



September 22, 2020

Mr. George Zakhari
Water Quality Engineer
Mountain / Desert District
Golden State Water Company
13608 Hitt Road
Apple Valley, CA 92308
Via e-mail to: George.Zakhari@gswater.com

Subject: *Special-Status Plant Survey Report for Irwin Road Reservoir and Transmission Main Project, near Barstow, California*

Dear Mr. Zakhari:

This letter report presents the results of the special-status plant survey conducted by ECORP Consulting, Inc. for Golden State Water Company's (GSWC) proposed Irwin Road Reservoir and Transmission Main Project (Project). The methods and results of the 2020 survey are presented below. Following is an easy reference to the organization of the report:

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PROJECT DESCRIPTION AND LOCATION

The Project site is located north of the city of Barstow, near the intersection of Irwin Road and Gavilan Street, along the Irwin Road right of way (ROW) in San Bernardino County, California (Figure 1). The proposed Project includes an above-ground 1.5-million gallon, welded steel water reservoir on Bureau of Land Management (BLM) land (Assessor's Parcel Number 042-316-141-0000) and a 1.1-mile-long 12-inch diameter ductile iron pipe (DIP) water transmission pipeline that traverses through federal and private lands (Figure 2). Approximately 4,000 linear feet (0.75 mile) of the Project is located within land owned by the County of San Bernardino and 1,800 linear feet (0.34 mile) of the Project lies within BLM-managed lands.

The reservoir will be constructed on a 0.80-acre site that will require permanent ROW from BLM. The entire Project site and surrounding area is designated as Rural Living (RL-40) by the San Bernardino County General Plan. The Project site, as depicted on U.S. Geological Survey 7.5-minute Series Barstow SE Topographic quadrangles, lies within Section 19 and 30 of Township 10 North and Range 1 West. Elevation on the Project site is approximately 2,335 feet above mean sea level. The Rare Plant Survey Area encompasses the Project footprint and its area of influence, which was assumed to be an approximately 100-foot buffer around the proposed pipeline location.

1.5-MG Water Storage Reservoir

The reservoir will be approximately 102 feet in diameter and 36.5 feet in height, constructed from welded steel plates. The reservoir site will be secured by an eight-foot chain-link fence and a security gate at the point of entry. The reservoir site will require a permanent ROW grant from BLM.

Water Transmission Main Pipeline

A 12-inch diameter DIP water transmission pipeline, approximately 5,816 linear feet (1.1 miles) long will be buried between 36 and 42 inches below the surface within previously developed portions of the Irwin Road ROW, a County maintained road. The pipeline will convey water to/from the reservoir and will connect the reservoir with an existing water pipeline located at the intersection of Irwin Road and Gavilan Street. The entire pipeline alignment will be within the Irwin Road ROW. Other permanent Project facilities include air valves, blow-offs, fire hydrants, and valves for the pipeline along the pipeline alignment.



Map Date: 4/29/2020

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 1. Project Vicinity

2018-039.008 Irwin Road Tank & Transmission Line

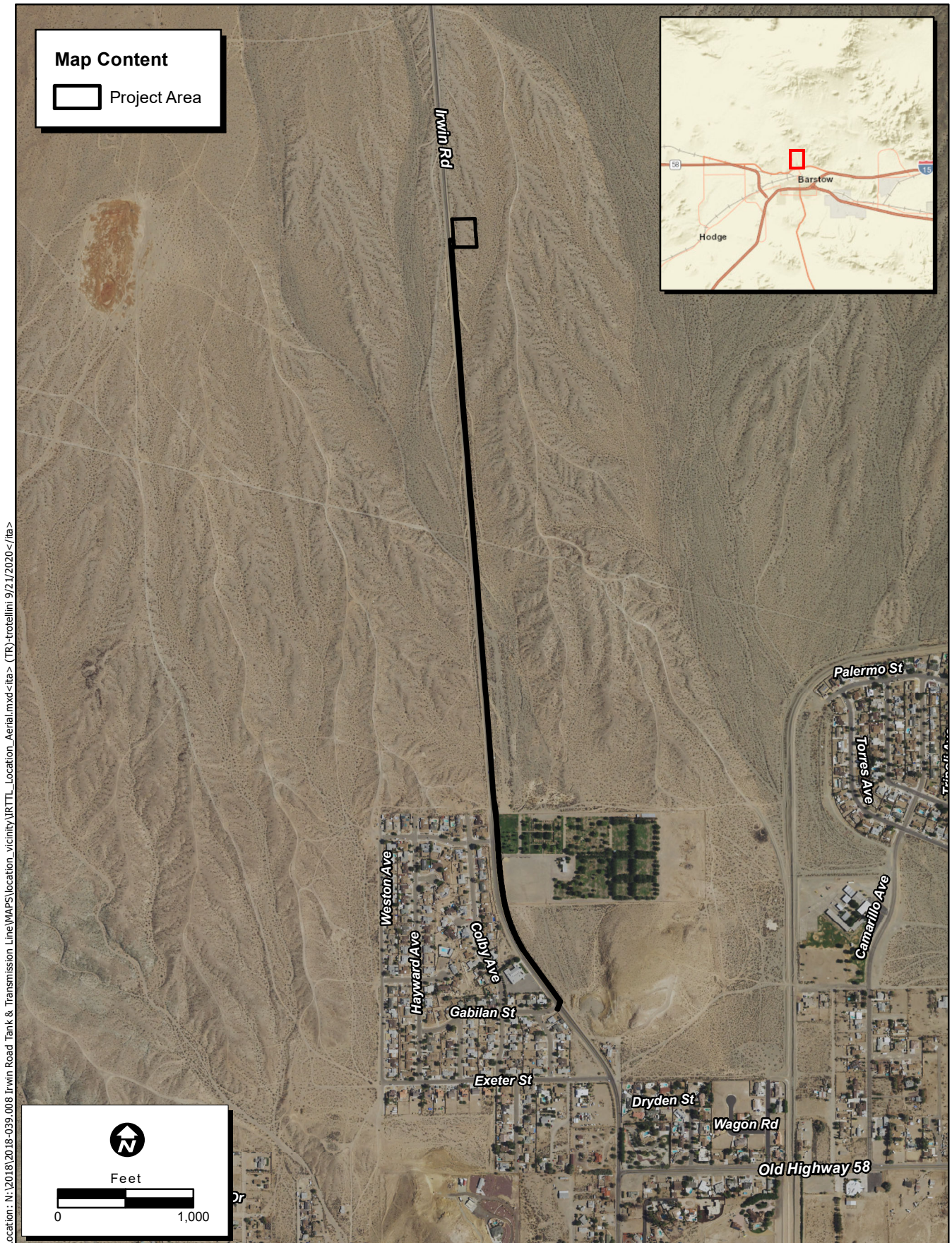


Figure 2. Project Location

2018-039.008 Irwin Road Tank & Transmission Line

SURVEY METHODS

Prior to conducting the field study, ECORP conducted a review of the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2020) and the CNPS Inventory of Rare and Endangered Plants of California (hereafter referred to as CNPS Electronic Inventory) (CNPS 2020) to determine whether special-status plant species have been previously reported within the Project area and the surrounding USGS 7.5-minute topographic quadrangles. In addition, the USFWS Information for Planning and Consultation website (iPAC) was utilized to verify if federally protected plant species have been detected in, or within 5 miles, of the Project site.

In an attempt to verify the blooming status of target special-status plant species, reference populations were visited that were previously recorded (according to the CNDDB). If plants were located during reference population assessments, information about their development (e.g., in flower; 50 percent of population with flower buds, but no flowers) was noted, and photo documentation was performed. The status of reference populations and vegetation communities that occur within the Project area were used to assist with planning the optimal time to conduct surveys.

Special-status plant species are those listed under the California or Federal Endangered Species Acts, considered sensitive by the BLM, or those considered rare by CNPS. Surveys were conducted by biologists with extensive experience with botanical surveys and knowledge regarding plant taxonomy, plant species in the region, and special-status plant species. The purpose of the surveys was to determine the presence or absence and number of individuals of special-status plant species within the Rare Plant Survey Area.

Survey methods were devised with consideration of the following resources: 1) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 1996), 2) *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018), and 3) *CNPS Botanical Survey Guidelines* (CNPS 2001). The surveys were scheduled to coincide with the target species' blooming periods and during a period when target species were most likely identifiable.

A total of two surveys were conducted to provide 100 percent visual coverage Rare Plant Survey Area, excluding private property. Developed areas that were not known to support special-status plant species were not surveyed. Pedestrian-based survey transects were walked 10 meters apart by three biologists. Global Positioning System (GPS) devices (iPads® running Collector software) were used during surveys to record the coordinates of any special-status plant species. Arrow™ receivers were used to obtain sub-meter accuracy on the GPS devices. Each GPS device displayed a position using the Universal Transverse Mercator coordinate system, North American Datum 1983.

Common plant species were identified and recorded in order to maintain a compendium of plant species that occur in the Rare Plant Survey Area. Taxonomy of plant species identified within the Rare Plant Survey Area are based on *The Jepson Manual, 2nd Ed.* (Baldwin et al. 2012).

Habitat descriptions and classifications are based on *The Manual of California Vegetation, 2nd Edition* (Sawyer et al. 2009); however, in some cases a best-fit definition based on habitat descriptions and land-use has been applied.

LITERATURE REVIEW

The project is located within the Superior-Cronese Area of Critical Environmental Concern (ACEC) as designated under the Desert Renewable Energy Conservation Plan (DRECP) and is therefore subject to the goals and objectives of the DRECP. The DRECP has identified Conservation and Management Actions (CMAs) for the Superior-Cronese ACEC that which the Project will be required to adhere. These CMAs can be found in the draft Environmental Assessment prepared for the Project (Albert A. Webb Associates 2020).

Numerous special-status plant species have been recorded within five miles of the Project area according to the iPAC website, the CNDDDB (CDFW 2020) and CNPS Electronic Inventory (CNPS 2020). Of all available records, a total of seven species were identified as those with the potential for occurrence within the vicinity of the Project Area. The seven species are discussed and detailed below in Table 1.

Special-status plant species available for review within the database search were assessed for their potential to occur within the Project Area based on the criteria guidelines¹ below. None of the special-status plant species were determined to have a high potential of occurrence.

Moderate: Habitat (including soils and elevation factors) for the species occurs in the Project Area and a known occurrence exists within the database search, but not within five miles of the Project; or a known occurrence exists within five miles of the site and marginal or limited amounts of habitat occurs in the Project Area.

Low: Limited habitat for the species occurs in the Project Area and a known occurrence exists within the database search, but not within five miles; or suitable habitat strongly associated with the species occurs on-site, but no records were found within the database search.

Table 1. Special-Status Plant Species with Potential to Occur within the Project Area				
Scientific Name Common Name	Status	Blooming Period/ Elevation Range (meters)	Habitat	Potential to Occur in the Study Area
<i>Dipylaeus mohavensis</i> Mojave monkeyflower	USFWS: None CDFW: None CRPR: 1B.2 BLM: Sensitive	April - June (600 - 1200)	Joshua tree woodland Mojavean desert scrub	Moderate: Limited habitat occurs within the Project Area; known occurrence exists within 5 miles.
<i>Eriophyllum mohavense</i> Barstow woolly sunflower	USFWS: None CDFW: None CRPR: 1B.2 BLM: Sensitive	March - May (500 - 1175)	Chenopod scrub Mojavean desert scrub	Moderate: Limited habitat occurs within the Project Area; known occurrence exists within 5 miles.

¹ Note: Location information on some sensitive species may be of questionable accuracy or unavailable; therefore, for survey purposes, environmental factors associated with species occurrence requirements may be considered sufficient reason to give a species a positive potential for occurrence.

Table 1. Special-Status Plant Species with Potential to Occur within the Project Area				
Scientific Name Common Name	Status	Blooming Period/ Elevation Range (meters)	Habitat	Potential to Occur in the Study Area
<i>Menodora spinescens</i> var. <i>mohavensis</i> Mojave menodora	USFWS: None CDFW: None CRPR: 1B.2 BLM: Sensitive	April - May (690 - 2000)	Mojavean desert scrub	Moderate: Limited habitat occurs within the Project Area; known occurrence exists within 5 miles.
<i>Mentzelia tricuspis</i> spiny-hair blazing star	USFWS: None CDFW: None CRPR: 2B.1 BLM: None	March - May (150 - 1280)	Mojavean desert scrub	Low: Limited habitat occurs within the Project Area; known occurrence exists greater than 5 miles.
<i>Mentzelia tridentata</i> creamy blazing star	USFWS: None CDFW: None CRPR: 1B.3 BLM: Sensitive	April - June (700 - 1175)	Mojavean desert scrub	Moderate: Limited habitat occurs within the Project Area; known occurrence exists within 5 miles.
<i>Phacelia parishii</i> Parish's phacelia	USFWS: None CDFW: None CRPR: 1B.1 BLM: Sensitive	April - May (540 - 1200)	Mojavean desert scrub	Low: Limited habitat occurs within the Project Area; known occurrence exists greater than 5 miles.
<i>Pediomelum castoreum</i> beaver dam breadroot	USFWS: None CDFW: None CRPR: 1B.3 BLM: Sensitive	April - May (610 - 1525)	Joshua tree woodland Mojavean desert scrub	Moderate: Limited habitat occurs within the Project Area; known occurrence exists within 5 miles.

California Native Plant Society (CNPS) Rare Plant Rank (CRPR) Designations:

1B: Plants rare and endangered in CA and throughout their range.

2B: Plants rare, threatened, or endangered in CA but more common elsewhere in their range.

Plants 1B and 2B extension meanings:

.1 Seriously endangered in CA (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 Fairly endangered in California (20-80% occurrences threatened)

.3 Not very endangered in CA (<20% of occurrences threatened or no current threats known)

Other Designations

BLM Sensitive: Bureau of Land Management (BLM) Sensitive Plant Species List, 2013.

Source: California Natural Diversity Data Base (CDFW 2020).

RESULTS

Reference Population Assessment

In an attempt to verify the blooming status of target special-status plant species, reference populations were visited that were previously recorded (according to the CNDDDB). All reference populations were located within a 25-mile radius of the Study Area. Using Geographic Information System (GIS) software, ECORP plotted the results of the literature review on an aerial imagery map to identify areas where special-status plant species have been previously documented so that those locations could be visited

during the 2020 survey effort. A total of three known populations of plant species on the target list for sensitive plant surveys were visited in order to assess their status. All reference populations had positive observations of the target plant species and were in full bloom. The reference populations visited occur nearby the Project area and include creamy blazing star (*Mentzelia tridentata*), Mojave monkeyflower (*Diplacus mohavensis*), and Barstow woolly sunflower (*Eriophyllum mohavense*). If plants were located during reference population assessments, information about their development (e.g., in flower; 50 percent of population with flower buds, but no flowers) was noted, and photo documentation was performed. The status of reference populations and vegetation communities that occur within the Project area were used to assist with planning the optimal time to conduct surveys. Reference populations visited are listed in Table 2.

Table 1. Reference Populations Visited in 2020					
Date Visited	Scientific Name	Common Name	Location	Federal/ State Listing Status	CNPS Rare Plant Rank
3/16/20	<i>Mentzelia tridentata</i>	creamy blazing star	Off of Camp Rock Road, south of Daggett, California.	None	1B.3
3/16/20	<i>Diplacus mohavensis</i>	Mojave monkeyflower	Off of Camp Rock Road, south of Daggett, California.	None	1B.2
3/18/20	<i>Eriophyllum mohavense</i>	Barstow woolly sunflower	Off of unnamed dirt road (power line road) east of Kramer Junction.	None	1B.2

Field Survey

Special-status plant surveys were performed by ECORP biologists Greg Hampton, Lauren Simpson, and Caroline Garcia on March 19 and 20, 2020. A list of all individual plant species observed in the Rare Plant Survey Area can be found in Attachment A. A biological reconnaissance survey was conducted concurrently with the special-status plant surveys, and all wildlife observations and digital photographs are included in the corresponding Biological Reconnaissance Report (ECORP 2020, in prep).

No special-status plant species were observed; however, one beavertail cactus (*Opuntia basilaris* var. *basilaris*) was observed within the Project Area (Figure 3). Additionally, one skeleton of a Wiggin's cholla (*Cylindropuntia echinocarpa*) was observed within the Rare Plant Survey Area but its location was not recorded because it was determined to be deceased at the time of the survey.

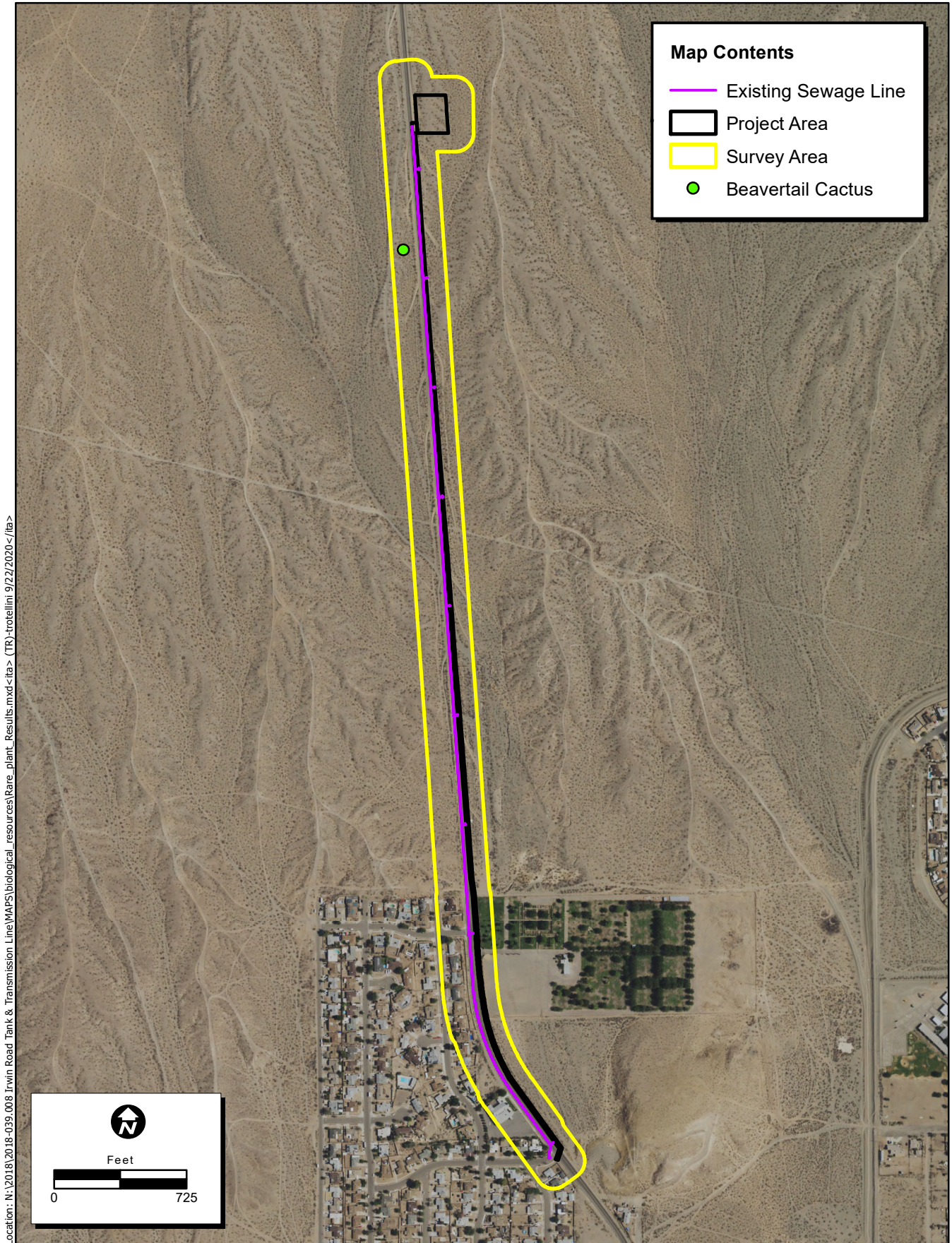


Figure 3. Rare Plant Survey Results

2018-039.008 Irwin Road Tank & Transmission Line

Vegetation Communities

This section includes information about the habitat types, the vegetation that was identified in each habitat, the dominant species present, and habitat quality. A complete map of vegetation communities observed during the survey is shown on Figure 4. Vegetation communities and notable plant species found within the Rare Plant Survey Area include:

Creosote Bush - White Bursage Scrub (Larrea tridentata – Ambrosia dumosa Shrubland Alliance)

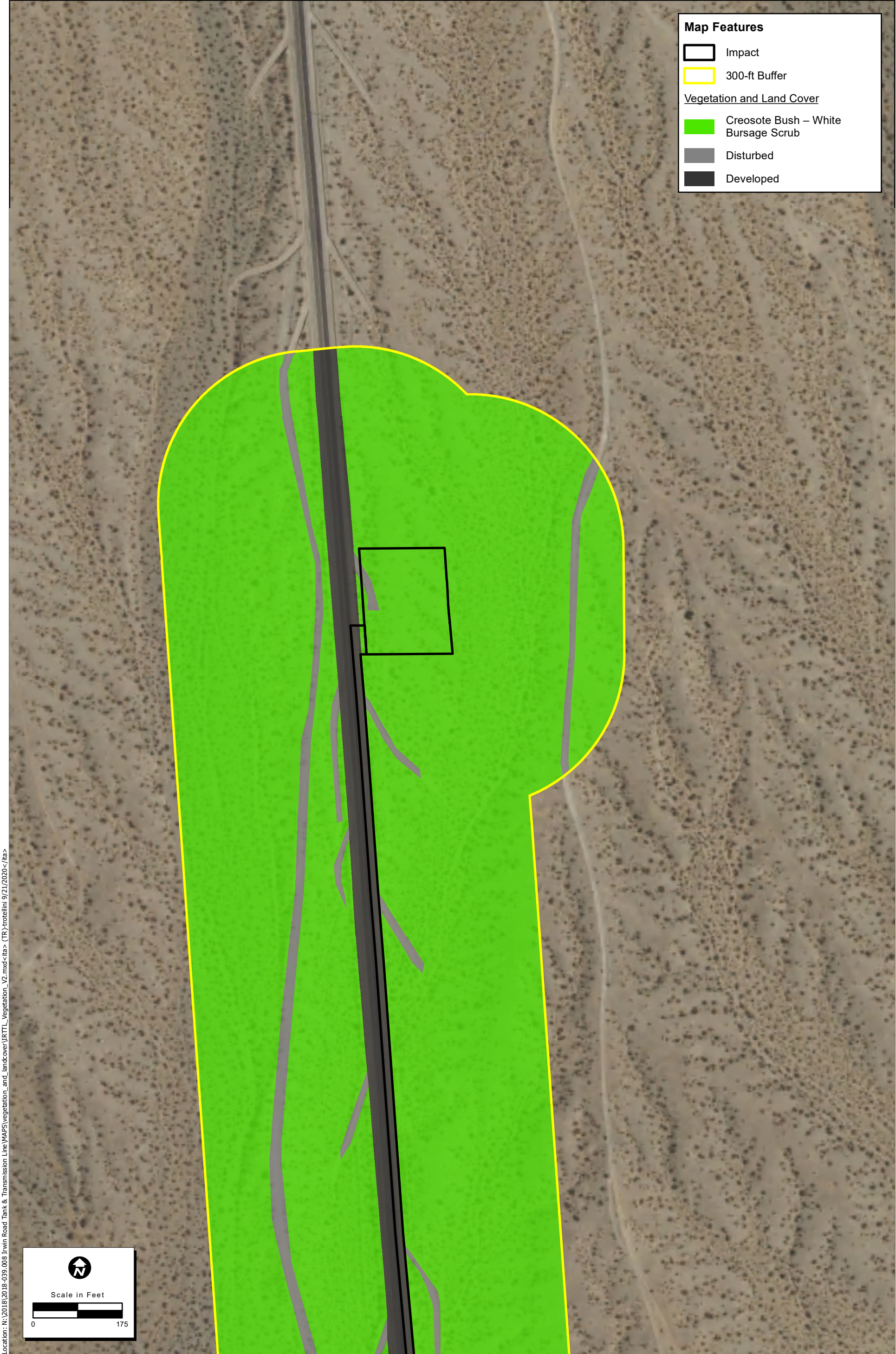
The Creosote Bush – White Bursage Scrub community is characterized by intermediate to tall, widely spaced shrubs typically dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). This community is found within well drained secondary soils with very low available water holding capacity on slopes, fans, and valleys at elevations ranging from -75 meters below mean sea level (msl) to 1,600 meters above msl (Sawyer et al. 2009). Within the Rare Plant Survey Area, this community is dominated by creosote bush but also consists of white bur-sage, Cooper's box thorn (*Lycium cooperi*) and cheesebush (*Ambrosia salsola*). Annual species consisted of desert heron's bill (*Erodium texanum*), and rigid spiny herb (*Chorizanthe rigida*). This community is located mostly in the northern and mid-portions of the Rare Plant Survey Area and was mildly to moderately disturbed throughout, based on non-native species and anthropogenic causes (e.g., roads, tire tracks). There are 0.78 acre of Creosote Bush – White Bursage Scrub within the Project site.

Disturbed

The disturbed classification includes areas where the native vegetation community has been heavily influenced by human actions, such as grading, trash dumping, and off-road use, but lack development. Disturbed is not a vegetation classification, but rather a land cover type and is not typically restricted to a known elevation. Disturbed areas located throughout the Rare Plant Survey Area most commonly included dirt roads. In areas classified as disturbed, vegetation was absent or consisted primarily of nonnative species, such as red brome (*Bromus madritensis*), redstem filaree (*Erodium cicutarium*), and Mediterranean grass (*Schismus barbatus*). Approximately 0.04 acre of disturbed areas are present in the Project site.

Developed

Areas designated as developed will have infrastructure present and any vegetation in the immediate surroundings represents ornamental landscaping. Developed is not a vegetation classification, but rather a land cover type and is not typically restricted to a known elevation. Developed areas were located throughout the Rare Plant Survey Area and included residences and roadways. There are 2.00 acres of developed areas within the Project site.



Map Date: 9/21/2020
Photo Source: NAIP 2018

Figure 4. Vegetation Communities and Land Cover
Sheet 1 of 3

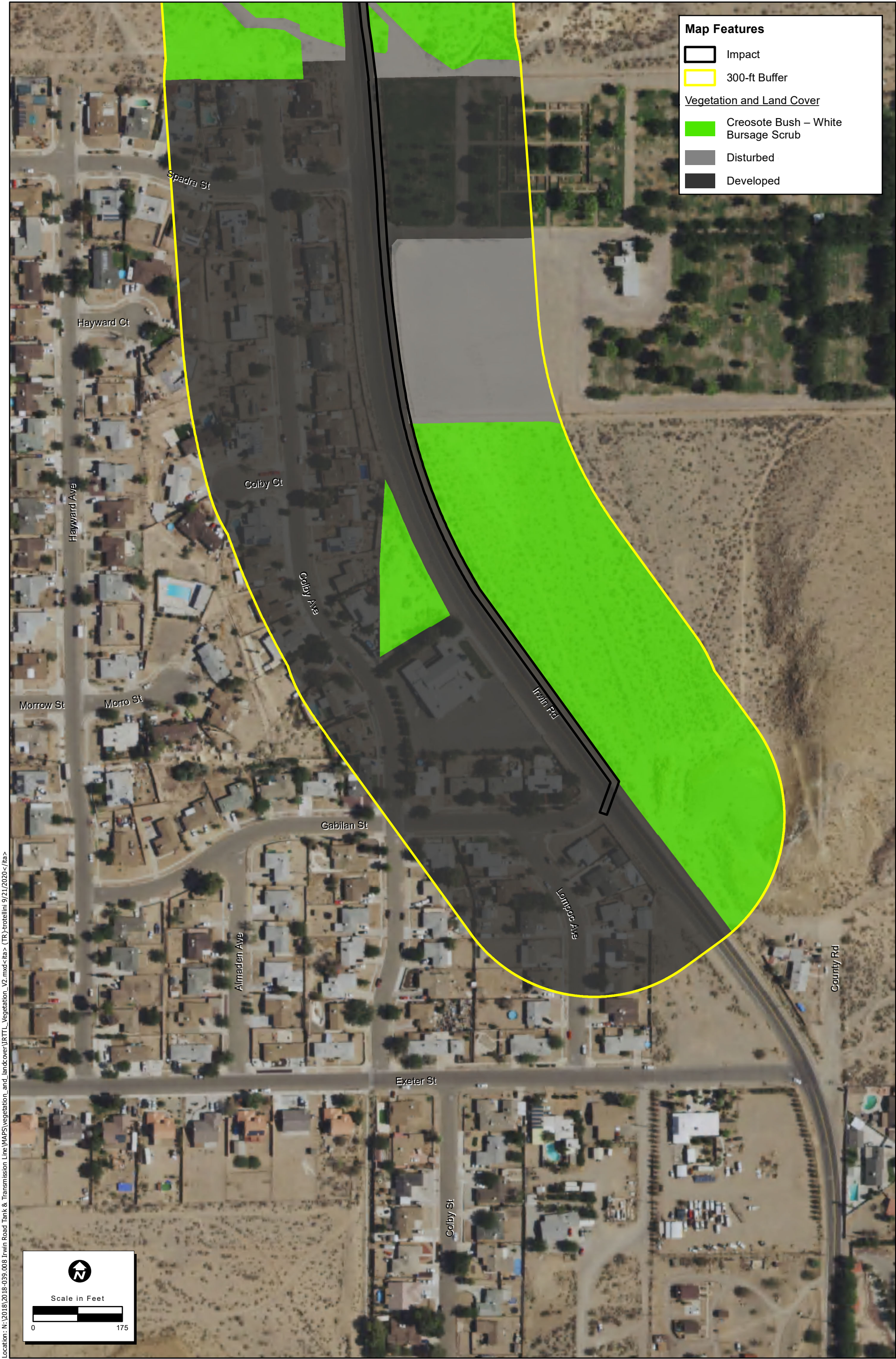


Figure 4. Vegetation Communities and Land Cover
Sheet 3 of 3

DISCUSSION

Although special status plants were not identified, to maintain compliance with CMA LUPA-BIO-7 it is recommended that the beavertail cactus be salvaged, stored, and replanted in the same location following construction. Salvage, care, and replanting of beavertail cactus should be performed by someone familiar with BLM protocols, and who will be able to maintain the cactus(es) until construction is complete.

Due to the possibility of new cactus and/or succulent growth/germination occurring after the rare plant survey and before construction, it is recommended that a pre-construction cactus/succulent survey be conducted prior to the start of construction to assure all cacti and succulents are salvaged in accordance with LUPA-BIO-7. Please refer to the recommended mitigation measures in the corresponding Biological Reconnaissance Report (ECORP 2020).

If you have any questions concerning this letter report, please contact me at (858) 279-4040.

Sincerely,



Greg Hampton
Staff Biologist

REFERENCES

- Albert A. Webb and Associates. 2020. *Environmental Assessment, Irwin Road Reservoir and Transmission Main, Screencheck No. 2*. Prepared for Bureau of Land Management, Barstow Field Office. March.
- Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (Eds.). 2012. *The Jepson Manual; Vascular Plants of California, Second Edition*. University of California Press, Berkeley, California. 1519 pp. + app.
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- USFWS. 1996. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants. Sacramento, California.

Irwin Road Reservoir and Transmission Main Project Project Plant Species Compendium	
Scientific Name	Common Name
VASCULAR PLANTS	
GYNOSPERMS (GNETALES)	
EPHEDRACEAE	EPHEDRA FAMILY
<i>Ephedra nevadensis</i>	Nevada jointfir
ANGIOSPERMS (EUDICOTS)	
ARECACEAE	PALM FAMILY
<i>Washingtonia robusta</i> *	Mexican fan palm
ARALIACEAE	GINSENG FAMILY
<i>Hedera helix</i> *	English ivy
ASTERACEAE	SUNFLOWER FAMILY
<i>Ambrosia acanthicarpa</i>	annual bur-sage
<i>Ambrosia dumosa</i>	white bursage
<i>Ambrosia salsola</i>	cheesebush
<i>Chaenactis fremontii</i>	Fremont's pincushion
<i>Chaenactis stevioides</i>	desert pinsuchion
<i>Eriophyllum wallacei</i>	Wallace's woolly daisy
<i>Lactuca serriola</i>	prickly lettuce
<i>Logfia depressa</i>	dwarf cottonrose
<i>Malacothrix glabrata</i>	desert dandelion
<i>Sonchus asper</i> *	spiny sowthistle
<i>Stephanomeria pauciflora</i>	wirelettuce
APOCYNACEAE	DOGBAIN FAMILY
<i>Nerium oleander</i> *	oleander
BORAGINACEAE	BORAGE FAMILY
<i>Amsinckia tessellata</i>	bristly fiddleneck
<i>Cryptantha angustifolia</i>	narrow leaved cryptantha
<i>Cryptantha circumscissa</i>	cushion cryptantha
<i>Cryptantha nevadensis</i>	Nevada cryptantha
<i>Cryptantha pterocarya</i>	wingnut cryptantha
<i>Heliotropium curassavicum</i>	Chinese parsley
<i>Pectocarya linearis</i>	comb-bur
<i>Pectocarya penicillata</i>	winged combseed
<i>Phacelia tanacetifolia</i>	tansy phacelia
BRASSICACEAE	MUSTARD FAMILY
<i>Brassica tournefortii</i> *	Saharan mustard
<i>Caulanthus lasiophyllus</i>	California mustard
<i>Lepidium lasiocarpum</i>	peppergrass
<i>Sisymbrium</i> sp.	mustard
CACTACEAE	CACTUS FAMILY
<i>Cylindropuntia echinocarpa</i>	Wiggins' cholla (dead)
<i>Opuntia basilaris</i> var. <i>basilaris</i>	beavertail cactus**
CHENOPODIACEAE	GOOSEFOOT FAMILY
<i>Atriplex canescens</i>	fourwing saltbush
<i>Atriplex polycarpa</i>	allscale saltbush
FABACEAE	LEGUME FAMILY
<i>Melilotus indicus</i> *	annual yellow sweetclover
<i>Senna armata</i>	desert senna
GERANIACEAE	GERANIUM FAMILY
<i>Erodium cicutarium</i> *	coastal heron's bill
<i>Erodium texanum</i>	desert heron's bill
LOASACEAE	LOASA FAMILY

Irwin Road Reservoir and Transmission Main Project Project Plant Species Compendium	
<i>Mentzelia albicaulis</i>	whitestem blazingstar
MALVACEAE	MALLOW FAMILY
<i>Malacothamnus parishii</i>	Parish's bush mallow
ONAGRACEAE	EVENING PRIMROSE FAMILY
<i>Chylismia claviformis</i> subsp. <i>claviformis</i>	browneyed primrose
PAPAVERACEAE	POPPY FAMILY
<i>Eschscholzia minutiflora</i>	coville poppy
PLANTAGINACEAE	PLANTAIN FAMILY
<i>Plantago ovata</i>	desert indian wheat
POLEMONIACEAE	PHLOX FAMILY
<i>Langloisia setosissima</i>	lilac sunbonnet
POLYGONACEAE	BUCKWHEAT FAMILY
<i>Chorizanthe brevicornu</i> var. <i>brevicornu</i>	brittle spineflower
<i>Chorizanthe rigida</i>	rigid spiny herb
<i>Eriogonum angulosum</i>	anglestem buckwheat
SOLANACEAE	NIGHTSHADE FAMILY
<i>Lycium cooperi</i>	Cooper's box thorn
TAMARICACEAE	TAMARISK FAMILY
<i>Tamarix aphylla</i>	athel tamarisk
ZYGOPHYLLACEAE	CALTROP FAMILY
<i>Larrea tridentata</i>	South American creosote bush
ANGIOSPERMS (MONOCOTS)	
LILIACEAE	LILLY FAMILY
<i>Agapanthus praecox</i> *	African lilly
POACEAE	GRASS FAMILY
<i>Bromus madritensis</i> subsp. <i>rubens</i> *	red brome
<i>Cynodon dactylon</i> *	Bermuda grass
<i>Hordeum murinum</i> *	foxtail barley
<i>Schismus barbatus</i> *	common Mediterranean grass

* Not native to California.