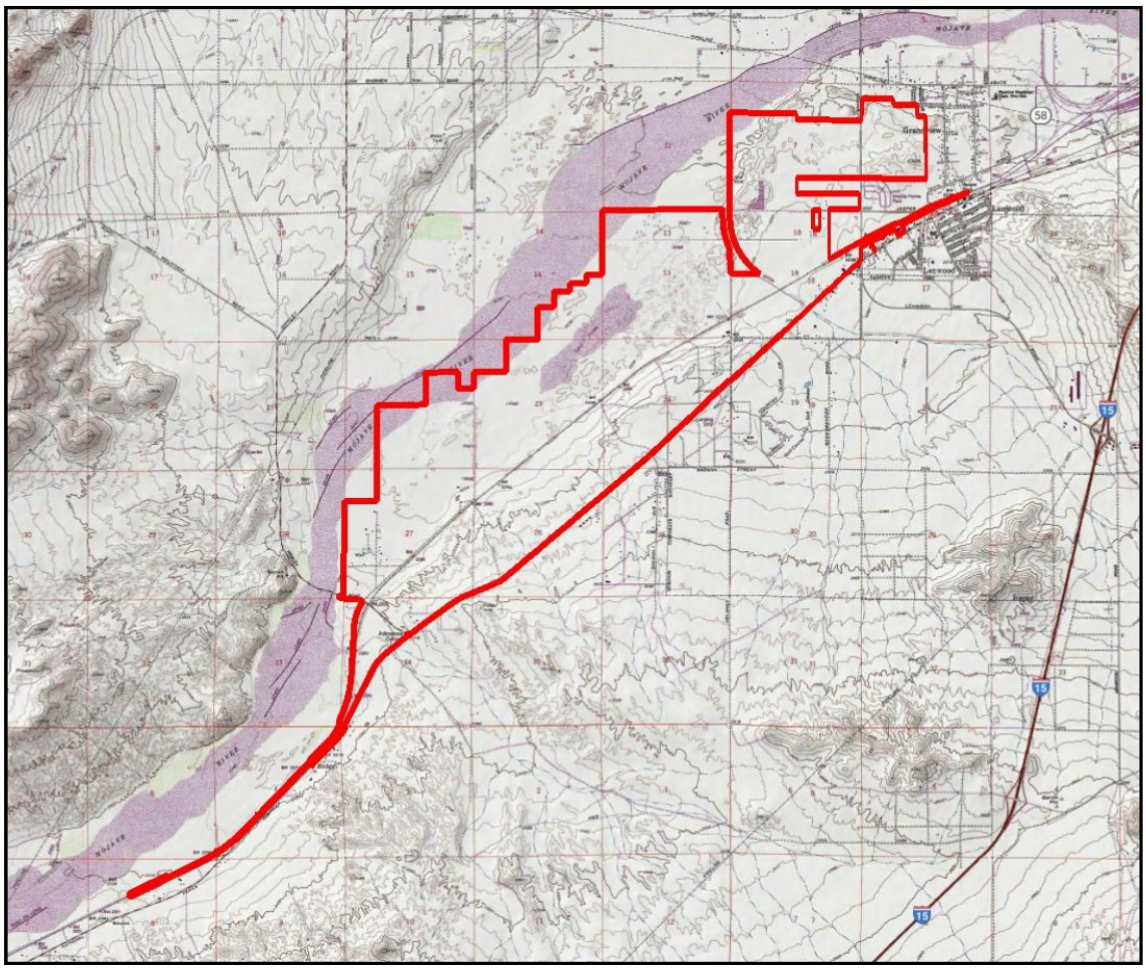


Figure 1. Project site (red lines) on the Hodge 7.5' topographic map.

Site Description

The 4,500-acre project site is within the Mojave River Valley south of Hinkley, and extends from the Lenwood neighborhood of Barstow southwest to Hinkley Rd, where the project boundary narrows along the existing railroad tracks for another 3.1 miles. Two important features of the site are the Mojave River north of the existing railroad tracks and a bench with desert scrub vegetation that slopes from Route 66 (Main St.) to the railroad tracks. Active farmland is currently restricted to the southern part of the site, although in the past alfalfa and row crops were also grown in the northern part of the site (Brylski 2022). Residential and commercial land uses are concentrated in Lenwood in the northern part of the site.

The plant communities on the 4,500-acre project site include allscale scrub (*Atriplex polycarpa*) and creosote bush scrub, riverbed and active desert dunes, agriculture, and developed/disturbed. Among these, the habitats potentially suitable for MGS were considered to be the allscale scrub and creosote

bush scrub habitats (Photos 1-5). Allscale scrub areas support widely spaced stands of allscale (*Atriplex polycarpa*). Mixed allscale scrub-creosote bush scrub occurs within the allscale and creosote scrub communities. Creosote bush scrub occurs on alluvial fans, bajadas, and upland slopes, and is dominated by creosote bush (*Larrea tridentata*) of varying densities.

Methods

A literature review of MGS occurrences and issues in the project area included the following:

- Records in the California Natural Diversity Database (CNDDB, California Department of Fish and Wildlife [CDFW] 2022);
- Summaries of MGS surveys in the project region for the periods 2013-2020, 2008-2012, and 1998-2007 (Leitner 2021, 2015, and 2008), and
- The California Department of Fish and Wildlife 2019 Mohave ground squirrel Conservation Strategy (CDFW 2019).

A habitat assessment of the 4,500-acre project site carried out in November 2021 and January 2022 identified potentially suitable habitat for MGS on the project site (Brylski 2022), and was used to prioritize areas for live-trapping surveys. A visual/auditory survey for MGS was carried out on April 13, 2022 at different locations across the site that contained potentially suitable habitat for MGS. The survey was carried out by Phil Brylski, Ph.D., who holds an MOU with CDFW for MGS surveys. The survey did not yield visual or auditory detection of MGS.

Two grids for surveying MGS were established at sites considered to have the highest potential to support MGS on the project site based on soil, slope and vegetation suitable for MGS. The grids were located on the southern side of the BNSF railroad tracks north of Hinkley Rd, and on the northern side of the tracks along the Mojave River in the central part of the site (Figures 2,3). The 4x25 trap grids were established using 100 large Sherman live traps (3 x 3.75 x 12") at 35-meter spacing. Cardboard tents shielded the traps from sunlight. Traps were checked at least every four hours until they were closed at the end of each day or until temperature reached 90°F, in accordance with the guideline. Traps were closed within one hour of sunset, or when the air temperature reached 90°F measured at 6 inches above the ground in the shade. Traps were baited with four-way commercial livestock feed mixed with bird seed. Traps were left open between dusk and dawn during sessions 1 and 2 to inventory nocturnal small mammals. The UTM coordinates of the grid corners are listed in Appendix 3.

Results

The survey consisted of 15 days of live-trapping at each of two grids (100 traps each day per grid) for a total trap effort of 3,000 trap-days. The surveys were carried out in three sessions as follows: grid 1: April 13-17, May 12-16, and June 22-26, 2022; and grid 2: April 18-22, May 21-26, and June 28-July 2, 2022. The weather conditions during the surveys are summarized in Appendix 2. Appendix 3 summarizes information on the grids. Figure 3 shows the grid locations on the Hodge 7.5' topographic map.

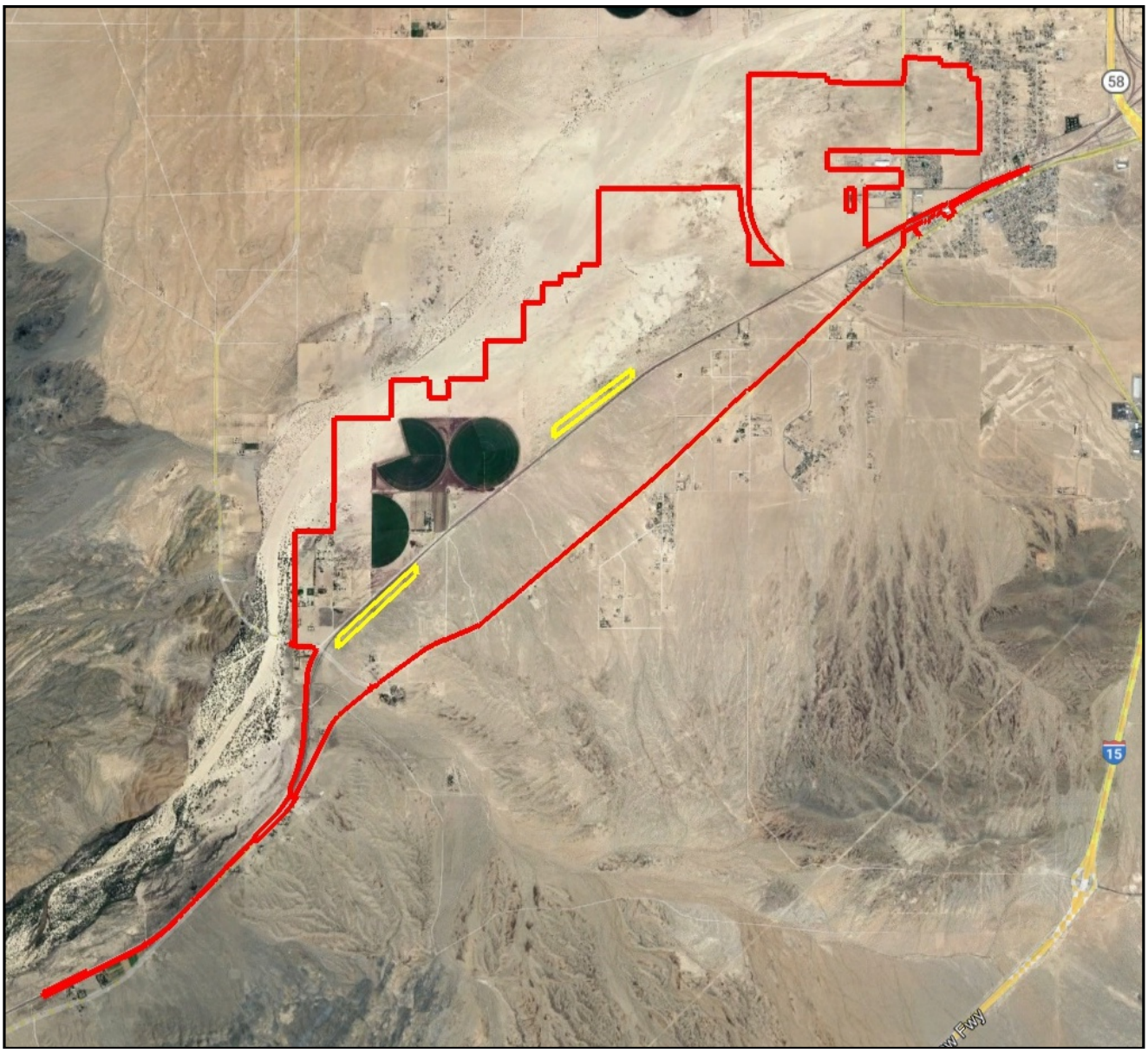


Figure 2. Aerial photo of project site (red polygon) and grid locations (yellow rectangles).

No Mohave ground squirrels or round tailed ground squirrels were captured during the survey and none were observed or heard onsite or in the adjoining area. One squirrel species, the Antelope ground squirrel (AGS; *Ammospermophilus leucurus*), was captured. Table 1 summarizes the survey captures. Night-time small mammal captures included the common Merriam kangaroo rat (*Dipodomys merriami*) and desert pocket mouse (*Chaetodipus penicillatus*).

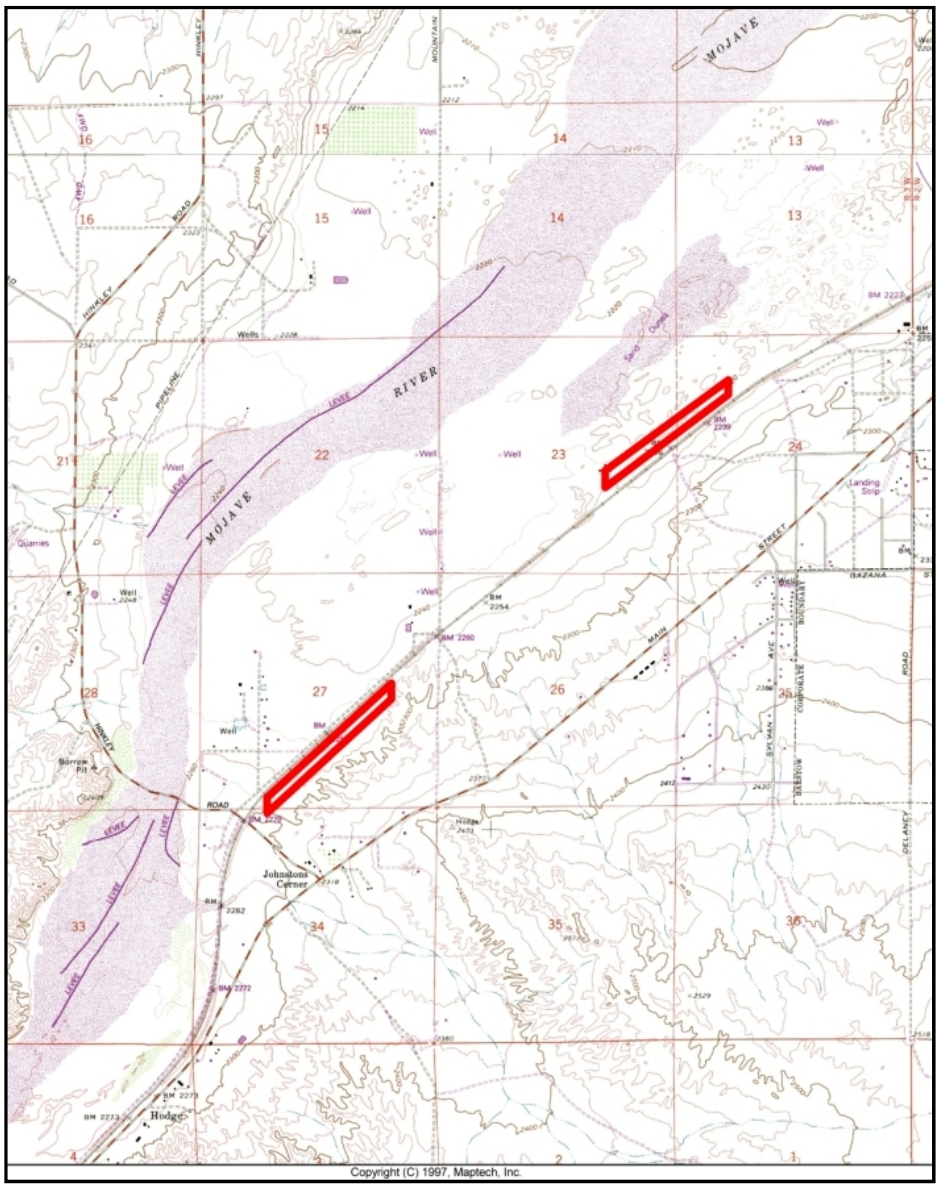


Figure 3. Locations of trapping grids (red rectangles) on the Hodge 7.5' topographic map

Table 1. MGS Trapping Survey Results		
Grid 1		AGS
Session 1		29
Session 2		28
Session 3		26
	Subtotals	83
Grid 2		
Session 1		23
Session 2		18
Session 3		12
	Subtotals	**53**
AGS, Antelope ground squirrel (*Ammospermophilus leucurus*)		

Discussion

MGS Occurrences in Project Area

Figure 4 shows MGS occurrences from the project vicinity (green dots) and in the region further from the site (red dots) from the CNDDB (CDFW 2022). There are two types of records: physical records and observational records. Physical records can be either trapping records or museum specimens, however, there are no MGS trapping records within 5 miles of the project site. The museum records[1] are as follows:

- E side Depue Airport (CNDDB occurrence No. 456). One individual was collected in 1949, approximately 1.5 miles east of the project site. The specimen is in the San Bernardino County Museum;

- Lenwood, 5.4 mi S, 6.2 mi W; Hodge Rd, T8N, R3W, $SW^{1/4}$ S8 (CNDDB occurrence No. 374), which is approximately 0.38 miles south of the southern end of the project site. Wessman (1977) reported this 1977 specimen as a round-tailed ground squirrel (RTGS, *Xerospermophilus tereticaudus*). The CNDDB recorded it as a possible hybrid MGS/RTGS. While this is not an MGS record, if it is a hybrid this would indicate that MGS occurred in the area. The specimen is in the LA County Museum of Natural History; and

- 15 mi SW of Barstow. One individual was collected in 1935 (CNDDB occurrence No. 455), approximately 2.3 miles south/southwest of the southern end of the project site. The specimen is in the San Bernardino County Museum.

The observational records are as follows:

- Intersection of Lenwood Rd and Community Blvd, Hinkley Valley (CNDDB occurrence No. 277 from 1990), approximately 1.05 miles north of the northern boundary of the project site;

- Mountain View Rd, about 1 mile north of Community Blvd intersection in Hinkley (CNDDB occurrence No. 493 from 2012), approximately 2.4 miles northwest of the project site;

- Barstow, just northwest of Fort Irwin Road-Hwy 58 junction (CNDDB occurrence No. 276, from 1982), approximately 5 miles east/northeast of the northern boundary of the project site; and

- Approximately 1.1 miles from Highway 247 (at Stoddard Wells Rd), 4 miles south of Barstow (CNDDB occurrence No. 343, from 2005), approximately 7 miles southeast of the project site.

[1] These museum specimens should be examined to ensure that the identifications are correct.

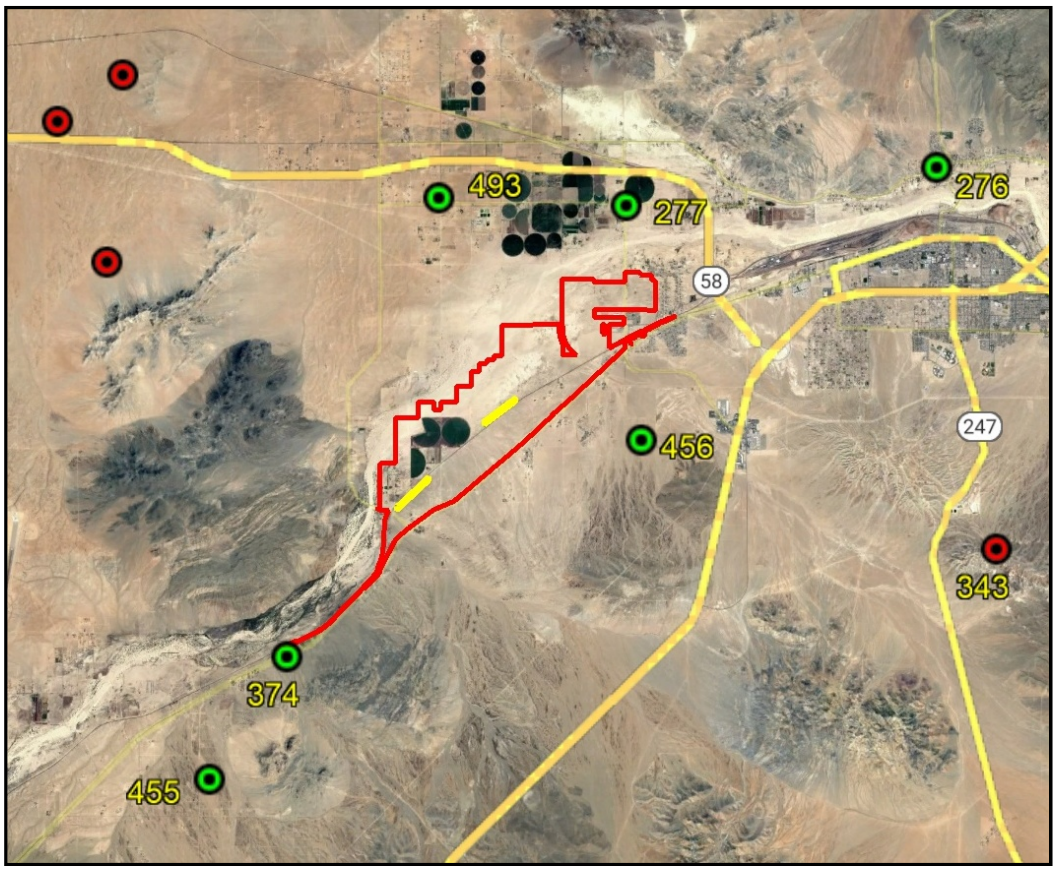


Figure 4. MGS occurrences around project site (red polygon). MGS records 5 miles or closer to project site shown as green circles (with CNDDB occurrence number), records further from project site shown as red circles.

MGS Survey Results in Project Area from 1998 to 2020

The project site may be outside of the current range for MGS. Leitner (2008, 2015, 2021) compiled the results of regional and protocol MGS surveys throughout the species' range. The surveys from 1998 to 2020 include 17 regional or protocol surveys in the vicinity of the project site, none of which recorded MGS. The results of the surveys for the three time periods are as follows:

- The 1998-2007 surveys included five MGS protocol surveys southwest of Barstow along the east side of the Mojave River in the project vicinity, which yielded captures of RTGS and no MGS (Leitner 2008).

- The 2008-2012 surveys did not include MGS surveys on the project site, but there were five regional MGS surveys within one mile north of the project site, on the northern side of the Mojave River below SR-58, which yielded RTGS captures and no MGS captures (Leitner 2015); and

- The 2013 to 2020 surveys included one regional survey east of the project site and six regional surveys in the Hinkley area within two miles north of the project site. RTGS were recorded in six

surveys, with no MGS captures in any survey. Three other protocol surveys in Barstow yielded no MGS captures (Leitner 2021).

Leitner et al (2017) examined MGS and round-tailed ground squirrel (RTGS) trapping and observational occurrences in the Barstow/Hinkley Valley area from 1914 to 2009. The results show four MGS observation records from the Barstow area (listed above) and no physical MGS records (museum specimens or live-captures) in the Barstow area from 1914 to 2009. Figure 5 shows the MGS and RTGS capture locations from this data set. The trapping records from the Barstow area have all been RTGS, with no MGS captures and several hybrid offspring in the Hinkley Valley where MGS populations from west of the contact zone hybridize with RTGS from the east. There is also a hybridization zone in the Helendale area (Wessman 1977), approximately seven miles south of the project site.

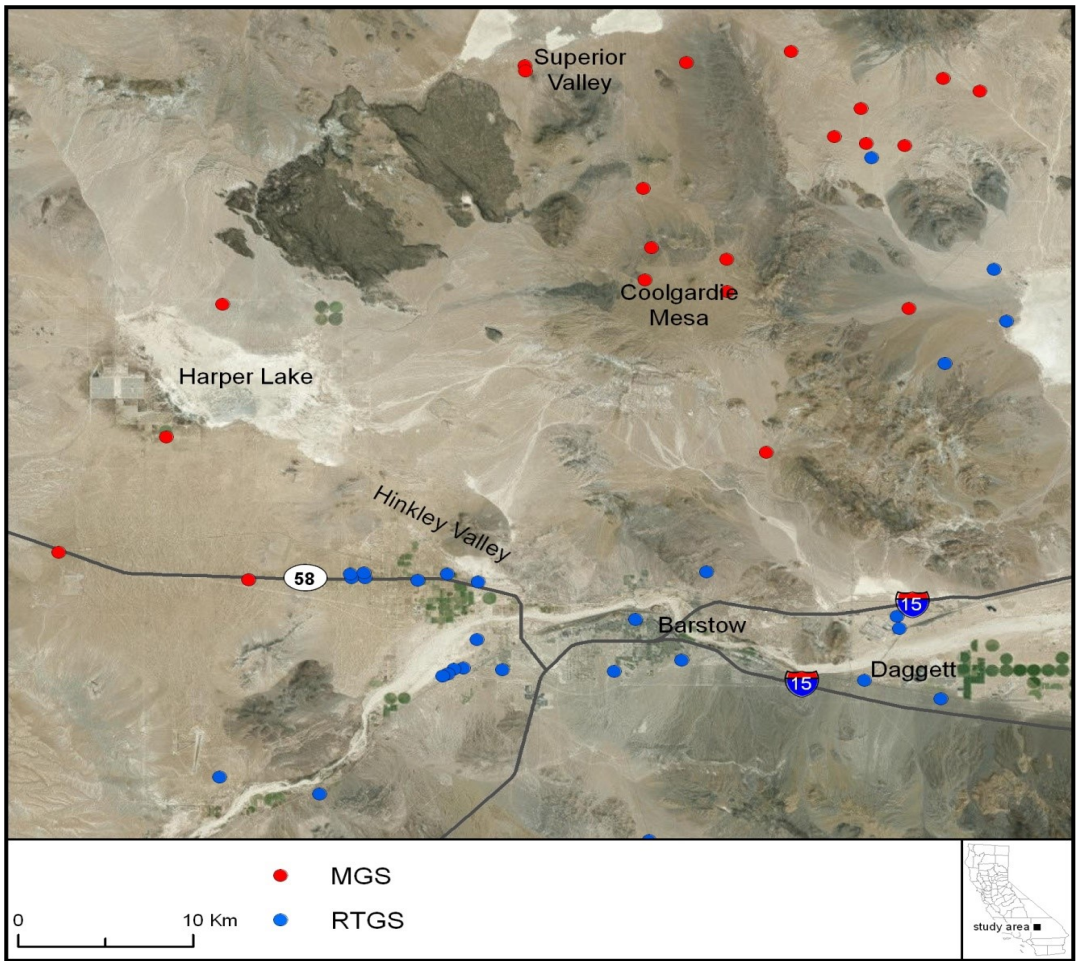


Figure 5. Distribution of Mohave ground squirrel (red circles) and round-tailed ground squirrel (blue circles) trapping records from the Barstow region, 1914-2009 (from Leitner et al 2017).

Mohave ground squirrel habitat suitability

A habitat assessment for MGS carried out on the site prior to the live-trapping survey (Brylski 2022) estimated that approximately 1,222 acres of allscale scrub and creosote bush scrub habitats within the 4,500-acre site were suitable habitat for MGS. The remainder of the site (3,278 acres) are unsuitable

habitat for MGS, comprised of excessively sandy soils with little or no native vegetation (within the Mojave River bed, adjoining dunes, and areas of previous intensive agriculture that have not recovered), current agricultural lands, and developed lands.

Although the site contains potentially suitable habitat for MGS, it may be outside of the current range of MGS. In the project region, MGS occurs west of the Mojave River. Wessman (1977) mapped the project site as being within the range of the round-tailed ground squirrel (RTGS). MGS has not been confirmed from Barstow or east of the Mojave River in the Lenwood area. At the same time, the RTGS range has extended westward, and now overlaps the range of MGS along the Mojave River near Barstow and along Highway 58 west of Barstow where the two species hybridize. The CNDDB (CDFW 2022) contains MGS museum records at localities east of the Mojave River dating from 1935 and 1949, when MGS may have ranged further east than it does today.

Conclusion

The 2022 survey yielded the common Antelope ground squirrel and no MGS or RTGS captures or sightings on the two grids[2]. The survey sampled two sites considered to have the highest chance of capturing MGS based on a habitat assessment of the 4,500-acre project site (Brylski 2022). The surveys followed all the CDFW trapping guideline with regard to within-grid recommendations such as trap number, grid dimensions, trap spacing, use of cardboard sun shields, and the number and schedule of the trap sessions. Additional MGS surveys may be needed in the future to meet CDFW's trapping guidelines (CDFG 2010) prior to development of the site.

Sincerely,



Phil Brylski, Ph.D.
pbrylski@gmail.com

[2] Leitner et al's (2017) analysis appears to show RTGS records in the northern part of the project site

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Wessman, E.V. 1977. The distribution and habitat preferences of the Mohave ground squirrel in the southeastern portion of its range. California Department of Fish and Game Wildlife Management Branch Admin. Report.15 pp + Appendices

Appendix 1. Site photos



Photo 1. View of grid 1 from the eastern side, looking west.



Photo 2. View of grid 1 from the western side, looking southeast



Photo 3. View of grid 2 from western side, looking northeast



Photo 4. View of grid 2 from eastern side, looking west

Appendix 2. Weather Data for Mohave Ground Squirrel Trapping Grid

Grid 1

Date	Temperature (F)				Cloud Cover (%)				Wind (mph)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
4/13	47	0740	72	1215	0	0740	0	1830	0-2	1215	5-8	1830
4/14	50	0715	77	1215	0	1215	1	0715	3-7	0715	4-9	1815
4/15	49	0715	78	1800	0	0715	5	1115	0-3	0715	4-7	1800
4/16	47	0720	77	1400	0	0700	0	1800	0	0700	4-10	1600
4/17	48	0720	85	1500	0	0720	5	1800	2-4	0720	3-7	1800
5/12	47	0700	80	1500	0	0700	30	1500	1-3	0700	2-3	1500
5/13	0710	60	88	1700	0	0710	0	1800	1	1700	2-5	1030
5/14	0700	64	90	1300	0	0700	0	1300	0	0700	1-3	1300
5/15	0700	69	90	1100	30	0700	30	1100	0	0700	0	1100
5/16	66	0710	90	1200	0	0710	0	1200	2-4	0700	3-7	0710
6/22	70	0700	86	1630	50	1630	100	0930	0	0700	2-10	1700
6/23	64	0600	90	1210	0	1210	10-15	0600	0-1	0600	1-2	1210
6/24	69	0620	90	1000	0	0620	0	1000	0	0620	0	1000
6/25	70	0550	90	1045	0	0550	0	1045	0	0550	0	1045
6/26	68	0600	90	1015	0	0600	0	1015	0	1015	0	0600

Grid 2

Date	Temperature (F)				Cloud Cover (%)				Wind (mph)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
4/18	52	0720	87	1800	0	0720	40	1800	0-1	0720	4-9	1800
4/19	55	0700	80	1230	0	0700	1	1230	2-3	0700	5-11	1830
4/20	53	0715	84	1445	0	0715	0	1800	1-3	0715	4-9	1445
4/21	52	0700	74	1530	0	0700	0	1800	4-5	0700	6-10	1030
4/22	50	0710	66	1630	5	1630	15	0710	3-6	0710	4-7	0900
5/21	54	0700	88	1600	0	0700	0	1800	2	0700	3-5	1600
5/22	65	0705	90	1430	0	0705	5*	1430	0	0705	2-5	1430
5/23	66	0700	90	1400	0	0700	0	1400	0-2	0700	3-4	1400
5/25	67	0650	90	1045	0	0650	0	1045	1	1000	1-2	0650
5/26	73	0645	90	1100	0	0645	2	1100	1	0645	2-3	1100
6/28	78	0645	90	0950	0	0645	5	0950	1	0645	2-4	0950
6/29	70	0550	90	1000	0	0550	0	1000	0	0550	2-4	1000
6/30	71	0530	90	1030	0	0530	1	1030	2-3	0530	2-6	1030
7/1	74	0600	90	1000	0	0600	0	1000	1	0600	4-7	1000
7/2	72	0600	90	1000	0	0600	0	1000	1	0600	4-7	1000
* high dispersed cloud cover												

Appendix 3. Mohave Ground Squirrel (MGS) Survey and Trapping Form

Part I – Project Information							
Project Name:	Barstow International Gateway Project				Township:	9N	
Property Owner:	Private				Range:	3W	
Quad/Map Series:	Hodge 7.5'				Section:	27 SW & SE¼	
UTM Coordinates of grid corners (NAD 83, error <6m)							
NW Corner		NE Corner		SE Corner		SW Corner	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
483160	3854790	484000	3855571	484000	3855464	483160	3854686
Acreage of Project Site (or linear distance):						27 Acres	
Acreage of potential MGS habitat on site (or linear distance):						27 Acres	
Visual Surveys of potential MGS habitat conducted on:						April 13, 2022	
Visual Surveys conducted by:						Phil Brylski	
Total # of grids:						2 grids	

Session	Start Date	End Date
1	4/13/22	4/17/22
2	5/12/22	5/16/22
3	6/22/22	6/26/22

Trapping Conducted By:
P. Brylski
P. Brylski
P. Brylski

Part II –General Habitat Description	
Vegetation	
Dominant Perennials	creosote bush (*Larrea tridentata*), allscale (*Atriplex polycarpa*), Nevada ephedra (*Ephedra nevadensis*), winter fat (*Krascheninnikovia lanata*) and honey mesquite (*Prosopis glandulosa*) Mojave cottonthorn (*Tetradymia stenolepis*).
Other Perennials	Cooper's goldenbush (*Ericameria cooperi*), Mojave rabbitbrush (*Ericameria paniculata*)
Dominant Annuals	red brome, schismus, Mediterranean grass
Other Annuals	Star thistle (*Centaurea melitensis*), fiddleneck (*Amsinckia* spp.), desert needlegrass (*Stipa speciosa*)

Land Forms (*i.e.*, bajadas, washes): desert plain	
Soil Description: Cajon sands with some Nebona-Cuddeback Complex	
Elevation: 2275 ft	Slope 5 %

Grid 2

Part I – Project Information			
Project Name:	Barstow International Gateway Project	Township:	9N
Property Owner:	Private	Range:	3W
Quad/Map Series:	Hodge 7.5'	Section:	23 SE/NE¼; 24 NW$^{1/4}$

UTM Coordinates of grid corners (NAD 83, error <6m)							
NW Corner		NE Corner		SE Corner		SW Corner	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
485470	3857031	486310	3857651	486310	3857546	485470	3856921

Acreage of Project Site (or linear distance):	27 Acres
Acreage of potential MGS habitat on site (or linear distance):	27 Acres
Visual Surveys of potential MGS habitat conducted on:	April 13, 2022
Visual Surveys conducted by:	Phil Brylski
Total # of grids:	2 grids

Session	Start Date	End Date	Trapping Conducted By:
1	4/18/22	4/22/22	P. Brylski
2	5/21/22	5/26/22	P. Brylski
3	6/28/22	7/2/22	P. Brylski

Part II –General Habitat Description	
Vegetation	
Dominant Perennials	creosote bush (*Larrea tridentata*), allscale (*Atriplex polycarpa*), Nevada ephedra (*Ephedra nevadensis*), winter fat (*Krascheninnikovia lanata*) and honey mesquite (*Prosopis glandulosa*) Mojave cottonthorn (*Tetradymia stenolepis*).
Other Perennials	Cooper's goldenbush (*Ericameria cooperi*), Mojave rabbitbrush (*Ericameria paniculata*)
Dominant Annuals	red brome, schismus, Mediterranean grass
Other Annuals	Star thistle (*Centaurea melitensis*), fiddleneck (*Amsinckia* spp.), desert needlegrass (*Stipa speciosa*)

Land Forms (*i.e.*, bajadas, washes): desert plain	
Soil Description: Cajon sands	
Elevation: 2220 ft	Slope 0 %

ATTACHMENT W

2025 MOHAVE GROUND SQUIRREL SURVEY FOR THE BNSF BARSTOW INTERNATIONAL GATEWAY (BIG) PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA, PHIL BRYLSKI, PH.D.

2025 Mohave Ground Squirrel Survey for the BNSF Barstow International Gateway (BIG) Project, San Bernardino County, California

Phil Brylski, Ph.D., August 27, 2025

INTRODUCTION

This memo summarizes the results of a habitat assessment and live-trapping survey for the Mohave ground squirrel (MGS, *Xerospermophilus mohavensis*) on an approximately 5,000-acre site in the Mojave River Valley, San Bernardino County. The development area covers approximately 4,334 acres; approximately 590 acres which would remain ungraded/undisturbed.

The proposed Barstow International Gateway project is an integrated rail facility consisting of a rail yard, intermodal facility and warehouses for transloading freight containers. The project also includes rail improvements, and non-rail improvements to drainages, utilities, and roadways, and a solar farm. These would be built largely on the main project site from the Lenwood neighborhood of Barstow southwest along Main St (Highway 66) approximately 13 miles to Johnston's Corner (at Hinkley Rd), where the project boundary narrows along the existing railroad tracks for 6.8 miles to the southwestern end of the project site. The utilities subcomponent includes a second area at the eastern end of the project site where 33KV electrical lines would be installed underground along an approximately 7.7 miles of right of way along Main St, Sunrise Rd and Bonanza Rd to the Southern California Edison Tortilla substation.

Figures 1 and 2 show the project site on a topographic map and aerial photo, respectively. Table 1 lists the USGS 7.5' quadrangle name, township, range, and sections for the project site. The elevation of the main part of the project site ranges from approximately 2,200 feet above mean sea level (amsl) in Lenwood to approximately 2,400 feet amsl at Johnston's Corner near Hinkley Rd. The elevation of the eastern part of the site from Main St along Sunrise Rd and Bonanza Rd to the Southern California Edison Tortilla substation ranges from 2,240 to 2,700 feet amsl.

Appendix 1 contains site photos of the site. Appendix 2 contains site photos of the live-trapping grids.

Table 1. USGS topographic quadrangles of project site

USGS 7.5' Quad	Township	Range	Sections, quarters in ()
Wild Crossing	8N	4W	13, 14, 15
Hodge	8N	2W	18, 19
Hodge	8N	3W	3, 4, 5, 7, 8, 13, 22, 23, 24, 25, 27, 28, 33, 34
Hodge	8N	4W	12, 13, 14, 15
Barstow	9N	2W	7, 8, 9, 10, 11, 17, 18
Barstow SE	9N	2W	13, 14, 17, 20
Hinkley	9N	2W	7, 13, 18

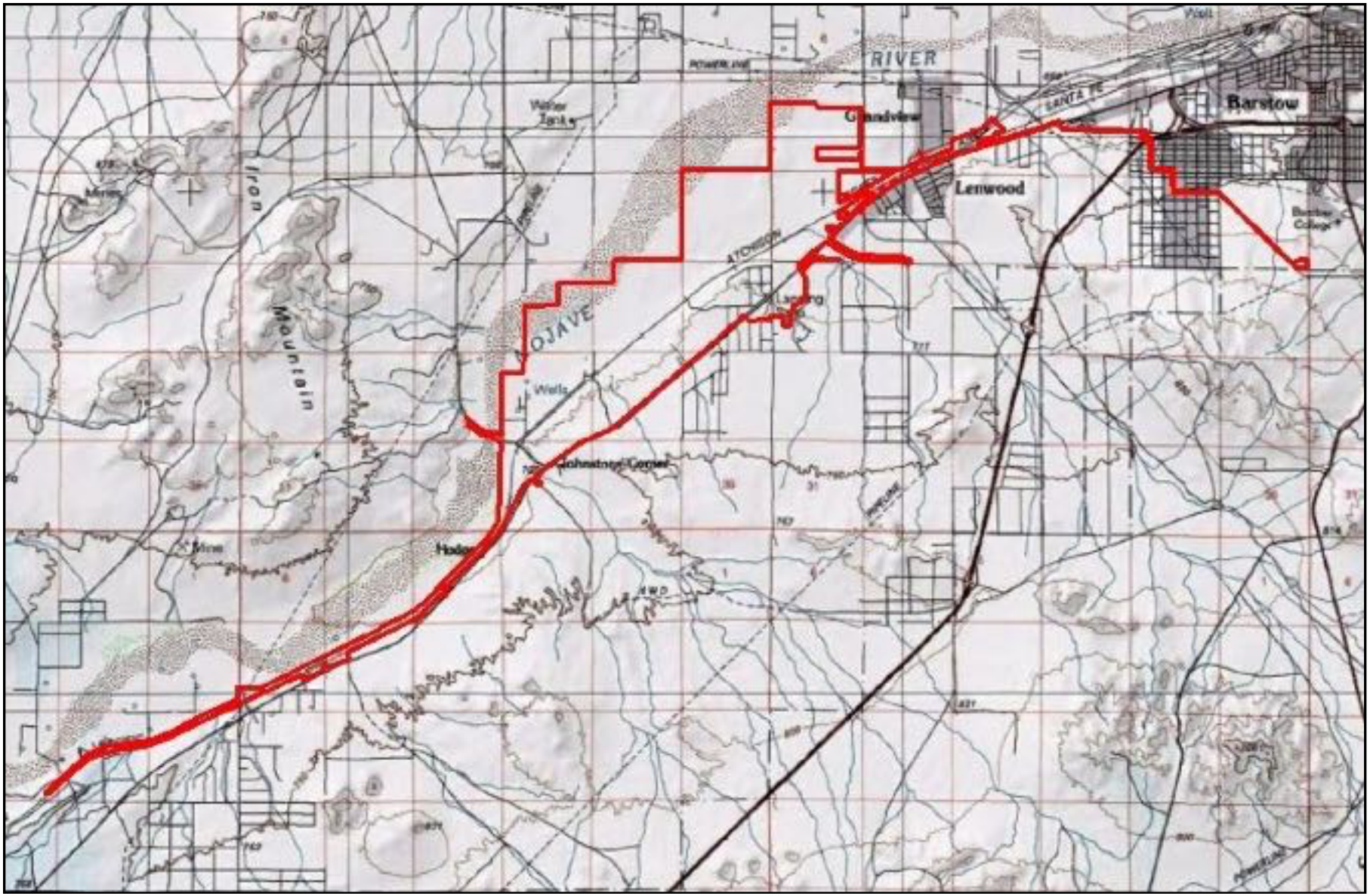


Figure 1. Project site (red line) on USGS topographic map.



Figure 2. Project site (red line) on an aerial photo.

Background on the Mohave Ground Squirrel

The MGS is a small ground squirrel (approximately nine inches long) that inhabits the Mojave Desert, in parts of Inyo, Kern, Los Angeles and San Bernardino counties. The historical range of the MGS covered approximately five million acres from Palmdale north to Owens Lake, and from the eastern edge of the Sierra Nevada to the Mojave River Valley (Gustafson 1993, Leitner 2008). MGS occur in a range of open desert habitats, commonly in creosote scrub but also in Joshua tree woodland, desert saltbush scrub, desert sink scrub, desert greasewood scrub, and shadscale scrub (Gustafson, 1993). MGS typically occur in areas with open vegetative cover and small bushes (< 0.6 meter [two feet] in height) spaced approximately six to nine meters (20 to 30 feet) apart.

Studies of the diet of MGS in the Owens Valley found that shrub leaves comprised approximately 40% of the diet, which was obtained mainly from winterfat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbushes (*Atriplex* spp.). Forb leaves comprised approximately 34% of the diet, mainly from species of the families Fabaceae (*Astragalus* and *Lupinus*), Polemoniaceae (*Gilia*), and Asteraceae (*Linanthus*). Flowers, pollen, and seeds comprised approximately 20% of the diet (Leitner and Leitner 2017). In this study, MGS nonnative annual plants that were present (*Erodium*, *Salsola*, *Bromus*, and *Schismus*) contributed less than 3% overall to the diet. Creosote bush was uncommon in the Leitner and Leitner (2017) study area, and data on MGS use of that shrub should be clarified as it is the dominant shrub in most of the species range. The diet of MGS in the southern part of the range has not been analyzed, apart from limited observations.

MGS dig burrows in sandy and gravelly soils on flat to gently sloping terrain. The burrows are used to avoid predators and high temperatures, and for aestivating during winter months. MGS are active only during the spring-summer months and spend most of the year (approximately seven months) below ground.

SITE DESCRIPTION

The main project site is within the Mojave River Valley, extending from the Lenwood neighborhood of Barstow southwest along Main St (Route 66) approximately 13 miles to Johnston's Corner (at Hinkley Rd), where the project boundary narrows along the existing railroad tracks for 6.8 miles to the southwestern end of the site. A second part of the project is approximately 7.7 miles of right of way from Main St along Sunrise Rd and Bonanza Rd to the Tortilla substation at the eastern end of the project site.

The project site is largely vacant with residential and commercial land uses concentrated in Lenwood in the northeastern part of the site along Main St. and several rural residences on the terrace. Two important features of the site are the Mojave River north of the railroad tracks and a terrace with desert scrub vegetation that slopes from Route 66 (Main St.) to the railroad tracks. Active farmland is restricted to the area north and northeast of Hinkley Rd. at the rail road tracks. There are patches of disturbed habitats scattered around the site as a result of vegetation clearing, refuse disposal, and off-highway vehicle (OHV) recreation.

Plant Communities

There are 15 plant communities on the project site following the Sawyer et al (2009) vegetation classification system. Figure 3 shows their distribution on the project site. These are grouped below under five plant community types from the older Holland (1986) classification: dunes, **c**reosote bush scrub, desert saltbush scrub, non-native grassland, Tamarisk scrub, and three land cover types: unvegetated channel, developed, and disturbed.

Dunes (1,909 acres, 36.3% of project site)

Dicoria canescens – Abronia villosa – Panicum urvilleanum Sparsely Vegetated Alliance (1,016.4 acres, (**Photo 1-1, Appendix 1**). This sparsely vegetated community occurs on active dunes in the north central part of the project site within the floodplain of the Mojave River. Dominant plants include desert dicoria (*Dicoria canescens*), Russian thistle (*Salsola* sp.), and dune evening primrose (*Oenothera deltoides*).

Dicoria canescens – Abronia villosa – Panicum urvilleanum Sparsely Vegetated Alliance – Disturbed/Stabilized (454.7 acres, **Photo 1-2**) extends from the northeastern corner of the project site along Lenwood Rd southwest to the old alfalfa fields north of Hinkley Rd. Non-native and native plants stabilize the dunes. The dominant plant is Russian thistle; other species present at low cover include four-wing saltbush (*Atriplex canescens*), desert dicoria, Mediterranean grass, dune evening primrose, red brome (*Bromus rubens*), yellow cups (*Chylismia brevipes*), fiddleneck (*Amsinckia* sp.), red-stemmed filaree (*Erodium cicutarium*), white mallow (*Eremalche exilis*), allscale (*Atriplex polycarpa*), desert panicgrass (*Panicum urvilleanum*), creosote bush (*Larrea tridentata*), and California ephedra (*Ephedra californica*).

Dicoria canescens – Abronia villosa – Panicum urvilleanum Sparsely Vegetated Alliance – Partially Stabilized (116.8 acres, **Photo 1-3**) occurs in the Mojave River (Photo 3). The dominant plants are desert panic grass and desert dicoria. Other species include Russian thistle, desert calico (*Loeseliastrum matthewsii*), gilia species, lupine species, fan-leaved tiquilia (*Tiquilia plicata*), dune evening primrose, and brittle spineflower (*Chorizanthe brevicornu*). The dunes where this community occurs have been partially stabilized by the (mostly) native plant cover

Creosote bush scrub-white bursage (1,228.6 acres, 26.2% of project site)

Larrea tridentata – Ambrosia dumosa Shrubland Alliance (1,228.6 acres, **Photos 1.4 – 1.6**) is one of the largest plant communities on the project site, where it occurs from the Hinkley bridge east to the vicinity of Sweeten Rd and Country Club Dr, and in the Barstow Heights area along Sunrise Rd and Bonanza Rd (the dirt roads that lead to the Tortilla substation at the eastern end of the project site). The main shrubs are creosote, four-wing and allscale saltbush, and white bursage (*Ambrosia dumosa*), with Mediterranean grass and devils spineflower (*Chorizanthe rigida*) in the herbaceous layer. Other plants include California ephedra, boxthorn (Lycium cooperi), freckled milk vetch (*Astragalus lentiginosus*), checker fiddleneck (*Amsinckia tesselata*), redstem stork's bill, desert plantain (*Plantago ovato*),

Sahara mustard (*Brassica tournefortii*), desert senna (*Senna armata*), desert lantern (*Eremothera boothii*), Mojave indigo bush, little desert buckwheat (*E. trichopes*), Jim Hill mustard (*Sisybrium altissimum*), Mojave yucca (*Yucca schidigera*), and silver cholla (*Cylindropuntia echinocarpa*).

Disturbed Larrea tridentata – Ambrosia dumosa Shrubland Alliance (0.9 acres) occurs around a residence in the central part of the main project site. The dominant plants are creosote bush, saltbush (*Atriplex* sp.), white bursage, and Mediterranean grass.

Larrea tridentata Shrubland Alliance (120.9 acres, **Photo 1-7**) occurs along the north side of the rail road tracks from the vicinity of Sweeten Rd southwest along the north side of the tracks to the vicinity of the abandoned alfalfa fields north of Hinkley Rd. Dominant plant species include creosote bush and Mediterranean grass, with other species at lower abundance, including allscale, Russian thistle, four-wing saltbush, California ephedra, and some places, green ephedra (*E. viridis*).

Disturbed Larrea tridentata Shrubland Alliance (26.9 acres) occurs in several patches in the southwestern end of the project site, west of the rail road tracks in the vicinity of Hinkley Rd, and north of the rail road tracks east of Lenwood Rd. The dominant plants are creosote bush, Mediterranean grass, and allscale saltbush.

Desert saltbush scrub (621 acres, 11.8% of project site)

Atriplex polycarpa Shrubland Alliance (235.1 acres, **Photos 1-8 - 1-9**) occurs as discontinuous patches from Lenwood to the southwestern part of the project site. The community is dominated by allscale and Mediterranean grass cover. Other plants include four-wing saltbush and creosote bush, and the forbs London rocket and desert dandelion.

A disturbed version of this community (159.8 acres) occurs from Lenwood southwest to the vicinity of Hinkley Rd. This community has been impacted by small scale historical and recent land clearance and OHV use. The dominant plants are allscale and Mediterranean grass; other plants include Russian thistle), white bursage, creosote bush, and London rocket (*Sisymbrium irio*);

Atriplex canescens Shrubland Alliance (184.2 acres, **Photo 1-10**), occurs below the Lenwood Channel on both sides of the tracks, then extends southwest along the northern side of the tracks to the central part of the site where it occurs south/southeast of the tracks onto the bench. The dominant shrub is four-wing salt bush with Mediterranean grass common in the herbaceous layer. Other plants include shrubs in lower abundance such as (in descending cover): allscale, white bursage, creosote bush, pale wolf berry (*Lycium pallidum*), green ephedra, Mojave indigo bush (*Psorothamnus arborescens*), desert senna, Fremont's pincushion (*Chaenactis fremontii*) and Russian thistle.

A disturbed version of this community (25.5 acres) occurs along the Lenwood Channel, rail road tracks, and dirt roads, with the same shrubs as the undisturbed version but with higher cover of London rocket, desert dandelion, Fremont's pincushion, and Russian thistle

Ambrosia dumosa Shrubland Alliance (16.4 acres, **Photo 1-11**) occurs as a small patch extending from the Main St/ Country Club Dr. intersection north to the rail road tracks. White bursage is the dominant shrub, with small amounts of creosote bush and Mediterranean grass (*Schismus barbatus*) in the herbaceous layer. Other plants present include allscale saltbush (*Atriplex polycarpa*), four-wing saltbush (*Atriplex canescens*), green ephedra (*E. viridis*), desert senna (*Senna armata*), Russian thistle, Panamint cryptantha (*Cryptantha augustifolia*), and desert woolystar (*Eriastrum eremicum*).

Non-native grassland (321.5 acres, 6.1%)

Brassica tournefortii – Malcolmia africana Provisional Herbaceous Semi-natural Alliance (**Photo 1-12**) occurs in several of the old alfalfa fields that were abandoned after 2015. The dominant plants are Mediterranean grass and London rocket.

Tamarisk scrub (18 acres, 0.3%)

Tamarix sp. Shrubland Semi-natural Alliance (**Photo 1-13**) occurs as rows or small strands across the project site, where it was planted as ornamentals or windbreaks.

Land Covers

Disturbed habitat (633.7 acres, 12.1%, **Photos 1-14, 1-15**) is habitat impacted by previous and current land uses including agriculture, OHV use, existing and abandoned residential and commercial lots, as well as land that is adjacent to transportation structures such as easements along roadsides and railroad tracks. This community on the project site can have high cover of non-native Mediterranean grass or Russian thistle, sparse cover of native plants such as four-wing saltbush, allscale saltbush, desert dicoria, desert mallow, white mallow, and annual ambrosia.

Developed land (349.5 acres, 6.6%, **Photo 1-16**) in the project area includes rail road tracks, roads, commercial buildings, residences, substations, storage yards, and paved or graded surfaces, and is identified by little or no native vegetation,

Unvegetated Channel (28.2 acres, 0.5%, consist of dry ephemeral or intermittent washes lacking plant cover. On the project site, it occurs in the vicinity of Hinkley Rd, at the Lenwood Channel, and along Bonanza Rd in the eastern part of the site.

Topography

The elevations of the project area from Lenwood southwest to Hinkley Rd are from 2,200 feet above mean sea level (amsl) in Lenwood to 2,400 feet amsl at the southwestern end of the project site. In the central part of the main project area, which contains much of the potentially suitable habitat for MGS, the elevation ranges from 2,400 feet amsl along Main St (Route 66) to 2,340 feet amsl along the rail road tracks. The slope ranges from 3% in the northern part and up

to 7% in the southern part. The elevation in the eastern project site along Bonanza Rd ranges from 2,500 to 2,700 feet amsl.

Soils

The soils on the site are predominantly sands with some loams (NRCS 2025). The project site contains two main blocks of habitats (1) the dunes within the Mojave River south to the rail road tracks and (2) the bench between Route 66 (Main St.) and the railroad tracks, bounded to the north by the Lenwood Channel and to the southwest by Hinkley Rd (at Johnston's Corner). Two smaller areas of the project site occur along the narrow railroad tracks southwest from Hinkley Rd southwest to the southwestern end of the site, and along Bonanza Rd to the Tortilla substation. The soils on these parts of the project site are as follows:

The soils in the dune area are predominantly Victorville sandy loam and Villa loamy sands, in part with hummocky areas, with smaller amounts of dune land and riverwash, which together comprise approximately 52% of the project site.

The soils on the terrace are Cajon sands and gravelly sands and Nebona-Cuddeback and Norob –Halloran complex soils, the latter being sandy loams formed on terraces and alluvial fans with desert pavement formed from gravel and pebbles.

The soils of the project site along the railroad tracks southwest from Hinkley Rd to the southwestern end of the site, and along Bonanza Rd in the eastern part of the site, are mainly Cajon sands and gravelly sands and Nebona-Cuddeback complex soils.

METHODS

The methods included a literature review of MGS in the project area, a field based habitat assessment, and live–trapping surveys in a sample of habitats across the project site found by the habitat assessment to have the highest potential to support MGS.

A literature review of MGS in the project area included the following:

- MGS records in the California Natural Diversity Database (CNDDB, California Department of Fish and Wildlife [CDFW] 2025);
- Summaries of MGS surveys in the project region for the periods 2013-2020, 2008-2012, and 1998-2007 (Leitner 2021, 2015, and 2008);
- The California Department of Fish and Wildlife 2019 MGS Conservation Strategy (CDFW 2019); and
- Published studies of MGS genetics and ecology and available survey reports in the project region

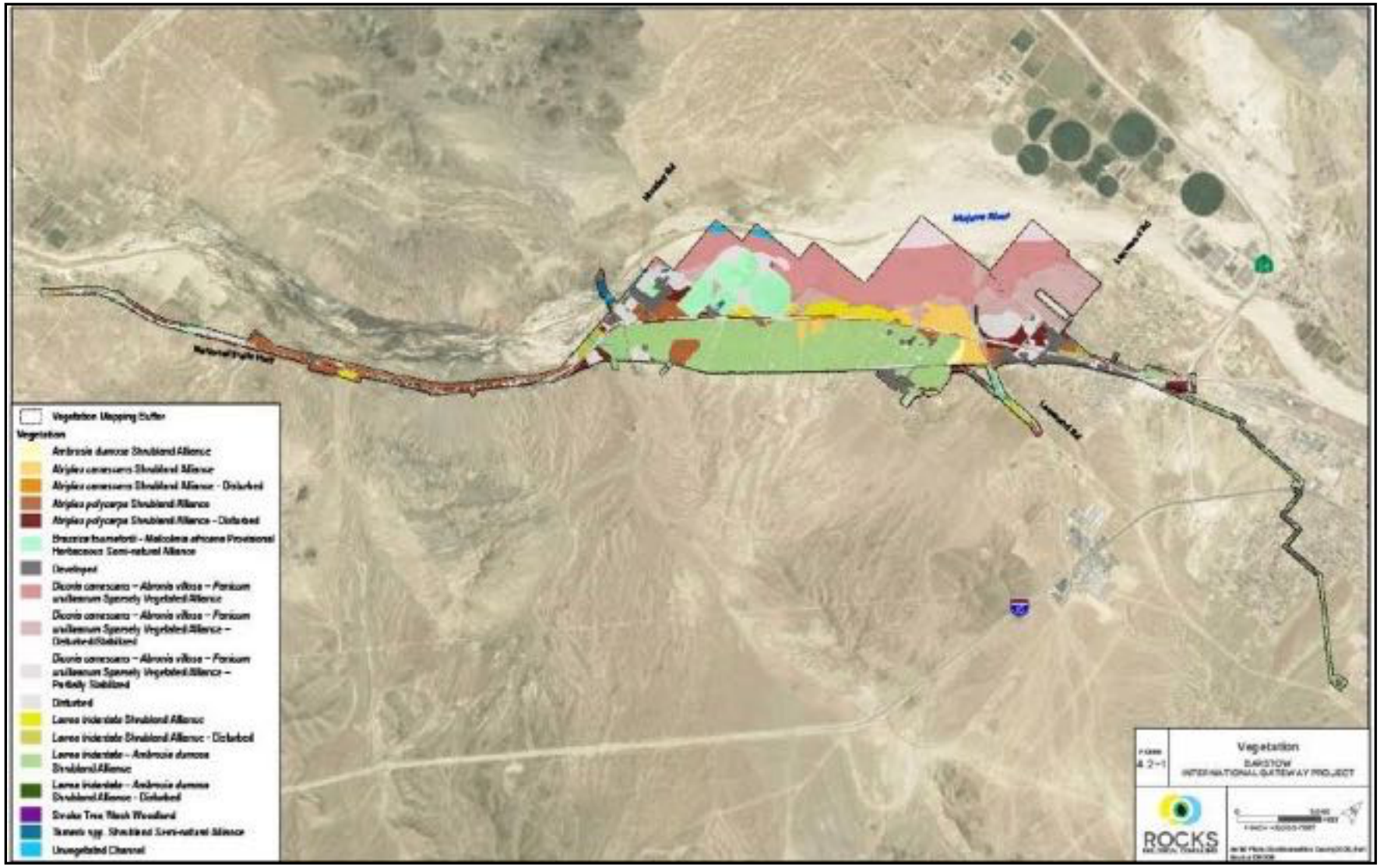


Figure 3. Plant Communities

Habitat Assessment

A habitat assessment was carried out in 2021-2022 on a feasibility study of the project that covered approximately 4,500 acres (Brylski 2022). Changes were made to the project in 2025: the boundaries of the main project site were extended to the southwest along the rail road tracks and east), small parcels along the northern boundary were added or deleted, and a component was added in the form of a 33KV electrical line to be installed underground along approximately 7.7 miles of right of way along Main St, Sunrise Rd and Bonanza Rd to the Southern California Edison Tortilla substation.

The field survey for the habitat assessment was repeated on March 7 and 16, 2025 to determine any changes from the 2021-2022 field surveys and to address the sites added to the proposed project in 2025. Both the 2021 and 2025 habitat assessments examined plant communities, disturbance features, and soil and slope factors that affect MGS habitat suitability. Historical aerial photos were used to study agricultural development of the project site (Google Earth 2025, California State Long Beach, 2022).

Live-trapping surveys

Based on the results of the habitat assessment, seven grids for surveying MGS were established at sites considered to have the highest potential to support MGS based on soil, slope, and vegetation suitability. The grids were 300 meters or more apart, as recommended in the CDFW MGS survey guidelines (2023). Visual/auditory surveys for MGS were carried out from March 30 to April 15, 2025. Figure 4 shows the locations of the seven MGS grids on an aerial photo. Figure 5, 6, and 7 show the grids and five camera station sites for each grid.

Each grid consisted of 100 large Sherman live traps (3” x 3.75” x 12”) spaced 35 meters apart. Cardboard tents shielded the traps from sunlight. Traps were checked at least every four hours and were left open between dusk and dawn during sessions one and/or two to inventory nocturnal small mammals. Traps were closed within one hour of sunset, or when the air temperature reached 90°F, measured at six inches above the ground in the shade. Traps were baited with four-way commercial livestock feed mixed with bird seed.

Camera Studies

Camera stations were used to supplement the live-trapping surveys, as recommended in CDFW’s MGS survey guideline (2023). Five cameras in each grid were operated from dawn to dusk for the three five-day sessions in accordance with the methods recommended by Delaney et al (2017). In addition, two cameras were operated at each of three small sites within the project site that contained suitable habitat for MGS, from dawn to dusk for three five-day sessions. The camera survey effort included 75 camera days per grid (525 camera days for the seven grids) and 90 camera days for the three off-grid sites, for a total of 615 camera days. The locations of the off-grid cameras stations are shown in Figure 4. Figures 5 to 7 show the locations of the on-grid cameras stations. Figure 4 shows the locations of the off-grid cameras.

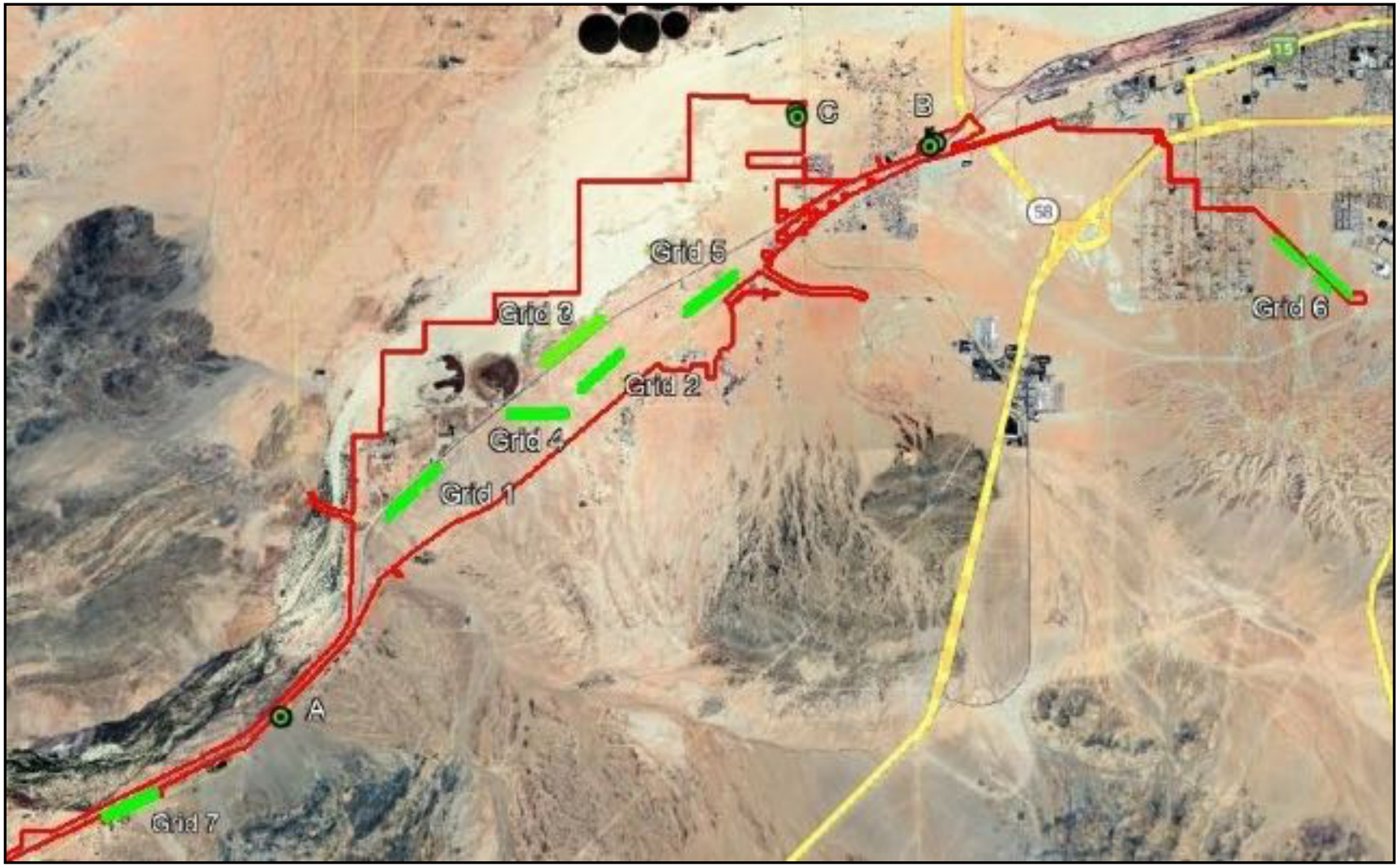


Figure 4. Locations of MGS grids (1 to 7) and off-grid camera stations (A, B, C)

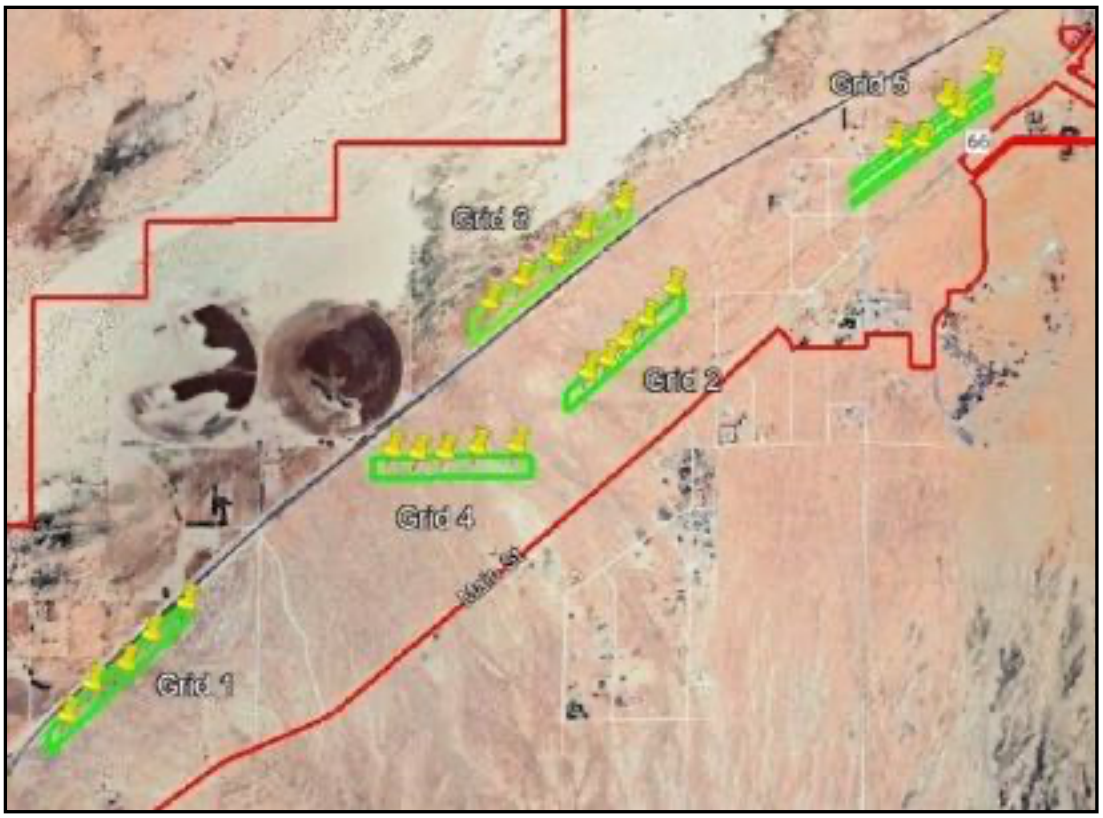


Figure 5. Locations of grids 1-5 (green rectangles) and camera stations (yellow tacks) on an aerial photo.



Figure 6. Location of grid 6 (green lines) and camera stations (yellow pins)



Figure 7. Location of grid 7 6 (green lines) and camera stations (yellow pins)

RESULTS

Habitat Assessment

This section addresses the potential of suitable habitat for MGS on the project site in relation to plant communities, soils, slope, and disturbance factors. The discussion section of this report covers issues of the project site in relation to MGS range, recent and historic MGS occurrences in the project area, and project site history.

The project site contains two main blocks of habitats (1) the dunes within the Mojave River south to the rail road tracks and (2) the terrace between Route 66 (Main St.) and the railroad tracks, bounded to the north by the Lenwood Channel and to the southwest by Hinkley Rd (at Johnston's Corner). Two smaller areas of the project site occur along the railroad tracks from Hinkley Rd southwest to the end of the site and at the eastern side of the project along Bonanza Rd to the Tortilla substation. Figure 8 shows the distribution of suitable and unsuitable habitats for MGS on the project site.

Unsuitable MGS habitats on the project site include the following:

- Sparsely vegetated dune habitats dominated by desert dicoria, Russian thistle, and dune evening primrose, with occasional allscale, creosote bush, and California ephedra shrubs on Victorville sandy loam and Villa loamy sands with smaller amounts of dune land and

riverwash soils. These cover 1,909 acres (36.3% of the project site). These habitats are unsuitable for MGS;

- Non-native grassland and developed and disturbed land covers that dominate the agricultural fields and rural residences north of Hinkley Rd (black polygon in Figure 8). These habitats are unsuitable for MGS; and

- Developed and disturbed land covers occur from the Lenwood Channel northeast through Lenwood to Hwy 58, and the same land covers occur on the terrace south of the Lenwood Channel southwest to Hinkley Rd and continue along the rail road tracks to the southwestern end of the site. The disturbed allscale habitats and the developed and disturbed land covers in these areas are unsuitable for MGS.

Potentially suitable MGS habitats on the project site include the following:

- Creosote bush scrub-white bursage scrub and creosote bush scrub occur on Cajon sands and gravelly sands. The terrace also contains Norob –Halloran complex soils, which are sandy loams formed on terraces and alluvial fans with desert pavement in some places. These plant communities cover 1,228.6 acres or 26.2% of the project site.

- Figure 8 shows the suitable habitat as green polygons on the terrace between Lenwood and Hinkley Rd and two small patches along the rail road tracks southwest of Hinkley Rd. The dark blue polygons are disturbed creosote bush -white bursage scrub, which are technically suitable but of marginal to low quality for MGS. Creosote bush scrub-white bursage vegetation soils occur on Cajon sands and gravelly sands and Nebona-Cuddeback complex soils along Sunrise Rd and Bonanza Rd on the eastern end of the project site from H Str. to the Tortilla substation. These habitats are suitable for MGS.

The botanical survey of the site yielded saltbush, which MGS are known to eat, although MGS forage preferences of the saltbush species from the project site are unknown. Plants known to be important forage for MGS such as winter fat (*Krascheninnikovia lanata*) and spiny hop sage (*Grayia spinosa*) were not recorded during the botanical survey. Species of other plant families that have the potential to be used by MGS, including saltbush and milk vetch , occur on the project site. Forb abundance on the project site was low throughout the MGS surveys, possibly due to dry winter conditions; there was limited documentation of forbs preferred by MGS on the project site.

MGS Trap Plan

The habitat assessment confirmed potentially suitable habitat for MGS on the project site and informed a live-trapping trap plan for determining presence/absence of MGS. The objective of the trap plan was to position grids to cover potentially suitable habitats on the project site across its range of plant communities, soils, geography, disturbance factors, and elevational range. Seven grids were located as follows:

- Two grids on the opposite ends of the project site: one at the southwestern end in a 24-acre area of allscale and creosote bush scrub along the rail road tracks (grid 7 in Figure 4) and the other at the eastern side of the site along Bonanza Rd in creosote bush-white bursage scrub where electrical lines would be installed underground along the roadside shoulder (grid 6 in Figure 4). These two grids cover the geographic limits of the project site;

- Two grids along the rail road tracks in the same locations of the 2022 pilot survey, which had been chosen for their MGS habitat potential, but yielded no MGS captures in 2022 (grids 1 and 3 in Figure 4); and

- Three grids on the terrace, two above the rail road tracks at higher elevations (grids 2 and 5), and one that spanned the elevation from the rail road tracks toward Main St. (grid 4 in Figure 4).

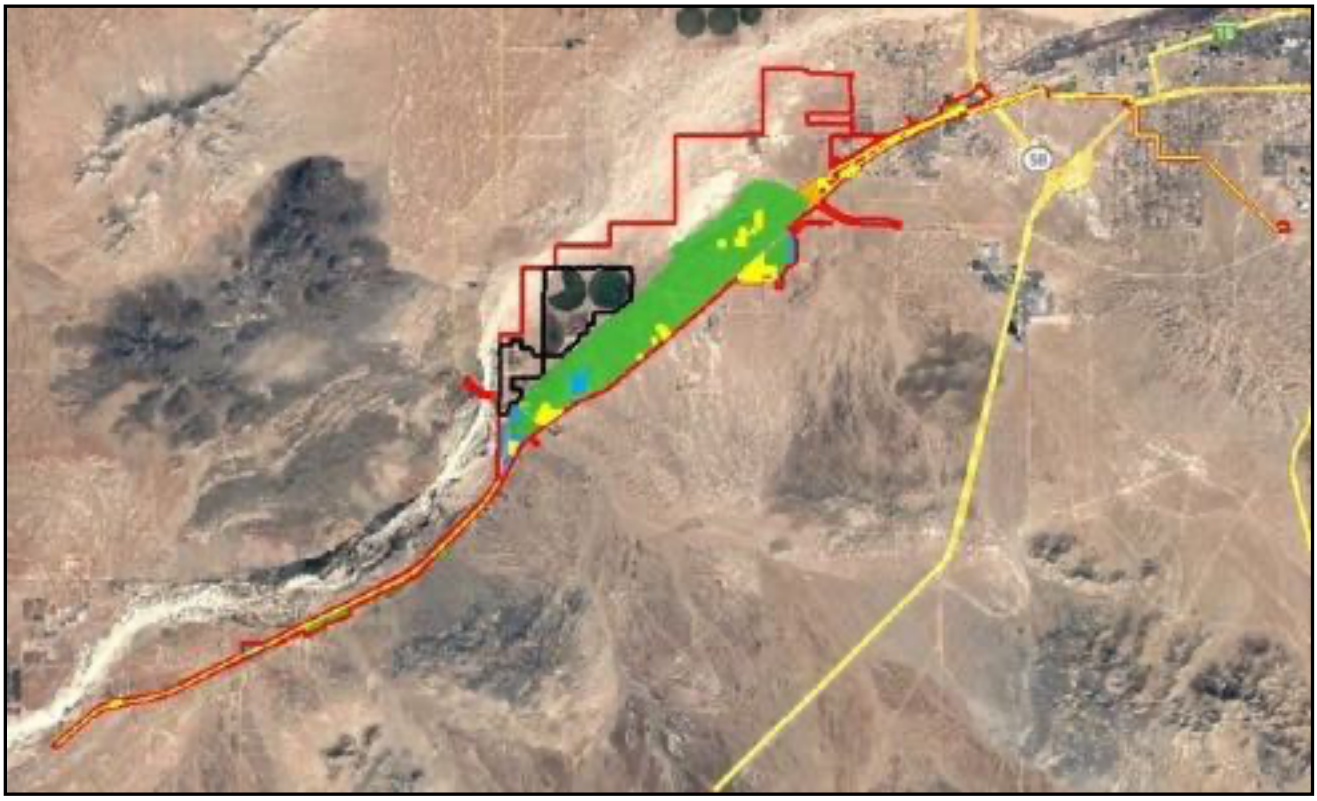


Figure 8. Habitat qualities for MGS on project site (green: suitable MGS habitat; dark blue, low quality disturbed scrub; black: unsuitable, old agriculture fields; yellow: unsuitable developed and disturbed, and orange: unsuitable ruderal/disturbed).

Live-trapping surveys

The surveys totaled 105 days of live-trapping: 15 days at each of seven grids (100 traps each day per grid) for a total trap effort of 10,500 trap-days. Table 2 lists the survey dates. The weather conditions during the surveys are summarized in Appendix 3. Appendix 4 summarizes information about the grids.

Table 2. Dates of MGS Surveys*			
Grid	**Session 1**	**Session 2**	**Session 3**
1	March 31-April 4	May 6-10	June 1-5
2	April 5-9	May 1-5	June 27-July 1
3	April 10-14	May 11-15	June 6-10
4	April 15-19	May 16-20	July 2-6
5	April 20-24	May 21-25	June 17-21
6	April 18-22	May 18-22	June 6-10
7	April 25-29	May 26-30	June 22-26
* Five camera stations were operated on each of the grids concurrent with the live-trapping surveys			

No MGS were captured during the surveys, and none were observed or heard on site or in adjacent areas. Antelope ground squirrels (*Ammospermophilus leucurus*) were captured at each of the seven grids. Table 3 summarizes the total captures of AGS adults and subadults/juveniles by grid. Appendix 5 lists the AGS captures by grid and trap session. One round tailed ground squirrel (RTGS, *Xerospermophilus tereticaudus*) was captured one time on grid 3 in the first session. Two California ground squirrels (CGS, *Otospermophilus beecheyi*) were captured on grid 7.

Table 3. Summary of Antelope ground squirrel captures		
Grid	**Adult**	**Subadult, juvenile**
1	63	
2	39	4
3	47	8
4	60	6
5	57	18
6	31	
7	55	8
subtotals	**352**	**44**
total	**396**	

Nocturnal small mammal captures included Merriam's kangaroo rat (*Dipodomys merriami*), desert pocket mouse (*Chaetodipus penicillatus*), and long-tailed pocket mouse (*C. formosus*), with single captures of the deer mouse (*Peromyscus maniculatus*), northern grasshopper mouse (*Onychomys torridus*), and desert woodrat (*Neotoma lepida*).

Camera Surveys

The wildlife cameras confirmed AGS presence on all seven trap grids and at the three off-grid camera stations. No MGS were recorded at any of the camera stations. One California ground squirrel was observed on grid 3 in session 3, but was not captured. The desert kangaroo rat (*D. deserti*) was recorded in the southwestern corner of grid 3 in session 2 during early and mid-morning hours. RTGS were detected only at grid 3 and at the off-grid camera station B: one individual was detected one time on grid 3 in session 3 (see Figure 4 for location).

RTGS on the project site (photos in Appendix 6)

One RTGS was captured once on grid 3 in session 1 (an adult scrotal male). A scrotal male was recorded on a wildlife camera at the same location at grid 3 in session 3. Several RTGS were recorded at the off-grid camera station B approximately 3.9 miles to the northeast: an adult in session 1 and three (two adults and a juvenile) at the same camera station in session 3 (photos 3-6 and 3-7).

RTGS differs from MGS in the following external characters (Best 1995, Ernest and Mares 1987; Ingles 1965):

- RTGS is significantly smaller than MGS, the head is small and rounded, and the pinnae is reduced;
- pelage coloration (dorsal pelage is pale cinnamon in RTGS and brown in MGS; ventral side of tail is buff or cinnamon in RTGS and white in MGS),
- tail length (from 81 to 102 mm in RTGS; from 57 to 72 in MGS) is longer relative to the body in RTGS compared to MGS;
- tail morphology (round in RTGS, flat in MGS); and
- hindfeet are large and broad, the soles are covered in long thick hairs

The RTGS captured on the project site showed typical RTGS characters and no MGS characters (Photos 6-1 to 6-5, photos in Appendix 6). All of the captured *Xerospermophilus* showed pelage coloration (dorsal and ventral tail surface), tail morphology and total body and tail length, round tail, and reduced pinnae typical of RTGS. The tail length of the adult male captured on grid 3 was 85 mm. The alert signals heard from the RTGS at the off-grid station B were typical of RTGS.

The RTGS captured on the project on the site and at the off-site location along N 1st St. in Barstow showed no morphological characters of hybrids between RTGS and MGS. In addition to the RTGS captures (live-traps and camera stations) on the project site, I captured several RTGS on the north side of the Mohave River along N 1st St. in Barstow in May 2025, approximately 8.5 miles east of the potential RTGS-MGS hybridization zone in Hinkley. The RTGSs from this locality share all of the characters observed in the individual captured on grid 3. Finally, I obtained pictures of MGS and RTGS from the project region from the Museum of Vertebrate Zoology. These include two RTGS specimens from 1.5 miles northeast of Barstow (1914) and 0.5 miles east of Daggett (1918). The tail morphology of these old museum specimens are closely similar to the tail morphology of the RTGS captured on grid 3 and at the off-site location along N 1st St. in Barstow. Photo 6-9 shows these specimens together with two MGS specimens from the region. In conclusion, there is no morphological evidence suggesting that the RTGS on the project site could be MGS x RTGS hybrids, and the project site is 3.5+ miles from the Hinkley area where hybrids were described.

Discussion

Project Site History

Historical aerial photos show the agricultural development of the project site (Google Earth, 2025; California State Long Beach, 2022). In 1953, agricultural development was restricted to

the southern part of the project site where Hinkley Rd crosses the BNSF rail road track and the Mojave River. At that time, residential /commercial development was restricted Lenwood in the northern part of the project site in. Figures 8 and 9 show the maximum extent of agricultural development on the project site based on a Google Earth aerial image from 1985, and on a 1963 aerial photo of the northern part of the site showing farmland west and northwest of the current intersection of Lenwood Dr and Main St, respectively. By 1983, agricultural development extended east of this area. Currently, intensive agriculture is restricted to the area in the Mohave River drainage north of Hinkley Rd. (Figure 9).



Figure 9. Project site (red line) on aerial photo showing agricultural fields (green lines, mainly alfalfa). The images are based on a Google Earth aerial dated December 1985 and other historical aerial photos (shown in Figure 10).



Figure 10. Aerial photo of the northern part of the project site in July 1963. Photo shows farmlands west and northwest of the current intersection of Lenwood Dr. and Main St. (Route 66).

Project Site in Relation to MGS Range

The project site is at the southeastern edge of the range of the species (CDFW 2019). In the project region, MGS occurs west of the Mojave River. Wessman (1977) mapped the project site as being within the range of the round-tailed ground squirrel (RTGS). Since 1977, MGS has not been confirmed from Barstow or east of the Mojave River in the Lenwood area. At the same time, the RTGS range has extended westward, and now overlaps the range of along Highway 58 west of Barstow.

MGS Occurrences in Project Area Based on CNDDB and Museum Records

There are few MGS records in the project vicinity since the middle of the last century, when MGS appears to have ranged further east than is currently known. The museum records from 1935 and 1949 are from a time when MGS occurred east of the Mojave River in the project area. The records from the project area (CNDDB, CDFW 2025) are as follows:

- Lenwood, 5.4 mi S, 6.2 mi W; Hodge Rd, T8N, R3W, SW$^{1/4}$ S8 (CNDDB occurrence No. 374). Wessman (1977) reported this 1977 museum specimen as a round-tailed ground squirrel (RTGS, *Xerospermophilus tereticaudus*), which the CNDDB recorded as a possible hybrid MGS/RTGS. This locality is approximately 0.1 miles south of the rail road tracks in the southwestern part of the project site;

- E side Depue Airport. One individual was collected in 1949 (CNDDB occurrence No. 456). The specimen is apparently in the San Bernardino County Museum and should be verified. This locality is approximately 0.85 miles south of the Lenwood Channel in the northern part of the project site;

- 15 mi SW of Barstow (exact location unknown) (CNDDB occurrence No. 455). One male collected July 25, 1935 (San Bernardino County #761). This locality is approximately 1.55 miles south of the rail road tracks in the southeastern part of the project site; and

- Just NE of Smithson Rd at Mountain Springs Rd, 1.5 mi NNW Helendale PO (CNDDB occurrence No. 18). Mapped to include 1977-83 localities T8N R4W SE1/4 SEC 19 (Wessman study site #12), T8N R5W NE1/4 Sec 25 (Wessman site #14) & "1.7 mi N, 1.3 mi W Helendale, 2600 ft." 2015 survey of 27 ac grid at NW corner of Mtn Springs Rd X Horseshow Trail. This locality is approximately 3.88 miles west/southwest of the rail road tracks at the southwestern end of the project site

The observational record is as follows:

- Intersection of Lenwood Rd and Community Blvd, Hinkley Valley (CNDDB occurrence No. 277). This is an observational record that is in question (Leitner et al 2017). This locality is approximately 1.3 miles north of the northern end of the project site along Lenwood Rd;

MGS Survey Results in Project Area from 1998 to 2020

Leitner (Leitner (2008, 2015, 2021) compiled the results of regional and protocol MGS surveys throughout the species' range. The surveys from 1998 to 2020 include 17 regional or protocol surveys in the vicinity of the project site, none of which recorded MGS. The results of the surveys for the three time periods are as follows:

- The 1998-2007 surveys included five MGS protocol surveys southwest of Barstow along the east side of the Mojave River in the project vicinity, which yielded captures of RTGS and no MGS (Leitner 2008).

- The 2008-2012 surveys did not include MGS surveys on the project site, but there were five regional MGS surveys within one mile north of the project site, on the northern side of the Mojave River below SR-58, which yielded RTGS captures and no MGS captures (Leitner 2015); and

- The 2013 to 2020 surveys included one regional survey east of the project site and six regional surveys in the Hinkley area within two miles north of the project site. RTGS were recorded in six surveys, with no MGS captures in any survey. Three other protocol surveys in Barstow yielded no MGS captures (Leitner 2021).

Leitner et al (2017) found no MGS occurrences from trapping surveys in the Barstow area from 1914 to 2009, including from surveys in the project area, and concluded that the observational records (i.e., records without captures) in the CNDDB from the Barstow area are unreliable. Figure 11 shows that the ground squirrel records from the project area are RTGS rather than MGS (Leitner et al, 2017). The report concludes that the eastern boundary of the Mohave ground squirrel range lies west of the Mojave River outside of Barstow.

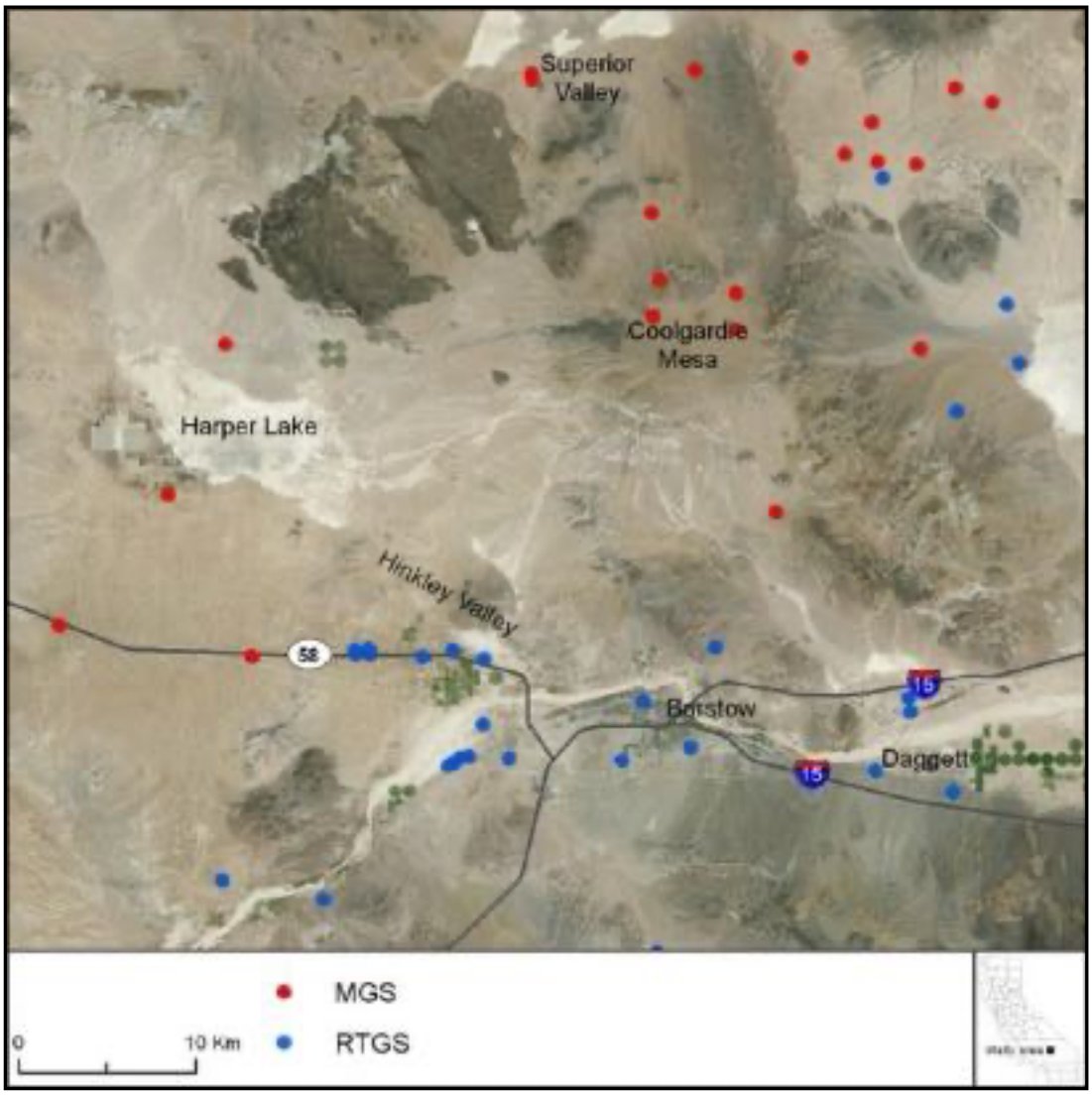


Figure 11. Distribution of Mohave ground squirrel (red circles) and round-tailed ground squirrel (blue circles) trapping records from the Barstow area, 1914-2009 (from Leitner et al, 2017.

The MGS and RTGS in the Hinkley Valley from 3.5 to 5 miles northwest of the northern part of the project site are currently considered to hybridize, but rarely. The nearest location of a hybrid

(an F1 hybrid) is in Hinkley 3. 5 miles northwest of the northern part of the project site, which is far enough from the project site to conclude that the project site is well outside the hybridization zone for RTGS and MGS.

Project Site in Relation to the MGS Conservation Strategy

The project site is not within or near a priority conservation area, defined as an MGS population area (core population area, peripheral population area, or linkage area) in the MGS Conservation Strategy (CDFW 2019).

Conclusion

The 2025 MGS surveys on the project site included visual and aural surveys, live-trapping, and camera station surveys. All trapping and surveillance efforts (visual, aural, and camera surveys) yielded no MGS occurrences. Based on the negative results of the 2025 surveys, the review of historical records and the 10 protocol surveys in the project region, none of which yielded MGS occurrences, MGS is not likely to occur on the project site and is not expected to be impacted by the proposed project.

According to the MGS Survey Guidelines (CDFG 2023), "In the absence of other MGS detection data for the site, surveys conducted according to these guidelines that result in no detection of MGS ("negative" survey results) are interpreted to mean that MGS are not present on the project site for the survey year. In other words, negative survey results are valid until the start of the next survey season (March of the subsequent year)." If the site is not developed prior to March 15, 2026, it may be necessary to repeat the MGS surveys.

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Appendix 1. Site photos
Dunes



Photo 1. Desert dicoria dune habitat, looking west (263)



Photo 1. Desert dicoria dune habitat, looking south/southwest



Photo 2. Disturbed desert dicoria dune habitat, looking north? (195)



Photo 3. Partially stabilized desert dicoria dune habitat (background), looking northwest (265)

CBS-white bursage 4-6 photos



Photo 4. Creosote bush scrub-white bursage, looking northeast (grid 3)



Photo 5. Creosote bush scrub-white bursage, looking north (grid 4)



Photo 6. Creosote bush scrub-white bursage on stony slope north of the Hinkley Rd-rail road intersection, looking east (grid 1)



Photo 6. Creosote bush scrub-white bursage, looking north (217)



Photo 6. Creosote bush scrub-white bursage with desert pavement , looking north (grid 2)

CBS



Photo 7. Creosote bush scrub, looking north ()

Allscale



Photo 8. Allscale scrub, looking north (276)



Photo 9. Allscale scrub, looking southwest (grid 7)

Fourwing saltbush



Photo 10. Fourwing saltbush, looking north (211)



Photo 10. Fourwing saltbush, looking southwest (211)

White Bursage



Photo 11. White bursage scrub, looking northwest (grid 5)

Non-native grassland



Photo 12. Non-native grassland, looking northwest (278)

Tamarisk scrub



Photo 13. Tamarisk scrub (background) with disturbed allscale scrub (foreground), looking north (280)

Disturbed



Photo 14. Disturbed, looking north (208)



Photo 14. Disturbed (foreground), looking north (202)



Photo 15. Disturbed, looking north (1407)



Photo 15. Disturbed, looking northeast (1441)

Developed



Photo 16. Developed, looking northeast (188)

Appendix 2. Site photos, grids



Photo 1. Grid 2-1, western part, looking northwest.



Photo 2-2. Eastern part of grid 1, looking west/northwest



Photo 2-3. Western part of grid 2, looking north.



Photo 2-4. Central part of grid 2, looking north.



Photo 2-5. Western part of grid 3, looking north.



Photo 2-6. Eastern part of grid 3, looking north.



Photo 2-7. Eastern part of grid 5, looking northwest.



Photo 2-8. Western part of grid 4, looking northwest.



Photo 2-9. Western part of grid 5, looking southwest



Photo 2-10. Eastern part of grid 5, looking north



Photo 2-11. Southwestern part of grid 6, looking west/northwest



Photo 2-12. Grid 6, southeastern part, looking north.



Photo 2-13. Grid 7, central part, looking west/southwest



Photo 2-14. Grid 7, eastern part, looking west/southwest

Appendix 3. Weather Data for Mohave Ground Squirrel Trapping Grids

Grid 1

Date	Temperature (F)				Cloud Cover (%)				Wind (mph)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
3/31	46	0730	73	1140	30	1750	75	0730	3-6	1750	5-9	0730
4/1	48	0715	59	1630	5	0715	1	1100	6	0715	11	1700
4/2	47	0700	63	1500	4	1100	10	0700	4-7	1500	8	0700
4/3	46	0715	69	1300	0	0715	0	1800	1	0715	2-3	1300
4/4	46	0700	74	1600	7	0700	25	1600	0-1	1800	7	0700
5/6	54	0700	83	1600	0	0700	90	1600	0	0700	5-8	1730
5/7	53	0705	84	1630	0	0705	1	1030	0-2	1030	2-3	0900
5/8	60	0700	90	1300	0	0700	0	1300	0	0700	0	1300
5/9	60	0600	90	1130	0	0600	0	1130	0	1130	0-1	0600
5/10	65	0600	90	1100	0	1100	1	0600	0	0600	0	1100
6/1	74	0545	87	1045	85	0900	100	1045	0	0545	2-7	0900
6/2	64	0600	90	1230	0	0600	0	1230	1	0830	1-2	0600
6/3	63	0600	90	1200	15	0600	65	1200	0	0600	0	1200
6/4	64	0545	90	1115	0	0545	0	1115	1	0645	2-3	1115
6/5	65	0540	90	1120	0	0540	0	1120	1-2	0540	3	0745

Grid 2

Date	Temperature (F)				Cloud Cover (%)				Wind (mph)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
4/5	47	0610	90	1600	0	0610	0	1800	1-2	0610	3-6	1330
4/6	54	0650	82	1800	0	0650	40*	1800	0	0650	0-3	1200
4/7	50	0630	87	1520	0	0630	40*	1815	0	0630	3-9	1815
4/8	52	0615	85	1515	0	0615	65*	1000	0	0615	3-4	1000
4/9	50	0610	90	1600	0	0610	0	1600	0	0610	0-1	1000
5/1	53	0615	85	1200	3	0900	90	1830	0-1	0900	5-11	1730
5/2	56	0610	90	1530	0	0610	35	1530	0	0610	1-2	1530
5/3	55	0545	86	1600	75	1600	85	0545	0	0545	5	1600
5/4	52	0600	72	1130	50	1130	100	1600	1-2	1600	5	1745
5/5	50	0610	78	1500	50	1500	100	0610	0-1	1200	3	0610
6/27	66	0550	90	1030	0	0550	0	1030	0	0550	2	0900
6/28	66	0545	90	1030	0	0545	0	1030	0	0545	3	1030
6/29	67	0600	90	1020	0	0600	0	1020	0	0600	3-5	1020
6/30	69	0545	90	1045	0	0545	0	1045	0	0545	0-2	1045
7/1	67	0550	90	1115	0	0550	0	1100	0	1100	1-3	0950

Grid 3

Date	Temperature (F)				Cloud Cover (%)				Wind (mph)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
4/10	53	0640	90	1300	0	0640	0	1300	0	0640	1-2	1300
4/11	55	0630	87	1145	0	0630	1	1145	0	0630	1-2	1145
4/12	54	0600	90	1500	40	1500	60	0600	3-8	0600	5-12	1500
4/13	51	0600	86	1230	0	1600	10	0600	1-2	1045	2-4	0600
4/14	46	0630	87	1400	0	0630	85*	1400	0-1	0930	3-7	1400
5/11	63	0610	90	1215	75	0610	80	1215	0-1	0610	0-1	1215
5/12	61	0615	86	1300	35*	0610	90	1630	4-6	0610	4-12	1800
5/13	50	0635	74	1600	0	0635	0	1800	2-6	1300	4-6	0915
5/14	49	0615	81	1800	0	0615	0	1915	1	1030	3	0615
5/15	50	0625	86	1845	0	0625	0	1845	0	0625	2-3	1600
6/6	66	0550	90	1130	0	0550	1	1000	0	0830	1-2	1130
6/7	67	0545	90	1020	0	0545	0	1020	0	0545	1-2	0730
6/8	67	0545	90	1200	0	0545	0	1200	0	0545	2-3	1200
6/9	68	0545	90	1100	0	0545	0	1100	0	0545	1-2	1100
6/10	72	0600	90	1000	0	0600	0	1000	2	1000	4	0600

Grid 4

Date	Temperature (F)				Cloud Cover (%)				Wind (mph)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
4/15	54	0700	88	1545	5	0700	50*	1225	0-1	0700	1-3	1225
4/16	53	0710	77	1445	0	0710	15	1445	1	0710	5-10	1800
4/17	52	0710	68	1500	7	0900	35	1500	3-6	1500	6-10	1030
4/18	51	0700	72	1430	10	0700	50	1130	2-6	1130	10-15	1730
4/19	51	0700	77	1630	0	0700	0	1800				
5/16	59	0650	90	1600	0	0650	90	1600	0	0650	2-4	1000
5/17	63	0650	75	1630	10-15	1830	100	1000	4	0730	6-13	1830
5/18	58	0645	83	1630	0	0645	0	1830	4	0830	3-10	1830
5/19	63	0645	89	1830	0	0645	0	1830	0-1	0645	0-3	1600
5/20	63	0650	90	1240	0	0650	0	1240	2	0930	2-4	0650
7/2	69	0545	90	1045	0	1045	35	0545	0-1	1045	3-4	0900
7/3	70	0550	90	0945	0	0550	0	0945	0-1	0550	1-2	0745
7/4	70	0600	90	1030	0	0600	0	1030	0-3	0600	5-6	1030
7/5	64	0550	90	1015	0	0550	0	1015	2	0950	3-4	0550
7/6	65	0545	90	1000	0	0545	0	1000	1	0545	3	1000

Grid 5

Date	Temperature (F)				Cloud Cover (%)				Wind (mph)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
4/20	55	0630	85	1630	0	0645	0	1800	0	0650	2-5	1400
4/21	59	0650	81	1030	3*	0650	7*	1030	1-2	0650	1-3	1200
4/22	54	0700	85	1445	0	0700	0	1745	0-1	0930	8-15	1700
4/23	55	0645	82	1400	1	1100	2*	0645	2	0645	4-8	1400
4/24	54	0700	81	1300	1-2	12100	30*	1300	1-2	1100	5-12	1830
5/21	60	0630	90	1200	0	0630	0	1200	0-1	0630	0-1	1200
5/22	68	0630	90	1115	1	0630	2*	0930	2-4	1115	4-6	0930
5/23	68	0630	90	1130	0	0630	0	1130	2-4	0930	4-6	1130
5/24	61	0615	90	1530	0	0615	4	1530	2-4	1530	4-6	0620
5/25	61	0630	90	1415	0	0630	0	1415	0	0630	6	1415
6/17	0550	63	90	1030	0	0550	0	1030	0-2	0550	3-5	1030
6/18	69	0550	90	1015	0	0550	0	1015	0	0550	1	1015
6/19	70	0555	90	1000	0	0555	0	1000	0	0555	1-3	1000
6/20	70	0545	90	1030	0	0545	0	1030	2-5	0545	7-10	0830
6/21												

Grid 6

Date	Temperature (F)				Cloud Cover (%)				Wind (mph)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
4/18	55	0715	71	1605	0	0715	50	1150	5-15	0715	5-20	1150
4/19	55	0715	69	1245	0	0715	0	1645	0	1000	3-10	1645
4/20	62	0715	81	1610	0	0715	90*	1130	0-1	1610	0-5	1410
4/21	66	0700	86	1705	0	1705	5*	0700	1-3	0700	5-16	1970
4/22	62	0710	82	1205	0	0710	20*	1730	1-3	1205	8-20	1950
5/18	59	0705	84	1420	0	0705	0	1930	4-19	1130	8-20	1930
5/19	64	0710	89	1510	0	0710	0	1845	0-5	1040	2-6	0710
5/20	69	0715	90	1250	0	0715	0	1540	0-3	1250	2-8	0950
5/21	70	0720	90	1210	0	0720	0	1448	0-1	1015	2-5	1448
5/22	74	0705	90	1111	100*	0705	100*	1111	5-10	0705	5-18	1525
6/6	74	0655	90	1405	0	0655	70	1645	2	0655	5-7	1645
6/7	76	0605	90	1130	0	0605	0	1130	2-4	0606	3-5	1130
6/8	78	0605	90	1000	0	0605	5	1000	2	0605	5-8	1000
6/9	74	0555	90	1030	0	0555	0	1030	2-5	0555	3-7	1030
6/10	79	0545	90	1010	0	0545	0	1010	2-4	1010	3-7	0545

Grid 7

Date	Temperature (F)				Cloud Cover (%)				Wind (mph)			
	Min	Time	Max	Time	Min	Time	Max	Time	Min	Time	Max	Time
4/25	51	0645	70	1230	0	0645	1	1230	2-3	0830	6-9	1700
4/26	50	0700	63	1730	2	0700	100	1100	2-5	1630	5-7	1100
4/27	49	0715	66	1700	2	0715	65	1700	2-4	0715	10-11	1700
4/28	48	0700	76	1700	0	0700	6	1700	1-2	0700	2-3	1130
4/29	53	0705	85	1545	0	0705	2	1545	1	0945	2-4	1545
5/26	69	0600	90	1010	4	0600	5-6	1010	0	1010	1	0600
5/27	60	0630	90	1330	0	0630	0	1330	0	0630	0-1	0900
5/28	64	0630	90	1230	0	0630	40*	1230	0	630	1-3	1230
5/29	63	0615	90	1230	0	0615	2-4	1230	0	0615	2-4	1230
5/30	67	0630	90	1115	0	0630	0	1115	0	0900	1-3	1115
6/22	57	0600	90	1430	0	0600	0	1430	0	1030	1-3	0730
6/23	59	0600	90	1415	0	0600	0	1415	1-2	0600	3-5	1415
6/24	60	0600	90	1330	1-3	0900	60*	0900	1-3	0900	2-4	1330
6/25	63	0550	90	1230	0	0550	0	1230	0-1	0550	1-4	1230
6/26	65	0600	90	1000	0	0600	0	1000	1	0600	1-3	0700

Appendix 4. Mohave Ground Squirrel (MGS) Survey and Trapping Form

Grid 1

Part I – Project Information							
Project Name:	BNSF Barstow Internat'l Gateway				Township:	9N	
Property Owner:	Private				Range:	3W	
Quad/Map Series:	Hodge 7.5'				Section:	27 SW, SE¼s	
UTM Coordinates of grid corners (NAD 83, error <3m)							
NW Corner		NE Corner		SE Corner		SW Corner	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
483160	3854790	484000	3855571	484000	3855464	483160	3854686
Acreage of Project Site (or linear distance):							24.5 acres
Acreage of potential MGS habitat on site (or linear distance):							24.5 acres
Visual Surveys of potential MGS habitat conducted on:							March 30, 2025
Visual Surveys conducted by:							Phil Brylski
Total # of grids:							7

Session	Start Date	End Date
1	3/31/25	4/1/25
2	5/6/25	5/10/25
3	6/1/25	6/5/25

Trapping Conducted By:
P. Brylski
P. Brylski
P. Brylski

Part II –General Habitat Description	
Vegetation	
Dominant Perennials	creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), allscale (*Atriplex polycarpa*), Nevada ephedra (*Ephedra nevadensis*)
Other Perennials	four-winged saltbush (*A. canescens*), buckwheat (*Eriogonum* sp)
Dominant Annuals	Mediterranean grass, red brome
Other Annuals	Star thistle (*Centaurea melitensis*), checker fiddleneck (*Amsinckia tesselata*), Russian thistle (*Kali tragus*), desert needlegrass (*Stipa speciosa*), Panamint cryptantha (*Cryptantha augustifolia*), desert dandelion (*Malacothrix glabrata*), desert lantern (*Eremothera boothii*), Sahara mustard (*Brassica tournefortii*), red-stemmed filaree (*Erodium cicutarium*), Mojave indigo bush (*Psorothamnus arborescens*)

Land Forms (*i.e.*, bajadas, washes): bajada	
Soil Description: Cajon sands with some Nebona-Cuddeback Complex	
Elevation: 2260-2300 ft	Slope 1-3 %

Grid 2

Part I – Project Information							
Project Name:	BNSF Barstow Internat'l Gateway				Township:	9N	
Property Owner:	Private				Range:	3W	
Quad/Map Series:	Hodge 7.5'				Section:	24 SW ¼	
UTM Coordinates of grid corners (NAD 83, error <3m)							
NW Corner		NE Corner		SE Corner		SW Corner	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
485960	3856635	486588	3857170	486588	3857060	485968	3856518
Acreage of Project Site (or linear distance):							24.5Acres
Acreage of potential MGS habitat on site (or linear distance):							24.5 acres
Visual Surveys of potential MGS habitat conducted on:							April 2, 2025
Visual Surveys conducted by:							Phil Brylski
Total # of grids:							7

Session	Start Date	End Date
1	4/5/25	4/9/25
2	5/1/25	5/5/25
3	6/27/25	7/1/25

Trapping Conducted By:
P. Brylski
P. Brylski
P. Brylski

Part II –General Habitat Description	
Vegetation	
Dominant Perennials	creosote bush, white bursage, allscale, Nevada ephedra, Anderson thornbush (*Lycium andersonii*)
Other Perennials	spiny hopsage (*Grayia spinosa*), little desert trumpet (*Eriogonum trichopes*), spiny senna (*Senna armata*)
Dominant Annuals	Mediterranean grass, red brome, devils spineflower (*Chorizanthe rigida*), red brome,
Other Annuals	Star thistle, desert Indian wheat (*Plantago ovata*), red stem stork's bill, Panamint cryptantha, checker fiddleneck

Land Forms (*i.e.*, bajadas, washes): bajada

Soil Description: Norob-Halloran Complex

Elevation: 2300 ft Slope <1 %

Grid 3

Part I – Project Information

Project Name:	BNSF Barstow Internat'l Gateway	Township:	9N
Property Owner:	Private	Range:	3W
Quad/Map Series:	Hodge 7.5'	Section:	23 SE¼ NE¼ 24 NW1/4

UTM Coordinates of grid corners (NAD 83, error <3m)

NW Corner		NE Corner		SE Corner		SW Corner	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
485470	3857031	486310	3857651	486310	3857546	485470	3856921

Acreage of Project Site (or linear distance):	24.5 Acres
Acreage of potential MGS habitat on site (or linear distance):	24.5 acres
Visual Surveys of potential MGS habitat conducted on:	April 8, 2025
Visual Surveys conducted by:	Phil Brylski
Total # of grids:	7

Session	Start Date	End Date	Trapping Conducted By:
1	4/10/225	4/14/25	P. Brylski
2	5/11/25	5/15/25	P. Brylski
3	6/6/25	6/10/25	P. Brylski

Part II –General Habitat Description

Vegetation

Dominant Perennials	creosote bush, white bursage, allscale, Nevada ephedra, Cooper's thornbush, desert senna
Other Perennials	Mojave indigo bush, honey mesquite, shadscale (*A. confertifolia*)
Dominant Annuals	Mediterranean grass, red brome
Other Annuals	Russian thistle, redstem stork's bill, Panamint cryptantha, checker fiddleneck, Jim Hill mustard (*Sisybrium altissimum*)

Land Forms (*i.e.*, bajadas, washes): bajada

Soil Description: mostly Cajon Sand with some Villa loamy sand, hummocky

Elevation: 2220 ft Slope 0 %

Grid 4

Part I – Project Information							
Project Name:	BNSF Barstow Internat'l Gateway				Township:	9N	
Property Owner:	Private				Range:	3W	
Quad/Map Series:	Hodge 7.5'				Section:	26 NE, NW 1/4s	
UTM Coordinates of grid corners (NAD 83, error <3m)							
NW Corner		NE Corner		SE Corner		SW Corner	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
484911	3856282	485746	3856287	487750	3856178	484910	3856178

Acreage of Project Site (or linear distance):	24.5 Acres
Acreage of potential MGS habitat on site (or linear distance):	24.5 acres
Visual Surveys of potential MGS habitat conducted on:	April 13, 2025
Visual Surveys conducted by:	Phil Brylski
Total # of grids:	7

Session	Start Date	End Date	Trapping Conducted By:
1	4/15/25	4/19/25	P. Brylski
2	5/16/25	5/20/25	P. Brylski
3	7/2/25	7/6/25	P. Brylski

Part II –General Habitat Description	
Vegetation	
Dominant Perennials	creosote bush, allscale, Nevada ephedra, honey mesquite
Other Perennials	four wing saltbush, Mojave indigo bush, pencil cholla (*Cylindropuntia ramosissima*), silver cholla (*C. echinocarpa*)
Dominant Annuals	Mediterranean grass, red brome, devils spineflower
Other Annuals	Star thistle, fiddleneck, London rocket (*Sisymbrium irio*) , desert lantern (*Eremothera boothi*)

Land Forms (*i.e*., bajadas, washes): desert plain	
Soil Description: Mostly Cajon Sand, some Norob-Halloran Complex	
Elevation: 2240 – 2310 ft	Slope <1 %

Grid 5

Part I – Project Information			
Project Name:	BNSF Barstow Internat'l Gateway	Township:	9N
Property Owner:	Private	Range:	2W, 3W
Quad/Map Series:	Hodge 7.5'	Section:	18 (R2W): SW, SE¼, 19 (R2W): NW¼ 24 (R3W): NE¼

UTM Coordinates of grid corners (NAD 83, error <3m)

NW Corner		NE Corner		SE Corner		SW Corner	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
487487	3857746	488232	3858293	488232	3858154	487487	

Acreage of Project Site (or linear distance):	24.5 Acres
Acreage of potential MGS habitat on site (or linear distance):	24.5 acres
Visual Surveys of potential MGS habitat conducted on:	April 10, 2025
Visual Surveys conducted by:	Phil Brylski
Total # of grids:	7

Session	Start Date	End Date
1	4/18/25	4/22/25
2	5/18/25	5/22/25
3	6/6/25	6/10/25

Trapping Conducted By:
P. Brylski
P. Brylski
P. Brylski

Part II –General Habitat Description	
Vegetation	
Dominant Perennials	creosote bush, white bursage, green ephedra (*Ephedra viridis*), four wing saltbush,
Other Perennials	desert senna
Dominant Annuals	Mediterranean grass, red brome, desert woolystar (*Eriastrum eremicum*)
Other Annuals	Panamint cryptantha, star thistle

Land Forms (*i.e.*, bajadas, washes): desert plain

Soil Description: Cajon sands with some Nebona-Cuddeback Complex

Elevation: 2250-2280 ft Slope <1 %

Grid 6

Part I – Project Information							
Project Name:	BNSF Barstow Internat'l Gateway				Township:	9N	
Property Owner:	Private				Range:	2W	
Quad/Map Series:	Barstow SE 7.5'				Section:	13 SW, NW, SE 1/4s	
UTM Coordinates of grid corners (NAD 83, error <3m)							
NW Corner		NE Corner		SE Corner		SW Corner	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
496479	3858479	497053	3857925	497053	3857889	496479	3858444
495987	3858717	495987	3858752	496775	3857960	496775	3857995
Acreage of Project Site (or linear distance):							24.5 Acres
Acreage of potential MGS habitat on site (or linear distance):							24.5 acres
Visual Surveys of potential MGS habitat conducted on:							April 3, 2025
Visual Surveys conducted by:							Phil Brylski
Total # of grids:							7

Session	Start Date	End Date
1	4/18/25	4/22/25
2	5/18/25	5/22/25
3	6/6/25	6/10/25

Trapping Conducted By:
S. Montgomery
S. Montgomery
S. Montgomery

Part II –General Habitat Description	
Vegetation	
Dominant Perennials	creosote bush, burro bush
Other Perennials	desert senna, pencil cholla, Nevada ephedra, Mojave yucca *(Yucca schidigera.),* saltbush *(Atriplex sp)*
Dominant Annuals	Mediterranean grass
Other Annuals	devils spineflower, desert woolly star, wire lettuce *(Stephanomeria pauciflora*), redstem stork's bill

Land Forms (*i.e*., bajadas, washes): desert plain	
Soil Description: Mostly Cajon sand with some Cajon gravelly sand and Ebona-Cuddleback Complex	
Elevation: 2530-2700 ft	Slope <1 %

Grid 7

Part I – Project Information							
Project Name:	BNSF Barstow Internat'l Gateway				Township:	8N	
Property Owner:	Private				Range:	3W	
Quad/Map Series:	Hodge 7.5'				Section:	7, NE, SE, NW 1/4s	
UTM Coordinates of grid corners (NAD 83, error <3m)							
NW Corner		NE Corner		SE Corner		SW Corner	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
479103	3850515	479871	3850863	479871	3850758	4791033850410	

Acreage of Project Site (or linear distance):	24.5 Acres
Acreage of potential MGS habitat on site (or linear distance):	24.5 acres
Visual Surveys of potential MGS habitat conducted on:	April 12, 2025
Visual Surveys conducted by:	Phil Brylski
Total # of grids:	7

Session	Start Date	End Date	Trapping Conducted By:
1	4/25/25	4/29/25	P. Brylski
2	5/26/25	5/30/25	P. Brylski
3	6/22/25	6/26/25	P. Brylski

Part II –General Habitat Description	
Vegetation	
Dominant Perennials	creosote bush , allscale, white bursage, Nevada ephedra
Other Perennials	four-wing saltbush, blue paloverde (*Parkinsonia florida*)
Dominant Annuals	Mediterranean grass
Other Annuals	cheat grass (*Bromus tectorum*)

Land Forms (*i.e.*, bajadas, washes): desert plain

Soil Description: Cajon sand and Cajon gravelly sand

Elevation: 2330 ft Slope <1 %

Appendix 5. Antelope ground squirrel captures

Grid	Session	Adult	Subadult, Juvenile
1	1	22	
	2	29	
	3	12	8
	subtotal	**63**	**8**
2	1	17	
	2	16	
	3	6	4
	subtotal	**39**	**4**
3	1	15	
	2	22	4
	3	10	4
	subtotal	**47**	**8**
4	1	22	
	2	31	1
	3	7	5
	subtotal	**60**	**6**
5	1	17	
	2	14	12
	3	26	6
	subtotal	**57**	**18**
6	1	9	
	2	17	
	3	5	
	subtotal	**31**	**0**
7	1	17	
	2	21	5
	3	17	3
	subtotal	**55**	**8**
		352	**44**
	Total	396	

Appendix 6. Round tailed ground squirrel photos



Photo 6-1. Round tailed ground squirrel (RTGS) captured on grid 3



Photo 6-2. RTGS captured on grid 3



Photo 6-3. Tail length of RTGS captured on grid 3



Photo 6-4. Ventral surface of tail of RTGS captured on grid 3



Photo 6-5. Head shot of RTGS captured on grid 3


Photo 6-6. RTGS captured at off-grid camera station 3 in session 1



Photo 6-7. Three RTGS (adults on left and right, juvenile in middle) at off-grid camera station 3 in session 3



Photo 6-8. Female RTGS captured on north side of the Mohave River along N 1st St. in Barstow (May 2025)



Photo 6-9. Museum specimens of MGS (top two) and RTGS (bottom two)

ATTACHMENT X

BAT ASSESSMENT AT THE BARSTOW INTERNATIONAL GATEWAY PROJECT



Bat Assessment at the Barstow International Gateway Project

August 6, 2025

thenat
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Project Objective

The purpose of this project is to provide a preliminary understanding of the bat activity levels and the current and potential use of structures by bats within the Barstow International Gateway (BIG) Project area. We deployed passive Anabat bat detectors supplemented by active surveys of all structures. We prioritized those structures with high potential for bat use such as railroad underpasses, culverts, and bridges. Project outcomes will help determine the need for additional surveying efforts and inform recommended next steps.

Results

Active Surveys

We actively surveyed all culverts, bridges, and railroad crossings within the project boundary for any signs of bat activity on June 30 – July 1 2025.

Culverts & Railroad crossings

See Figures 1, 4, 9, and 14 for numbered culverts and railroad crossings referenced below. There was a total of 80 culverts and 21 railroad crossings. For culverts with multiple entrances, each entrance was given their own unique number. Culverts not mentioned did not have suitable bat habitat for one or more of the following reasons: entrances were blocked, openings were very small, expansion joints were tightly sealed. Each side of the railroad crossing was also given their own unique number.

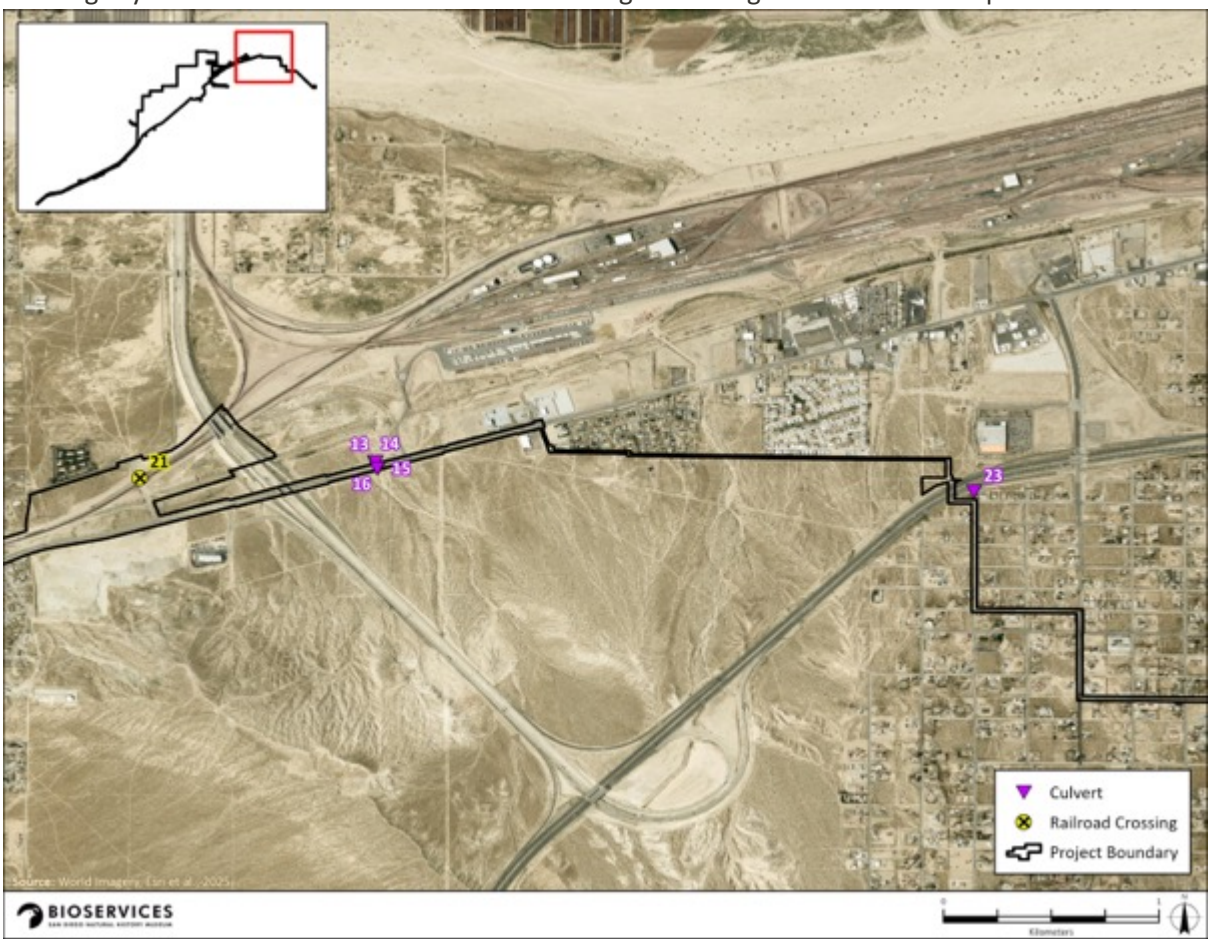


Figure 1: Numbered culverts and railroad crossings in the (BIG) project area that have potential to be used by bats (1 of 4)

Culvert #23: There was a clear passageway in the culvert that bats could fly through and there was a rock pile in front of culvert. Canyon Bats (*Parastrellus hesperus*) day roost in rocky crevices so there is potential for this culvert to be used by bats.

Culverts #13-16: Large rock pile in front of the culvert (Figure 2). Inside the culvert there were tumble weeds and evidence of human activity. However, it is possible that Canyon Bats could use the rock pile as a day roosting site.



Figure 2: Rock pile in front of culverts #13-16.

Railroad crossing #21: This railroad crossing was not marked in the original GIS data provided, but because it was within the project boundary, we surveyed the area anyway. It was difficult to get close enough to inspect the expansion joints (Figure 3). There is definitely potential for bat activity. While we did not detect any bats or signs of bat activity, an emergence count would need to be performed to determine whether bats are using this structure.



Figure 3: Railroad crossing #21 (Left) and small crevices in the bridge (Right)

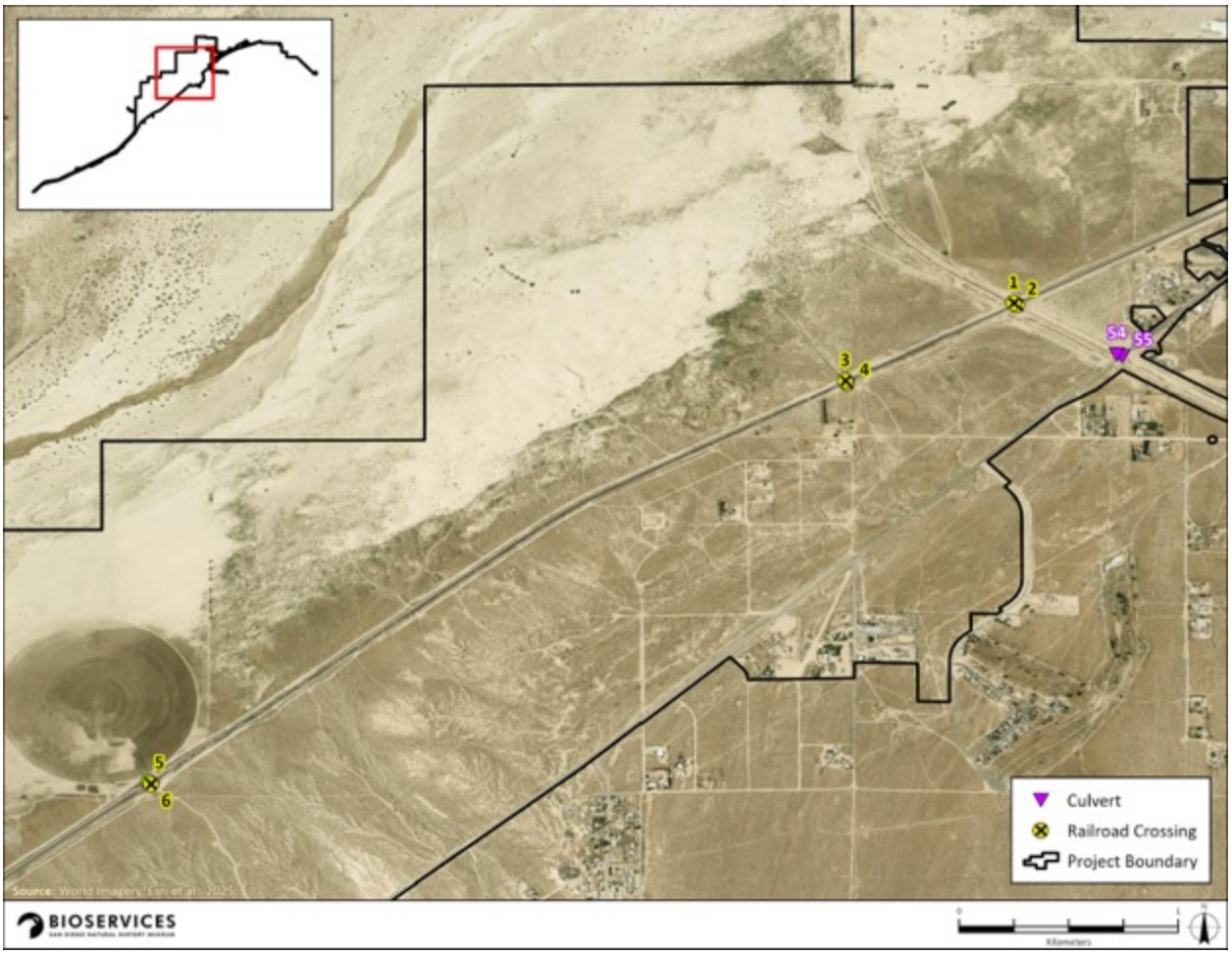


Figure 4: Numbered culverts and railroad crossings in the (BIG) project area that have potential to be used by bats (2 of 4)

Culverts #54 and #55: We observed a small hole within the culvert that bats could potentially use. There was more potential in the West side entrance relative to the East side entrance. An emergence count would need to be performed to determine whether bats are using this structure.

Railroad crossing #1 and #2: This railroad crossing had many crevices (expansion joints) that bats can use for day roosting and/or maternity roosting sites (Figures 5 and 6). We saw no sign of bat activity. However, an emergence count would need to be performed to be able to determine whether bats are using this structure. Medium-high potential for structure to be used by bats.



Figure 5: Zoomed out view of Railroad crossing #1 and #2



Figure 6: Expansion joints in railroad crossing #1 and #2

Railroad crossing #3 and #4: This railroad crossing had some hollow areas and expansion joints that may be suitable for bats to use for day roosting and/or maternity roosting sites. Large hollow areas within the structure may be suitable for bat species that roost in large maternity colonies. We did not detect

any bats or signs of bat activity. However, an emergence count would need to be performed to be able to determine whether bats are using this structure. High potential for structure to be used by bats.

Railroad crossing #5 and #6: The expansion joints provided some hollow crevices that have the potential to be used by bats (Figures 7 and 8). While we did not detect any bats or signs of bat activity, an emergence count would need to be performed to be able to determine if bats are indeed using this structure. Med-high potential for structure to be used by bats.



Figure 7: Railroad crossing #5 and #6



Figure 8: Expansion joints in Railroad crossing #5 and #6

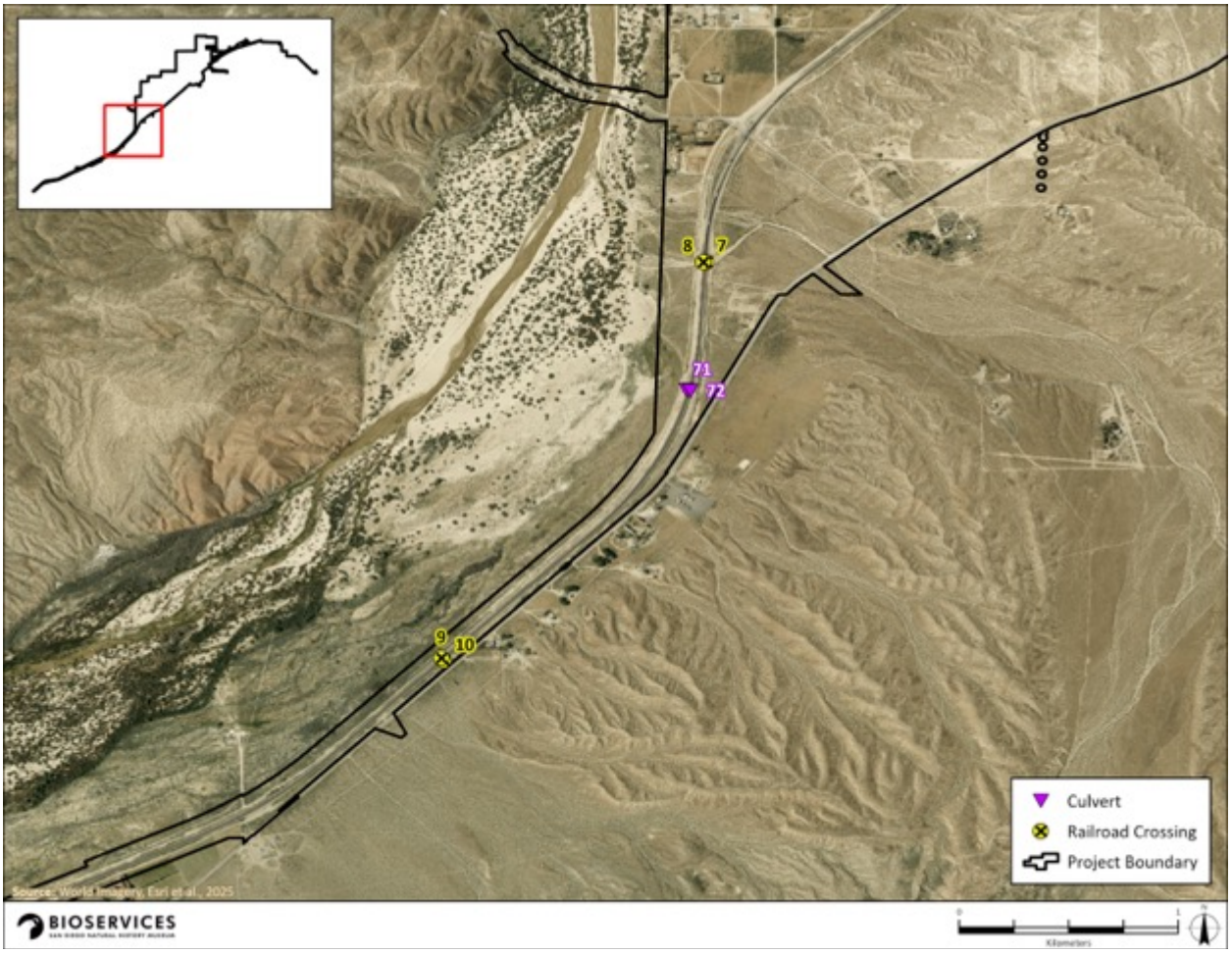


Figure 9: Numbered culverts and railroad crossings in the (BIG) project area that have potential to be used by bats (3 of 4)

Railroad crossing # 7 and #8: This particular undercrossing (Figure 10) contained numerous features indicative of high potential suitability for bat use. The majority of the bridge is hollow inside and there was space between the expansion joints where bats could roost as well (Figure 11). While we did not detect any bats or signs of bat activity, an emergence count would need to be performed to be able to determine if bats are indeed using this structure.



Figure 10: Zoomed out view of Railroad crossing #7 and #8



Figure 11: Zoomed-in view showing example of one hollow interior within railroad crossing #7 and #8 (Left). Zoomed out view of location of the hollow interior within the structure (Right)

Culverts #71 and #72: We detected what we believe to be a Yuma Myotis (*Myotis yumanensis*) in between an expansion joint inside this culvert (Figure 12). We detected the bat inside the culvert labeled '11.31' in Figure 13.



Figure 12: Yuma Myotis (?) inside expansion joint in culverts #71 and #72



Figure 13: Culverts #71 and #72. Yuma Myotis was found inside the culvert on the right (labeled 11.31).

Railroad crossing #9 and #10: There is room within the expansion joints bats could use. While we did not detect any bats or signs of bat activity, an emergence count would need to be performed to be able to determine if bats are indeed using this structure. Low-Med potential to be used by bats.

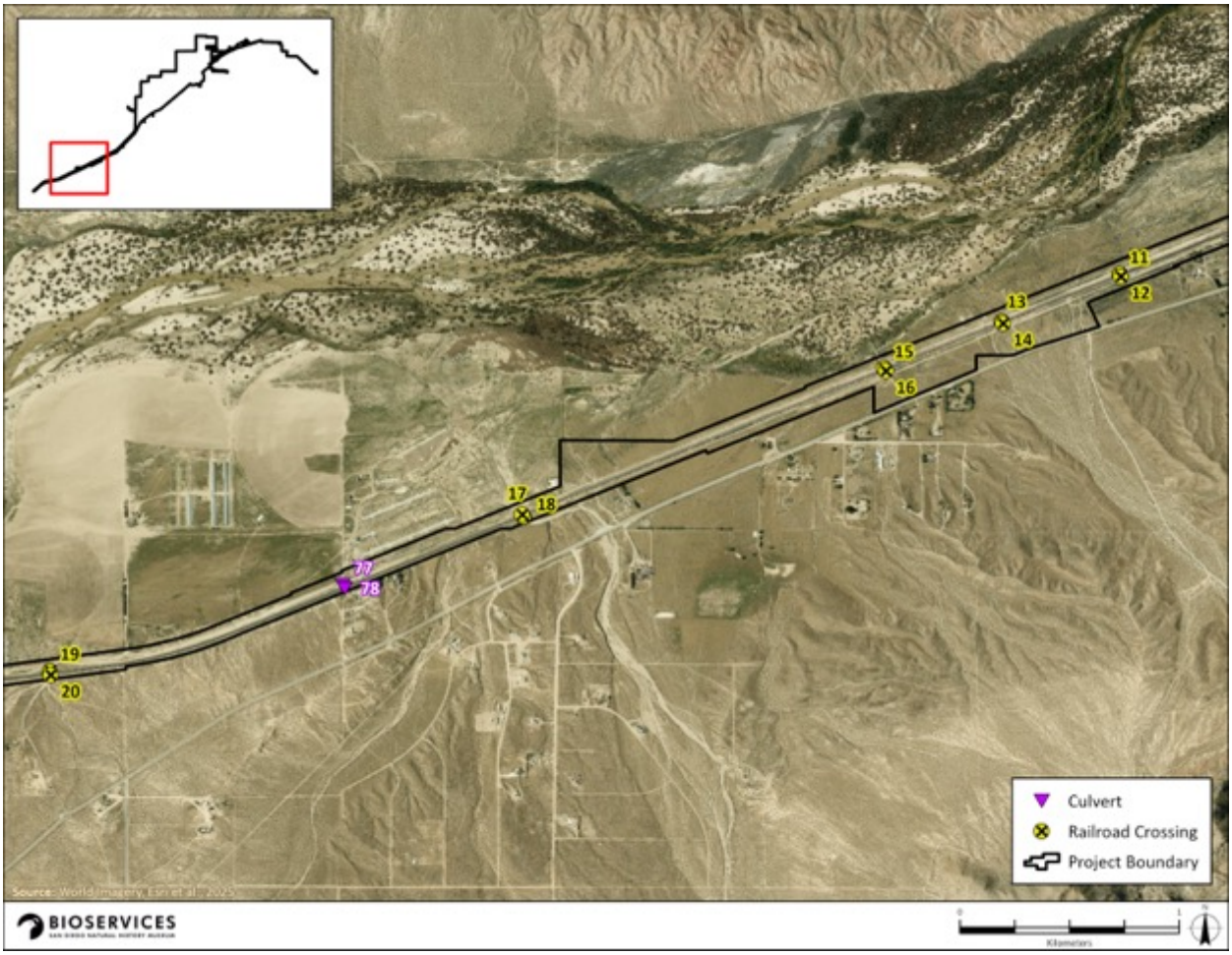


Figure 14: Numbered culverts and railroad crossings in the (BIG) project area that have potential to be used by bats (4 of 4)

Railroad crossing #11 and #12: We did not detect any bats or signs of bat activities. The structures did not look suitable for bats to use.

Railroad crossing #13 and #14: The railroad crossing was very low to the ground. We observed some cracks in the expansion joints that bats could potentially use. Low potential for structure to be used by bats.

Railroad crossing #15 and 16: This particular railroad crossing had the most bat activity compared to all other structures (culverts, bridges, railroad crossings) (Figure 15). We detected three Canyon Bats (*Parastrellus hesperus*) inside the expansion joints that lead to a large hollow opening inside the railroad crossing (Figure 16). We observed a barn owl inside one of these hollow openings (Figure 17).



Figure 15: Railroad crossing #15 and #16


Figure 16: One of three Canyon Bats (*Parastrellus hesperus*) detected inside the expansion joints in railroad crossing #15 and #16

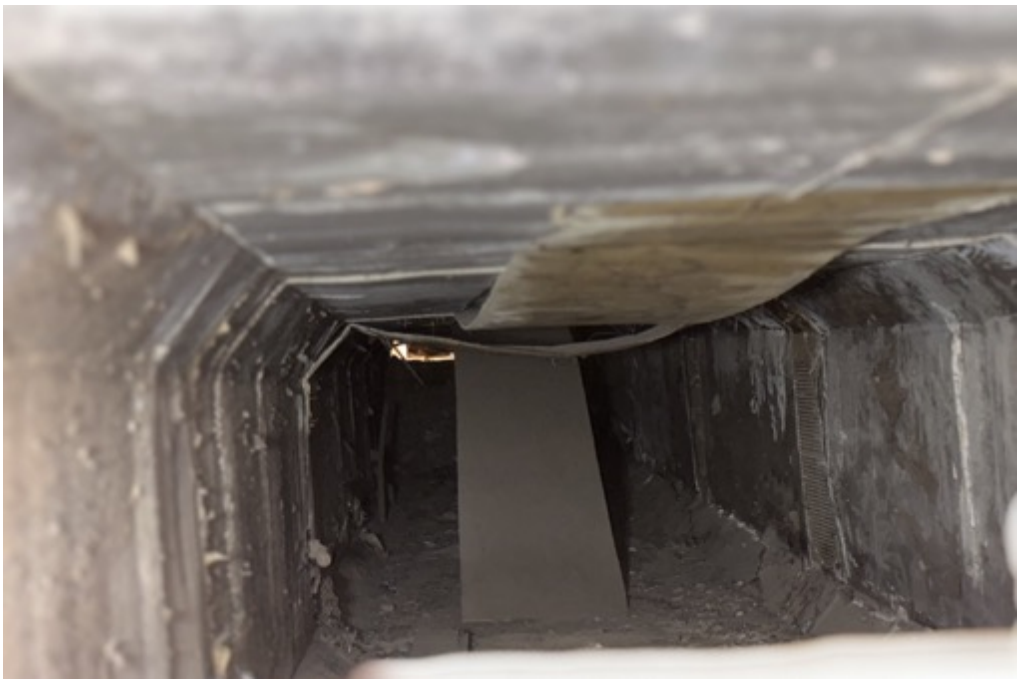


Figure 17: Hollow opening inside Railroad crossing #15 and #16 where we saw a Barn Owl

Railroad crossing #17 and #18: We observed many areas within this railroad crossing that bats could use as day roosting/maternity roosting sites. Specifically, there are a lot of crevices suitable for bats to use (Figures 18). While we did not detect any bats or signs of bat activities, an emergence count would need to be performed to be able to determine if bats are indeed using this structure. High potential for railroad crossing to be used by bats.



Figure 18: Crevices in Railroad crossing #17 and #18

Culverts #77 and #78: We did not detect any bats or signs of bat activity inside this culvert (Figure 19). There were some expansion joints inside the bridge that were not filled and bats could potentially use this space as a day roosting site. There was a rock pile in front of the culvert that could also potentially be used by a Canyon bat (*Parastrellus hesperus*). Medium potential for culvert to be used by bats.



Figure 19: Rock pile in front of culverts #77 and #78

Railroad crossing #19 and #20: We did not detect any bats or signs of bat activity. Low potential for railroad crossing to be used by bats.

Bridges

Hinkley Rd. Bridge: We surveyed the Hinkley Rd. bridge (Figure 20) for any signs of bat activity and we detected 2 Canyon Bats (*Parastrellus hesperus*) (Figure 21) roosting in between the metal joint and cement wall on the southeast side of the bridge (Figure 22). We also observed some old guano beneath the bridge (Figure 23). There are a lot of hollow structures within the bridge that have the potential for bats to use as roosting habitat. Additionally, we detected a few bird nests in the holes on top of north facing side of the bridge. An emergence count should be conducted to have a better understanding of how bats are using this structure.



Figure 20: Photo of Hinkley Rd. Bridge taken from the North Side facing Southwards



Figure 21: Canyon Bat (*Parastrellus hesperus*) in between the metal joint on the East side of the bridge



Figure 22: Zoomed out photo of metal joint on Hinkley Rd. bridge where we detected Canyon Bats (*Parastrellus hesperus)*



Figure 23: Guano detected under the Hinkley Rd. Bridge with a penny for size comparison

State Highway 58 Bridges: We surveyed the two State highway bridges and observed a few holes on the underside of the bridge that could potentially be used by bats (Figure 24). We were not able to get very close to take a good look. While we did not detect any bats or signs of bat activities, an emergence count would need to be performed to be able to determine if bats are indeed using this structure. Low-medium potential for bridge to be used by bats.

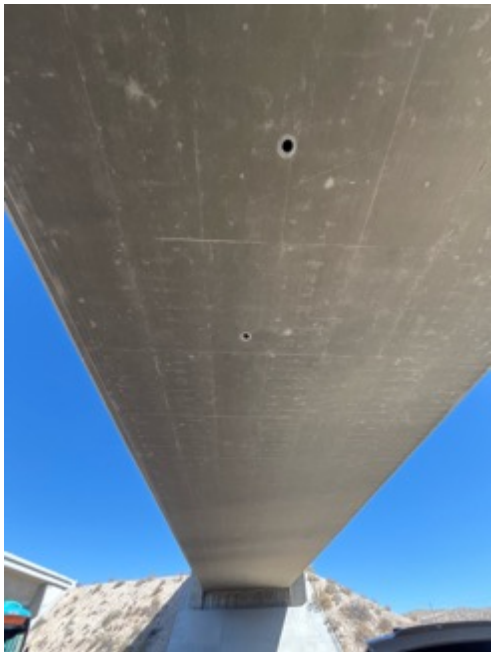


Figure 24: Holes on the underside of the State Highway 58 bridge

Passive Anabat Surveys

We deployed five Anabat bat detectors across the project site, prioritizing locations with potential flying corridors, roosting habitat, and foraging habitat. (Figure 25, blue squares).

Anabat #1: We deployed this Anabat near the electrical facility, along a potential flying corridor that bats may use.

Anabat #2: We deployed this Anabat in a wash next to railroad crossing #1 and #2. Bats can use washes as flying corridors and there was potential habitat inside the railroad crossing.

Anabat #3: We deployed this Anabat near the dunes and old agricultural fields. We positioned the Anabat along a dirt road lined with Tamarisk, as the area may serve as a flying corridor and foraging habitat for bats.

Anabat #4: We deployed this Anabat near the Hinkley Road bridge near some Mesquite and Cottonwoods as certain species of Bats roost in trees and forage on larger bodied insects near trees.

Anabat #5: We deployed this Anabat on the east side of railroad crossing #7 and #8. A large portion of this railroad crossing was hollow and it provided very good roosting habitat for bats.

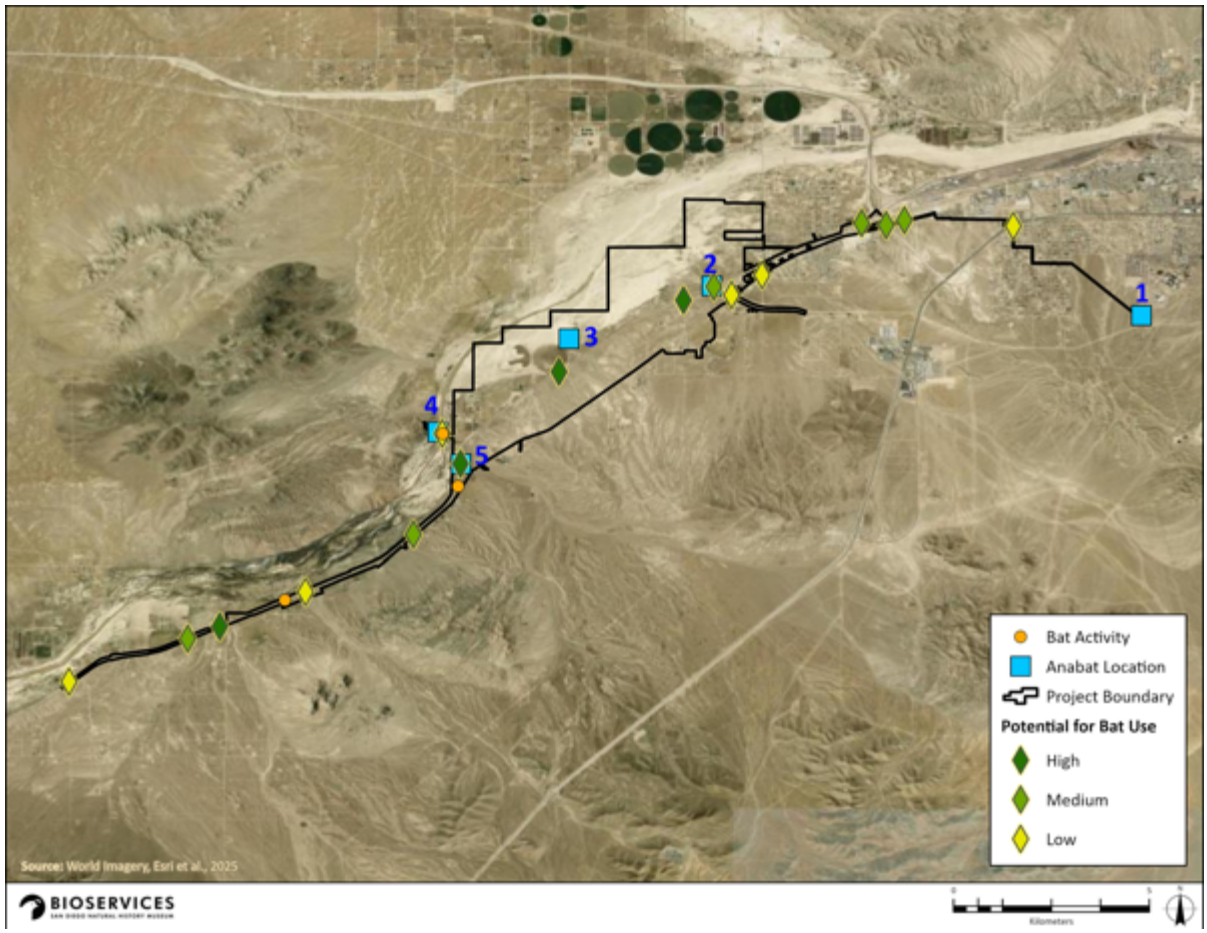


Figure 25: Map showing numbered Anabat detector locations, bat activity observations, and relative potential of structures to be used by bats.

ATTACHMENT Y

FOCUSED PRESENCE/ ABSENCE SURVEY FOR SOUTHWESTERN WILLOW FLYCATCHER, COMMUNITIES OF LENWOOD AND HODGE, SAN BERNARDINO COUNTY, CALIFORNIA, AUGUST 4, 2021

ROCK-001
August 4, 2021

Jim Rocks
Owner, Principal Biologist
Rocks Biological Consulting
4312 Rialto Street, San Diego, CA 92107

Subject: Focused Presence/Absence Survey for Southwestern Willow Flycatcher, Communities of Lenwood and Hodge, San Bernardino County, California.

Dear Mr. Rocks:

Borrego Biological was retained by Rocks Biological Consulting to conduct a habitat assessment and focused presence/absence survey for southwestern willow flycatcher (*Empidonax traillii extimus;* SWFL), an endangered subspecies of willow flycatcher (*Empidonax traillii*), at a linear project site and a buffer from the communities of Lenwood to Hodge in San Bernardino County, CA (Study Area; Attachment 1). The results of the surveys are presented below.

Survey Location

The initial Study Area covered several thousands of acres near or along the Mojave River between the communities of Lenwood and Hodge. Suitable habitat for SWFL was identified within the Study Area; however, portions of the suitable habitat were on private land and were inaccessible (Attachment 1). Surveys for SWFL in 2021 were thus conducted on approximately 37 acres of accessible suitable habitat where Hinkley Road crosses the Mojave River (Attachment 2). This survey location was within the California United States Geological Survey 7.5-minute *Hodge* topographic quadrangle, and the elevation was approximately 690 meters above mean sea level (Attachment 1). This survey area occurred within Assessor's Parcel Numbers 0420082230000, 0420082270000, and 0420091020000 (San Bernardino County Assessor-Recorder-Clerk 2021).

Methods

United States Fish and Wildlife Service (USFWS)-permitted biologist Linette Davenport (TE161483/ PER0007536) assessed the Study Area for suitable habitat for SWFL. Plant communities and associations were recorded in accordance with the categories set forth in *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009). The USFWS Critical Habitat Mapper and File Data (USFWS 2021) was reviewed to determine if the Project site was within designated critical habitat for SWFL. Ms. Davenport then conducted focused presence/absence surveys for SWFL according to *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* (Sogge et al. 2010). Five survey passes were conducted at least 5 days apart: one during May 15 - 31; two during June 1 -24; and two during June 25 – July 17.

All survey passes were conducted during favorable weather conditions between morning civil twilight and 1100 hours. Surveys were not conducted during excessive heat, cold, wind, rain, or other inclement weather that would be reasonably expected to reduce bird activity and consequential detection.

During each survey pass, Ms. Davenport walked paths throughout all suitable habitat looking and listening for SWFL, stopping at optimal stationary locations to look and listen for the target species without harming any other wildlife species in the area. Ms. Davenport used prerecorded willow flycatcher vocalizations to elicit SWFL within and/or adjacent to all suitable SWFL habitat. After a brief and silent acclimation period of one to two minutes, Ms. Davenport broadcasted the prerecorded SWFL vocalizations once at each chosen location, mimicking natural vocalization conditions (i.e., broadcast at natural volume occurring for approximately 10 to 15 seconds followed by 1 to 2 minutes of silence). Distance between broadcast

locations varied from 20 to 30 meters (60 to 100 feet), depending on topographic, vegetative, and other factors. If a willow flycatcher was detected, the taped vocalization broadcast was ceased at that location, and location, numbers, status, and demographic data were recorded.

The locations of any SWFL and other sensitive species were documented and mapped (Attachment 3), and California Natural Diversity Database (CNDDB) forms and Willow Flycatcher Survey and Detection forms were prepared (Attachment 4). If leg bands were observed, they were noted. Observations and numbers of brown-headed cowbirds also were noted and mapped (Attachment 3). All observed wildlife animal species were recorded for each survey day (Attachment 5). Site photographs and species photographs were taken (Attachment 6).

Results

Survey conditions are presented in Table 2.

Table 2. Survey Conditions

Survey Pass	Date 2021	Time (Start/End)	Temperature (Start/End) °F	Wind Speed (Start/End) mph	Cloud Cover (Start/End) %	Precipitation (Start/End)
HA	5/3	1400/1600	NR	NR	NR	NR
1	5/25	0515/1040	54.7/83.0	4(5)/4(6)	10/50	0/0
2	6/18	0500/0900	84.4/98.1	4(5)/2	60/60	0/0
3	6/24	0515/0930	65.6/84.0	0/0	60/30	0/0
4	6/29	0500/1000	77.3/85.8	0(1)/0	70/100	0/0
5	7/15	0515/0945	72.2/90.1	0/3	20/0	0/0

HA = Habitat Assessment; NR = Not Recorded

Habitat

L. Davenport assessed the Study Area for suitable habitat for SWFL on May 3, 2021. Approximately 37 acres of Tamarisk Thickets, low quality habitat for SWFL, were present where Hinkley Road crosses the Mojave River and were surveyed for SWFL. An additional patch of suitable habitat comprised of cottonwoods (*Populus* spp.) and willows (*Salix* spp.) was observed within the southern part of the Study Area. However, this was on private land and was not accessible and was not surveyed.

Tamarisk Thickets: Vegetation within the banks of the Mojave River in the Study Area was overwhelmingly dominated by tamarisk (*Tamarix ramosissima*) with a generally open canopy between small stands. Native shrubs were sparse: an occasional mulefat shrub (*Baccharis salicifolia*) was observed. The herbaceous layer was sparse, especially as it was a drought year. The soils were comprised of coarse sand riverwash of the Mojave Riverbed.

Critical Habitat

The Study Area is not within USFWS-designated critical habitat for SWFL (USFWS 2021).

Southwestern Willow Flycatcher

One willow flycatcher responded to broadcast vocalizations during the May 25 survey (Attachments 3, 4, and 6). It made several "fitz-bew" and "whit" calls and approached the broadcast. It perched in a tamarisk at GPS coordinates in UTM, NAD 83, Zone 11S: 482565 mE 3854417 mN. It then proceeded to forage in

tamarisk several meters to the west within the Study Area. No leg bands were observed. This observation occurred during SWFL Period 1 (May 15-31), when detected willow flycatchers may be migrants (Sogge et al. 2010). Because this willow flycatcher was not detected in any survey pass after this date, it was determined to be an unknown subspecies of willow flycatcher and was not a SWFL that was breeding within the survey area.

Other Species

No other special status species or brown-headed cowbirds were observed.

Conclusion and Discussion

Although a willow flycatcher was detected within the Study Area during one survey pass, it was not detected during any of the other passes. It was determined that the observed willow flycatcher individual was migrating through the Study Area and was not breeding. Since this individual was not determined to be the breeding SWFL subspecies, no confirmed SWFL were found in the accessible suitable habitat.

If access is gained to the suitable habitat within the southern portion of the Study Area, it is recommended to conduct a focused presence/absence survey there in a future breeding season.

Please do not hesitate to contact me at (714) 721-4621 or borregobiological@gmail.com if you have any questions.

Sincerely,



Linette Davenport
Borrego Biological

References

San Bernardino County Assessor-Recorder-Clerk
2021 Parcel Access and File Data. Retrieved from the San Bernardino County Assessor-Recorder-Clerk website: https://sbcountyarc.org/services/parcel-finder/

Sawyer, J.O., Jr., T. Keeler-Wolf, and J. Evens
2009 *A Manual of California Vegetation, Second Edition*. California Native Plant Society. Sacramento, California.

Sogge, M. K., Darrell Ahlers, and S. J. Sferra
2010 A natural history summary and survey protocol for the Southwestern Willow Flycatcher: United States Geological Survey Techniques and Methods 2A-10, 38 p.

United States Fish and Wildlife Service (USFWS)
2021 Critical Habitat Mapper and File Data. Retrieved from the USFWS Critical Habitat Mapper website: https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77

Attachments

1 – Study Area

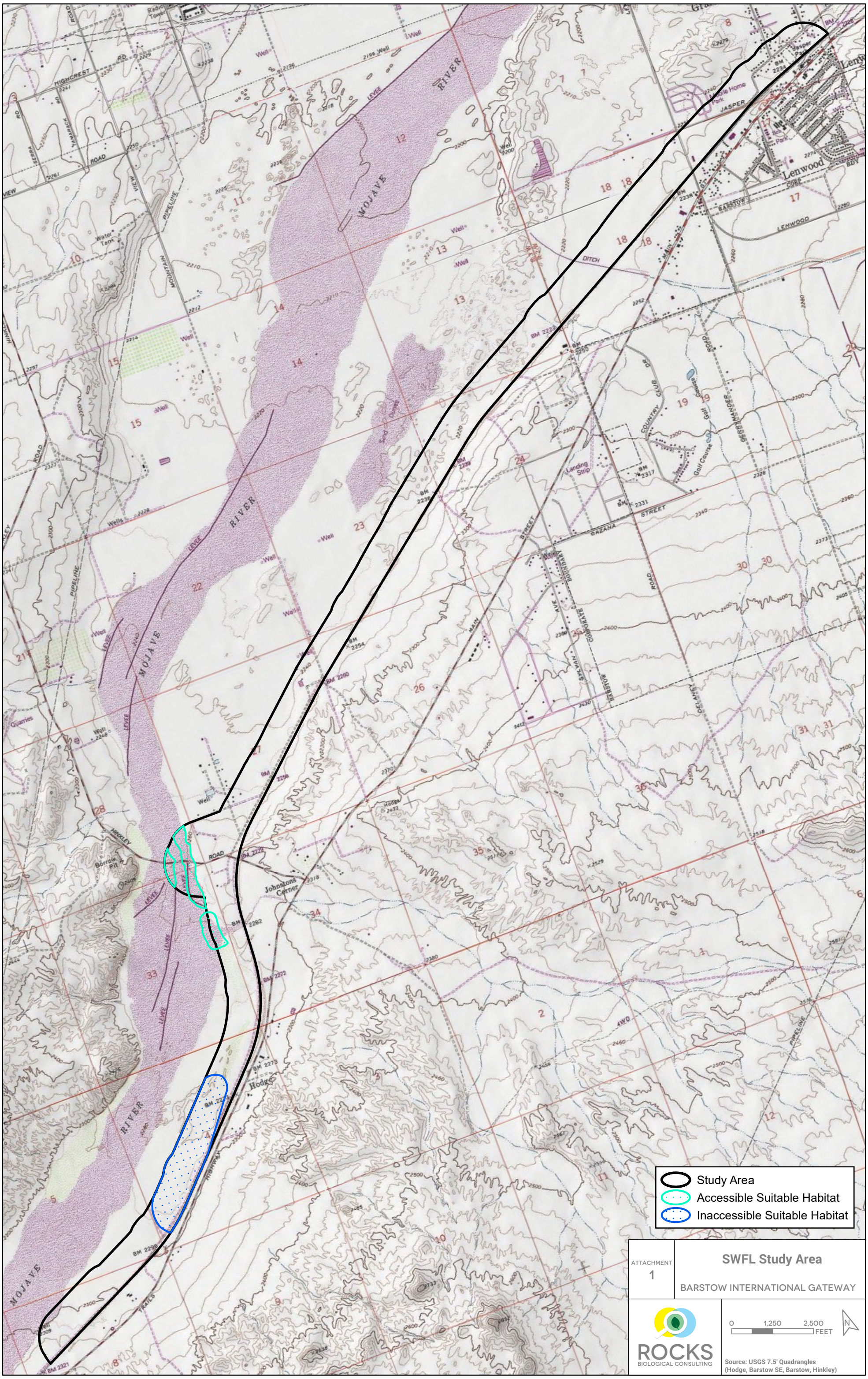
2 – Survey Location

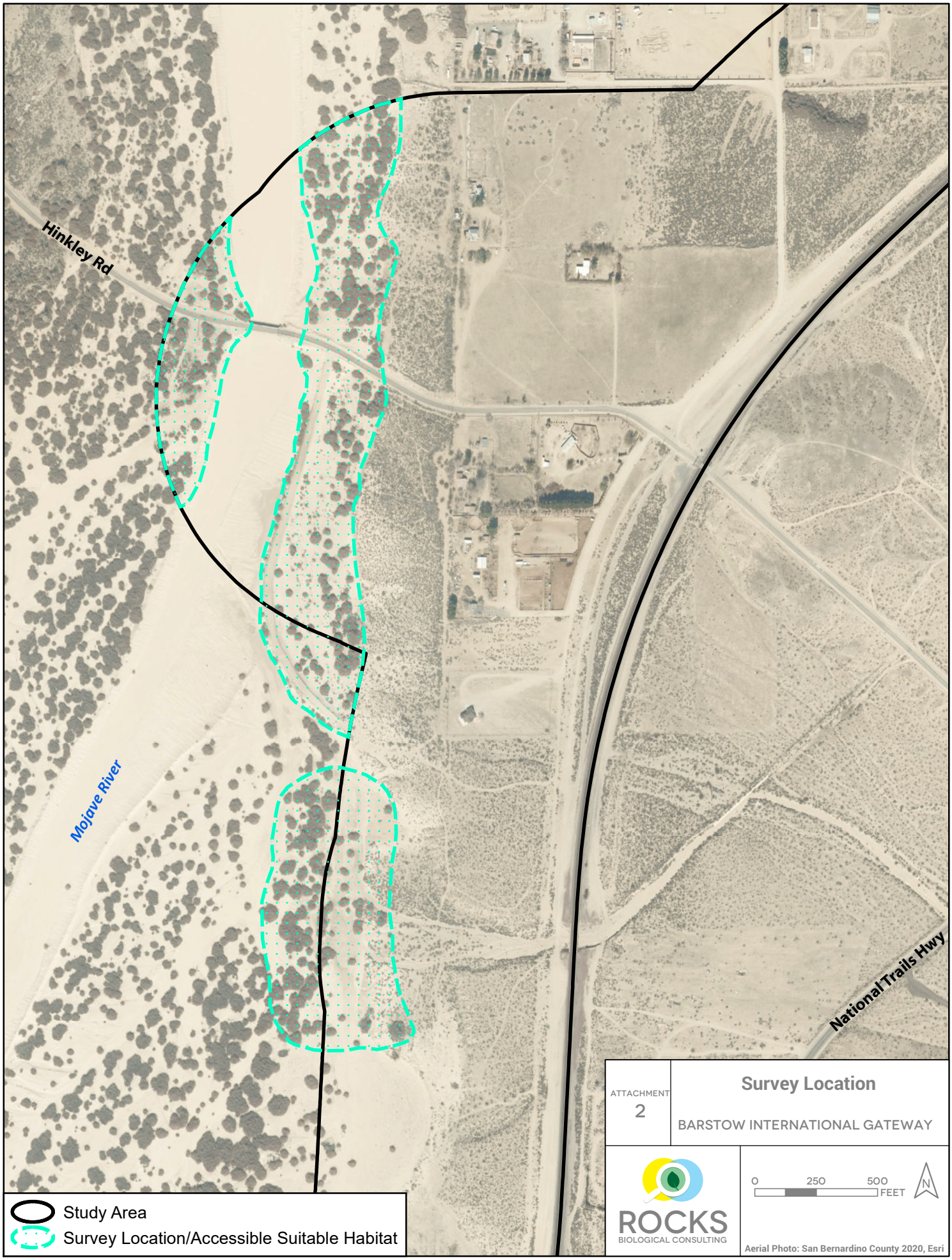
3 – Survey Results

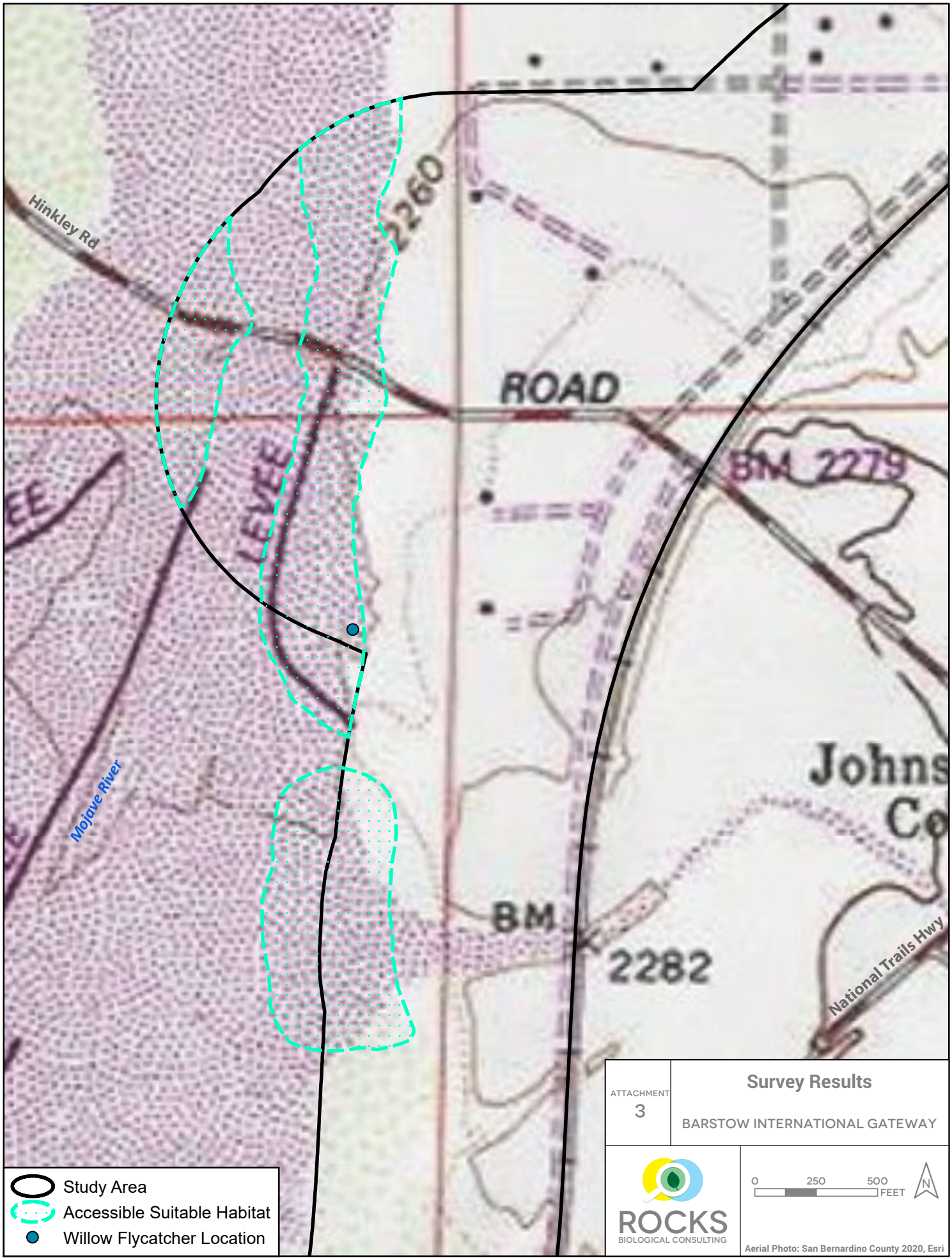
4 – CNDDB Forms, Willow Flycatcher Survey Forms

5 – Animal Species Observed

6 – Survey Photographs


Study Area
Accessible Suitable Habitat
Inaccessible Suitable Habitat
ATTACHMENT 1
SWFL Study Area
BARSTOW INTERNATIONAL GATEWAY
ROCKS
BIOLOGICAL CONSULTING
0 1,250 2,500
FEET
N
Source: USGS 7.5' Quadrangles
(Hodge, Barstow SE, Barstow, Hinkley)
MOJAVE RIVER
Lenwood
Hodge
Johnstons Corner
Barrow Pit
Landing Strip
Golf Course
Mobile Home Park
Water Tank
Quarries
Sand Dunes
Radio Tower
Well
LEVEE
PIPELINE
MOUNTAIN VIEW ROAD
HIGHCREST RD
HINKLEY ROAD
BARSTOW ROAD
MAIN STREET
LENWOOD
JASPER
GAZANA
COUNTRY CLUB DR
BROADWAY
DITCH
4WD TRAILS
BM 2223
BM 2238
BM 2254
BM 2160
BM 2236
BM 2282
BM 2372
BM 2273
BM 2296
BM 2321
BM 2331
BM 2317


Hinkley Rd
Mojave River
National Trails Hwy
Study Area
Survey Location/Accessible Suitable Habitat
ATTACHMENT 2
Survey Location
BARSTOW INTERNATIONAL GATEWAY
ROCKS BIOLOGICAL CONSULTING
0 250 500 FEET
N
Aerial Photo: San Bernardino County 2020, Esri


Hinkley Rd
2260
ROAD
LEVEE
BM 2279
Mojave River
BM
2282
National Trails Hwy
Study Area
Accessible Suitable Habitat
Willow Flycatcher Location
ATTACHMENT
3
Survey Results
BARSTOW INTERNATIONAL GATEWAY
ROCKS
BIOLOGICAL CONSULTING
0
250
500
FEET
N
Aerial Photo: San Bernardino County 2020, Esri

Attachment 4

CNDDB and Willow Flycatcher Survey Forms

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site ( ) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name LENWOOD State CA County SAN BERNARDINO
USGS Quad Name HODGE Elevation 690 (meters)
Creek, River, Wetland, or Lake Name MOJAVE RIVER
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ***Yes*** X ***No*** ___

Survey Coordinates: Start: E 482576 N 3855122 UTM Datum NAD83 (See instructions)
Stop: E 482482 N 3853946 UTM Zone 11S
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
***** Fill in additional site information on back of this page *****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.
Survey # 1 Observer(s) LINETTE DAVENPORT (LD)	Date 5/24/21 Start 0515 Stop 1040 Total hrs 5.5	1	Ø	Ø	N		# Birds: 1 · Sex: M · UTM E: 482565 · UTM N: 3854417
Survey # 2 Observer(s) LD	Date 6/18/21 Start 0500 Stop 0900 Total hrs 4	Ø	Ø	Ø	N		# Birds · Sex · UTM E · UTM N
Survey # 3 Observer(s) LD	Date 6/24/21 Start 0515 Stop 0930 Total hrs 4.25	Ø	Ø	Ø	N		# Birds · Sex · UTM E · UTM N
Survey # 4 Observer(s) LD	Date 6/29/21 Start 0500 Stop 1000 Total hrs 5	Ø	Ø	Ø	N		# Birds · Sex · UTM E · UTM N
Survey # 5 Observer(s) LD	Date 7/15/21 Start 0515 Stop 0945 Total hrs 4.5	Ø	Ø	Ø	N		# Birds · Sex · UTM E · UTM N
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs 23.25		Total Adult Residents: Ø	Total Pairs: Ø	Total Territories: Ø	Total Nests: Ø	Were any Willow Flycatchers color-banded? Yes ___ No ✓ If yes, report color combination(s) in the comments section on back of form and report to USFWS.	

Reporting Individual LINETTE DAVENPORT Date Report Completed 7/29/21
US Fish and Wildlife Service Permit # TE161483/PER0007536 State Wildlife Agency Permit # SCP-008260
Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual LINETTE DAVENPORT Phone # (714) 721-4621
Affiliation BORREGO BIOLOGICAL E-mail borregobiological@gmail.com
Site Name LENWOOD Date Report Completed 07/29/21
Was this site surveyed in a previous year? Yes___ No ___ Unknown X
Did you verify that this site name is consistent with that used in previous years? Yes ___ No X Not Applicable ___
If site name is different, what name(s) was used in the past? ___
If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes ___ No ___ If no, summarize below.

Management Authority for Survey Area: Federal___ Municipal/County X State ___ Tribal ___ Private ___
Name of Management Entity or Owner (e.g., Tonto National Forest) SAN BERNARDINO COUNTY FLOOD CONTROL

Length of area surveyed: 0.70 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

___ Native broadleaf plants (entirely or almost entirely, > 90% native)

___ Mixed native and exotic plants (mostly native, 50 - 90% native)

___ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

X Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific names.
Tamarix ramosissima, Baccharis salicifolia

Average height of canopy (Do not include a range): 5m (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections; 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests; 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.
Start and end coordinates were interchanged from survey pass to survey pass to reduce weather + time bias. One WIFL detected during 5/25 survey. No WIFLs detected during any other survey.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Attachment 5

Animal Species Observed

Scientific Name	Common Name
CLASS REPTILIA	REPTILES
FAMILY IGUANIDAE	IGUANAS
Dipsosaurus dorsalis	Desert iguana
FAMILY PHRYNOSOMATIDAE	HORNED AND SPINY LIZARDS
Sceloporus uniformis	Yellow-backed spiny lizard
Callisaurus draconoides	Zebra-tailed lizard
CLASS AVES	BIRDS
FAMILY ODONTOPHORIDAE	QUAIL
Callipepla californica	California quail
FAMILY COLUMBIDAE	DOVES, PIGEONS
Zenaida macroura	Mourning dove
Streptopelia decaocto	Eurasian collared-dove
FAMILY CAPRIMULGIDAE	NIGHTJARS AND RELATIVES
Chordeiles acutipennis	Lesser nighthawk
FAMILY TROCHILIDAE	HUMMINGBIRDS
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
FAMILY CHARADRIIDAE	SANDPIPERS AND RELATIVES
Charadrius vociferus	Killdeer
FAMILY ACCIPTRIDAE	HAWKS, KITES, EAGLES, AND ALLIES
Buteo lineatus	Red-shouldered hawk
FAMILY TYTONIDAE	BARN OWLS
Tyto alba	Barn owl
FAMILY TYRANNIDAE	TYRANT FLYCATCHERS
Contopus cooperi	Olive-sided flycatcher
Empidonax traillii	Willow flycatcher
Empidonax oberholseri	Dusky flycatcher
Empidonax difficilis	Pacific-slope flycatcher
Sayornis nigricans	Black phoebe
Sayornis saya	Say's phoebe
Myiarchus cinerascens	Ash-throated flycatcher
Tyrannus verticalis	Western kingbird
FAMILY VIREONIDAE	VIREOS
Vireo gilvus	Warbling vireo
FAMILY CORVIDAE	CROWS, RAVENS, AND RELATIVES
Corvus corax	Common raven
FAMILY ALAUDIDAE	LARKS

Scientific Name	Common Name
Eremophila alpestris	Horned lark
FAMILY HIRUNDINIDAE	SWALLOWS
Petrochelidon pyrrhonota	Cliff swallow
FAMILY TROGLODYTIDAE	WRENS
Thryomanes bewickii	Bewick's wren
FAMILY REMIZIDAE	VERDIN
Auriparus flaviceps	Verdin
FAMILY MIMIDAE	THRASHERS, MOCKINGBIRDS, AND RELATIVES
Toxostoma redivivum	California thrasher
Mimus polyglottos	Northern mockingbird
FAMILY PARULIDAE	WOOD WARBLERS
Oreothlypis ruficapilla	Nashville warbler
Cardellina pusilla	Wilson's warbler
FAMILY EMBERIZIDAE	SPARROWS AND RELATIVES
Chondestes grammacus	Lark sparrow
Artemisiospiza belli	Bell's sparrow
FAMILY CARDINALIDAE	CARDINALS, GROSBEAKS, AND ALLIES
Piranga ludoviciana	Western tanager
Pheucticus melanocephalus	Black-headed grosbeak
FAMILY FRINGILLIDAE	FINCHES
Haemorhous mexicanus	House finch
Spinus psaltria	Lesser goldfinch
FAMILY PASSERIDAE	OLD WORLD SPARROWS
Passer domesticus	House sparrow
CLASS MAMMALIA	MAMMALS
FAMILY LEPORIDAE	RABBITS AND HARES
Sylvilagus audubonii	Audubon's cottontail
Lepus californicus	Black-tailed jackrabbit

Attachment 6
Survey Photographs

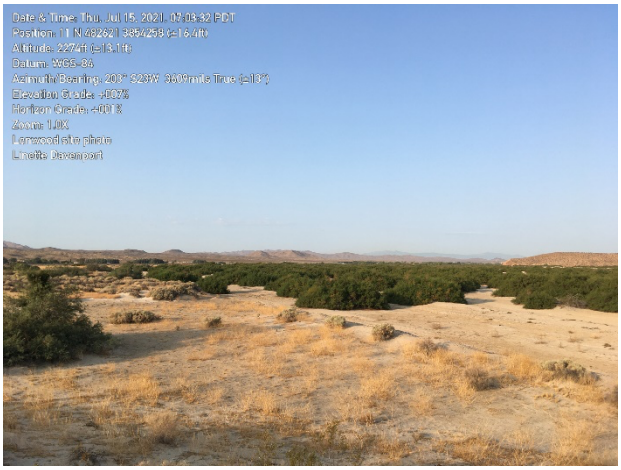


Photo 1. Photo facing southwest depicting southern portion of suitable accessible habitat.



Photo 2. Photo facing southeast depicting accessible suitable habitat immediately south of Hinkley Road.



Photo 3. Photo facing southwest depicting accessible suitable habitat north of Hinkley Road.

Attachment 6
Survey Photographs



Photo 4. Photo facing south depicting accessible suitable habitat on the west bank of the Mojave River, south of Hinkley Road.



Photo 5. Photo of the Willow Flycatcher observed on May 25, 2021 depicting its dorsal side.



Photo 6. A second photo of the Willow Flycatcher observed on May 25, 2021 depicting its ventral side.

ATTACHMENT Z

FOCUSED PRESENCE/ ABSENCE SURVEY FOR SOUTHWESTERN WILLOW FLYCATCHER, COMMUNITIES OF LENWOOD AND HODGE, SAN BERNARDINO COUNTY, CALIFORNIA, SEPTEMBER 20, 2022

ROCK-004
September 20, 2022

Jim Rocks
Owner, Principal Biologist
Rocks Biological Consulting
4312 Rialto Street, San Diego, CA 92107

Subject: Focused Presence/Absence Survey for Southwestern Willow Flycatcher, Communities of Lenwood and Hodge, San Bernardino County, California.

Dear Mr. Rocks:

Borrego Biological was retained by Rocks Biological Consulting to conduct a habitat assessment and focused presence/absence survey for southwestern willow flycatcher (*Empidonax traillii extimus;* SWFL), an endangered subspecies of willow flycatcher (*Empidonax traillii*; WIFL), at a linear project site and a buffer near the communities of Lenwood and Hodge in San Bernardino County, CA (Survey Area; Attachment 1). The results of the surveys are presented below.

Survey Area

Surveys for SWFL in 2022 were conducted in the same survey area as in 2021 (Davenport 2021) plus additional acreage in areas that were inaccessible in 2021, as well as additional suitable habitat for a total of approximately 115 acres (Attachment 2). This survey location was within the California United States Geological Survey 7.5-minute *Hodge* topographic quadrangle, and the elevation was approximately 690 meters above mean sea level (Attachment 1). The Survey Area occurred within Assessor's Parcel Numbers 0420082230000, 0420082270000, 0420091020000, 0420082080000, 0420121010000, 0420121110000, and 042012103000 (San Bernardino County Assessor-Recorder-Clerk 2022).

Methods

United States Fish and Wildlife Service (USFWS)-permitted biologist Linette Davenport (PER0007536) assessed the Survey Area for suitable habitat for SWFL. Plant communities and associations were recorded in accordance with the categories set forth in *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009) (Attachment 3). The USFWS Critical Habitat Mapper and File Data (USFWS 2022) was reviewed to determine if the Survey Area was within designated critical habitat for SWFL. Ms. Davenport then conducted focused presence/absence surveys for SWFL according to *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* (Sogge et al. 2010). Five survey passes were conducted at least 5 days apart: one during May 15 - 31; two during June 1 -24; and two during June 25 – July 17.

All survey passes were conducted during favorable weather conditions between morning civil twilight and 1100 hours. Surveys were not conducted during excessive heat, cold, wind, rain, or other inclement weather that would be reasonably expected to reduce bird activity and consequential detection. In order to cover the Survey Area thoroughly, each survey pass took two mornings to complete. L. Davenport did not conduct any other surveys concurrently with the SWFL survey.

During each survey pass, Ms. Davenport walked paths throughout all suitable habitat looking and listening for SWFL, stopping at optimal stationary locations to look and listen for the target species without harming any other wildlife species in the area. To reduce bias from environmental conditions, the taken each survey day varied between survey passes. Ms. Davenport used prerecorded WIFL vocalizations to elicit SWFL within and/or adjacent to all suitable SWFL habitat. After a brief and silent acclimation period of one to two minutes, Ms. Davenport broadcasted the prerecorded SWFL vocalizations once at each chosen location, mimicking natural vocalization conditions (i.e., broadcast at natural volume occurring for approximately 10

to 15 seconds followed by 1 to 2 minutes of silence). Distance between broadcast locations varied from 20 to 30 meters (60 to 100 feet), depending on topographic, vegetative, and other factors. If a WIFL was detected, the vocalization broadcast was ceased at that location, and location, numbers, status, and demographic data were recorded.

The locations of any SWFL and other sensitive species were documented and mapped (Attachment 4), and California Natural Diversity Database (CNDDB) forms and Willow Flycatcher Survey and Detection forms were prepared (Attachment 5). If leg bands were observed, they were noted. Observations and numbers of brown-headed cowbirds also were noted and mapped (Attachment 4). All observed wildlife animal species were recorded for each survey day (Attachment 6). Site photographs and species photographs were taken (Attachment 7).

Results

Survey conditions are presented in Table 1.

Table 1. Survey Conditions

Survey Pass	Date 2022	Time (Start/End)	Temperature (Start/End) °F	Wind Speed (Start/End) mph	Cloud Cover (Start/End) %	Precipitation (Start/End)
1a	5/17	0615/1100	64/80	2(4)/3(6)	0/0	0/0
1b	5/18	0535/1100	60/84	0/1(3)	0/0	0/0
2a	6/2	0515/1100	58/91	2/5(7)	0/50	0/0
2b	6/3	0530/1030	66/90	3(4)/5(7)	15/90	0/0
3a	6/16	0530/1015	65/95	0/1	0/0	0/0
3b	6/17	0535/1020	65/94	3/5(6)	0/25	0/0
4a	6/29	0515/0945	69/96	0/3	0/0	0/0
4b	6/30	0520/0940	72/93	1/3(4)	5/5	0/0
5a	7/13	0515/0915	74/85	0/0	0/0	0/0
5b	7/14	0515/1000	74/92	0(1)/0	0/0	0/0

Habitat

Suitable habitat within the Survey Area included Tamarisk Thickets, fragments of Black Willow Thickets, and small stands of honey mesquite (*Prosopis glandulosa*) and Fremont cottonwood (*Populus fremontii*) (Attachment 3). (The suitable habitat in the southernmost portion of the Survey Area was surrounded by Fourwing Saltbush Scrub.)

Tamarisk Thickets (99 acres): Vegetation within the banks of the Mojave River in the Survey Area was dominated by tamarisk (*Tamarix ramosissima*) with a generally open canopy between small stands. Native shrubs were sparse: an occasional mulefat shrub (*Baccharis salicifolia*) and screwbean mesquite (*Prosopis pubescens*) were observed. The herbaceous layer was sparse, especially as it was a drought year. The soils were comprised of coarse sand riverwash of the Mojave Riverbed.

During surveys in late May and June, L. Davenport observed tamarisk shrubs drying out and beginning to defoliate, and especially during the June 16 and 17 surveys, she observed very large swarms of tamarisk

beetle (*Diorhabda* sp.) throughout the Survey Area (Attachment 7). Almost all the tamarisk stands were defoliating by July. No native shrubs appeared to be negatively impacted.

Black Willow Thickets (5 acres): Fragments of Black Willow Thickets occurred southwest of the Hinkley Road bridge and in the southernmost section of the Survey Area. Black willow (*Salix goodingii*), occasional Fremont cottonwood, and occasional honey mesquite and screwbean mesquite trees were surrounded by Tamarisk Thickets or Fourwing Saltbush Scrub. The herbaceous layer was sparse, with patches of desert saltgrass (*Distichlis spicata*) present in the alkaline soils in the southernmost section of the Survey Area.

Critical Habitat

The Survey Area is not within USFWS-designated critical habitat for SWFL (USFWS 2022).

Willow Flycatcher/ Southwestern Willow Flycatcher

Several WIFL were observed during the SWFL surveys and were incidentally observed during focused surveys for least Bell's vireo (*Vireo bellii pusillus*; LBVI) and yellow-bellied cuckoo (*Coccyzus americanus*; YBCU) in the Survey Area (Table 2, Attachment 4). No leg bands were observed.

Table 2. Willow Flycatcher Observations

Location #	Date (2022)	# Individuals	Dot Color in Attachment 4	UTM E*	UTM N*	Comments
1	5/17	1	Black	482614	38551223	
2	5/17, 5/31	2	Black	482409	3854851	2 adults observed during 5/17 SWFL survey and 5/31 LBVI survey
3	5/18	1	Black	482605	3854782	
4	5/18	1	Black	482563	3854596	
5	5/18	1	Black	482514	3854419	
6	5/18	1	Black	482506	3853736	
7	5/20, 6/1, 6/15	1	Light Blue	481627	3852314	Incidentally observed during 3 LBVI surveys
8	5/20	1	Blue	482497	3853978	Incidentally observed during a LBVI survey
9	6/3	2	Orange	481848	3852525	
10	6/3	1	Orange	482556	3853827	
11	8/11	1	Red	481543	3852324	Incidentally observed during a YBCU survey
12	8/11	2	Red	482520	3853680	Incidentally observed during a YBCU survey

*****NAD83, Zone 11

1 – One adult WIFL was "fitz-bewing" in tamarisk in the northeastern section of the Survey Area.

2 – L. Davenport detected two adult WIFL foraging and interacting with each other during the 5/17 SWFL survey pass. She also incidentally observed presumably the same two WIFL on 5/31 as she was conducting a LBVI survey pass. Both individuals vocalized to each other with several "whits" and "fitz-bews" and actively foraged in a small stand of honey mesquite and a Fremont cottonwood northwest of the Hinkley Road bridge.

3 – One adult WIFL "whitted" and eventually "fitz-bewed" in a large tamarisk just north of Hinkley Road east of the Mojave River.

4 – One adult WIFL "fitz-bewed" in response to broadcast vocalization while in tamarisk immediately south of Hinkley Road east of the Mojave River.

5 - One adult WIFL "fitz-bewed" in response to broadcast vocalization while in tamarisk south of Hinkley Road east of the Mojave River.

6 - One adult WIFL "fitz-bewed" in response to broadcast vocalization while in tamarisk south of Hinkley Road east of the Mojave River.

7 – L. Davenport incidentally observed one adult WIFL foraging in a stand of honey mesquite in the southernmost (most upstream) section of the Survey Area during three different survey passes for LBVI. She did not detect it during SWFL surveys.

8 – L. Davenport incidentally observed one adult WIFL in a lone red willow (*Salix laevigata*) tree within a large stand of tamarisk during a LBVI survey pass.

9 – Two adult WIFL were detected in the Black Willow Thickets within the southernmost section of the Survey Area. They counter-sang to each other with several "fitz-bews" and "whits" for more than 20 minutes.

10 – One adult WIFL responded to broadcast vocalization while foraging low within a honey mesquite tree. It sang several "fitz-bews" but eventually became silent and continued to actively forage within the honey mesquite.

11 – Arthur Davenport (who is also permitted to conduct SWFL surveys, TE802450-9) incidentally observed one adult WIFL as he was conducting a YBCU survey pass in August. It was foraging within a honey mesquite in the southernmost section of the Survey Area, west of Location #7. It made several "whit," "briiit," and "purr" calls.

12 – A. Davenport incidentally observed two adult WIFL as he was conducting a YBCU survey pass in August. They were making "whit," "fitz-bew," and "purr" vocalizations as they were foraging in a stand of honey mesquite.

Other Special Status Species

One olive-sided flycatcher (*Contopus cooperi*) was observed on June 3, one Lucy's warbler (*Leiothlypis luciae*) was observed on June 17, and one loggerhead shrike (*Lanius ludovicianus*) was observed on July 14. All three species are CDFW Species of Special Concern. The individuals observed appeared to be migrating or dispersing through the Survey Area and did not appear to be nesting within the Survey Area, and thus were not reported to the CNDDB.

Brown-headed Cowbirds

Brown-headed cowbirds were heard twice during surveys, generally heard coming from the residential areas to the east of the Survey Area (Attachment 4).

Discussion

Several WIFL were observed throughout the Survey Area during the first two survey passes for SWFL and until June 15 incidentally during LBVI surveys. However, they were not detected after June 15 through July 17 during any SWFL surveys or other surveys in the Survey Area. According to Sogge et al., if detected only during May 15 – June 24, WIFL found during that time are probably migrants unless evidence of breeding is noted (2010). Even though some possible pair interactions were observed when there were

two WIFL observed together, no solid evidence of breeding was observed and the WIFL observed were determined to be migrants. No breeding SWFL were detected in the Survey Area.

Three WIFL were incidentally observed on August 11 during a YBCU survey. The breeding season for SWFL may last into early August (Sogge et al 2010), so it is possible that these individuals had bred locally in the region, possibly further upstream in the Mojave River where there are larger stands of Fremont cottonwood and black willow, and were travelling through the Survey Area during post-breeding dispersal. However, WIFL are also late-summer and early-fall migrants: "The first fall transients arrive [in southern California] at the very end of July in the interior, where migration peaks from mid-August to early September" (Garrett and Dunn, 1981). Therefore, it is undetermined whether the observed individuals were locally breeding SWFL or if they were migrating WIFL.

During surveys in late May and June, the extensive Tamarisk Thickets throughout the Survey Area were heavily impacted and defoliated by tamarisk beetle. This appears to be the first year that tamarisk beetle invaded the region, since tamarisk defoliation was not documented during SWFL surveys in 2021 in the Survey Area (Attachment 7). Even though tamarisk is invasive and negatively impacts negative vegetation and animals, it still can provide habitat for SWFL. The possible impacts of widespread defoliation of tamarisk by tamarisk beetle on SWFL and riparian birds are unknown and may vary, but it is possible that it could be detrimental unless active restoration of native vegetation also occurs prior to complete eradication of tamarisk in the region (Paxton et al 2011). Even though SWFL were not breeding in the Survey Area, WIFL were using the Survey Area heavily during migration, both prior to breeding and afterward, so habitat within the Survey Area is still highly important to WIFL. In particular, the observed individuals were often detected within honey mesquite, so honey mesquite restoration is recommended in addition to black willow and Fremont cottonwood restoration in the region. Native habitat restoration may also increase the regional SWFL breeding population.

Conclusion

No SWFL were found to be nesting in the Survey Area. Several migrating WIFL were detected in the Survey Area, so the habitat in the Survey Area is still important to the species. Tamarisk beetle were newly discovered in the Survey Area in 2022 and may have negative impacts on WIFL unless it is addressed within the region.

Please do not hesitate to contact me at (714) 721-4621 or borregobiological@gmail.com if you have any questions.

Sincerely,



Linette Davenport
Borrego Biological

SURVEYOR'S CERTIFICATION

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



Linette Davenport
PER0007536-0
September 19, 2022

References

Garrett, Kimball and Jon Dunn
1981 *Birds of Southern California: Status and Distribution*. Los Angeles Audubon Society. Los Angeles, California.

Paxton, Eben H., Tad C. Theimer, and Mark K. Sogge
2011 Tamarisk Biocontrol using Tamarisk Beetles: Potential Consequences for Riparian Birds in the Southwestern United States. The Condor, Volume 113, Issue 2, Pages 255–265. Retrieved from the American Ornithological Society website: https://doi.org/10.1525/cond.2011.090226

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2022 Parcel Access and File Data. Retrieved from the San Bernardino County Assessor-Recorder-Clerk website: https://arcpropertyinfo.sbcounty.gov/

Sawyer, J.O., Jr., T. Keeler-Wolf, and J. Evens
2009 *A Manual of California Vegetation, Second Edition*. California Native Plant Society. Sacramento, California.

Sogge, M. K., Darrell Ahlers, and S. J. Sferra
2010 A natural history summary and survey protocol for the Southwestern Willow Flycatcher: United States Geological Survey Techniques and Methods 2A-10, 38 p.

United States Fish and Wildlife Service (USFWS)
2022 Critical Habitat Mapper and File Data. Retrieved from the USFWS Critical Habitat Mapper website: https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77

Attachments

1 – Survey Area

2 – Survey Location

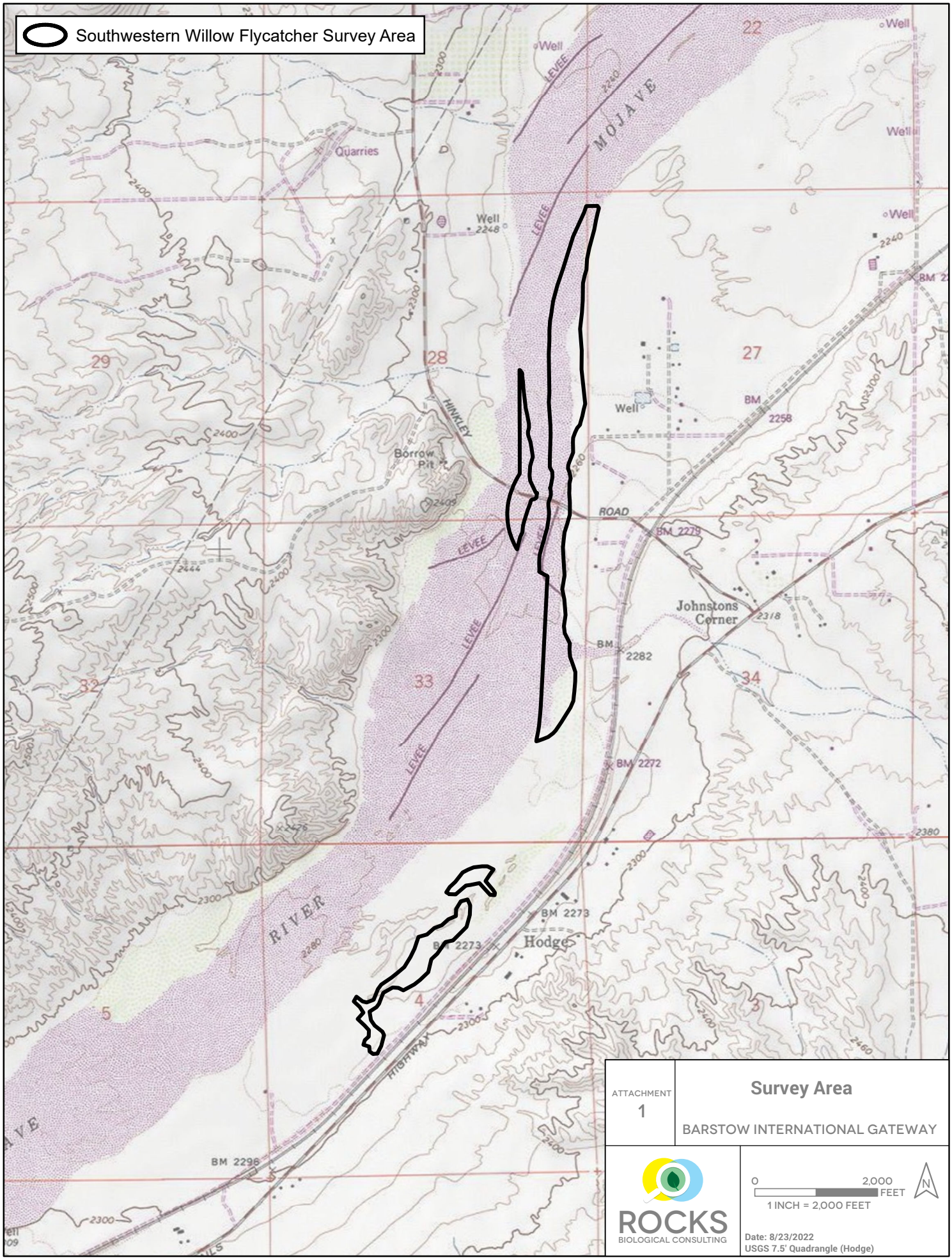
3 – Vegetation

4 – Willow Flycatcher And Brown-headed Cowbird Observations

5 – CNDDB Forms, Willow Flycatcher Survey Forms

6 – Animal Species Observed

7 – Survey Photographs



ATTACHMENT 1

Survey Area

BARSTOW INTERNATIONAL GATEWAY

ROCKS BIOLOGICAL CONSULTING

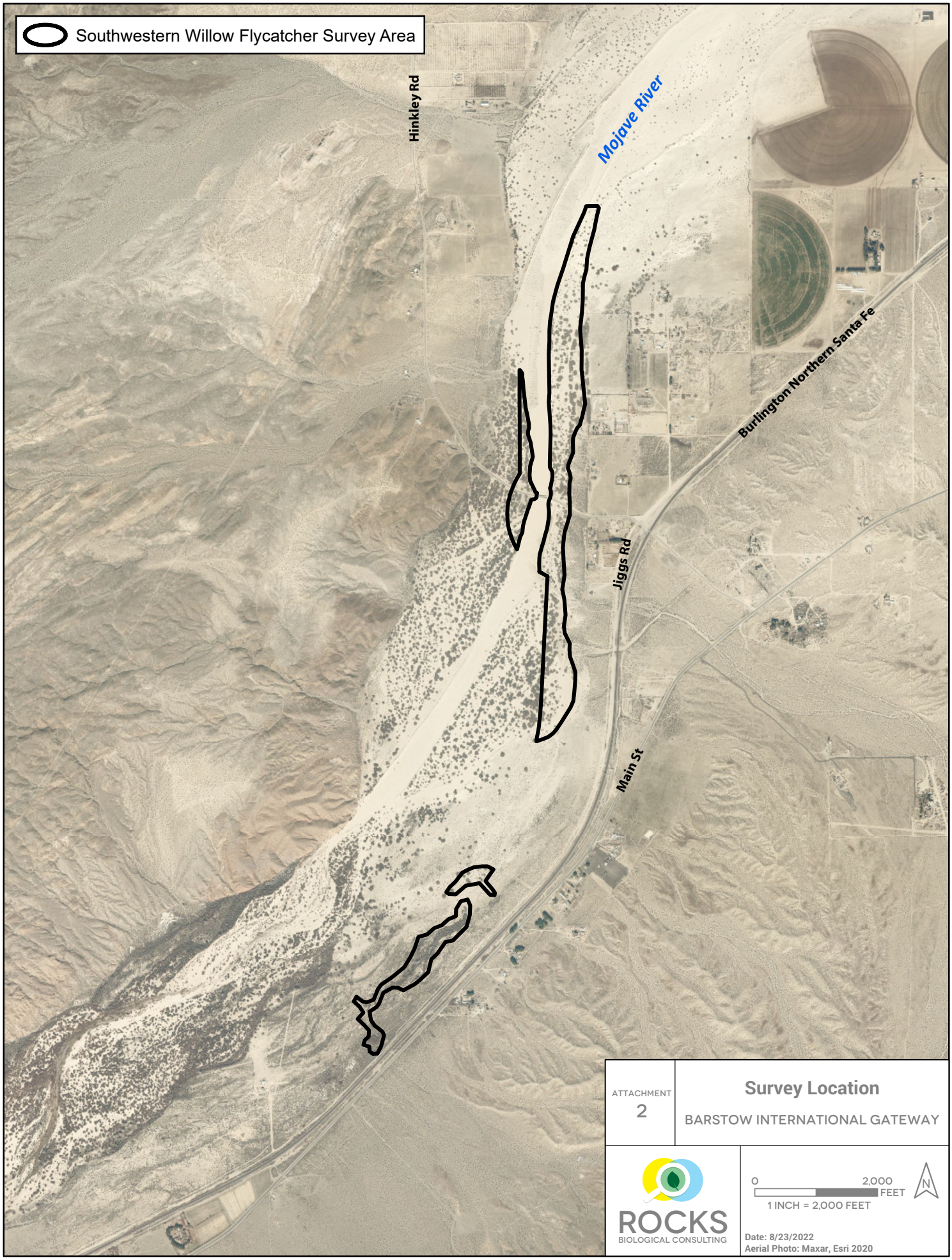
0 2,000 FEET

1 INCH = 2,000 FEET

N

Date: 8/23/2022

USGS 7.5' Quadrangle (Hodge)



ATTACHMENT 2

Survey Location

BARSTOW INTERNATIONAL GATEWAY

ROCKS BIOLOGICAL CONSULTING

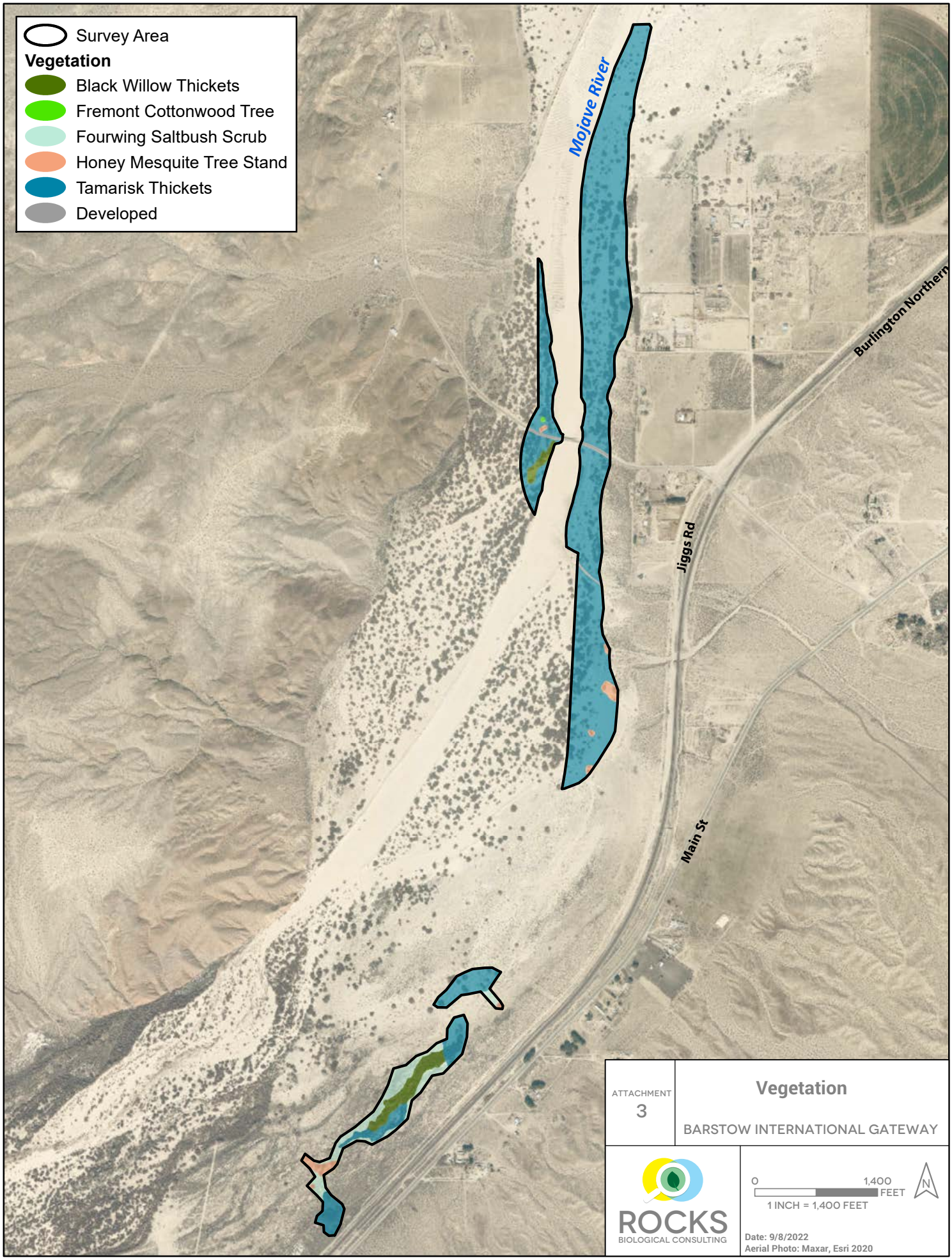
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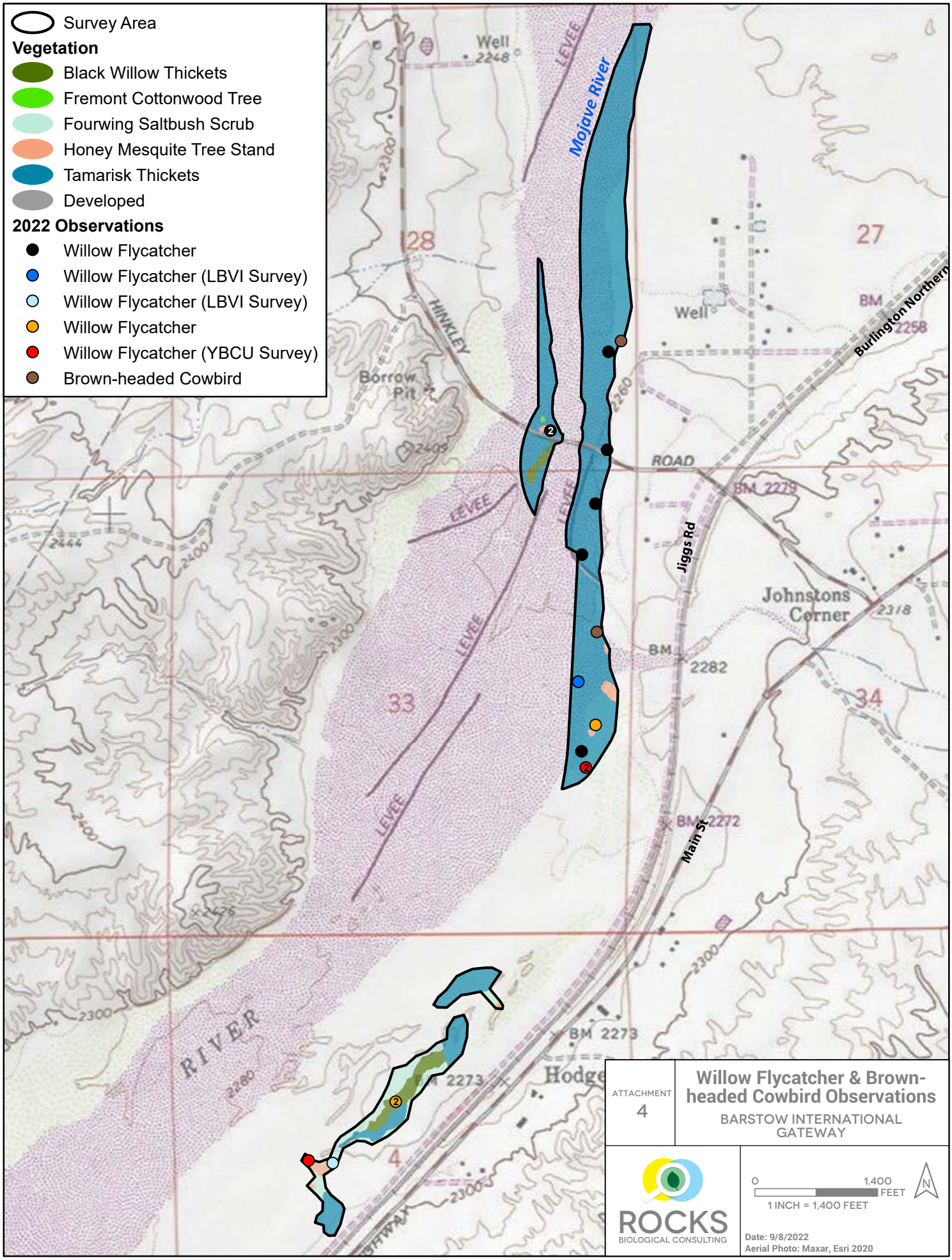
1 INCH = 2,000 FEET

N

Date: 8/23/2022

Aerial Photo: Maxar, Esri 2020


Survey Area
Vegetation
Black Willow Thickets
Fremont Cottonwood Tree
Fourwing Saltbush Scrub
Honey Mesquite Tree Stand
Tamarisk Thickets
Developed
Mojave River
Burlington Northern
Jiggs Rd
Main St
ATTACHMENT
3
Vegetation
BARSTOW INTERNATIONAL GATEWAY
ROCKS
BIOLOGICAL CONSULTING
0
1,400
FEET
1 INCH = 1,400 FEET
N
Date: 9/8/2022
Aerial Photo: Maxar, Esri 2020



ATTACHMENT 4

Willow Flycatcher & Brown-headed Cowbird Observations

BARSTOW INTERNATIONAL GATEWAY

ROCKS BIOLOGICAL CONSULTING

0 1,400 FEET

1 INCH = 1,400 FEET

N

Date: 9/8/2022

Aerial Photo: Maxar, Esri 2020

Attachment 5

CNDDB and Willow Flycatcher Survey Forms

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code DAV22F0003
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Empidonax traillii*

Common name: willow flycatcher

Date of field work (mm-dd-yyyy): 08-11-2022

Comment about field work date(s): Observations took place from 5/17/22 - 6/15/22 and on 8/11/22.

OBSERVER INFORMATION

Observer: Linette Davenport

Affiliation: Borrego Biological

Address: 5820 Alpine Woods Dr. , Anchorage, AK 99516

Email: borregobiological@gmail.com

Phone: (714) 721-4621

Other observers: Arthur Davenport

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: 2 identified by Arthur Davenport incidentally on 8/11 during YBCU survey

Other: Familiarity with vocalizations and visual markings

Identification explanation: Individuals were observed visually and aurally. Identification was confirmed by "fitz-bew" vocalizations. Photos were taken as feasible.

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: 5 SWFL survey passes following USGS 2010 guidelines; incidental observations also made during LBVI and YBCU surveys. Observations occurred 5/17-6/15 during SWFL & LBVI surveys, then 2 WIFL were observed on 8/11 during a YBCU survey.

Total number of individuals: At least 13

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Heard calling then seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
9				

Age class comment:

Bird site use:

☐ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☑ **Other**

Site use description: Migrating

What was the observed behavior? Foraging. Individuals were observed during surveys from 5/17 - 6/15, then not observed during rest of SWFL surveys or other LBVI surveys. No nesting behavior obs. On 8/11, 2 WIFL observed could have been migrating or maybe SWFL that bred in the region.

Describe any evidence of reproduction: None observed.

SITE INFORMATION

Habitat description: Tamarisk Thickets dominated by tamarisk (Tamarix ramosissima) with a generally open canopy between small tamarisk stands within the banks of the Mojave River. Occasional honey mesquite, Fremont cottonwood, and black willow scattered.

Slope:

Aspect:

Land owner/manager: Private, San Bernardino County Flood Control

Site condition + population viability: Poor

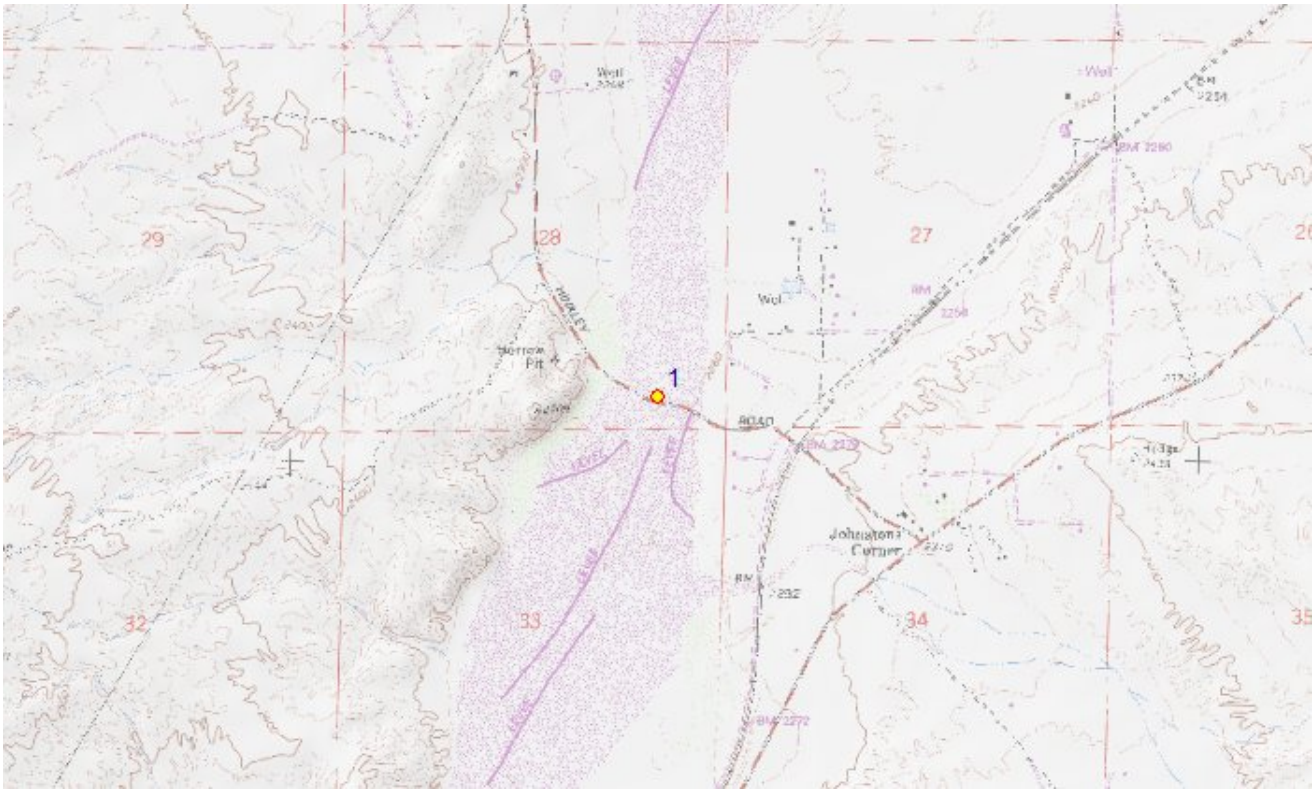
Immediate & surrounding land use: Mojave River, residential properties, a livestock corral, a railroad, and Route 66 to the east.

Visible disturbances: Non-native vegetation, scouring, trash, OHV use

Threats: OHV use; also, in June 2022 large swarms of Diorhabda sp. were observed within the entire survey area. Almost all stands of tamarisk, which dominate the survey area, became deciduous and defoliated. This was not observed during surveys in 2021.

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2262	34.83580	-117.19239	482409	3854851	11

1	Public Land Survey	Feature Comment
	S T09N R03W 28	

The mapped feature is accurate within: 1000 m

Source of mapped feature: GPS, +/- 16 feet accuracy

Mapping notes:

Location/directions comments:

Attachment(s): WIFL_DetectionForm_Excel_LDavenport_20220817.pdf, Form with additional location and other survey info.

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code DAV22F0004
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Empidonax traillii*

Common name: willow flycatcher

Date of field work (mm-dd-yyyy): 08-11-2022

Comment about field work date(s): Observations took place from 5/17/22 - 6/15/22 and on 8/11/22.

OBSERVER INFORMATION

Observer: Linette Davenport

Affiliation:

Address: 5820 Alpine Woods Dr. , Anchorage, AK 99516

Email: borregobiological@gmail.com

Phone: (714) 721-4621

Other observers: Arthur Davenport

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: 1 identified by Arthur Davenport incidentally on 8/11 during YBCU survey

Other: Familiarity with vocalizations and visual markings

Identification explanation: Individuals were observed visually and aurally. Identification was confirmed by "fitz-bew" vocalizations. Photos were taken as feasible.

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: 5 SWFL survey passes following USGS 2010 guidelines; incidental observations also made during LBVI and YBCU surveys. Observations occurred 5/17-6/15 during SWFL & LBVI surveys, then 1 WIFL was observed on 8/11 during a YBCU survey.

Total number of individuals: At least 4

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Heard calling then seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
4				

Age class comment:

Bird site use:

☐ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☑ **Other**

Site use description: Migration

What was the observed behavior? Foraging. Individuals were observed during surveys from 5/17 - 6/15, then not observed during rest of SWFL surveys or other LBVI surveys. No nesting behavior obs. On 8/11, 1 WIFL observed could have been migrating or maybe SWFL that bred in the region.

Describe any evidence of reproduction: None observed.

SITE INFORMATION

Habitat description: Black Willow Thickets and Tamarisk Thickets with occasional stand of honey mesquite. Suitable habitat is surrounded by Fourwing Saltbush Scrub.

Slope: Land owner/manager: Private

Aspect:

Site condition + population viability: Poor

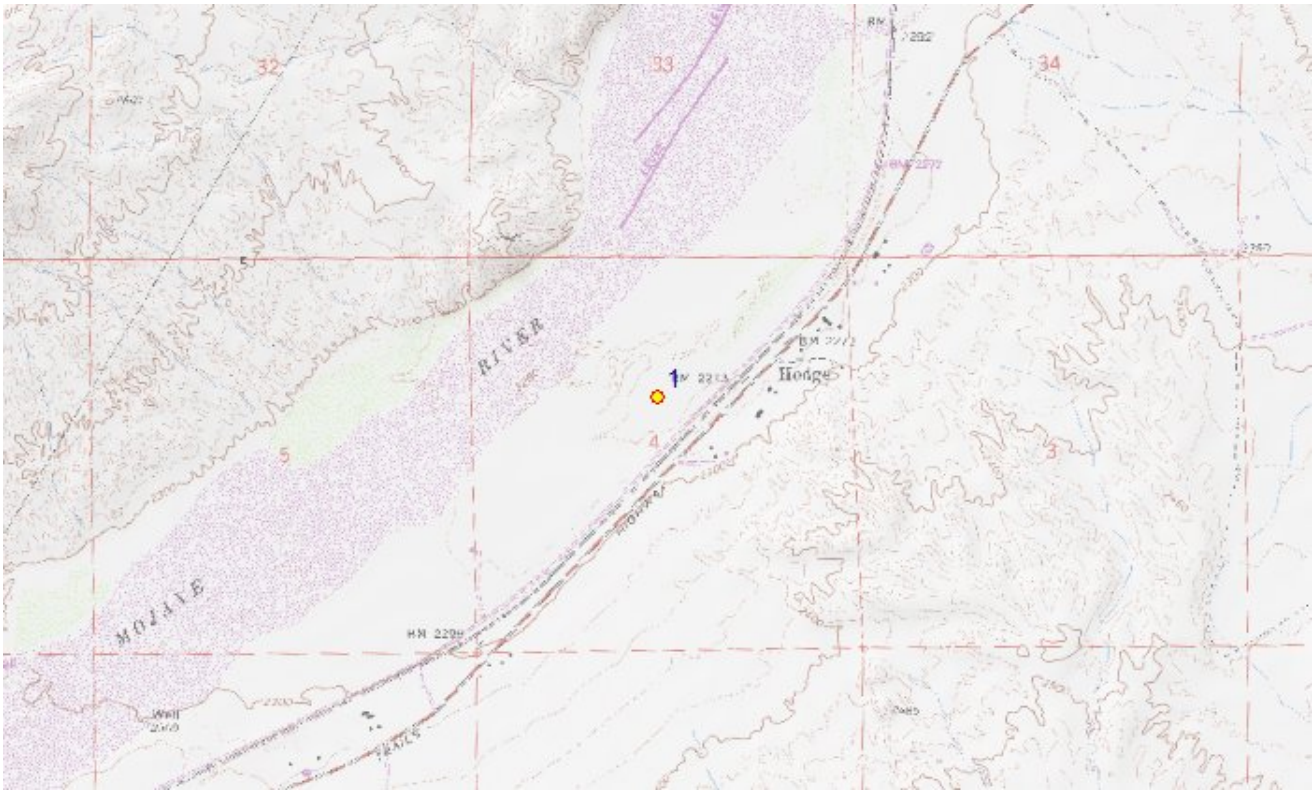
Immediate & surrounding land use: Mojave River to west, railroad and Route 66 to east, some residential and commercial properties to west and south.

Visible disturbances: Non-native vegetation, historic grazing

Threats: In June 2022 large swarms of Diorhabda sp. were observed within the entire survey area. Almost all stands of tamarisk, which dominate the survey area, became deciduous and defoliated. This was not observed during surveys in 2021.

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2282	34.81481	-117.19847	481848	3852525	11

ID	Public Land Survey	Feature Comment
1	S T08N R03W 4	

The mapped feature is accurate within: 500 m

Source of mapped feature: GPS, +/- 16 feet accuracy

Mapping notes:

Location/directions comments:

Attachment(s): WIFL_DetectionForm_Excel_LDavenport_20220817.pdf, orm with additional location and other survey info.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: **Barstow** State: **California** County: **San Bernardino**

USGS Quad Name: **Hodge** Elevation: **690** (meters)

Creek, River, or Lake Name: **Mojave River**

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ***Yes*** **X** ***No*** ____

Survey Coordinates: Start: E **481621** N **3852067** UTM Datum: **NAD83** (See instructions)

Stop: E **482732** N **3856236** UTM Zone: **11**

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

*****Fill in additional site information on back of this page*****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding;-potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
Survey # 1	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	5/17/22-5/18/22						1	U	482614	3855123
Linette Davenport	Start:						2	U	482409	3854851
	6:15AM/ 5:35AM	7	0	0	N		1	U	482605	3854782
	Stop:						1	U	482563	3854596
	11:00AM/ 11:00AM						1	U	482514	3854419
	Total hrs:						1	U	482506	3853736
	10.25									
Survey # 2	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	6/2/22-6/3/22						2	U	481848	3852525
Linette Davenport	Start:						1	U	482556	3853827
	5:15AM/ 5:30 AM	3	0	0	N	Observed some stands of tamarisk with leaves drying out.				
	Stop:									
	11:00AM/ 10:30AM									
	Total hrs:									
	10.75									
Survey # 3	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	6/16/22-6/17-22									
Linette Davenport	Start:									
	5:30AM/ 5:35AM	0	0	0	N	Very large swarms of Diorhabda sp. were observed withing the entire survey area. Almost all stands of tamarisk, which dominate the survey area, became deciduous and defoliated.				
	Stop:									
	10:15AM/ 10:20AM									
	Total hrs:									
	9.5									
Survey # 4	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	6/29/22-6/30/22									
Linette Davenport	Start:									
	5:15AM/ 5:20AM	0	0	0	N					
	Stop:									
	9:45AM/ 9:40AM									
	Total hrs:									
	8.75									
Survey # 5	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	7/13/22-7/14-22									
Linette Davenport	Start:									
	5:15AM/ 5:15AM	0	0	0	N					
	Stop:									
	9:15AM/ 10:00AM									
	Total hrs:									
	8.75									

Overall Site Summary Totals do	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes ____ No **X**
Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.	0	0	0	0	If yes, report color combination(s) in the comments section on back of form and report to USFWS.
Total survey hrs: 48.0					

Reporting Individual: **Linette Davenport** Date Report Completed: **8/18/2022**

US Fish & Wildlife Service Permit #: **PER0007536** State Wildlife Agency Permit #: **SCP-008260**

<u>Submit</u> form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual **Linette Davenport** Phone # **714-721-4621**

Affiliation **Borrego Biological** E-mail borregobiological@gmail.com

Site Name **Barstow** Date report Completed

Was this site surveyed in a previous year? Yes__X_ No____ Unknown____

Did you verify that this site name is consistent with that used in previous yrs? Yes **X** No ____ Not Applicable ____

If name is different, what name(s) was used in the past? **Lenwood**

If site was surveyed last year, did you survey the same general area this year? Yes **X*** No ____ If no, summarize below.

Did you survey the same general area during each visit to this site this year? Yes **X** No ____ If no, summarize below.

Management Authority for Survey Area: Federal ____ Municipal/County **X** State ____ Tribal ____ Private **X**

Name of Management Entity or Owner (e.g., Tonto National Forest) **DEVCAL Corporation; San Bernardino Flood Control District**

Length of area surveyed: **3.8** (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

____ Native broadleaf plants (entirely or almost entirely, > 90% native)

____ Mixed native and exotic plants (mostly native, 50 - 90% native)

X Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

____ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Tamarix ramosissima, Salix gooddingii, Prosopis glandulosa

Average height of canopy (Do not include a range): **~5** (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

This year's "Barstow" survey area included last year's "Lenwood" survey area plus additional acreage. Each survey pass took 2 days to complete, covering approximately half the survey area each day. Routes taken each day varied between survey passes to reduce bias from environmental conditions. Additional WIFL were incidentally observed during surveys for Least Bell's Vireo: 1 adult at UTM 481627 E 3852314 N on 5/20/22, 6/01/22, and 6/15/22 and 1 adult at UTM 482497 E 3853978 N on 5/20/22 (on map). Additional WIFL were incidentally observed during a Yellow-Billed Cuckoo survey by Arthur Davenport on 8/11/22: 1 adult at UTM 481543 E 3852324 N and 2 adults at UTM 482520 E 3853680 N (on map). Based on the timing of those observations, these may have been migrating WIFL or possibly SWFL that bred in the area and were in post-breeding dispersal.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Attachment 6

Animal Species Observed

Scientific Name	Common Name
CLASS REPTILIA	REPTILES
FAMILY PHRYNOSOMATIDAE	HORNED AND SPINY LIZARDS
Uta stansburiana	Common side-blotched lizard
Sceloporus occidentalis	Western fence lizard
Sceloporus uniformis	Yellow-backed spiny lizard
Callisaurus draconoides	Zebra-tailed lizard
FAMILY TEIIDAE	WHIPTAILS AND RELATIVES
Aspidoscelis tigris tigris	Great Basin whiptail
CLASS AVES	BIRDS
FAMILY ODONTOPHORIDAE	QUAIL
Callipepla californica	California quail
FAMILY COLUMBIDAE	DOVES, PIGEONS
Zenaida macroura	Mourning dove
Streptopelia decaocto	Eurasian collared-dove
FAMILY CUCULIDAE	CUCKOOS AND RELATIVES
Geococcyx californianus	Greater roadrunner
FAMILY CAPRIMULGIDAE	NIGHTJARS AND RELATIVES
Chordeiles acutipennis	Lesser nighthawk
FAMILY TROCHILIDAE	HUMMINGBIRDS
Calypte anna	Anna's hummingbird
FAMILY CHARADRIIDAE	SANDPIPERS AND RELATIVES
Charadrius vociferus	Killdeer
FAMILY CATHARTIDAE	VULTURES AND RELATIVES
Cathartes aura	Turkey vulture
FAMILY ACCIPTRIDAE	HAWKS, KITES, EAGLES, AND ALLIES
Buteo jamaicensis	Red-tailed hawk
FAMILY PICIDAE	WOODPECKERS
Picoides nuttallii	Nuttall's woodpecker
FAMILY TYRANNIDAE	TYRANT FLYCATCHERS
Contopus cooperi	Olive-sided flycatcher
Empidonax traillii	Willow flycatcher
Empidonax difficilis	Pacific-slope flycatcher
Sayornis saya	Say's phoebe
Myiarchus cinerascens	Ash-throated flycatcher
Tyrannus vociferans	Cassin's kingbird
Tyrannus verticalis	Western kingbird
FAMILY LANIIDAE	SHRIKES
Lanius ludovicianus	Loggerhead shrike
FAMILY VIREONIDAE	VIREOS

Scientific Name	Common Name
Vireo gilvus	Warbling vireo
FAMILY CORVIDAE	CROWS, RAVENS, AND RELATIVES
Corvus corax	Common raven
FAMILY ALAUDIDAE	LARKS
Eremophila alpestris	Horned lark
FAMILY TROGLODYTIDAE	WRENS
Thryomanes bewickii	Bewick's wren
FAMILY POLIOPTILIDAE	GNATCATCHERS
Polioptila melanura	Black-tailed gnatcatcher
FAMILY REMIZIDAE	VERDIN
Auriparus flaviceps	Verdin
FAMILY AEGITHALIDAE	BUSHTITS
Psaltriparus minimus	Bushtit
FAMILY TURDIDAE	THRUSHES
Catharus ustulatus	Swainson's thrush
FAMILY MIMIDAE	THRASHERS, MOCKINGBIRDS, AND RELATIVES
Toxostoma redivivum	California thrasher
Mimus polyglottos	Northern mockingbird
FAMILY STURNIDAE	STARLINGS
Sturnus vulgaris	European starling
FAMILY PTILOGONATIDAE	SILKY FLYCATCHERS
Phainopepla nitens	Phainopepla
FAMILY PARULIDAE	WOOD WARBLERS
Leiothlypis celata	Orange-crowned warbler
Leiothlypis luciae	Lucy's warbler
Geothlypis tolmiei	MacGillivray's warbler
Cardellina pusilla	Wilson's warbler
FAMILY EMBERIZIDAE	SPARROWS AND RELATIVES
Artemisiospiza nevadensis	Sagebrush sparrow
Artemisiospiza belli	Bell's sparrow
Zonotrichia leucophrys	White-crowned sparrow
FAMILY CARDINALIDAE	CARDINALS, GROSBEAKS, AND ALLIES
Piranga ludoviciana	Western tanager
Passerina caerulea	Blue grosbeak
FAMLIY ICTERIDAE	BLACKBIRDS AND RELATIVES
Molothrus ater	Brown-headed cowbird
Icterus bullockii	Bullock's oriole
Icterus cucullatus	Hooded oriole
FAMILY FRINGILLIDAE	FINCHES
Haemorhous mexicanus	House finch
FAMILY PASSERIDAE	OLD WORLD SPARROWS
Passer domesticus	House sparrow

Scientific Name	Common Name
CLASS MAMMALIA	MAMMALS
FAMILY LEPORIDAE	RABBITS AND HARES
Sylvilagus audubonii	Audubon's cottontail
Lepus californicus	Black-tailed jackrabbit
FAMILY SCIURIDAE	SQUIRREL, CHIPMUNKS, AND MARMOTS
Ammospermophilus leucurus	White-tailed antelope ground squirrel
FAMILY CANIDAE	FOXES, WOLVES, AND RELATIVES
Canis latrans	Coyote

Attachment 7
Survey Photographs

	Photo 1. Southernmost section of Survey Area depicting a Fremont cottonwood within Black Willow Thickets. (Suitable habitat surrounded by Fourwing Saltbush Scrub.) Photo taken June 30, 2022.
	Photo 2. Survey Area south of Hinkley Road depicting Tamarisk Thickets that made up most of the Survey Area. Photo taken May 25, 2021.
	Photo 3. Willow Flycatcher detected in honey mesquite stand in the southernmost portion of the Survey Area. Photo taken May 20, 2022.

	Photo 4. Survey Area south of Hinkley Road on July 15, 2021, showing un-impacted stands of tamarisk.
	Photo 5. Survey Area south of Hinkley Road on July 13, 2022 showing impacted tamarisk throughout the survey area.
	Photo 6. Photo of tamarisk beetle (*Diorhabda* sp.*)* on June 16, 2022.

ATTACHMENT AA

2023 FOCUSED PRESENCE/ ABSENCE SURVEY FOR SOUTHWESTERN WILLOW FLYCATCHER, BARSTOW INTERNATIONAL GATEWAY, COMMUNITY OF HODGE, SAN BERNARDINO COUNTY, CALIFORNIA

DRAFT September 11, 2023

Jim Rocks
Owner, Principal Biologist
Rocks Biological Consulting
4312 Rialto Street, San Diego, CA 92107

Subject: 2023 Focused Presence/Absence Survey for Southwestern Willow Flycatcher, Barstow International Gateway, Community of Hodge, San Bernardino County, California.

Dear Mr. Rocks:

Borrego Biological was retained by Rocks Biological Consulting to conduct a focused presence/absence survey for southwestern willow flycatcher (*Empidonax traillii extimus;* SWFL), at a portion of the Barstow International Gateway (BIG) project site added after 2022 and a 1000-foot buffer near the community of Hodge in San Bernardino County, CA (Survey Area; Attachments 1 and 2). The results of the survey are presented below.

Southwestern Willow Flycatcher

The SWFL is a federally and California state-listed as endangered subspecies of the California state-listed as endangered willow flycatcher (*Empidonax traillii*). The breeding range of the SWFL includes the southern half of California, Arizona, New Mexico, extreme southern portions of Nevada and Utah, and southwest Colorado (Sogge et al. 2010). This subspecies is in decline primarily due to extensive habitat loss and brood parasitism by the brown-headed cowbird.

Breeding habitat for SWFL is made up of dense riparian vegetation with tree or shrub cover that is at least three meters tall or higher with or without a higher overstory layer, dense twig structure, and high levels of live green foliage. Suitable plant species can be highly variable, including a variety of willow (*Salix* spp.), cottonwood (*Populus* spp.), coast live oak (*Quercus agrifolia*), alder (*Alnus* spp.), and non-native tamarisk (*Tamarix* spp.), as long as the vegetation structure requirements are met (Sogge et al. 2010).

The WIFL is a relatively nondescript flycatcher with a dark back, two faint wing bars, yellow lower mandible, faint wash of yellow on the belly, and little to no eye ring. The WIFL is safely distinguished from other members of its genus only by its characteristic "fitzbew" song; however, SWFL are almost indistinguishable from subspecies of WIFL without specialized equipment or extensive experience. Therefore, for field survey purposes, only WIFL that are found to be territorial or breeding within the SWFL breeding range are presumed to be SWFL.

Survey Area

Surveys for SWFL in suitable habitat within the BIG project site and 1000-buffer were conducted in 2021 and 2022 (Davenport 2021 and 2022). The 2023 survey took place within suitable habitat for SWFL present within a portion of the BIG project site that was added after the 2022 survey season plus a 1000-foot buffer. Suitable habitat was assessed by consulting vegetation maps and aerial photos of this area prior to the survey, and then ground-truthing the assessment during the first survey pass. The Survey Area was within the California United States Geological Survey 7.5-minute *Hodge* topographic quadrangle, and the elevation was approximately 704 meters above mean sea level (Attachment 1). The Survey Area was approximately 60 acres occurring within Assessor's Parcel Number 0420151010000 (San Bernardino County Assessor-Recorder-Clerk 2023).

Methods

United States Fish and Wildlife Service (USFWS)-permitted biologist Linette Davenport (PER0007536) assessed the Project Area for suitable habitat for SWFL. Plant communities and associations were recorded in accordance with the categories set forth in *A Manual of California Vegetation, Second Edition* (Sawyer et al 2009) (Attachment 3). The USFWS Critical Habitat Mapper and File Data (USFWS 2023) was reviewed to determine if the Project Area and Survey Area were within designated critical habitat for SWFL. Ms. Davenport then conducted focused presence/absence surveys for SWFL according to *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher* (Sogge et al. 2010). Five survey passes were conducted at least 5 days apart: one during May 15 - 31; two during June 1 -24; and two during June 25 – July 17.

All survey passes were conducted during favorable weather conditions between morning civil twilight and 1030 hours (Table 1). Surveys were not conducted during excessive heat, cold, wind, rain, or other inclement weather that would be reasonably expected to reduce bird activity and consequential detection. Ms. Davenport did not conduct any other surveys concurrently with the SWFL survey.

During each survey pass, Ms. Davenport walked paths throughout all suitable habitat looking and listening for SWFL, stopping at optimal stationary locations to look and listen for the target species without harming any other wildlife species in the area. To reduce bias from environmental conditions, the route taken each survey day varied between survey passes. Ms. Davenport used prerecorded WIFL vocalizations to elicit SWFL within and/or adjacent to all suitable SWFL habitat. After a brief and silent acclimation period of one to two minutes, Ms. Davenport broadcasted the prerecorded SWFL vocalizations once at each chosen location, mimicking natural vocalization conditions (i.e., broadcast at natural volume occurring for approximately 10 to 15 seconds followed by 1 to 2 minutes of silence). Distance between broadcast locations varied from 20 to 30 meters (60 to 100 feet), depending on topographic, vegetative, and other factors. If a WIFL was detected, the vocalization broadcast was ceased at that location, and location, numbers, status, and demographic data were recorded. If detected WIFL were conducting confirmed nesting behavior, they were presumed to be SWFL. If WIFL were detected during the surveys conducted from June 25 – July 17, they were presumed to be territorial or breeding SWFL and information about their breeding status was collected.

The locations of any SWFL and other sensitive species were documented and mapped (Attachment 4), and California Natural Diversity Database (CNDDB) forms and Willow Flycatcher Survey and Detection forms were prepared (Attachment 5). If leg bands were observed, they were noted. Observations and numbers of brown-headed cowbirds also were noted and mapped (Attachment 4). All observed wildlife animal species were recorded for each survey day (Attachment 6). Site photographs and species photographs were taken (Attachment 7).

Results

Survey conditions are presented in Table 1.

Table 1. Survey Conditions

Survey Pass	Date 2023	Time (Start/End)	Temperature (Start/End) °F	Wind Speed (Start/End) mph	Cloud Cover (Start/End) %	Precipitation (Start/End)
1	5/23	0545/0945	61/86	2/4	0/0	0/0
2	6/2	0555/1010	54/81	1/5(6)	0/0	0/0
3	6/13	0545/1030	59/86	5(8)/2(4)	5/5	0/0
4	6/30	0520/0950	61/93	1/2(3)	0/0	0/0
5	7/10	0535/1000	55/87	2/1(2)	0/0	0/0

Habitat

Suitable habitat within the Survey Area was made up of Tamarisk Thickets (Attachment 3).

Tamarisk Thickets (60 acres): Vegetation within the banks of the the Survey Area was dominated by tamarisk (*Tamarix ramosissima*) with a generally open canopy between small stands. Honey mesquite (*Prosopis glandulosa*) trees and small stands of sandbar willow (*Salix exigua*) were occasionally present, and one small stand of giant reed (*Arundo donax*) was present. An herbaceous layer was present in April and May due to significant rainfall during the previous winter season, consisting of various native annual plants including devil's lettuce (*Amsinckia tessellata*), desert dandelion (*Malacothrix glabrata*), and birdcage evening primrose (*Oenothera deltoides*). One small seep in the northern portion of the Survey Area contained water all survey passes through July, likely fed by snowmelt of local mountains (Attachment 7).

Swarms of tamarisk beetle (*Diorhabda* sp.) heavily impacted the Tamarisk Thickets surveyed in 2022, which are downstream of the current Survey Area (Davenport 2022). Tamarisk beetle larvae were observed in the current Survey Area in 2023 (Attachment 7) but only a very small number of adult beetles were observed. Approximately 10% or less of the tamarisk in the 2023 Survey Area appeared to be defoliated. In contrast, the tamarisk stands in the 2021 and 2022 survey area appeared severely impacted in 2023 (Attachment 7). No native shrubs appeared to be negatively impacted.

Critical Habitat

The Survey Area is not within USFWS-designated critical habitat for SWFL (USFWS 2023).

Willow Flycatcher/ Southwestern Willow Flycatcher

No WIFL or SWFL were detected during any of the survey passes.

Other Special Status Species

At least one loggerhead shrike (*Lanius ludovicianus*), a California Species of Special Concern (SSC), was observed during several survey passes in June. No nesting behavior was confirmed, but based on timing and range it is possible it was breeding in the vicinity. Up to 20 Swainson's hawks (*Buteo swainsoni*), a California state-listed as threatened species, were observed during surveys from June 12 through June 30. Most of the Swainson's hawks appeared to be second-year birds with a small number of adults that did not appear to be breeding. They were foraging on the numerous grasshoppers onsite and along the Mojave River that appeared to be a result of significant rainfall during the previous winter. The loggerhead shrike and Swainson's hawk observations were submitted to the CNDDB (Attachment 5).

Two tricolored blackbirds (*Agelaius tricolor*), a SSC, were observed flying from the east side of the Survey Area to the west, upstream along the Mojave River, during the June 2 survey pass. Because they were flying over the Survey Area and did not stop, this observation was not submitted to the CNDDB.

Brown-headed Cowbirds

Brown-headed cowbirds were heard during several surveys, usually flying overhead going from the Mojave River to the residential areas along Route 66 or vice versa (Attachment 4).

Discussion

Tamarisk beetle was observed in the Survey Area, but it did not appear to have impacted the tamarisk in this upstream section as severely as the surveyed areas downstream yet. Even though tamarisk is invasive and negatively impacts native vegetation and animals, it still can provide habitat for LBVI, SWFL, and other riparian birds. In order to alleviate negative impacts of overly rapid tamarisk loss and also to maximize the benefit of removing this invasive species, it is still recommended to actively restore native trees and shrubs prior to the complete eradication of tamarisk in the region (Paxton et al 2011).

Conclusion

No SWFL were found to be nesting in the Survey Area.

Please do not hesitate to contact me at (714) 721-4621 or borregobiological@gmail.com if you have any questions.

Sincerely,



Linette Davenport
Borrego Biological

SURVEYOR'S CERTIFICATION

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

Linette Davenport
PER0007536-0
Date, 2023

References

Davenport, Linette
2021 Focused Presence/Absence Survey for Southwestern Willow Flycatcher, Communitis of Lenwood and Hodge, San Bernardino County, California. Submitted to Rocks Biological Consulting, San Diego, California, July 30, 2021.

2022 Focused Presence/Absence Survey for Southwestern Willow Flycatcher, Barstow International Gateway, San Bernardino County, California. Submitted to Rocks Biological Consulting, San Diego, California, October 11, 2022.

Paxton, Eben H., Tad C. Theimer, and Mark K. Sogge
2011 Tamarisk Biocontrol using Tamarisk Beetles: Potential Consequences for Riparian Birds in the Southwestern United States. The Condor, Volume 113, Issue 2, Pages 255–265. Retrieved from the American Ornithological Society website: https://doi.org/10.1525/cond.2011.090226

San Bernardino County Assessor-Recorder-Clerk
2023 Parcel Access and File Data. Retrieved from the San Bernardino County Assessor-Recorder-Clerk website: https://arcpropertyinfo.sbcounty.gov/

Sawyer, J.O., Jr., T. Keeler-Wolf, and J. Evens
2009 *A Manual of California Vegetation, Second Edition*. California Native Plant Society. Sacramento, California.

Sogge, M. K., Darrell Ahlers, and S. J. Sferra
2010 A natural history summary and survey protocol for the Southwestern Willow Flycatcher: United States Geological Survey Techniques and Methods 2A-10, 38 p.

United States Fish and Wildlife Service (USFWS)
2023 Critical Habitat Mapper and File Data. Retrieved from the USFWS Critical Habitat Mapper website: https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77

Attachments

1 – Survey Area

2 – Survey Location

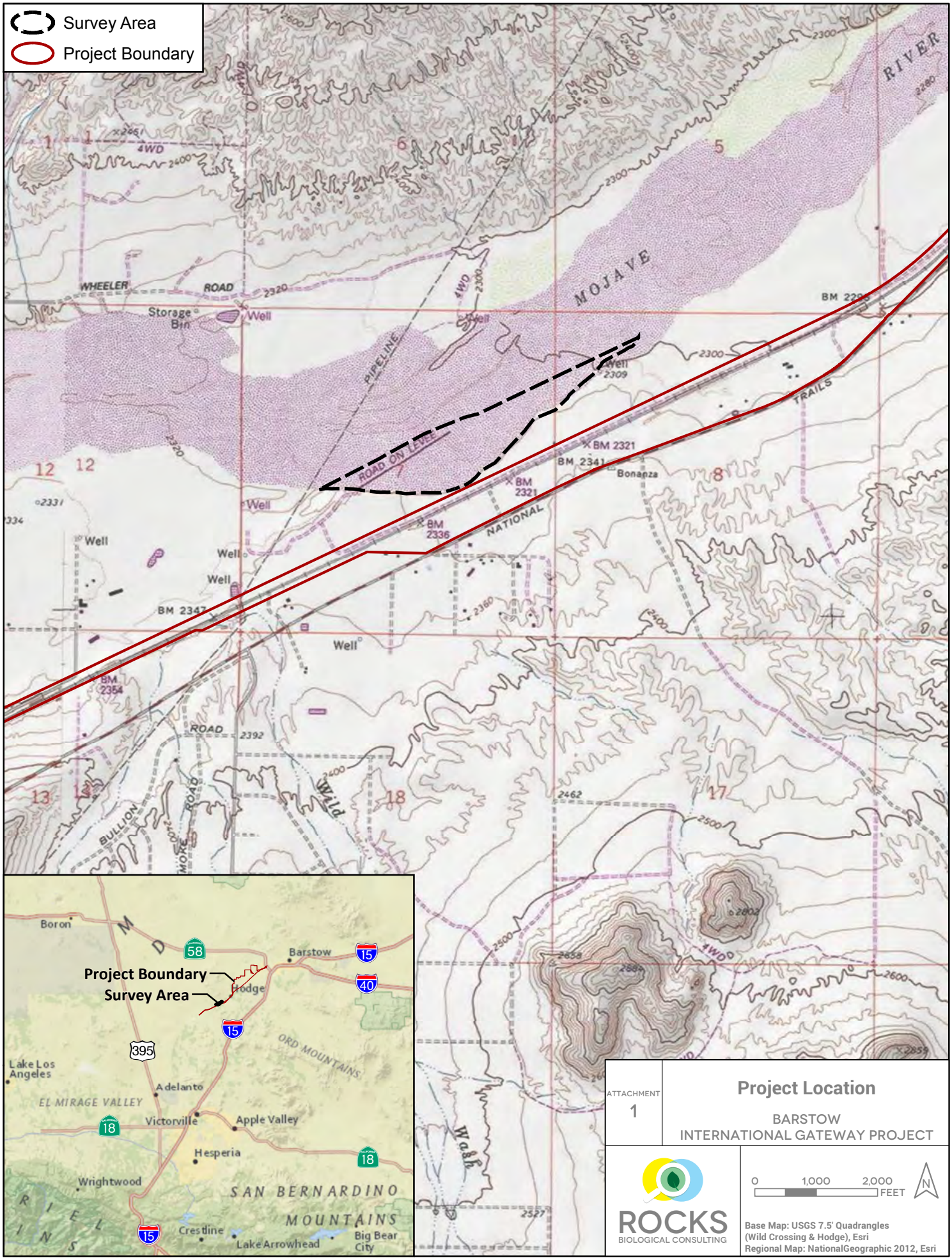
3 – Vegetation

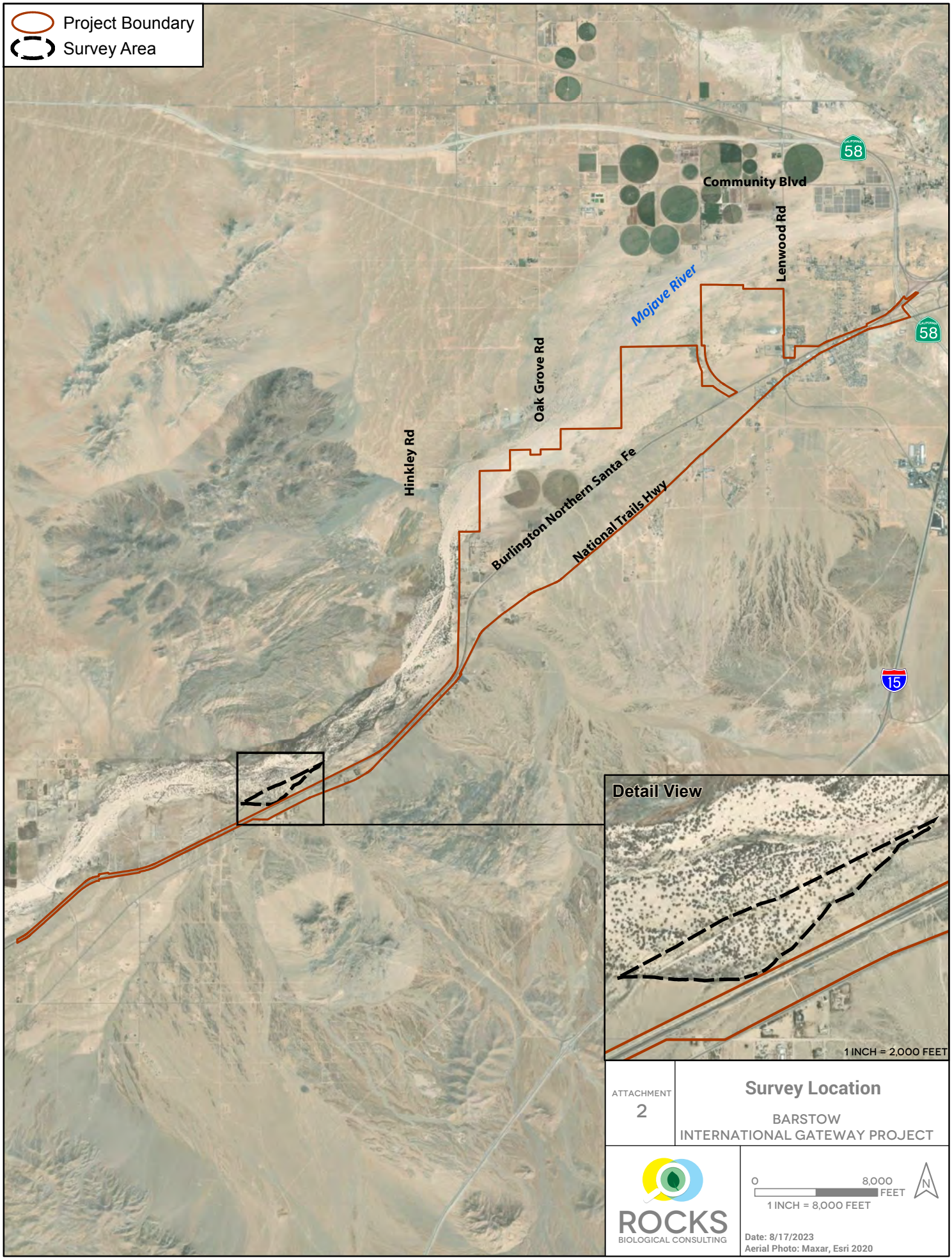
4 – Willow Flycatcher And Brown-headed Cowbird Observations

5 – CNDDB Forms, Willow Flycatcher Survey Forms

6 – Animal Species Observed

7 – Survey Photographs


Survey Area
Project Boundary
WHEELER
ROAD
Storage Bin
Well
PIPELINE
MOJAVE
RIVER
TRAILS
NATIONAL
BM 2321
BM 2341
Bonanza
BM 2336
BM 2347
BM 2354
ROAD
BULLION
MOJAVE
Wild
Wash
Boron
Barstow
Hodge
Project Boundary
Survey Area
Lake Los Angeles
Adelanto
EL MIRAGE VALLEY
Victorville
Apple Valley
Hesperia
Wrightwood
SAN BERNARDINO MOUNTAINS
Crestline
Lake Arrowhead
Big Bear City
ORD MOUNTAINS
ATTACHMENT 1
Project Location
BARSTOW
INTERNATIONAL GATEWAY PROJECT
ROCKS
BIOLOGICAL CONSULTING
0 1,000 2,000 FEET
Base Map: USGS 7.5' Quadrangles
(Wild Crossing & Hodge), Esri
Regional Map: NationalGeographic 2012, Esri



ATTACHMENT 2

Survey Location

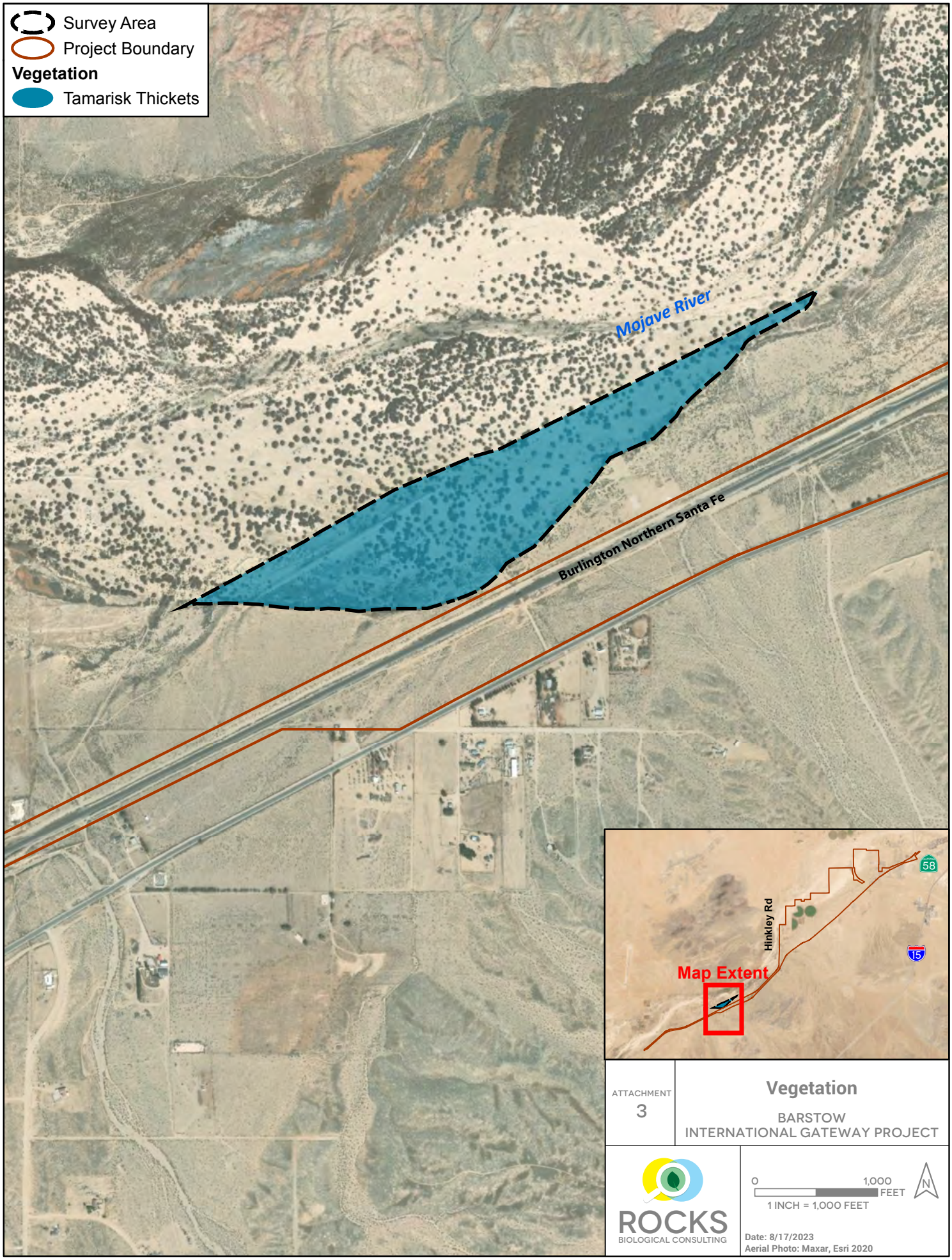
BARSTOW
INTERNATIONAL GATEWAY PROJECT

ROCKS
BIOLOGICAL CONSULTING

0 8,000 FEET
1 INCH = 8,000 FEET

N

Date: 8/17/2023
Aerial Photo: Maxar, Esri 2020



ATTACHMENT 3

Vegetation

BARSTOW INTERNATIONAL GATEWAY PROJECT

ROCKS BIOLOGICAL CONSULTING

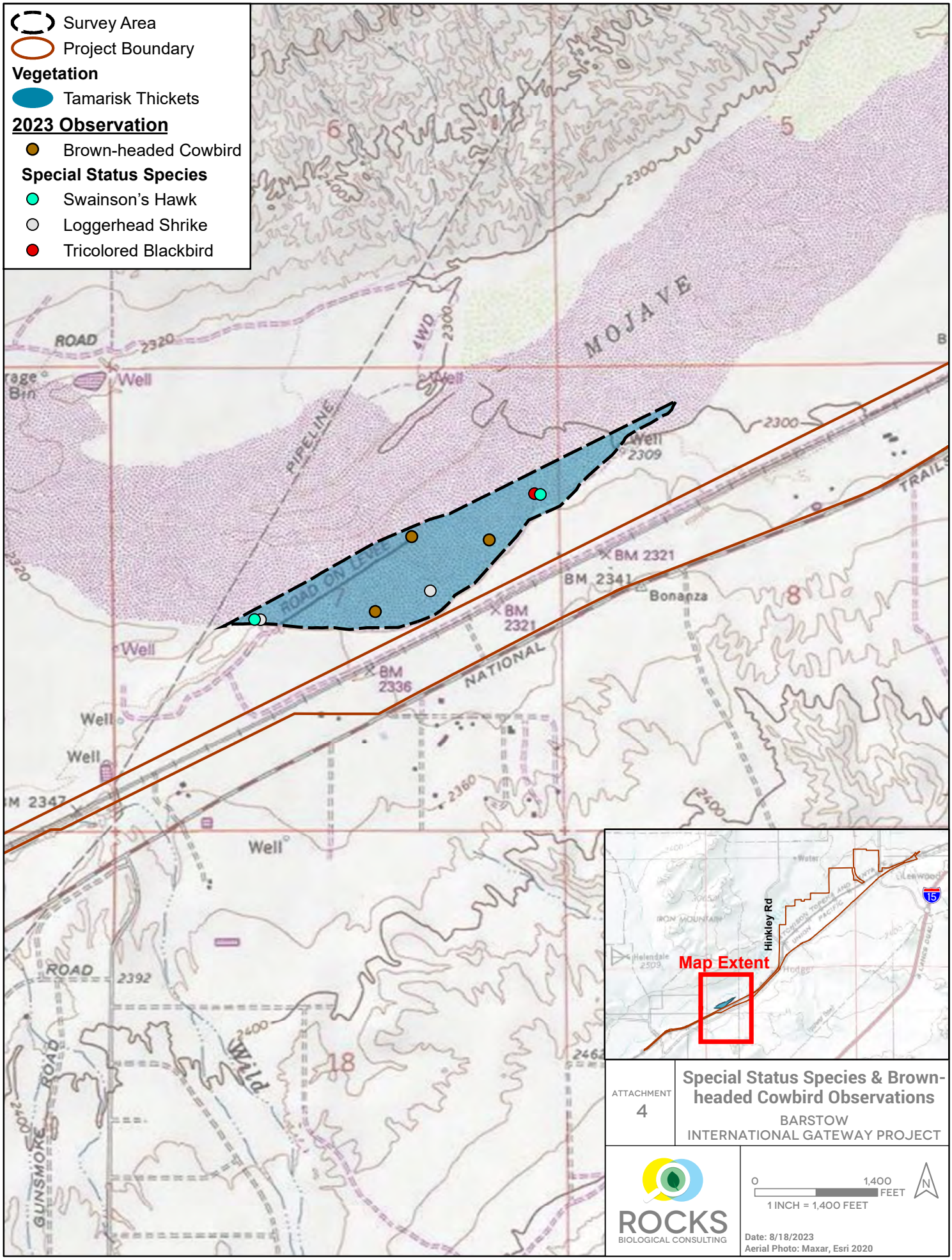
0 1,000 FEET

1 INCH = 1,000 FEET

N

Date: 8/17/2023

Aerial Photo: Maxar, Esri 2020



ATTACHMENT 4

Special Status Species & Brown-headed Cowbird Observations

BARSTOW INTERNATIONAL GATEWAY PROJECT

ROCKS BIOLOGICAL CONSULTING

0 1,400 FEET

1 INCH = 1,400 FEET

Date: 8/18/2023

Aerial Photo: Maxar, Esri 2020

Attachment 5

CNDDB and Willow Flycatcher Survey Forms

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code DAV23F0002
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Lanius ludovicianus*

Common name: loggerhead shrike

Date of field work (mm-dd-yyyy): 07-16-2023

Comment about field work date(s): Observations made on 6/13, 6/29, 6/30, 7/3, 7/10, 7/16

OBSERVER INFORMATION

Observer: Linette Davenport

Affiliation:

Address: 1120 Huffman Rd Suite 24 #285, Anchorage, AK 99515

Email: borregobiological@gmail.com

Phone: (714) 721-4621

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: Arthur Davenport observed the species on 7/3 and 7/16

Other: Familiarity with vocalizations and visual markings

Identification explanation: Individuals were observed visually and aurally

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Incidental observations made during focused surveys for least Bell's vireo, southwestern willow flycatcher, and yellow-billed cuckoo.

Total number of individuals: 1 or 2

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Heard calling then seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
2				

Age class comment:

Bird site use:

☐ Nesting ☐ Rookery ☐ Nesting colony ☐ Burrow site ☐ Lek

☐ Non-breeding (over-wintering) ☐ Communal roost ☑ Other

Site use description: At least one, possibly two individuals observed over a month-long period. No nesting behavior confirmed, but based on timing and range it is possible it was breeding in the vicinity.

What was the observed behavior? Foraging, calling

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description: Tamarisk Thickets dominated by tamarisk (Tamarix ramosissima) with a generally open canopy between small tamarisk stands within the banks of the Mojave River. Occasional honey mesquite and sandbar willow present.

Slope: Land owner/manager: Private

Aspect:

Site condition + population viability: Fair

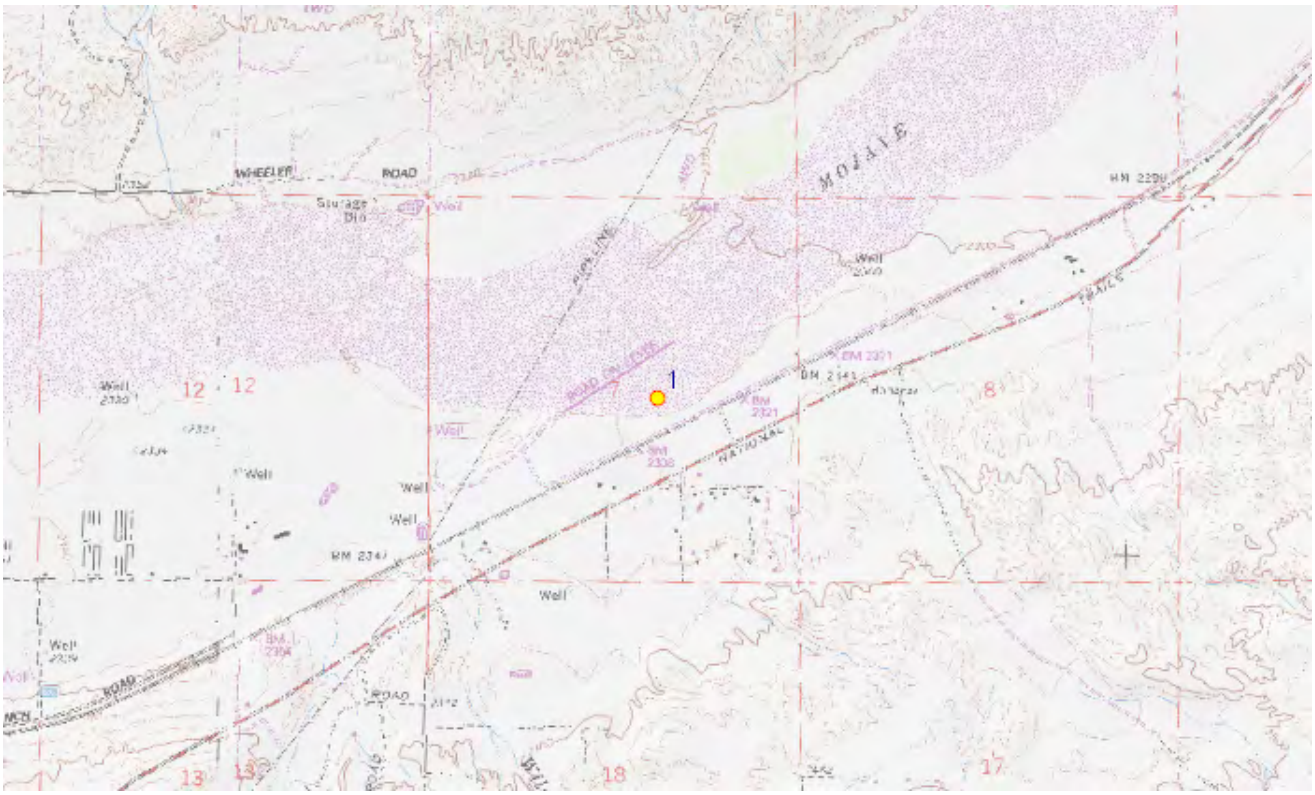
Immediate & surrounding land use: Mojave River, residential properties, a railroad, and Route 66 to the east.

Visible disturbances: Non-native vegetation, scouring, trash, OHV use

Threats: OHV use; also, small numbers of tamarisk beetle (Diorhabda sp.) causing defoliation of some tamarisk trees in the immediate vicinity, and defoliation of most tamarisk downstream around Hinkley Rd.

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2307	34.79760	-117.23074	478893	3850623	11
1	**Public Land Survey**	**Feature Comment**						
	S T08N R03W 7							

The mapped feature is accurate within: 5 m

Source of mapped feature: GPS Horizontal Accuracy: ± 15 ft Vertical Accuracy: ± 12 ft

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code DAV23F0003
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Buteo swainsoni*

Common name: Swainson's hawk

Date of field work (mm-dd-yyyy): 06-30-2023

Comment about field work date(s): Observations made on 6/12, 6/13, 6/19, 6/30

OBSERVER INFORMATION

Observer: Linette Davenport

Affiliation:

Address: 1120 Huffman Rd Suite 24 #285, Anchorage, AK 99515

Email: borregobiological@gmail.com

Phone: (714) 721-4621

Other observers: Arthur Davenport

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in: Sibley Birds V2 app for iPhone

By another person:

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Incidental observations made during focused surveys for least Bell's vireo, southwestern willow flycatcher, and yellow-billed cuckoo

Total number of individuals: 3 to 20

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Photograph

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
2	18			

Age class comment: Most individuals appeared to be 2nd-year/immature birds, with 2 or so full adults.

Bird site use:

☐ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☑ **Other**

Site use description: Group was foraging on numerous grasshoppers along the Mojave River that were likely present due to significant precipitation from the previous winter.

What was the observed behavior? Individuals on the ground or perched in trees, foraging, or kettling in the air. Individuals were highly skittish and flushed when observer was within 200 feet.

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description: Tamarisk Thickets dominated by tamarisk (Tamarix ramosissima) with a generally open canopy between small tamarisk stands within the banks of the Mojave River. Occasional honey mesquite and sandbar willow present.

Slope:

Land owner/manager: Private

Aspect:

Site condition + population viability: Fair

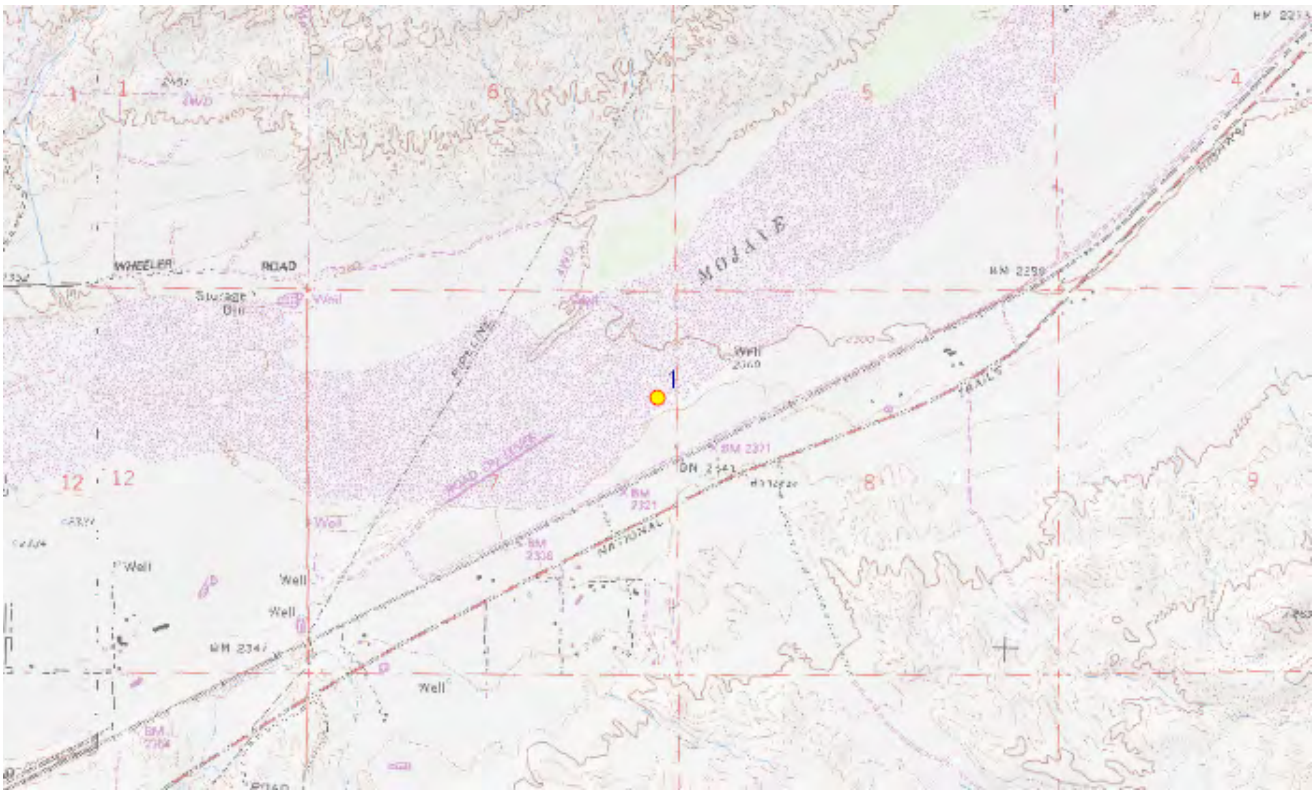
Immediate & surrounding land use: Mojave River, residential properties, a railroad, and Route 66 to the east.

Visible disturbances: Non-native vegetation, scouring, trash, OHV use

Threats: OHV use; also, small numbers of tamarisk beetle (Diorhabda sp.) causing defoliation of some tamarisk trees in the immediate vicinity, and defoliation of most tamarisk downstream around Hinkley Rd.

General comments: Very large numbers of grasshoppers present in May and June 2023.

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2304	34.80111	-117.22519	479401	3851011	11

1	Public Land Survey	Feature Comment
	S T08N R03W 7	

The mapped feature is accurate within: 5 m

Source of mapped feature: GPS Horizontal Accuracy: ± 12 ft Vertical Accuracy: ± 10 ft

Mapping notes:

Location/directions comments:

Attachment(s): 9.JPG, Molting 2nd-year Swainson's Hawk

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: **Barstow International Gateway 2023** State: **California** County: **San Bernardino**

USGS Quad Name: **Hodge** Elevation: **704** (meters)

Creek, River, or Lake Name: **Mojave River**

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ***Yes*** **X** ***No*** ____

Survey Coordinates: Start: E **479558** N **3851087** UTM Datum: **NAD83** (See instructions)

Stop: E **478385** N **3850571** UTM Zone: **11S**

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

*****Fill in additional site information on back of this page*****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding;-potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
Survey # 1	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	5/23/2023									
Linette Davenport	Start:									
	5:45	0	0	0	N					
	Stop:									
	9:45									
	Total hrs:									
	4.0									
Survey # 2	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	6/2/2023									
Linette Davenport	Start:									
	5:55	0	0	0	N					
	Stop:									
	10:10									
	Total hrs:									
	4.25									
Survey # 3	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	6/13/2023									
Linette Davenport	Start:									
	5:45	0	0	0	N					
	Stop:									
	10:30									
	Total hrs:									
	4.75									
Survey # 4	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	6/30/2023									
Linette Davenport	Start:									
	5:20	0	0	0	N					
	Stop:									
	9:50									
	Total hrs:									
	4.5									
Survey # 5	Date:						# Birds	Sex	UTM E	UTM N
Observer(s):	7/10/2023									
Linette Davenport	Start:									
	5:35	0	0	0	N					
	Stop:									
	10:00									
	Total hrs:									
	4.5									

Overall Site Summary	Total Adult Residents	Total Pairs	Total Territories	Total Nests	
Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.	0	0	0	0	Were any WIFLs color-banded? Yes ____ No ____ If yes, report color combination(s) in the comments section on back of form and report to USFWS.
Total survey hrs: 22.0					

Reporting Individual: **Linette Davenport** Date Report Completed: **8/23/2023**

US Fish & Wildlife Service Permit #: **PER0007536** State Wildlife Agency Permit #: **SCP-008260**

<u>Submit</u> form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual: **Linette Davenport** Phone #: **714-721-4621**

Affiliation: **Borrego Biological** E-mail: borregobiological@gmail.com

Site Name: **Barstow International Gateway 2023** Date report Completed: **8/23/2023**

Was this site surveyed in a previous year? Yes____ No__x__ Unknown____

Did you verify that this site name is consistent with that used in previous yrs? Yes____ No____ Not Applicable **x**

If name is different, what name(s) was used in the past?

If site was surveyed last year, did you survey the same general area this year? Yes____ No **x** If no, summarize below.

Did you survey the same general area during each visit to this site this year? Yes **x** No____ If no, summarize below.

Management Authority for Survey Area: Federal____ Municipal/County____ State____ Tribal____ Private **x**

Name of Management Entity or Owner (e.g., Tonto National Forest) **Private**

Length of area surveyed: **1.5** (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

____ Native broadleaf plants (entirely or almost entirely, > 90% native)

____ Mixed native and exotic plants (mostly native, 50 - 90% native)

____ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

x Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Tamarix ramosissima, Prosopis glandulosa, Salix exigua

Average height of canopy (Do not include a range): **~3** (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features. Attach additional sheets if necessary.

The Survey Area for Barstow International Gateway 2023 was upstream of the survey areas for Barstow International Gateway/Lenwood for 2021 and 2022, which were around Hinkley Road. Only this 60-acre site, upstream of the other sites and closer to Hodge, was surveyed in 2023.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Attachment 6

Animal Species Observed

Southwestern Willow Flycatcher Survey

Scientific Name	Common Name
CLASS REPTILIA	REPTILES
FAMILY IGUANIDAE	IGUANAS
Dipsosaurus dorsalis	Desert iguana
FAMILY PHRYNOSOMATIDAE	HORNED AND SPINY LIZARDS
Uta stansburiana	Common side-blotched lizard
Sceloporus uniformis	Yellow-backed spiny lizard
FAMILY TEIIDAE	WHIPTAILS AND RELATIVES
Aspidoscelis tigris tigris	Great Basin whiptail
CLASS AVES	BIRDS
FAMILY ODONTOPHORIDAE	QUAIL
Callipepla californica	California quail
FAMILY COLUMBIDAE	DOVES, PIGEONS
Zenaida macroura	Mourning dove
Streptopelia decaocto	Eurasian collared-dove
FAMILY CUCULIDAE	CUCKOOS AND RELATIVES
Geococcyx californianus	Greater roadrunner
FAMILY CAPRIMULGIDAE	NIGHTJARS AND RELATIVES
Chordeiles acutipennis	Lesser nighthawk
FAMILY TROCHILIDAE	HUMMINGBIRDS
Calypte anna	Anna's hummingbird
FAMILY CHARADRIIDAE	SANDPIPERS AND RELATIVES
Charadrius vociferus	Killdeer
FAMILY CATHARTIDAE	VULTURES AND RELATIVES
Cathartes aura	Turkey vulture
FAMILY ACCIPTRIDAE	HAWKS, KITES, EAGLES, AND ALLIES
Buteo swainsoni	Swainson's hawk
FAMILY TYRANNIDAE	TYRANT FLYCATCHERS
Empidonax difficilis	Pacific-slope flycatcher
Myiarchus cinerascens	Ash-throated flycatcher
Tyrannus vociferans	Cassin's kingbird
FAMILY LANIIDAE	SHRIKES
Lanius ludovicianus	Loggerhead shrike
FAMILY CORVIDAE	CROWS, RAVENS, AND RELATIVES
Corvus corax	Common raven
FAMILY ALAUDIDAE	LARKS
Eremophila alpestris	Horned lark
FAMILY TROGLODYTIDAE	WRENS

Scientific Name	Common Name
Thryomanes bewickii	Bewick's wren
FAMILY REMIZIDAE	VERDIN
Auriparus flaviceps	Verdin
FAMILY MIMIDAE	THRASHERS, MOCKINGBIRDS, AND RELATIVES
Toxostoma redivivum	California thrasher
Mimus polyglottos	Northern mockingbird
FAMILY EMBERIZIDAE	SPARROWS AND RELATIVES
Artemisiospiza belli	Bell's sparrow
FAMILY CARDINALIDAE	CARDINALS, GROSBEAKS, AND ALLIES
Piranga ludoviciana	Western tanager
Pheucticus melanocephalus	Black-headed grosbeak
Passerina caerulea	Blue grosbeak
Passerina amoena	Lazuli bunting
FAMLIY ICTERIDAE	BLACKBIRDS AND RELATIVES
Agelaius phoeniceus	Red-winged blackbird
Agelaius tricolor	Tricolored Blackbird
Molothrus ater	Brown-headed cowbird
FAMILY FRINGILLIDAE	FINCHES
Haemorhous mexicanus	House finch
FAMILY PASSERIDAE	OLD WORLD SPARROWS
Passer domesticus	House sparrow
CLASS MAMMALIA	MAMMALS
FAMILY LEPORIDAE	RABBITS AND HARES
Sylvilagus audubonii	Audubon's cottontail
Lepus californicus	Black-tailed jackrabbit
FAMILY SCIURIDAE	SQUIRREL, CHIPMUNKS, AND MARMOTS
Ammospermophilus leucurus	White-tailed antelope ground squirrel
FAMILY CANIDAE	FOXES, WOLVES, AND RELATIVES
Canis latrans	Coyote

Attachment 7
Survey Photographs

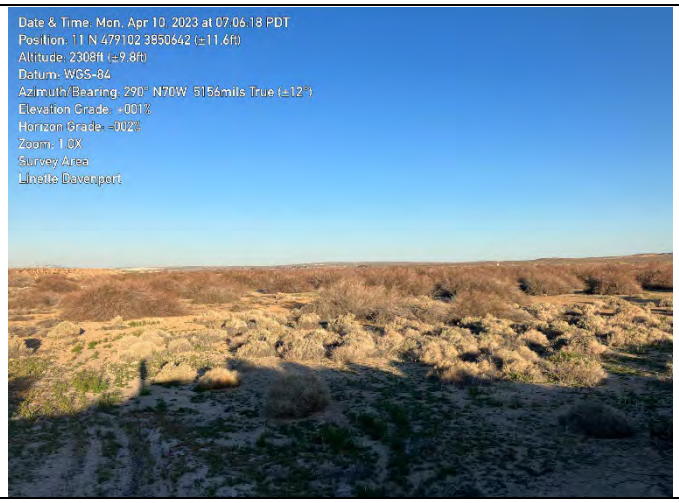
		Photo 1. Western portion of the Survey Area. Photo taken from the south side of the Survey Area facing northwest. Photo taken on April 10, 2023.
		Photo 2. Eastern portion of the Survey Area. Photo taken from the south side of the Survey Area facing northeast. Photo taken on April 10, 2023.
		Photo 3. Seep present in northern portion of Survey Area. Photo taken on June 29, 2023.

		Photo 4. Tamarisk beetle (*Diorhabda* sp.) larva on a tamarisk. Photo taken on June 12, 2023.
		Photo 5. Tamarisk Thickets south of Hinkley Road downstream of the 2023 Survey Area. Photo taken May 25, 2021, prior to the arrival of tamarisk beetles.
		Photo 6. Tamarisk Thickets south of Hinkley Road downstream of the 2023 Survey Area showing severe defoliation from tamarisk beetles. Photo taken July 24, 2023.

ATTACHMENT BB

BARSTOW INTERNATIONAL GATEWAY PROJECT PROTOCOL PRESENCE/ABSENCE 2024 SURVEY REPORT FOR SWAINSON'S HAWK (*BUTEO SWAINSONI*)

ROCKS
BIOLOGICAL CONSULTING





BARSTOW INTERNATIONAL GATEWAY PROJECT

PROTOCOL PRESENCE/ABSENCE 2024 SURVEY REPORT FOR SWAINSON'S HAWK (*Buteo swainsoni*)

San Bernardino County, California

October 18, 2024

Prepared for:
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Appendix C – California Natural Diversity Database Online Field Survey Form Reports
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1 SUMMARY

This report provides a detailed analysis of the habitat assessment and focused Swainson's hawk (*Buteo swainsoni*) nesting surveys conducted by Rocks Biological Consulting (RBC) for the Burlington Northern Santa Fe Railway (BNSF) Barstow International Gateway (BIG) Project (project) located in and adjacent to the City of Barstow, San Bernardino County, California. Historically, Swainson's hawks have not been documented nesting within the project vicinity; however, the species migrates through the region annually, and suitable nesting and foraging habitat is present. As a result, RBC conducted focused surveys in 2024 in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Guidelines; Swainson's Hawk Technical Advisory Committee 2000) to assess presence/absence of nesting Swainson's Hawk within the project footprint and surrounding areas.

Multiple Swainson's hawks were observed migrating through the project impacts footprint and 0.5-mile buffer (survey area); however, no active nests or nesting behaviors were documented within the survey area (Figure 1). One active Swainson's hawk nest was documented outside of the survey area in Hinkley, California, approximately one mile north of the project site (Figure 1C). Due to the presence of suitable habitat within the project site and nesting Swainson's Hawk in the vicinity, recommended measures to avoid and/or minimize potential impacts on nesting Swainson's hawks during project implementation are provided herein.

2 INTRODUCTION

2.1 PROJECT DESCRIPTION

The project includes the construction of an approximately 4,500-acre rail yard with an intermodal facility, a block swap yard, and a transload warehouse center. The intermodal facility would be used to transfer goods between trains and trucks, with trucks either picking up containers from arriving trains or delivering containers to departing trains. The block swap yard would be used for transferring a block of train cars between trains without re-classification at the rail yard. In effect, the entire block of cars remains coupled together and would be moved en masse to another train. The transload warehouse center would be used to transfer goods from 40-foot international containers to 53-foot short-haul domestic containers.

Additionally, to serve the proposed rail yard and transload warehouse center, BNSF proposes off-site rail improvements including lead track extensions and offsite non-rail improvements including roadways and infrastructure.

2.2 PROJECT LOCATION

The project site, including off-site improvements, occurs primarily within unincorporated San Bernardino County and partially within City of Barstow (Figure 1). The project site is generally bounded by the Mojave River to the north, Route 66 (National Trails Highway) to the south, Lenwood Road to the east, and Hinkley Road to the west. Additionally, the project site is located

within five U.S. Geological Survey (USGS) 7.5-minute quadrangles: Barstow, Barstow SE, Hinkley, Hodge, and Wild Crossing.

2.3 SWAINSON'S HAWK NATURAL HISTORY

Swainson's hawk is listed as threatened by the California Fish and Game Commission under California Endangered Species Act (CESA). Historically common, populations in southern California have diminished largely due to the destruction of nesting habitat. Current breeding occurs in the Central Valley in sparsely foliated juniper-sage flats, riparian areas, and oak savannahs, and throughout the Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert in open desert, grasslands, alfalfa fields, and livestock pastures with scattered tree coverage. Infrequent breeding also occurs across Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley in similar habitats. Swainson's hawk migrates south from North America to Argentina in August and September, returning to the northern hemisphere March through August to breed. Swainson's hawk migrates through central and southern California in September and October while southbound and March through May while northbound (Zeiner et al. 1988-1990).

Nesting occurs in trees and shrubs or on top of utility poles in proximity to foraging sites. In urban areas across the Central Valley, Swainson's hawk prefers mature coniferous trees (England et al. 1995). In southern California, nesting is known to occur in cottonwoods (*Populus* spp.) and sycamores (*Platanus* spp.) (Unitt, 2004). Swainson's hawks typically have high nest fidelity and are likely to use the same nest site each year (California Energy Commission et al. 2010). Proximity to suitable foraging habitat is positively correlated with nesting, particularly in urban areas (England et al. 1995). Grasslands, open desert, or agricultural fields with sparsely dispersed trees are essential for hunting prey, which include rodents, lagomorphs, ground squirrels, and arthropods. Roosting occurs in large trees, if available, or within grasses near foraging grounds (Zeiner et al. 1988-1990). Swainson's hawks are primarily threatened by loss of mature riparian breeding habitats, conversion of high-quality foraging habitat to incompatible land uses, and pesticide poisoning (Woodbridge 1998).

3 METHODS

RBC biologists Garrett Moss, Alec Goodman, Kelsey Woldt, and Hannah Swarthout conducted six focused Swainson's hawk surveys between March 20 and July 30, 2024, to assess Swainson's hawk nesting activity, nesting potential, and species presence/absence within the project site and surrounding areas. Specifically, three surveys were conducted during Period II (March 20-April 5) and three surveys were conducted during Period V (June 10-July 30) in accordance with the methods outlined in the Guidelines (Swainson's Hawk Technical Advisory Committee, 2000). Period II is typically when Swainson's hawks return to their nesting territories and begin displaying courtship and other nesting behaviors, while Period V is typically prior to fledging when nestlings are active and visible within nests. The survey area was defined as the project impacts footprint plus a 0.5-mile buffer.

A combination of pedestrian and windshield surveys were conducted throughout the survey area where property access was granted. The majority of each survey was conducted via windshield on paved and unpaved public roadways with speed limits varying between 10 to 55 miles per hour

(mph). A minimum of two biologists conducted each survey to ensure sufficient visual coverage during windshield surveys. While driving, passenger biologists scanned for perched or soaring raptors and potential nests within the survey area. Additionally, biologists drove with windows down while driving slower than 25 mph to listen for raptor vocalizations. The vehicle made frequent stops to scan trees and structures (e.g., electric distribution poles or transmission towers) within the survey area that could be used for nesting. Potential nesting trees/structures that could not be sufficiently surveyed from afar using binoculars or a spotting scope were approached on foot if property access was granted.

Binoculars with a minimum 10x42 magnification and a spotting scope with 45x65 magnification were used to aid in identification of bird species, determine nest status, and visually examine areas where vehicle or pedestrian access was limited. During each survey, biologists recorded all Swainson's hawk observations, Swainson's hawk nests, and other nests of interest, including raptor species, common raven (*Corvus corax*), and other special-status species. Each nest was examined to determine species and nesting status. Nests were considered active if any of the following were observed: (1) adults incubating or perching on the nest; (2) adults carrying food or nesting material to the nest; or (3) eggs and/or chicks visible in the nest. Nests were classified as active until all chicks were fledged and no longer present within the nest tree/structure (i.e., no longer dependent on the nest). No call playback or other forms of harassment were used during these surveys. Field observations and associated data were recorded using the ArcGIS application Field Maps.

4 RESULTS

4.1 EXISTING CONDITIONS & HABITAT ASSESSMENT

The survey area is primarily composed of creosote bush scrub, allscale scrub, and dune habitat with large mature trees suitable for raptor nesting scattered throughout these habitats. Suitable nesting trees included, but were not limited to, salt cedar (*Tamarix* spp.), cottonwood (*Populus fremontii*), Chinese elm (*Ulmus parvifolia*), and ornamental trees, such as pines (*Pinus* spp.), typically associated with private residences. Additionally, the project site occurs adjacent to a portion of the Mojave River that contains patches of tall, dense salt cedar with large cottonwoods intermixed.

The survey area also includes sparely distributed scrub habitat that is highly suitable for foraging raptors. A wide variety of potential prey species for Swainson's hawk were observed throughout the project site, including grasshoppers, western fence lizard (*Sceloporus occidentalis*), yellow-backed spiny lizard (*Sceloporus uniformis*), California ground squirrel (*Otospermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), and Botta's pocket gopher (*Thomomys bottae*).

RBC biologists identified a separate site approximately one mile north of the project site unrelated to the project near the intersection of Lenwood Road and Community Boulevard with high-quality habitat. This site was composed of active alfalfa fields with numerous mature ornamental trees, making it highly suitable for Swainson's hawk foraging and nesting.

Swainson's hawk has not been documented nesting within the project vicinity prior to the 2024 season, but individuals are known to migrate through the area annually. Due to this migration pattern and the presence of suitable nesting trees, foraging habitat, and prey species, Swainson's hawks have a moderate-to-high potential to nest within or adjacent to the project site.

4.2 SURVEY RESULTS

All surveys were conducted during times of the day that typically coincide with high Swainson's hawk activity and during high visibility conditions with no precipitation. During Period II (March 20-April 5), surveys were conducted between sunrise and 1000 and between 1600 and sunset. During Period V (June 10-July 30), surveys were conducted between sunrise and 1200 and between 1600 and sunset. All survey dates, times, and conditions are provided in Table 1, below.

Table 1. Swainson's Hawk Survey Dates, Times, and Conditions

Survey Number	Date	Surveyors	Time (Start- End)	Temp. (F) (Start- End)	Cloud Cover (%) (Start- End)	Wind Range (mph) (Start; End)	Precip. (Low, Med, High) (Start- End)	Visibility (Low, Med, High) (Start; End)
1	3/20/2024	GM, AG	0655-1000	47-59	0-0	1-3; 1-3	None; None	High; High
1	3/21/2024	GM, AG	0650-1000	54-66	0-1	1-3; 0-3	None; None	High; High
1	3/21/2024	GM, AG	1600-1900	73-72	50-10	3-8; 3-8	None; None	High; High
2	3/28/2024	GM, KW	0650-1000	45-58	0-0	1-3; 5-8	None; None	High; High
2	3/28/2024	GM, KW	1600-1900	69-62	0-100	8-16; 8-16	None; None	High; High
2	3/29/2024	GM, KW	0638-1000	44-55	0-10	1-3; 3-5	None; None	High; High
3	4/4/2024	GM, KW, HS	0632-1000	50-61	5-20	1-3; 8-12	None; None	High; High
3	4/4/2024	GM, KW, HS	1630-1830	60-55	30-40	15-30; 15-30	None; None	High; High
3	4/5/2024	GM, KW, HS	0630-0915	37-45	10-10	1-3; 5-10	None; None	High; High
4	6/11/2024	GM, HS	1600-2000	105-93	0-0	8-16; 3-5	None; None	High; High
4	6/12/2024	GM, HS	0532-1200	67-94	0-0	3-5; 5-10	None; None	High; High
5	6/25/2024	GM, AG	1600-2005	102-89	0-0	3-5; 5-10	None; None	High; High
5	6/26/2024	GM, AG	0645-1030	80-93	0-0	3-8; 3-5	None; None	High; High
6	7/17/2024	AG, HS	1600-2000	103-99	25-10	1-5; 3-8	None; None	High; High
6	7/18/2024	AG, HS	0630-1030	78-93	10-40	1-3; 3-8	None; None	High; High

Surveyors:
GM=Garrett Moss, AG=Alec Goodman, KW=Kelsey Woldt, HS=Hannah Swarthout

A total of six Swainson's hawks were observed near Hinkley Bridge during the second and third surveys in Period II (Figure 1B). These individuals were observed in flight only once; therefore, it is assumed they were migrating through the survey area. Swainson's hawks were not observed within the survey area during any of the other surveys. No Swainson's hawk nests or nesting

behaviors (e.g., courtship displays, carrying nesting material or food) were observed within the survey area.

In addition to the focused nesting surveys, RBC biologists examined high-quality Swainson's hawk habitat in the region to gain a better understanding of their ability to nest in this region of the Mojave desert. RBC biologists identified a site approximately one mile north of the project site outside of the survey area near the intersection of Lenwood Road and Community Boulevard with particularly high-quality habitat. This area was checked frequently for Swainson's hawk activity.

During these site checks, one active Swainson's hawk nest was found on April 22, 2024, in a large Chinese elm immediately adjacent to active alfalfa fields (Figure 1C). The breeding adults were observed foraging and establishing their nesting territory throughout Period II; active nesting was confirmed during Period V with the first chick being observed on June 11, 2024. Biologists noted that the breeding female was banded with alphanumeric code J2, indicating that she was banded by Peter Bloom (SCP-#000221, MB20431) as a nestling in Antelope Valley in 2018. The sex of the breeding adults was determined by position during observed copulation on April 11, 2024. On June 28, 2024, the three chicks from the active nest were banded by Peter Bloom with alphanumeric band codes FH, FM, and FV. Chicks were placed back into the nest after banding. Several weeks after banding, the remains of one chick were found on July 13, 2024 near the base of the nest tree during a site check suggesting that the chick fell out of the nest prior to fledging and was predated. On July 18, 2024, two chicks were fully flight capable and were observed leaving the nest tree to forage with the adults.

Within the survey area, two active red-tailed hawk (*Buteo jamaicensis*) nests were documented. One nest was within an ornamental conifer near Hinkley Bridge and the other was within salt cedar near Lenwood Channel (Figures 1B and 1C). Two red-tailed hawk chicks successfully fledged the Hinkley Bridge nest, and at least one red-tailed hawk chick fledged the Lenwood Channel nest. One great horned owl (*Bubo virginianus*) nest was observed in a salt cedar near Hinkley Bridge; however, an adult was observed on the nest only once during surveys on June 11, 2024, and nesting status was not confirmed (Figure 1B). Common raven activity was observed frequently throughout the survey area, including 23 nests (Figures 1A-1D). Not all common raven nests were confirmed active; some were deteriorated and likely unused during the 2024 nesting season. In addition, one unknown stick nest was documented near Hinkley Bridge and one active loggerhead shrike nest was documented in Lenwood Channel (Figures 1B and 1C).

Representative photographs were taken during surveys (Appendix A). A total of 50 bird species were observed during surveys (Appendix B). All special-status species observations were submitted to the California Natural Diversity Database (CNDDB; Appendix C), and all observations of special status species and nests were recorded in ArcGIS Field Maps and detailed in field notes (Appendix D).

5 AVOIDANCE AND MINIMIZATION MEASURES

Due to the presence of suitable nesting habitat for Swainson's hawk within the project site and confirmed Swainson's hawk nesting within the project region, measures outlined in the *Draft Barstow International Gateway Project Biological Resources Technical Report* (RBC 2024) and

provided below shall be implemented to avoid or minimize impacts on Swainson's hawk during project implementation.

MM BIG BIO-18: Swainson's hawk nest surveys shall be conducted prior to initiation of project construction activities. Surveys shall be conducted within the BIG footprint plus a 0.5-mile buffer by agency-approved Species-Specific Biological Monitors following the protocol outlined in the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee, 2000). The Species-Specific Biological Monitor shall be familiar with Swainson's hawk identification and life history and be approved to conduct surveys by CDFW.

If active Swainson's hawk nests are found during nest surveys, an appropriate avoidance buffer shall be delineated around each nest in consultation with CDFW. No construction activities shall occur within the avoidance buffer until a Species-Specific Biological Monitor confirms that Swainson's hawk nest(s) are no longer active.

6 CONCLUSIONS

Multiple Swainson's hawks were observed migrating through the survey area in 2024; however, no active nests or nesting behaviors were documented within the survey area. One active Swainson's hawk nest was documented outside of the survey area within high-quality habitat approximately 1 mile north of the project site. Due to the presence of suitable nesting habitat for Swainson's hawk within the project site and confirmed Swainson's hawk nesting in the region, pre-construction Swainson's hawk nest surveys will be required prior to initiation of project activities.

7 REFERENCES

Bechard, M. J., C. S. Houston, J. H. Saransola and A. S. England. (2010). Swainson's Hawk (*Buteo swainsoni*), version 2.0. In The Birds of North America (P. G. Rodewald, editor). Cornell Lab of Ornithology, Ithaca, New York.

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Survey Area (0.5-mile from Impact Footprint)
Project Impact Footprint
Project Site

Survey Results

Common Raven Nest

Key Map

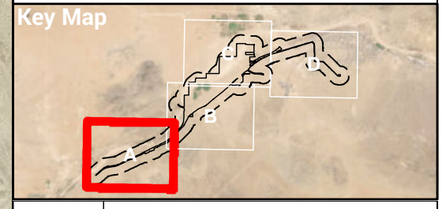


FIGURE
A

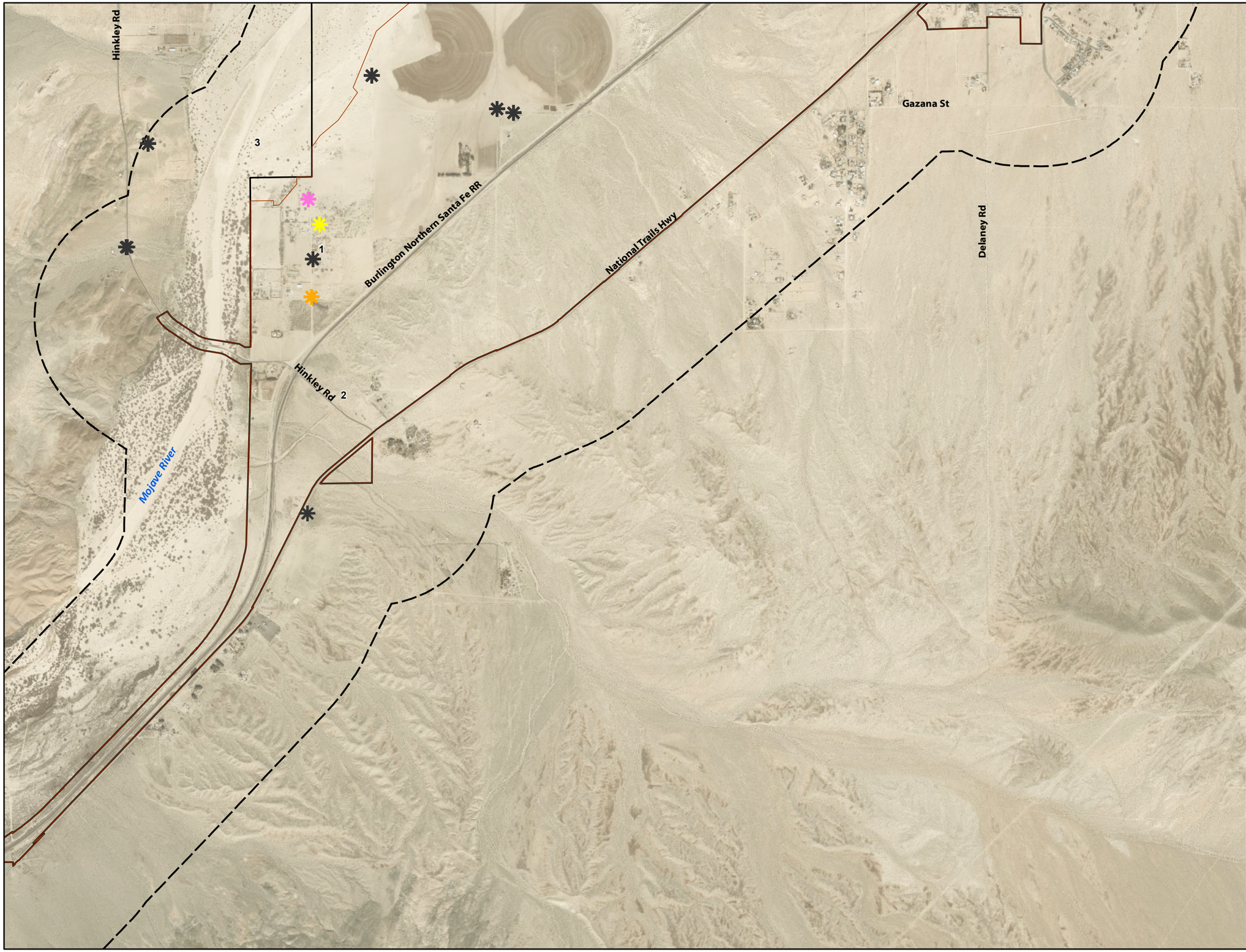
Swainson's Hawk Survey Results
BARSTOW
INTERNATIONAL GATEWAY PROJECT

ROCKS
BIOLOGICAL CONSULTING

0 2,000 FEET
1 INCH = 2,000 FEET

N

Date: 10/15/2024
Aerial Photo: Maxar, Esri 2020
Regional Map: National Geographic, Esri 2012



Survey Area (0.5-mile from Impact Footprint)
Project Impact Footprint
Project Site

Survey Results

- Common Raven Nest
- Great Horned Owl Nest
- Red-tailed Hawk Nest
- Unknown Nest

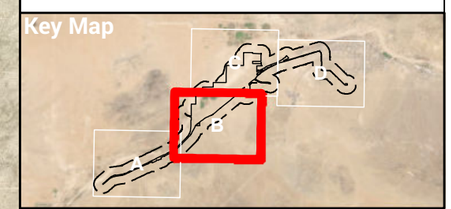


FIGURE
B

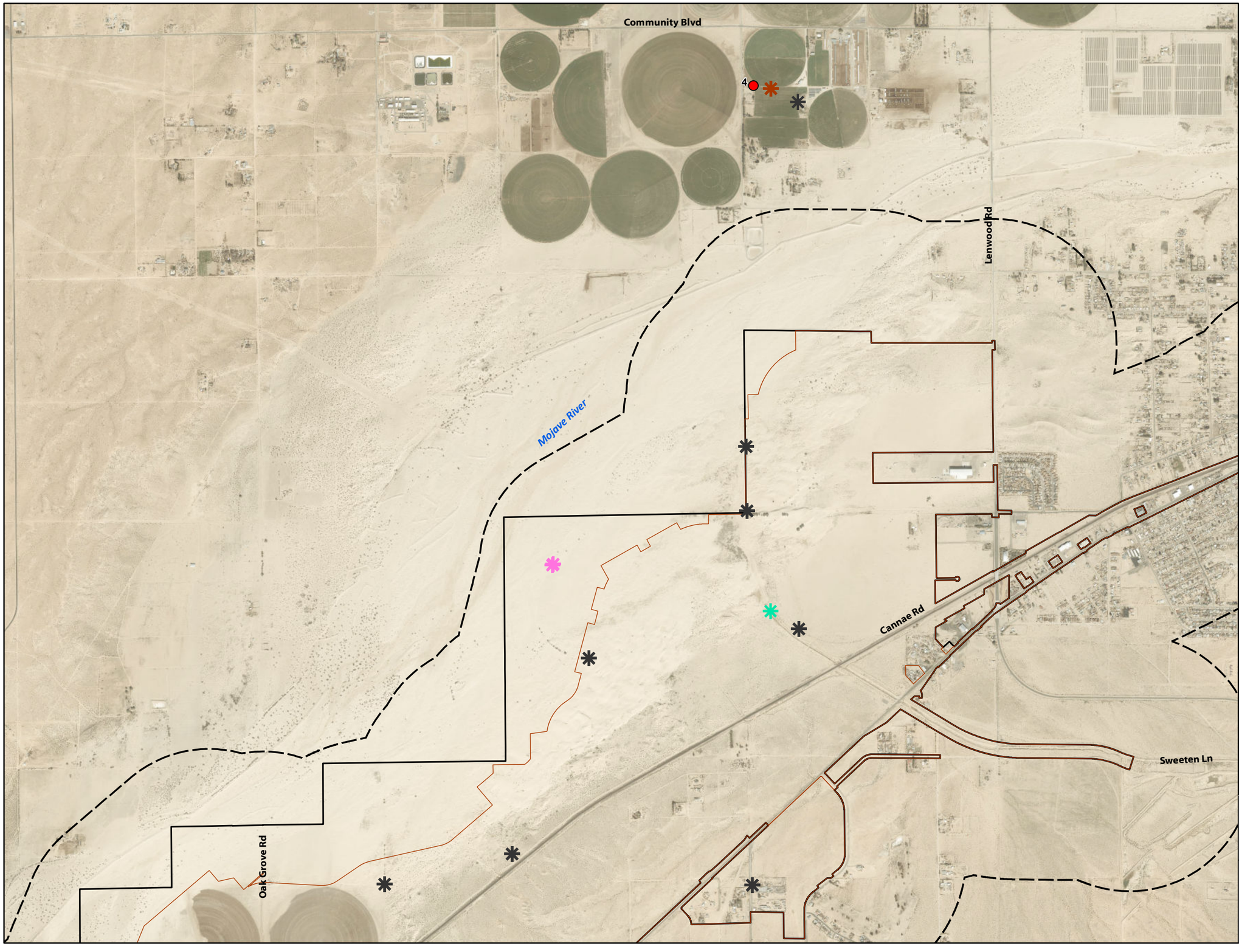
Swainson's Hawk Survey Results
BARSTOW
INTERNATIONAL GATEWAY PROJECT

ROCKS
BIOLOGICAL CONSULTING

0 2,000 FEET
1 INCH = 2,000 FEET

N

Date: 10/15/2024
Aerial Photo: Maxar, Esri 2020
Regional Map: National Geographic, Esri 2012



Survey Area (0.5-mile from Impact Footprint)
Project Impact Footprint
Project Site

Survey Results

- Swainson's Hawk
- Swainson's Hawk Nest
- Common Raven Nest
- Loggerhead Shrike Nest
- Red-tailed Hawk Nest

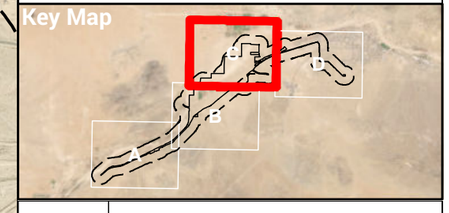


FIGURE
C

Swainson's Hawk Survey Results

BARSTOW
INTERNATIONAL GATEWAY PROJECT

ROCKS
BIOLOGICAL CONSULTING

0 2,000 FEET
1 INCH = 2,000 FEET

N

Date: 10/15/2024
Aerial Photo: Maxar, Esri 2020
Regional Map: National Geographic, Esri 2012

Survey Area (0.5-mile from Impact Footprint)
Project Impact Footprint
Project Site

Survey Results

Common Raven Nest

Agate Rd
Main St
Main St
L St
H St
P St
Barstow Rd
Rimrock Rd
Linda Vista Rd
58
15
247

Key Map

FIGURE
D

Swainson's Hawk Survey Results
BARSTOW
INTERNATIONAL GATEWAY PROJECT

ROCKS
BIOLOGICAL CONSULTING

0 2,000 FEET
1 INCH = 2,000 FEET

Date: 10/15/2024
Aerial Photo: Maxar, Esri 2020
Regional Map: National Geographic, Esri 2012

APPENDIX A

SITE PHOTOGRAPHS

Appendix A

Site Photographs



Photo 1. Riparian habitat along the Mojave River composed of dense salt cedar and intermixed cottonwoods. Photo taken March 20, 2024, facing southeast.



Photo 2. Unknown stick nest located in an ornamental pine tree. Photo taken March 28, 2024.



Photo 3. Common raven nest located in a salt cedar. Photo taken March 28, 2024.



Photo 4. Common raven nest located in a salt cedar. Photo taken March 28, 2024.



Photo 5. Common raven nest located on an electric distribution pole transformer. Photo taken on April 4, 2024.



Photo 6. Location of active Swainson's hawk nest approximately one mile north of the project site. Photo taken on April 22, 2024, facing southeast.



Photo 7. Active Swainson's hawk nest approximately one mile north of the project site. Nest is located in a Chinese elm adjacent to active alfalfa fields. Photo taken on April 22, 2024, facing east.



Photo 8. Adult Swainson's hawk perched on distribution pole approximately one mile north of the project site. Photo taken on April 5, 2024.



Photo 9. Swainson's hawk pair perching together approximately one mile north of the project site. Photo taken on April 11, 2024.



Photo 10. Three Swainson's hawk chicks banded by Pete Bloom (SCP-#000221, MB20431) approximately one mile north of the project site. Photo taken on June 28, 2024.

APPENDIX B

BIRD SPECIES OBSERVED

Appendix B

Bird Species Observed

Common Name	Scientific Name
American kestrel	*Falco sparverius*
American pipit	*Anthus rubescens*
American robin	*Turdus migratorius*
Anna's hummingbird	*Calypte anna*
Ash-throated flycatcher	*Myiarchus cinerascens*
Bell's sparrow [3]	*Artemisiospiza belli*
Bewick's wren	*Thryomanes bewickii*
Black phoebe	*Sayornis nigricans*
Black-necked stilt	*Himantopus mexicanus*
Blue-gray gnatcatcher	*Polioptila caerulea*
Brewer's blackbird	*Euphagus cyanocephalus*
Bullock's oriole	*Icterus bullockii*
California quail	*Callipepla californica*
California thrasher	*Toxostoma redivivum*
Canada goose	*Branta canadensis*
Common raven	*Corvus corax*
Cooper's hawk [3]	*Accipiter cooperii*
Eurasian collared-dove *	*Streptopelia decaocto*
European starling *	*Sturnus vulgaris*
Great-tailed grackle	*Quiscalus mexicanus*
Greater roadrunner	*Geococcyx californianus*
Greater yellowlegs	*Tringa melanoleuca*
Horned lark	*Eremophila alpestris*
House finch	*Haemorhous mexicanus*
House sparrow *	*Passer domesticus*
Killdeer	*Charadrius vociferus*
Lark sparrow	*Chondestes grammacus*
Lawrence's goldfinch [6]	*Spinus lawrencei*
Lesser goldfinch	*Spinus psaltria*
Lesser nighthawk	*Chordeiles acutipennis*
Loggerhead shrike [2]	*Lanius ludovicianus*
Mourning dove	*Zenaida macroura*
Northern harrier [2, 6]	*Circus hudsonius*

Common Name	Scientific Name
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Osprey [3, 4]	*Pandion haliaetus*
Red-tailed hawk	*Buteo jamaicensis*
Rock pigeon *	*Columba livia*
Rock wren	*Salpinctes obsoletus*
Say's phoebe	*Sayornis saya*
Song sparrow	*Melospiza melodia*
Swainson's hawk [1, 5]	*Buteo swainsoni*
Turkey vulture	*Cathartes aura*
Verdin	*Auriparus flaviceps*
Vermilion flycatcher [2]	*Pyrocephalus rubinus*
Western kingbird	*Tyrannus verticalis*
Western meadowlark	*Sturnella neglecta*
Western sandpiper	*Calidris mauri*
White-crowned sparrow	*Zonotrichia leucophrys*
White-winged dove	*Zenaida asiatica*
Yellow-rumped warbler	*Setophaga coronata*

Notes:

* Non-native/introduced species

[1] Bureau of Land Management (BLM) Sensitive (S)

[2] California Department of Fish and Wildlife (CDFW) Species of Special Concern (SSC)

[3] CDFW Waitlist Species (WL)

[4] California Department of Forestry and Fire Protection (CDF) Sensitive (S)

[5] State Threatened (ST) under the California Endangered Species Act (CESA)

[6] United States Fish and Wildlife Service (USFWS) Birds of Conservation Concern (BCC)

APPENDIX C

CALIFORNIA NATURAL DIVERSITY DATABASE ONLINE FIELD SURVEY FORM REPORTS

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code WOL24F0005
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Artemisiospiza belli belli*

Common name: Bell's sparrow

Date of field work (mm-dd-yyyy): 03-28-2024

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Kelsey Woldt

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: kelsey@rocksbio.com

Phone: (619) 247-4336

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: Garrett Moss

Other:

Identification explanation:

Identification confidence: Confident

Species found: Yes **If not found, why not?**

Level of survey effort: Swainson's hawk protocol survey pass #2

Total number of individuals: 1

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	other
1				

Age class comment:

Bird site use:

☐ Nesting ☐ Rookery ☐ Nesting colony ☐ Burrow site ☐ Lek

☐ Non-breeding (over-wintering) ☐ Communal roost ☑ Other (foraging, fly-over, etc.)

Site use description: Foraging

What was the observed behavior? Perched on atriplex polycarpa

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description:

Slope: Landowner/manager:

Aspect:

Site condition + population viability:

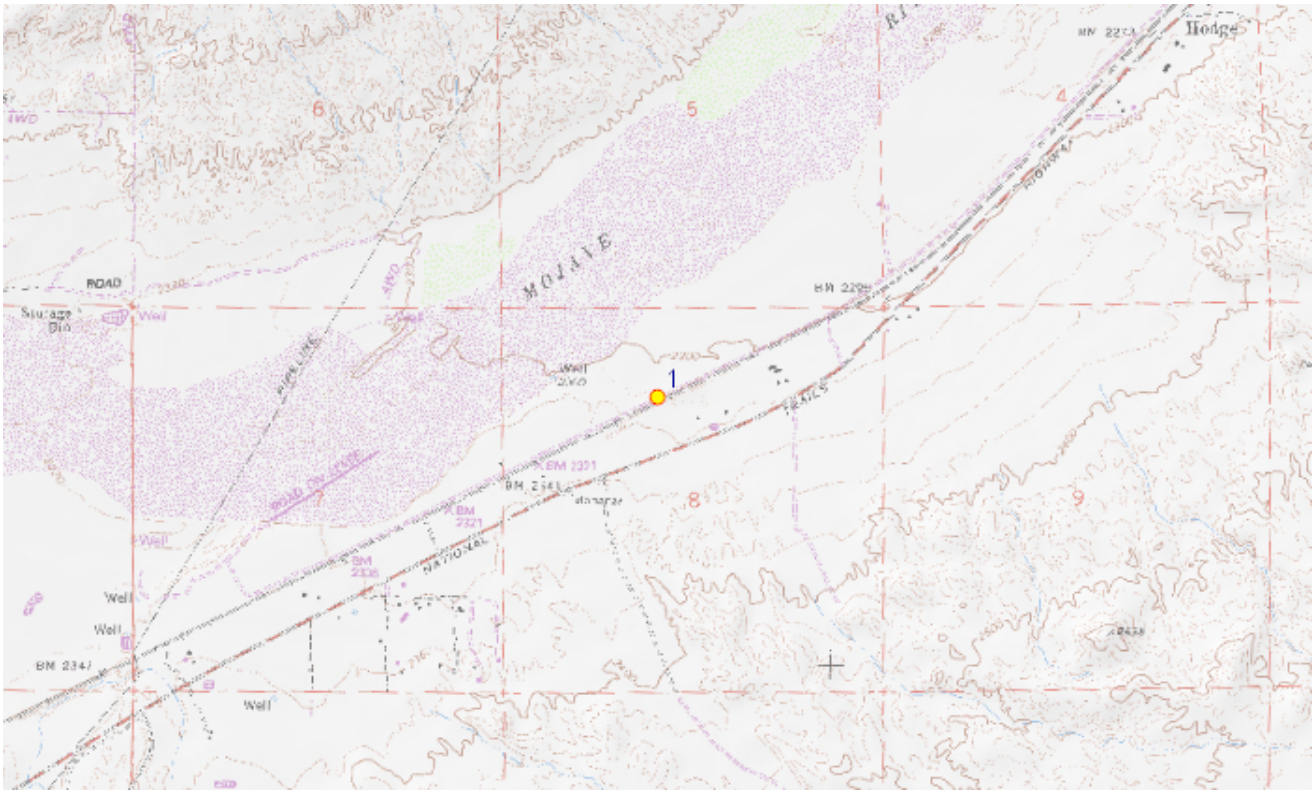
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2307	34.80178	-117.21717	480135	3851084	11
1	**Public Land Survey**	**Feature Comment**						
	S T08N R03W 8							

The mapped feature is accurate within: 5 m

Source of mapped feature: FieldMaps ArcGIS mobile application

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code WOL24F0004
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Circus hudsonius*

Common name: northern harrier

Date of field work (mm-dd-yyyy): 03-28-2024

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Kelsey Woldt

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: kelsey@rocksbio.com

Phone: (619) 247-4336

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: Garrett Moss

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Swainson's hawk protocol survey pass #2

Total number of individuals: 1

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	other
1				

Age class comment:

Bird site use:

☐ Nesting ☐ Rookery ☐ Nesting colony ☐ Burrow site ☐ Lek

☐ Non-breeding (over-wintering) ☐ Communal roost ☑ Other (foraging, fly-over, etc.)

Site use description: Foraging

What was the observed behavior? Flight

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description:

Slope: Landowner/manager:

Aspect:

Site condition + population viability:

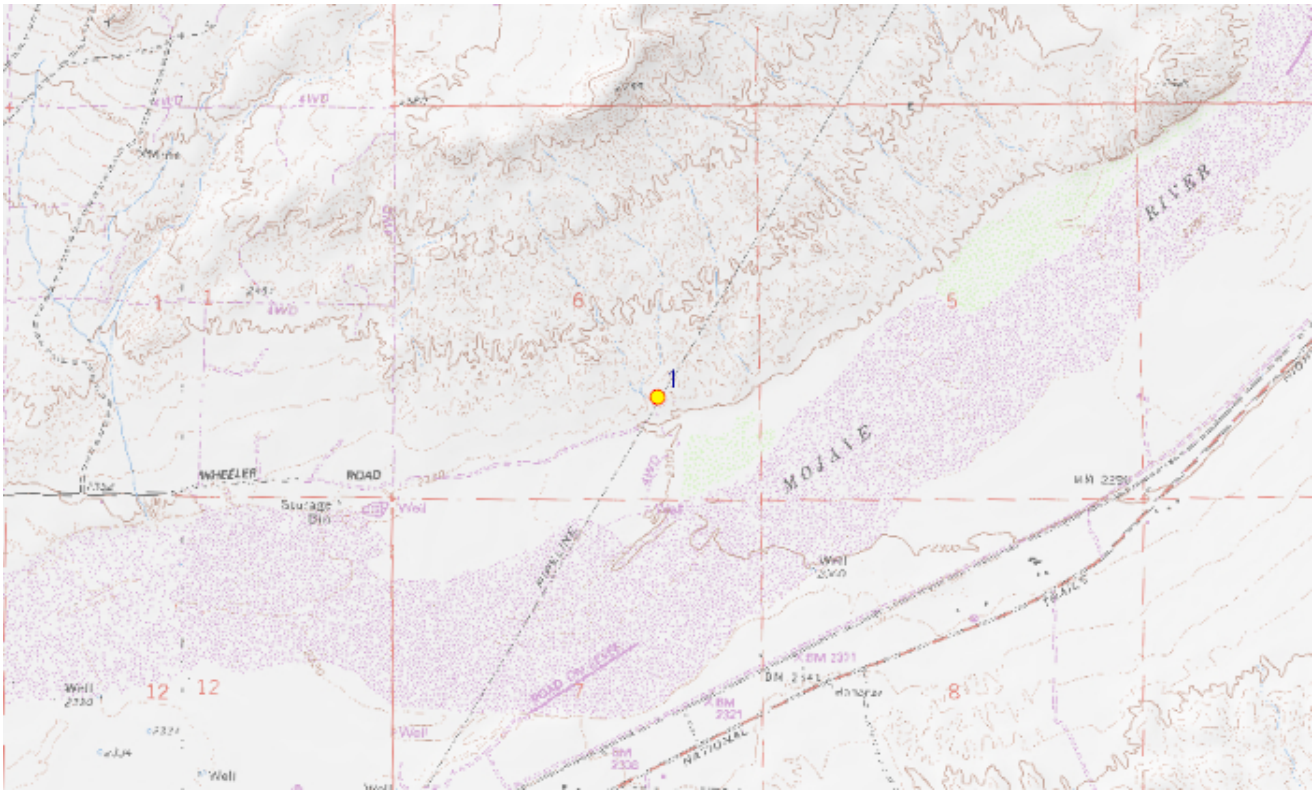
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2333	34.80901	-117.22909	479046	3851888	11
1	**Public Land Survey**	**Feature Comment**						
	S T08N R03W 6							

The mapped feature is accurate within: 5 m

Source of mapped feature: FieldMaps ArcGIS mobile application

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code MOS24F0003
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Buteo swainsoni*

Common name: Swainson's hawk

Date of field work (mm-dd-yyyy): 04-05-2024

Comment about field work date(s): Six surveys conducted during 2024 nesting season

OBSERVER INFORMATION

Observer: Garrett L. Moss

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: garrett@rocksbio.com

Phone: (661) 742-5589

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person:

Other: Sibley Guide to Birds of North America

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Protocol Swainson's hawk nest surveys

Total number of individuals: 6

Collection? **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
6				

Age class comment: Adults observed soaring; 1 adult was observed perched in a salt cedar

Bird site use:

☐ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☑ **Other**

Site use description: Passing through area during Spring migration.

What was the observed behavior? Soaring

Describe any evidence of reproduction: No breeding behaviors observed.

SITE INFORMATION

Habitat description:

Slope: Land owner/manager:

Aspect:

Site condition + population viability:

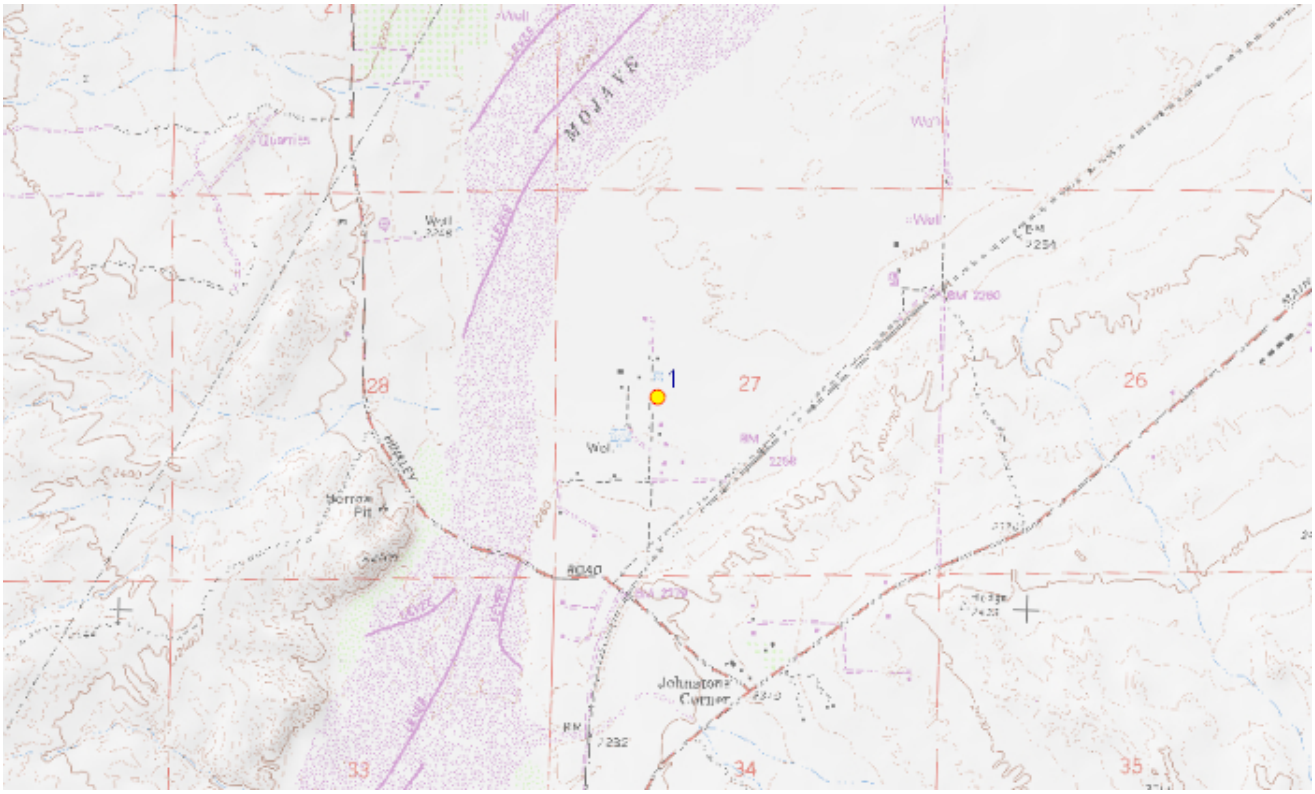
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2250	34.84137	-117.18451	483130	3855468	11
1	**Public Land Survey**	**Feature Comment**						
	S T09N R03W 27							

The mapped feature is accurate within: 1000 m

Source of mapped feature: GPS

Mapping notes: Swainson's hawks were observed soaring over this general area; not exact coordinates.

Location/directions comments: General location of soaring Swainson's hawks.

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code MOS24F0004
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Lanius ludovicianus*

Common name: loggerhead shrike

Date of field work (mm-dd-yyyy): 04-05-2024

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Garrett L. Moss

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: garrett@rocksbio.com

Phone: (661) 742-5589

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person:

Other: Sibley Guide to Birds of North America

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort:

Total number of individuals: 2

Collection? **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
2				

Age class comment: Pair

Bird site use:

☑ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☐ **Other**

Site use description:

What was the observed behavior? Pair observed actively defending territory and carrying nesting material and food; Exact nest location was not found; Nest success not confirmed.

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description:

Slope: Land owner/manager:

Aspect:

Site condition + population viability:

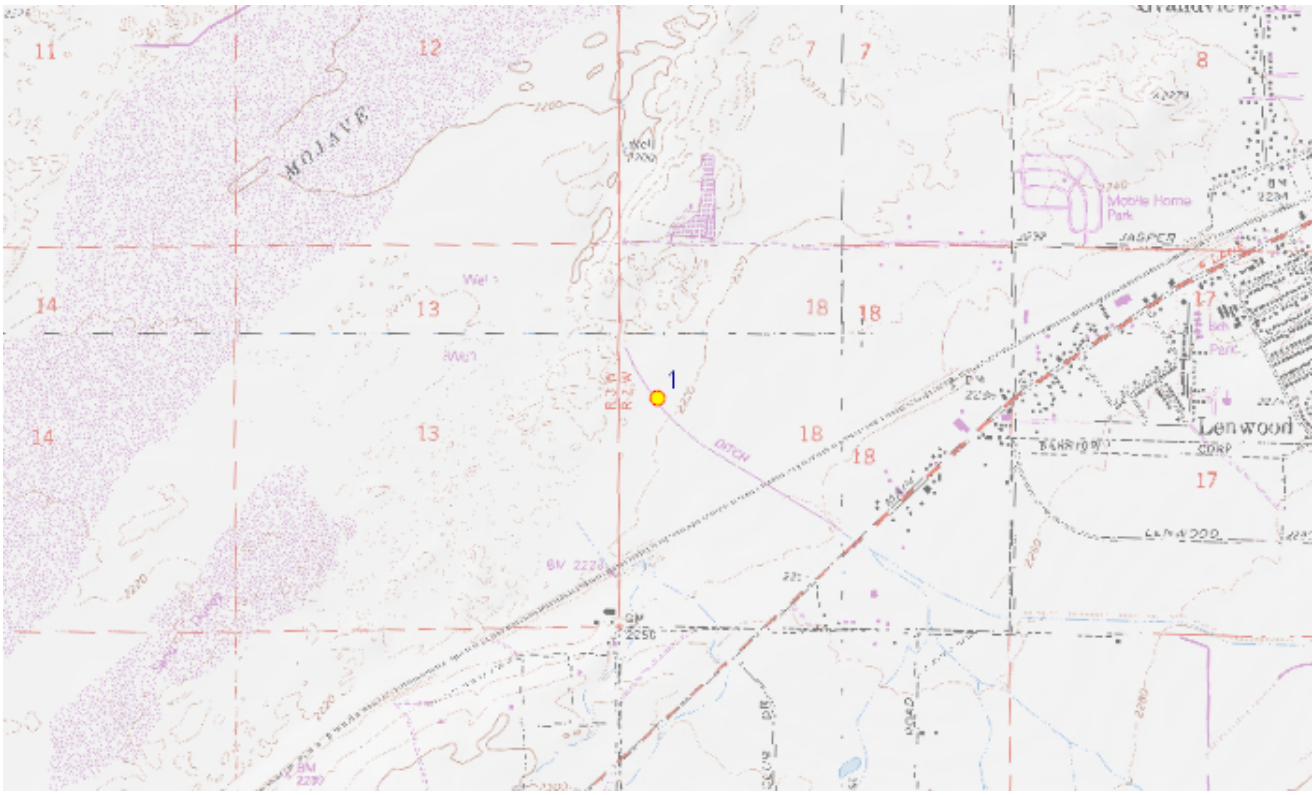
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2223	34.87258	-117.13438	487718	3858922	11
1	**Public Land Survey**	**Feature Comment**						
	S T09N R02W 18							

The mapped feature is accurate within: 100 m

Source of mapped feature: GPS

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code SWA24F0034
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Pyrocephalus rubinus*

Common name: vermilion flycatcher

Date of field work (mm-dd-yyyy): 06-11-2024

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Hannah Swarthout

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: hannah@rocksbio.com

Phone: (760) 712-6663

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: Garrett Moss

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Swainson's hawk protocol survey pass #4

Total number of individuals: 2

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	other
1	1			

Age class comment:

Bird site use:

☐ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☑ **Other (foraging, fly-over, etc.)**

Site use description: Possibly nested here

What was the observed behavior? Foraging in ornamental pine trees

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description:

Slope: Landowner/manager:

Aspect:

Site condition + population viability:

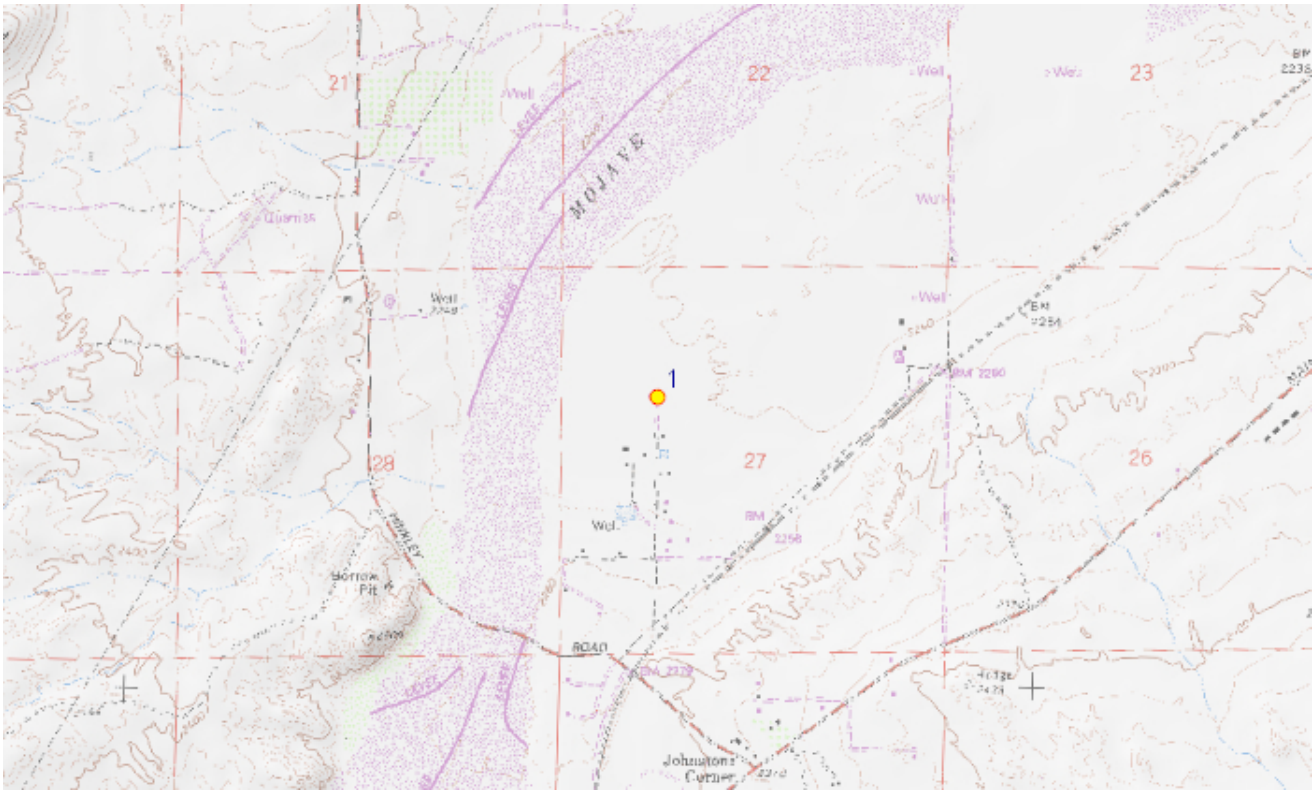
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2246	34.84429	-117.18476	483108	3855792	11
1	**Public Land Survey**	**Feature Comment**						
	S T09N R03W 27							

The mapped feature is accurate within: 5 m

Source of mapped feature: FieldMaps ArcGIS mobile application

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code GOO24F0034
Quad code 3411772
Occ. no.
EO index no.
Map index no.

Scientific name: *Lanius ludovicianus*

Common name: loggerhead shrike

Date of field work (mm-dd-yyyy): 06-25-2024

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Alec Goodman

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: alec@rocksbio.com

Phone: (909) 565-7197

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person:

Other: Confident identification based on experience

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Swainson's hawk protocol survey #5

Total number of individuals: 2

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	other
2				

Age class comment:

Bird site use:

☐ Nesting ☐ Rookery ☐ Nesting colony ☐ Burrow site ☐ Lek

☐ Non-breeding (over-wintering) ☐ Communal roost ☑ Other (foraging, fly-over, etc.)

Site use description: Foraging

What was the observed behavior? Perched in tamarisk

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description:

Slope: Landowner/manager:

Aspect:

Site condition + population viability:

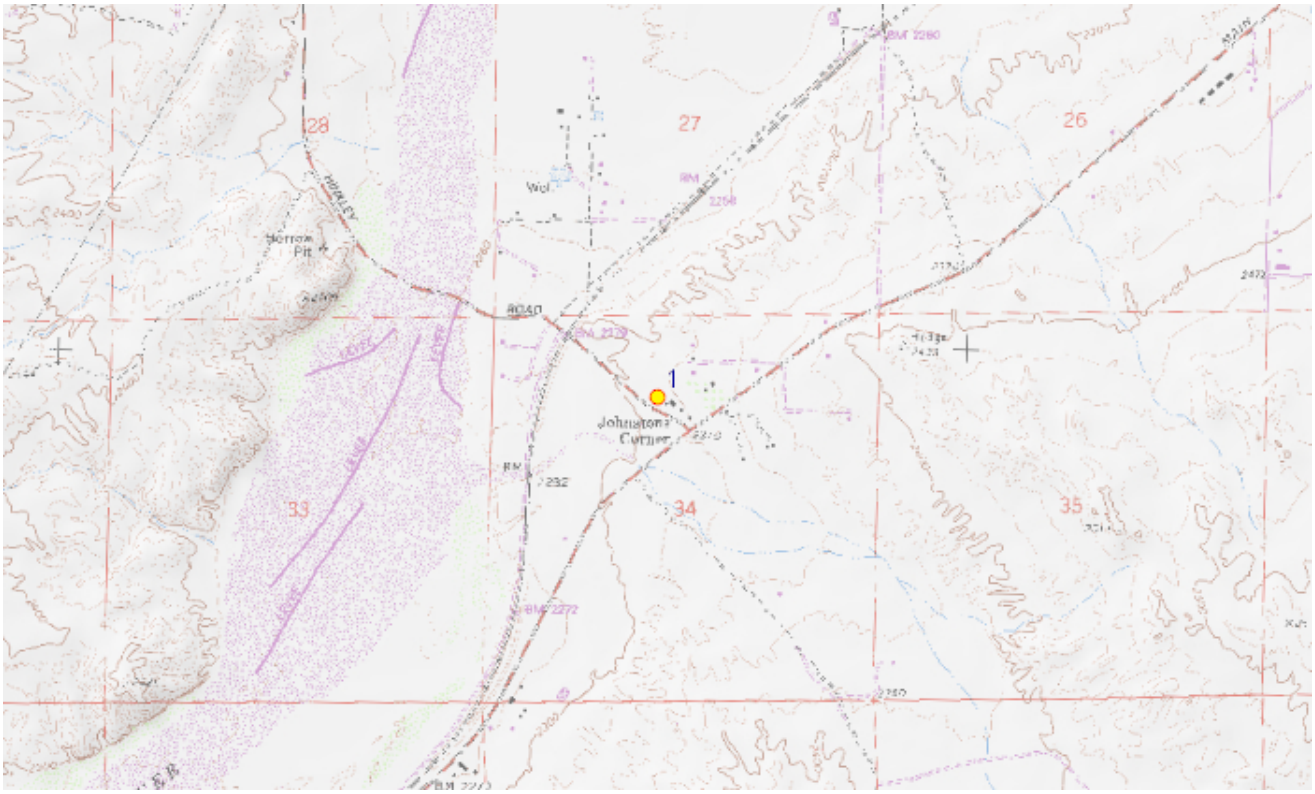
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2313	34.83157	-117.18176	483380	3854381	11
1	**Public Land Survey**	**Feature Comment**						
	S T09N R03W 34							

The mapped feature is accurate within: 5 m

Source of mapped feature: FieldMaps ArcGIS mobile application

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code SWA24F0035
Quad code 3411772
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Lanius ludovicianus*

Common name: loggerhead shrike

Date of field work (mm-dd-yyyy): 07-17-2024

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Hannah Swarthout

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: hannah@rocksbio.com

Phone: (760) 712-6663

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person: Alec Goodman

Other: Confident identification based on experience

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Swainson's hawk protocol survey #6

Total number of individuals: 1

Collection? No **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	other
1				

Age class comment:

Bird site use:

☐ Nesting ☐ Rookery ☐ Nesting colony ☐ Burrow site ☐ Lek

☐ Non-breeding (over-wintering) ☐ Communal roost ☑ Other (foraging, fly-over, etc.)

Site use description: Foraging

What was the observed behavior? Perched on tamarisk

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description:

Slope: Landowner/manager:

Aspect:

Site condition + population viability:

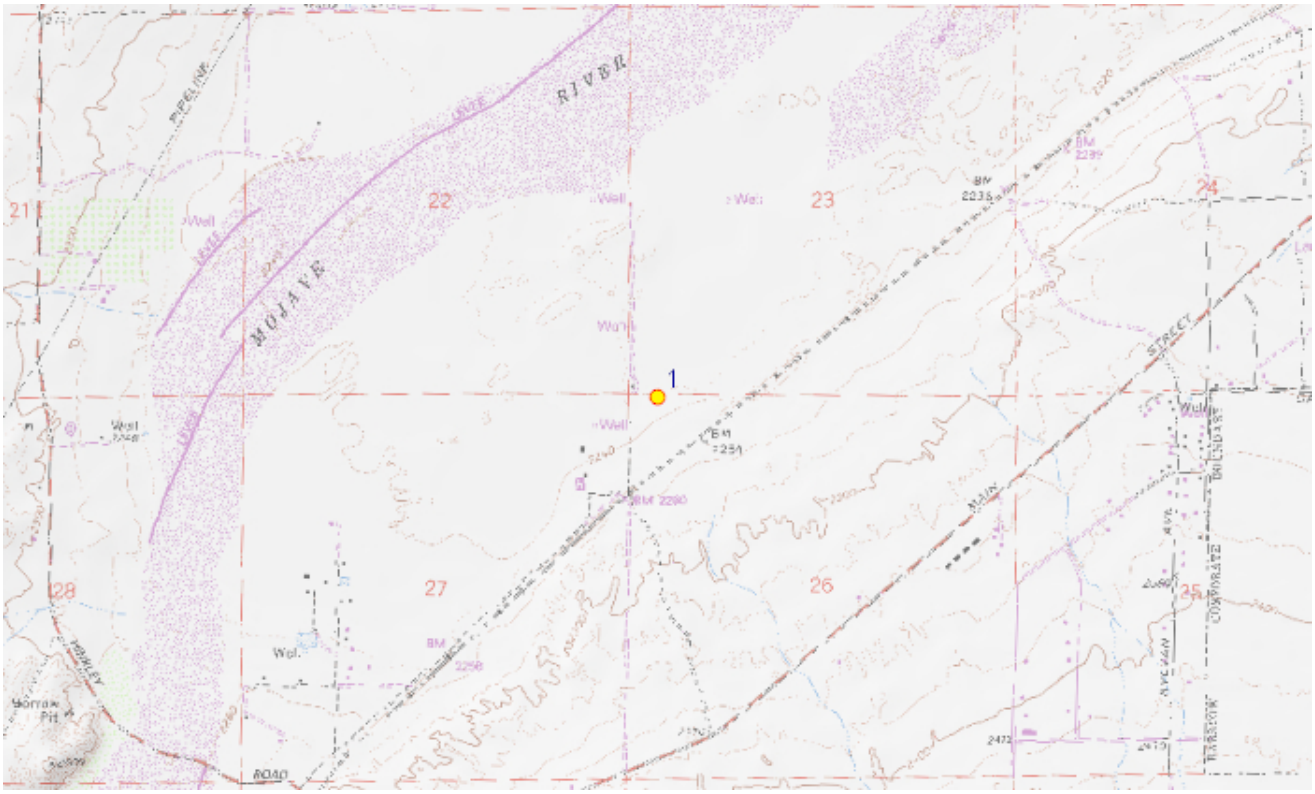
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hodge	2236	34.84909	-117.17011	484448	3856321	11
1	**Public Land Survey**	**Feature Comment**						
	S T09N R03W 26							

The mapped feature is accurate within: 5 m

Source of mapped feature: FieldMaps ArcGIS mobile application

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code MOS24F0002
Quad code 3411782
Occ. no. _____
EO index no. _____
Map index no. _____

Scientific name: *Buteo swainsoni*

Common name: Swainson's hawk

Date of field work (mm-dd-yyyy): 07-18-2024

Comment about field work date(s): Six surveys conducted during 2024 nesting season

OBSERVER INFORMATION

Observer: Garrett L. Moss

Affiliation:

Address: 4312 Rialto St. , San Diego, CA 92107

Email: garrett@rocksbio.com

Phone: (661) 742-5589

Other observers:

DETERMINATION

Keyed in:

Compared w/ specimen at:

Compared w/ image in:

By another person:

Other: Sibley Guide to Birds of North America

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Protocol Swainson's hawk nest surveys

Total number of individuals: 5

Collection? **Collection number:**

Museum/Herbarium:

ANIMAL INFORMATION

How was the detection made? Seen

Number detected in each age class:

adults	juveniles	larvae	egg mass	unknown
2	3			

Age class comment: Adult pair had 3 chicks. One chick was found predated at the base of the tree. Other two chicks fledged and were observed foraging with parents in general area.

Bird site use:

☑ **Nesting** ☐ **Rookery** ☐ **Nesting colony** ☐ **Burrow site** ☐ **Lek**

☐ **Non-breeding (over-wintering)** ☐ **Communal roost** ☐ **Other**

Site use description: Nested in Chinese elm adjacent to active alfalfa fields.

What was the observed behavior? Pair observed foraging, actively incubating, and carrying food back to the nest.

Describe any evidence of reproduction:

SITE INFORMATION

Habitat description: Active agriculture

Slope:

Land owner/manager: Private property

Aspect:

Site condition + population viability:

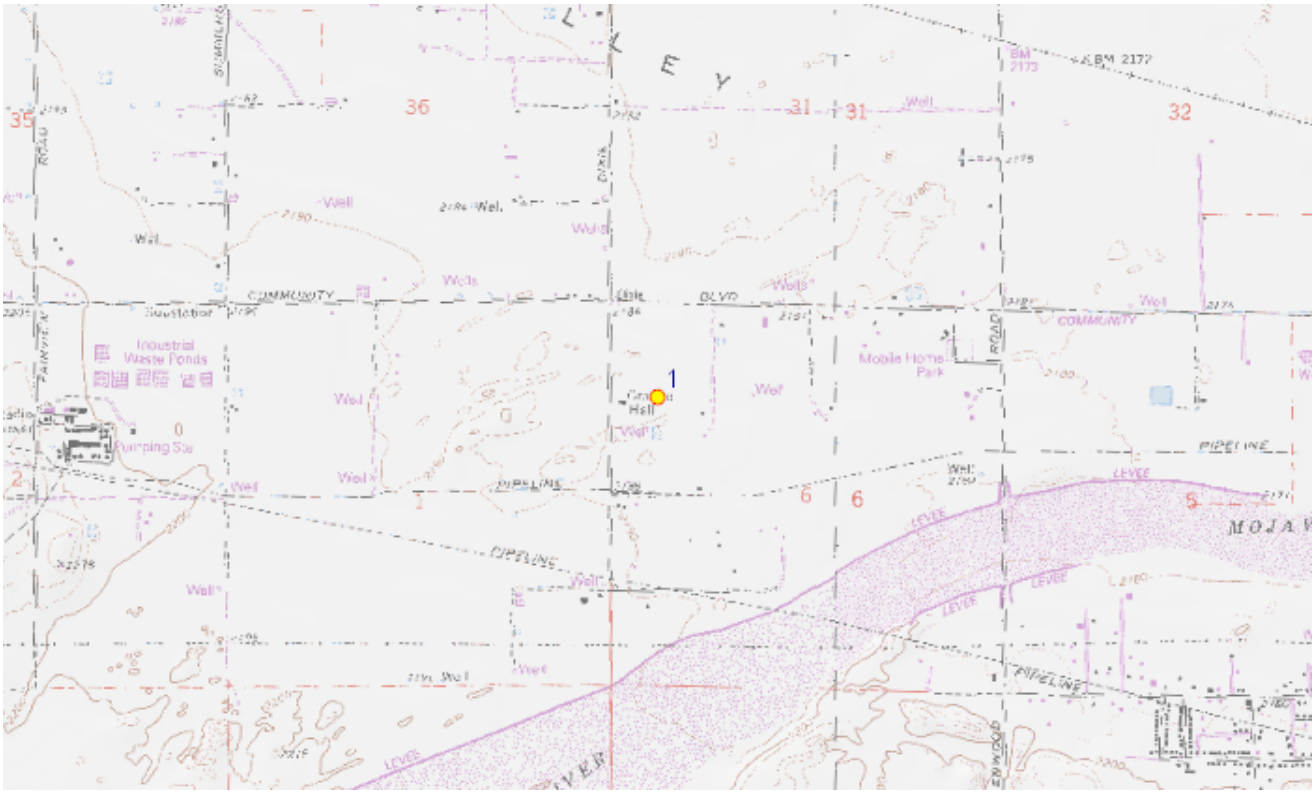
Immediate & surrounding land use:

Visible disturbances:

Threats:

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	San Bernardino	Hinkley	2189	34.90382	-117.13406	487752	3862386	11
1	**Public Land Survey**	**Feature Comment**						
	S T09N R02W 6							

The mapped feature is accurate within: 5 m

Source of mapped feature: GPS

Mapping notes: Located in Chinese elm adjacent to active alfalfa fields.

Location/directions comments: Exact nest Swainson's hawk nest location in Chinese elm. Located on private property.

Attachment(s):

APPENDIX D

SURVEYOR FIELD NOTES

3/20 SWHA Survey 3/20

HA	655	47	1-3	OK
GM	1000	89	1-3	OK

COCHA	MODO	WEME	NOHA*	CUHA*
VEKO	ROWR	RTHA	DRIVE	UCSD
CAQU	ANHU	HOFD	HOSP	EUCO
KELL	HOLA*	NRWS	BG-GN	YRWA

NOHA, foraging in salt bush scrub, then
34.799992 117.237282, 0705
perched on pole, preening

~~Roadkill~~: ~~kill deer~~, in road
head missing, Redtail, Census
34.853605 -117.168411
in road.

TMI Sign: K-Rat, Bird tracks

AL-GM	WILL	UNUM	Study	3/20
	1000	89	13	OK
	1315	71	3-5	OK

* Data entry

AG	BTG	SWHA	Surv	1 1/2	3/24
GM	0630	54	1-3	0%	
	1000	66	0-3	1%	
CORA	MORO	YRWA	HOFI	HOSP	SAPH
EVGD	WCSP	EVGT	HETH	PUMO	LOSH
CATH	WTEMF	BHOR			

[redacted] Active CORA nest on Cedar RD.

Active CORA nest on 3rd & Western dr.

AG	Canvas SD	Cord Swamp			3/21
GH	Big Willits	MWMT	Surv		
	1000	66	0-3	1%	
	1230				

AG	BTG	SWHA	PM	1 1/2	3/21
GM	1600	73	3-8	50%	
	1900	72	3-8	10%	
NOHA	MORO	EVGT	HAFL	RTHA	EVGD
CORA					

No nests observed.

SWHA Survey #2 - Day 1

Date: 3/28/2024
Biologists: KW, GM

Sunrise: 0640
AM Start: 0650, 45F, 1-3 mph, 0% CC
AM End: 1000, 58F, 5-8 mph, 0% CC
PM Start: 1600, 69F, 8-16 mph, 0% CC
PM End: 1900, 62F, 8-16 mph, 100% CC
Sunset: 1907

Species Observed:
CORA CAQU CATH NOHA WEME MODO EUCD ANHU BEWR HOFI HOLA LEGO TUVU WCSP LASP HOSP RTHA ROPI BESP AMKE BRBL COHA SWHA SAPH

NOHA observed foraging in allscale scrub/alkali sink area immediately north of the Mojave River.

Multiple active and inactive CORA nests observed throughout the project site.

One active RTHA nest observed; one adult appeared to be Krider's subspecies.

Two SWHA observed soaring over Hinkley Bridge area; one light morph and one intermediate morph.

SWHA SURVEY #2 8/28/24

AM SURVEY SUNRISE 0640

0650	45°	1-3	0.0
1000	58°	5-8	0.0

PM SURVEY

1600	69	8-16	0.0
1900	62	8-16	100.0

SUNSET 1907

RAPTORS: NOHA* RTHA (SWHA*)

* SURVEY POSITIVE FOR SWHA* (one light morph + intermediate morph)

WCSP	MODO	CATH	LEGO
CORA	EUCD	WEME	HOLA*
TMVU	CAQU	ANHU	HOFI
BWR	LASP	WEKI	BESP*
BRBL	AMKE	LOSH*	SAPH

* SWHA: n=2, soaring over scrub near Hinkley

* 1 RTHA nest observed - one RTHA recorded on nest.

* NOHA: n=1, foraging

Scale: 1 square = _____

SWHA Survey #2 - Day 2

Date: 3/29/2024
Biologists: KW, GM

Sunrise: 0638
AM Start: 0638,
AM End: 1000, 55F, 3-5 mph, 10% CC

Species Observed:
CORA SAPH MODO EUST ROPI ANHU HOSP RTHA BRBL AMRO YRWA HOFI EUCD CAQU WCSP SOSP CATH BGGN VERD

3/28/24

0%
0%

0%
100%

SWTHA*

7* (one morph)

OO
OLA*
AOFI
ESP*
APH

over

one RTHA

SWTHA SURVEY #2 3/29/24

SUNRISE 0638.

AM:	0638	44°	1-3	0%
	1000	55°	3-5	10%

RAPTORS: RTHA

SAPH	CORA	EUST	AMCR
ROPI	DCCO	HOSP	HOFI
AMRO	YRWA	EUCD	WEME
ANHU	LEGO	SAPH	WCSP
CAQU	MODO	NOMO	

* Low availability of food sources (insects)

Scale: 1 square = _____

Rite in the Rain

BIG SWHA #3 - Day 1

Date: 4/4/2024
Biologists: KW, HS, GM

Sunrise: 0632
AM Start: 0632, 50F, 1-3 mph, 5% CC
AM End: 1000, 61F, 8-12 mph, 20% CC
PM Start: 1630, 60F, 15-30 mph, 30% CC
PM End: 1830, 55F, 15-30 mph, 40% CC
Sunset: 1912

Species Observed:
CORA EUST HOSP HOFI CANG CAQU EUCD WCSP RTHA GTGR BRBL NOMO GRYE BNST KILL WESA CATH SAPH SWHA WEME HOLA YRWA BGGN ROPI

AM Notes:
Three SWHA (two intermediate and one light morph) observed flying over the project are and soaring/kettling within the survey buffer immediately north of the Mojave and Hinkley Bridge. Large mob of CORA (~50) observed flying near area SWHA we observed.

Two SWHA (light morphs and possible pair) were observed foraging in ag field and perched together in a large elm tree located at 34.903869, -117.135419. Both SWHA were observed foraging and occasionally harassed by CORA. SWHA continued to forage and perch in the area while actively fending off CORA.

PM Notes:
Single SWHA observed foraging over ag field northeast of survey area located at 34.905393, -117.133803.

Low raptor activity observed due to high winds.

SWHA #3 B16 4/4/24

(SUNRISE)			
↳0632	50°	1-3	5.10
PM: 1000	61°	8-12	20.10

CORA CANG EUST HOSP
HOFI CAQU EUCD Gull sp.
MALL WCSP GTGR BRBL
NOMO BNST GRYE WESA
CATH HOLA* YRWA BGGN

*3 SWHA - 2 intermediate, 1 light morph
*2 SWHA in tree near AG (light morphs)
OTHER RAPTORS - RTHA

SUNSET 1912

PM: 1630	60	15-30	30.10
1830	55	15-30	40.10

* PM - HIGH WINDS LOW RAPTOR ACTIVITY
* Observed one SWHA in AG field from AM survey foraging in high winds (1645)

BIG
4/4/24 SWHA #3
0600-1200 ~~0900~~ 4:00PM-

	TIME	TEMP	WIND	CC
START	6:32AM	~~50~~	1-3	5%
END	10:00AM	61	5-8	20%

WILDLIFE:
COKA, EUST, ~~CACO~~ CANG, HOSP, HOFI, CAQU, EUCD, WCSP, RTHA, GTGR, BRBL, NOMO, BNST, GRYE, WESA, CATH, SWHA, LOSH, BGBN, ITOLA,
9:00AM OBSERVED 3 SWHA SOARING. 2 INTERMIDIATE, 1 LIGHT MORPH
10:30 AM OBSERVED TWO LIGHT MORPH ~~SWHA~~S IN DEAD TREE

4/4/24 BIG SWHA #3

	TIME	TEMP	WIND	
START	4:30pm	60°	25-30	30%
END	6:30PM	55	15-30	40%

WILDLIFE
YRWA, ETHA, SWHA*

* FORAGING IN AG FIELD W/ WINDY CONDITIONS

BIG SWHA #3 - Day 2

Date: 4/5/2024
Biologists: KW, HS, GM

Sunrise: 0629
AM Start: 0630, 37F, 1-3 mph, 10% CC
AM End: 0915, 45F, 5-10 mph, 10% CC
PM Start: N/A
PM End: N/A
Sunset: 1913

Species Observed:
CORA BRBL EUST MODO EUCD SWHA WCSP HOSP LAGO CAQU YRWA NOMO HOFI LASP LOSH WEKI OSPR

AM Notes:
One dark morph SWHA was observed emerging from a roost spot within a line of thick tamarisks near the abandoned houses near Hinkley Bridge (34.840605, -117.184639).

Single OSPR observed perched near 34.876165, -117.124158.

SWHA pair was observed again perched in the same tree adjacent to ag fields (34.903865, -117.135412). One adult was heard briefly calling. Both were observed foraging and soaring over the ag fields together.

4 SWHA #3 B/G 4/15/24

SUNRISE 0629

0630	37	1-3	10.2°
0915	45	5-10	10.10

BRBL MODO EUST CORA
WOSP CAQU LAGO* HOSP
YRWA EUCD HOFI LOSH*
WEKI

*SWHA n=2 pair @ AG field, 0900

*SWHA n=1 in Tamarisk 0647, roosting (dark morph)

*OSPR perched on snag, n=1

*RTHA ♀ on nest incubating

OTHER RAPTORS: RTHA OSPR*

Scale: 1 square = _____

4/5/24 BIG SWITA #3
6:00AM - 2:45PM

	TIME	TEMP	WIND	CC
START	6:30AM	37	1-3	10%
END	9:15AM	45	5-10	10%

WILDLIFE:
BRBL, COKA, MODO, WCSP, LAGO, CAQU, HOSP, NOMO, HOFI,

6:44AM OBSERVED SWITA (DARK MORPH) FLUSH FROM TAMRAM

LOSH, WEKI, OSPR,

8:40AM OBSERVED 2 SWITA IN AG FIELD AREA

BIG SWHA Survey #4 - Day 1

Date: 6/11/2024
Biologists: HS, GM

Start: 1600, 105F, 8-16 mph wind, 0% CC
End: 2000, 93F, 3-5 mph wind, 0% CC

Sunset: 2002

Species Observed:
Reptiles: Aspidoscelis tigris, Callisaurus draconoides
Birds: CORA HOSP MODO CAQU SWHA EUCD NOMO VEFL SAPH ATFL HOLA
Mammals: desert cottontail, CAGS, AGS

Survey Notes:

- Adult SWHA with at least 1 downy chick observed in nest located at known agriculture location outside of survey buffer; Other adult SWHA was observed on a nearby wooden distribution pole with a prey item
- Adult RTHA nest with 2 nestlings observed near Hinkley Road; Nestlings had almost complete adult plumage and are likely close to fledging
- Adult female and immature male VEFL observed foraging together near RTHA nest near Hinkley Road
- No other SWHA or SWHA nests were observed

6/11 BIG SWHA

1:00pm - 1:45pm 3:30 PM - 8:5pm

	TIME	TEMP	WIND	CC
START	4:00pm	105	8-16	0%
END	8:00PM	95°	3-5	0%

WILDLIFE:

COPA SWHA*, HOSP, MODO,
*OBSERVED ADULT ON NEST
W/ CHICK AT ~ 4:20PM IN
KNOWN NEST LOCATION.
CAQU, EUCO, BTHA (ON KNOWN
NEST W/ TWO NESTLINGS
NOMO, VEEL, GHOW HOLA
*1 ADULT & VEEL W/ JUNO
FORAGING IN DUNES
LOSH* AGS
* PERCHED IN TAMARIX (1)
+ 1:14PM OBSERVED SWHA PERCHED
ON UTILITY LINE W/ FOOD

SUNSET AT 8:02 PM

BIG SWHA Survey #4 - Day 2

Date: 6/12/2024
Biologists: HS, GM

Sunrise: 532

Start: 532, 67F, 3-5 mph wind, 0% CC
End: 1200, 94F, 5-10 mph wind, 0% CC

Species Observed:
Reptiles: zebra-tailed lizard, long-nosed leopard lizard
Birds: CORA MODO EUST HOSP EUCD BESP CAQU CATH HOLA LENI NOMO RTHA SAPH VEFL LASP BUOR LOSH AMPI
Mammals: desert cottontail, AGS, black-tailed jackrabbit, CAGS

Survey Notes:

- No SWHA or SWHA nests (potential or confirmed) were observed within the survey area

6/12 BIG SWAP

5:00AM -

	TIME	TEMP	WIND	CC
START	5:30AM	67	3-5	0%
END	12:00PM	94	5-10	0%

SUNRISE: 5:32 AM

WILDLIFE:

COKA, CATH, HOLA, CANY, MOBO, BESP, EUST, HOSP, EUCH, CAQU, DESERT COTTONTAIL, BTJR, AGS, RTHA, LASP, VEFL*

*SAME VEFL AS 6/11

LOSH, SAPH, BUOR, AMPL,