San Joaquin Joint Powers Authority

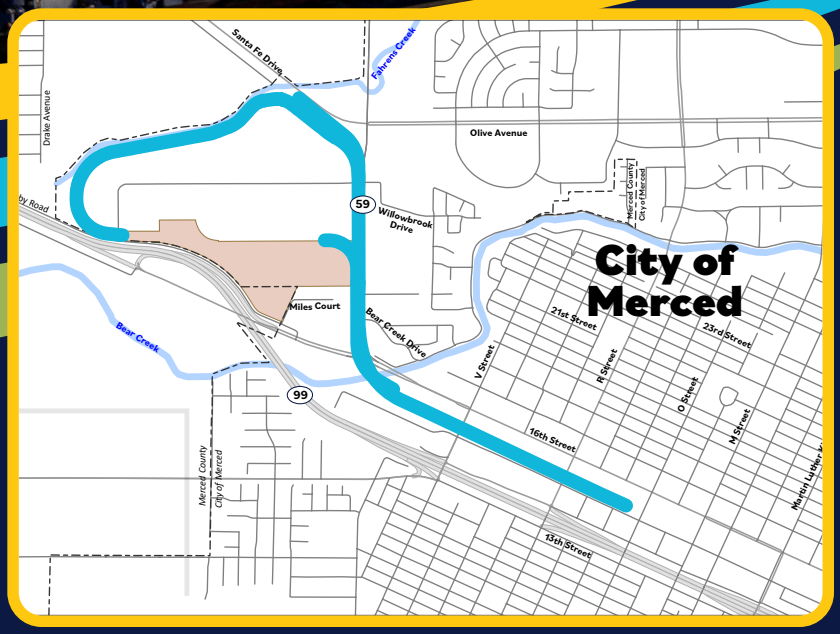
MITC
Merced Intermodal Track Connection

Appendix 3.4-1:

Rare Plant Survey Technical Memorandum

July 2024

SCH # 2023010061



Memorandum

To:	Dan Leavitt, San Joaquin Joint Powers Authority Andy Cook, San Joaquin Joint Powers Authority
From:	Lisa Webber, ICF
Cc:	Rich Walter, ICF Jessica Viramontes, ICF David DeRosa, AECOM Jason Green, AECOM
Date:	May 21, 2024
Re:	**Merced Intermodal Track Connection Project – Rare Plant Survey Technical Memorandum**

This memorandum provides a summary of the botanical surveys conducted for the San Joaquin Joint Powers Authority's Merced Intermodal Track Connection (MITC) Project (Project). The botanical surveys were conducted by ICF botanists on May 2 and June 13, 2023. The purpose of this memorandum is to provide information on the environmental setting of the Project, survey methodology, and field results of the 2023 botanical surveys.

Environmental Setting

The approximately 235-acre survey area evaluated for the Project is in Merced County, California, and almost entirely within the city limits of Merced (Figure 1 in Attachment A). The survey area is in an industrial and commercial part of Merced that is served by rail lines. Elevations in the survey area range from approximately 160 to 165 feet above mean sea level.

The Project would include a new track connection from the Burlington Northern Santa Fe (BNSF) corridor to the proposed integrated Merced High-Speed Rail (HSR) Station in downtown Merced between O and R Streets, in addition to a new platform that would allow for cross-platform transfer between the San Joaquins passenger rail and HSR. The Project only includes the construction of the track connection; it does not include the construction of the proposed integrated Merced HSR Station.

The Project would consist of the following:

- New passenger rail connection for the San Joaquins from BNSF north of State Route (SR) 59 to the southern terminus at the proposed integrated Merced HSR Station

- New aerial guideway that would connect into the east side of the HSR platform (which would be shared with the San Joaquins) at the proposed integrated Merced HSR Station, creating an elevated integrated platform with HSR
- Modification of the approved Altamont Corridor Express (ACE) Merced Layover and Maintenance Facility

In addition to the Project, the San Joaquin Joint Powers Authority has identified three variants that assume different approaches for fueling future hydrogen-powered trains in response to the state's zero emission goals. The variants would occur within approximately the same environmental footprint as the Project.[1]

The survey area for the rare plant survey is the 100-foot lateral buffer from the environmental footprint of the Project.[2] The survey area includes enough area to encompass all proposed Project elements. Attachment B includes representative photographs of the survey area.

Soils and Land Cover Types

The survey area supports six soil map units: Honcut silt loam, 0 to 1 percent slopes; Honcut silty clay loam, 0 to 1 percent slopes; Landlow clay, 0 to 1 percent slopes; Wyman clay loam, 0 to 3 percent slopes; Wyman clay loam, deep over hardpan, 0 to 1 percent slopes; and water (U.S. Department of Agriculture, Natural Resources Conservation Service 2022).

The survey area is in the San Joaquin Valley subregion of the California Floristic Province (Baldwin et al. 2012). There are 10 land cover types in the survey area: developed/landscaped (includes industrial and commercial buildings and associated ornamental landscaping, roads, sidewalks, concrete culverts, and bridges), disturbed/unvegetated (includes graded road shoulders, gravel, barren land, driveways, and pullouts), ruderal annual grassland, ruderal riparian, upland detention basin, wastewater treatment pond, upland ditch, perennial drainage, seasonal wetland, and freshwater marsh. General descriptions of the vegetated upland land cover types in the survey area are provided below. The "disturbed/unvegetated" and "wastewater treatment pond" types are not included below because these areas are maintained and there is essentially no vegetation present. Figure 2 in Attachment A shows the land cover types in the survey area.

Developed/Landscaped

Developed/landscaped cover types include developed areas for commercial, industrial, transportation, and landscaping uses (e.g., sites with structures, paved surfaces, horticultural and ornamental plantings, irrigated lawns). Vegetation in developed/landscaped areas is highly variable, ranging from nonexistent in paved areas to maintained lawns and ornamental shade trees in other areas. Common ornamental species in the survey area include eucalyptus (*Eucalyptus* sp.), olive (*Olea europaea*), coast redwood (*Sequoia sempervirens*), Chinese pistache (*Pistacia chinensis*), and oleander (*Nerium oleander*). Ground cover generally consists of ornamental or ruderal vegetation.

[1] Variant H1 would have additional footprint requirements for solar panels that are beyond the environmental footprint of the Project.

[2] The survey area includes the Variant H1 additional environmental footprint.

Ruderal Annual Grassland

Ruderal cover types occur in areas where natural vegetation has been removed or significantly degraded by past or current human activity. Ruderal annual grassland is associated with vacant lots, roadsides, areas alongside railroad tracks, and other highly disturbed areas (see Attachment B, Photos 1 and 2). Ruderal vegetation is typified by the dominance of non-native annual grasses and forbs that thrive in disturbed conditions, including wild oat (*Avena fatua*), wall barley (*Hordeum murinum*), rip-gut brome (*Bromus diandrus*), Italian ryegrass (*Festuca perennis*), black mustard (*Brassica nigra*), bindweed (*Convolvulus arvensis*), horseweed (*Erigeron canadensis*), filaree (*Erodium* spp.), prickly lettuce (*Lactuca serriola*), cheeseweed (*Malva parviflora*), curly dock (*Rumex crispus*), Russian thistle (*Salsola tragus*), milk thistle (*Silybum marianum*), and Johnson grass (*Sorghum halapense*).

Ruderal Riparian

The ruderal riparian cover type in the survey area is associated with Fahrens Creek and Bear Creek (see Attachment B, Photos 3–6). A mix of native and non-native species occur in riparian habitat, with none being dominant throughout. Species include deodar cedar (*Cedrus deodara*), red gum eucalyptus (*Eucalyptus calmaldulensis*), Northern California black walnut (*Juglans hindsii*), English walnut (*Juglans regia*), olive, almond (*Prunus dulcis*), valley oak (*Quercus lobata*), narrowleaf willow (*Salix exigua*), black willow (*Salix gooddingii*), and coast redwood. The understory layer includes Himalayan blackberry (*Rubus armeniacus*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), and native and non-native herbaceous forbs and grasses. A large stand of invasive giant reed (*Arundo donax*) and several invasive black locust (*Robinia pseudoacacia*) trees grow in the riparian area along Bear Creek.

Upland Detention Basin

Six detention basins occur in the survey area, five of which are in the industrial area around Cooper Avenue (see Attachment B, Photos 7–10). Detention basins generally support sparse to dense ruderal annual grassland vegetation. The detention basins, which have been excavated in uplands, drain runoff following storm events.

Upland Ditch

Although most parts of the survey area have paved gutters along the roads, Ashby Road and State Route 59 have unpaved upland ditches that are vegetated with ruderal grassland species on the shoulders (see Attachment B, Photo 11). These ditches, which have been excavated in uplands, drain road runoff following storm events.

Perennial Drainage

Fahrens Creek and Bear Creek are perennial drainages in the survey area. They support a non-continuous fringe of freshwater marsh vegetation along creek edges (see Attachment B, Photos 3–6, 15, and 16).

Seasonal Wetland

There are two seasonal wetlands within the detention basins on the east side of the survey area (see Attachment B, Photos 12 and 13). Dominant vegetation includes Oregon ash (*Fraxinus latifolia*), narrowleaf cattail (*Typha angustifolia*), curly dock (*Rumex crispus*), Italian ryegrass (*Festuca perennis*), and Bermuda grass (*Cynodon dactylon*). These two basins are the first in a series of three basins from which water is pumped and ultimately discharged to Bear Creek.

Freshwater Marsh

The freshwater marsh in the survey area occurs within an intermittently flooded detention basin (see Attachment B, Photo 14). It is dominated by emergent herbaceous wetland plants, including spikerush (*Eleocharis macrostachya*) and narrowleaf cattail. The wetland appears to be fed by groundwater and surface water. The freshwater marsh cover type in the survey area is also associated with Fahrens Creek and ruderal riparian land cover types (see Attachment B, Photos 15 and 16).

Methods

Prior to the site visits, the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife 2023), California Native Plant Society (CNPS) Rare Plant Inventory (California Native Plant Society 2023), and U.S. Fish and Wildlife Service Information for Planning and Consultation Database (IPac) (U.S. Fish and Wildlife Service 2023) were queried for information regarding the U.S. Geological Survey Merced and Atwater 7.5-minute quadrangles and the survey area. Table 1 includes a list of special-status plant species with potential to occur in the survey area based on the CNDDB, CNPS, and IPac query results. Special-status species include federally listed, state listed, and California Rare Plant Rank (CRPR) species.

Special-status plant species were identified as having potential to occur in the survey area, based on the presence of suitable habitat, the range of the species, and occurrences of the species within the vicinity of the survey area. Six special-status plants (watershield, dwarf downingia, spiny-sepaled button-celery, hogwallow starfish, forked hare-leaf, and Sanford's arrowhead) were identified as having potential to be present in the survey area, based on the presence of suitable land cover types for their habitats. However, there is low potential for special-status plants to occur because the survey area is highly disturbed by historic and ongoing development and maintenance, resulting in low-quality habitats.

ICF botanists Sean O'Brien and Lisa Webber conducted botanical surveys on May 2 and June 13, 2023, of the survey area, which is defined as the limits of disturbance for the Project and a buffer of 100 feet. During the field efforts, the botanists surveyed private properties where access was granted. Properties without access were analyzed and reviewed using a combination of aerial interpretation in conjunction with visual surveys from within the public right of way. The botanical surveys were floristic in nature and, where access was granted, followed methods consistent with California Department of Fish and Wildlife's (CDFW's) *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities* (California Department of Fish and Wildlife 2018). Table 2 includes a list of plant species observed in the survey area. No special-status plants were observed in the survey area.

Table 1. Special-Status Plants with Potential to Occur in the Survey Area

Common Name Scientific Name	Legal Status Federal/State/ CRPR	Geographic Distribution and General Habitat Description	Potential for Occurrence on Project Site
Vernal pool smallscale *Atriplex persistens*	–/–/1B.2	Central Valley, from Glenn to Tulare County. Dry beds of vernal pools on alkaline soils; 10–115 meters. Blooms June–October.	No vernal pool habitat; not observed during May or June 2023 surveys.
Watershield *Brasenia schreberi*	–/–/2B.3	Scattered occurrences in northern and central California; widespread across U.S. Freshwater marshes; 30–2,200 meters. Blooms June–September.	**Suitable habitat in freshwater marsh**; historic (1915) CNDDB occurrence overlaps survey area. Not observed during May or June 2023 surveys.
Succulent owl's clover *Castilleja campestris* var. *succulenta*	T/E/1B.2	Eastern edge of San Joaquin Valley and adjacent foothills, from Stanislaus to Fresno County. Vernal pools, often on acidic soils; 50–750 meters. Blooms (March) April–May.	No vernal pool habitat; not observed during May or June 2023 surveys.
Small-flowered morning-glory *Convolvulus simulans*	–/–/4.2	San Joaquin Valley, central western and southwestern California, southern Channel Islands; Baja California. On clay soils in serpentinite seeps in chaparral openings, coastal scrub, valley, and foothill grassland; 30–700 meters. Blooms March–July.	No suitable clay soils; not observed during May or June 2023 surveys.
Dwarf downingia *Downingia pusilla*	–/–/2B.2	Central Valley. Vernal pools and mesic valley and foothill grasslands; below 445 meters. Blooms March–May.	**Marginal habitat in seasonal wetland and ruderal annual grassland**; nearest CNDDB occurrence is 6 miles northeast of survey area. Not observed during May or June 2023 surveys.

Common Name Scientific Name	Legal Status Federal/State/ CRPR	Geographic Distribution and General Habitat Description	Potential for Occurrence on Project Site
Spiny-sepaled button-celery *Eryngium spinosepalum*	–/–/1B.2	Eastern San Joaquin Valley and Sierra Nevada foothills in Fresno, Madera, Merced, Stanislaus, Tulare, and Tuolumne Counties. Valley and foothill grassland, vernal pools; 80–255 meters. Blooms April–June.	**Marginal habitat in ruderal annual grassland and seasonal wetland**; nearest CNDDB occurrence is 6 miles northeast of survey area. Not observed during May or June 2023 surveys.
Hogwallow starfish *Hesperevax caulescens*	–/–/4.2	Alameda, Amador, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Napa, San Diego, San Joaquin, San Luis Obispo, Solano, Stanislaus, Sutter, Tehama, and Yolo Counties. Mesic clay in valley and foothill grassland; below 505 meters. Blooms March–June.	**Marginal habitat in ruderal annual grassland**; nearest record (CCH) is 6 miles northeast of survey area. Not observed during May or June 2023 surveys.
Forked hare-leaf *Lagophylla dichotoma*	–/–/1B.1	Butte*, Calaveras, Fresno, Merced*, Monterey, San Benito, and Stanislaus Counties. Cismontane woodland, valley and foothill grassland, and sometimes on clay soils; 50–760 meters. Blooms April–May.	**Marginal habitat in ruderal annual grassland**; historic (1915) CNDDB occurrence overlaps survey area. Not observed during May 2023 surveys.
Shining navarretia *Navarretia nigelliformis* ssp. *radians*	–/–/1B.2	Interior foothills of Southern Coast Ranges from Merced County to San Luis Obispo County. Mesic areas with heavy clay soils, swales and clay flats, oak woodland, and grassland; 76–1,000 meters. blooms (March) April–July.	No suitable clay soils; not observed during May or June 2023 surveys.
Colusa grass *Neostapfia colusana*	T/E/1B.1	Central Valley: Colusa*, Glenn, Merced, Solano, Stanislaus, and Yolo Counties. Adobe soils of vernal pools; 5–200 meters. Blooms May–August.	No vernal pool habitat; not observed during May or June 2023 surveys.
San Joaquin Valley Orcutt grass *Orcuttia inaequalis*	T/E/1B.1	Scattered locations along eastern edge of the San Joaquin Valley and adjacent foothills, from Stanislaus County to Tulare County. Vernal pools; 10–755 meters. Blooms April–September.	No vernal pool habitat; not observed during May or June 2023 surveys.

Common Name Scientific Name	Legal Status Federal/State/ CRPR	Geographic Distribution and General Habitat Description	Potential for Occurrence on Project Site
Hairy Orcutt grass *Orcuttia pilosa*	E/E/1B.1	Scattered locations along eastern edge of the Central Valley and adjacent foothills, from Tehama County to Merced County. Vernal pools; 46–200 meters. Blooms May–September.	No vernal pool habitat; not observed during May or June 2023 surveys.
Merced phacelia *Phacelia ciliata* var. *opaca*	–/–/3.2	Merced County. Adobe or clay soils of valley floor, open hills, alkali flats, or grasslands; 60–150 meters. Blooms February–May.	No suitable adobe or clay soils; not observed during May or June 2023 surveys.
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Scattered locations in Central Valley and Coast Ranges. Freshwater marshes, sloughs, canals, and other slow-moving water habitats; below 650 meters. Blooms May–October (November).	**Suitable marsh habitat in slow-moving water**; nearest CNDDB occurrence is 1.2 miles northwest of survey area. Not observed during May or June 2023 surveys.
Keck's checkerbloom *Sidalcea keckii*	E/–/1B.1	Known from only three occurrences in Fresno, Merced, and Tulare Counties; plants from inner Northern Coast Ranges in Colusa, Napa, Solano, and Yolo Counties may be *Sidalcea diploscypha* (needs study). Serpentine clay soils in cismontane woodland and valley and foothill grassland; 75–650 meters. Blooms April–May (June).	No suitable serpentine clay soils; not observed during May or June 2023 surveys.

Sources: CDFW 2023; CNPS 2023; California Consortium of Herbaria (CCH) 2023

* = populations extirpated in the county.

( ) = months in parentheses are uncommon blooming periods

[a.] Status explanations:

Federal

E = listed as endangered under the federal Endangered Species Act (ESA).

T = listed as threatened under ESA.

– = no listing.

State

E = listed as endangered under the California Endangered Species Act (CESA).

– = no listing.

California Rare Plant Rank (CRPR)

1B = List 1B species: plants that are rare, threatened, or endangered in California and elsewhere.

2B = List 2B species: plants that are rare, threatened, or endangered in California but more common elsewhere.

3 = List 3 species; plants about which more information is needed—a review list.
4 = List 4 species; plants of limited distribution—a watch list.
CRPR Code Extensions:
0.1 = seriously endangered in California (more than 80% of occurrences threatened/high degree and immediacy of threat).
0.2 = fairly endangered in California (20%–80% of occurrences threatened).
0.3 = not very threatened in California (< 20% of occurrences threatened/low degree and immediacy of threat or no current threats known).

Table 2. Plant Species Observed in the Survey Area

Scientific Name	Common Name	Origin
Trees		
Cedrus deodara	Deodar cedar	Non-native
Eucalyptus camaldulensis	Red gum	Non-native
Ficus carica	Common fig	Non-native
Fraxinus latifolia	Oregon ash	Native
Juglans hindsii	Northern California black walnut	Native
Juglans regia	English walnut	Non-native
Olea europaea	Olive	Non-native
Pinus sp.	Pine	Non-native
Populus fremontii	Fremont cottonwood	Native
Prunus dulcis	Almond	Non-native
Quercus lobata	Valley oak	Native
Robinia pseudoacacia	Black locust	Non-native
Salix exigua	Narrowleaf willow	Native
Salix gooddingii	Gooding's willow	Native
Sequoia sempervirens	Coast redwood	Native
Shrubs and Vines		
Cephalanthus occidentalis	Common buttonbush	Native
Nerium oleander	Oleander	Non-native
Salix exigua	Narrowleaf willow	Native
Forbs		
Alisma triviale	Northern water plantain	Native
Amsinckia sp.	Fiddlehead	Native
Artemisia douglasiana	California mugwort	Native
Asclepias fascicularis	Narrow leaf milkweed	Native
Brassica nigra	Black mustard	Non-native
Capsella bursa-pastoris	Shepherd's purse	Non-native
Carduus pycnocephalus	Italian thistle	Non-native
Centaurea solstitialis	Yellow starthistle	Non-native
Centromadia pungens	Common tarweed	Native
Cirsium vulgare	Bullthistle	Non-native
Conium maculatum	Poison hemlock	Non-native
Convolvulus arvensis	Field bindweed	Non-native
Croton setiger	Turkey-mullein	Native
Dittrichia graveolens	Stinkwort	Non-native
Eichornia crassipes	Water hyacinth	Non-native
Epilobium brachycarpum	Annual fireweed	Native
Erigeron canadensis	Canada horseweed	Native
Erodium botrys	Big heron bill	Non-native

Scientific Name	Common Name	Origin
Erodium cicutarium	Red stem filaree	Non-native
Erodium moschatum	Round leaved filaree	Native
Euphorbia serpens	Matted sandmat	Non-native
Grindelia camporum	Gumweed	Native
Helianthus annuus	Hairy-leaved sunflower	Native
Heterotheca grandiflora	Telegraph weed	Native
Hirschfeldia incana	Mustard	Non-native
Lactuca serriola	Prickly lettuce	Non-native
Leontodon saxatilis	Hawkbit	Non-native
Lepidium nitidum	Shining pepper grass	Native
Lotus corniculatus	Bird's foot trefoil	Non-native
Lysimachia arvensis	Scarlet pimpernel	Non-native
Malva parviflora	Cheeseweed	Non-native
Malvella leprosa	Alkali mallow	Native
Matricaria discoidea	Pineapple weed	Native
Medicago polymorpha	California burclover	Non-native
Melilotus indicus	Annual yellow sweetclover	Non-native
Persicaria hydropiperoides	Smartweed	Native
Polygonum aviculare	Prostrate knotweed	Non-native
Ranunculus muricatus	Buttercup	Non-native
Raphanus sativus	Jointed charlock	Non-native
Rubus armeniacus	Himalayan blackberry	Non-native
Rumex crispus	Curly dock	Non-native
Salsola tragus	Russian thistle	Non-native
Sambucus mexicana	Elderberry	Native
Senecio vulgaris	Common groundsel	Non-native
Silybum marianum	Milk thistle	Non-native
Sonchus oleraceus	Sow thistle	Non-native
Spergularia sp.	Sand spurry	Non-native
Tribulus terrestris	Puncture vine	Non-native
Trifolium dubium	Shamrock	Non-native
Urtica dioica	Stinging nettle	Native
Wolffia sp.	Watermeal	Native
Xanthium strumarium	Cocklebur	Native
Graminoids		
Arundo donax	Giant reed	Non-native
Avena barbata	Slim oat	Non-native
Bromus diandrus	Ripgut brome	Non-native
Bromus hordeaceus	Soft chess	Non-native
Bromus rubens	Red brome	Non-native
Cynodon dactylon	Bermuda grass	Non-native

Scientific Name	Common Name	Origin
Cyperus eragrostis	Tall cyperus	Native
Eleocharis macrostachya	Common spikerush	Native
Festuca bromoides	Rattail six-weeks grass	Non-native
Festuca perennis	Italian ryegrass	Non-native
Hordeum murinum	Foxtail barley	Non-native
Juncus effusus	Common bog rush	Native
Polypogon monspeliensis	Annual beard grass	Non-native
Schoenoplectus acutus	Tule	Native
Sonchus oleraceus	Sow thistle	Non-native
Sorghum halapense	Johnsongrass	Non-native
Typha angustifolia	Narrowleaf cattail	Native

Results

Mr. O'Brien and Ms. Webber did not observe any special-status plant species in the survey area during the May 2 or June 13, 2023, surveys (see Tables 1 and 2). Vegetation phenology during both surveys varied from immature to senescent with fruiting structures.

The survey area includes primarily highly disturbed habitats that have been historically modified for agriculture and railway use—and more recently for industrial development. Undeveloped parcels support primarily non-native plant species.

Limiting Survey Factors

Rainfall in 2023 was substantially higher than normal, with total rainfall at 162 percent of normal in June (National Oceanic and Atmospheric Administration 2023). Therefore, rainfall was not a limiting factor for seed germination, and species with a seed bank in the survey area would be expected to be present.

The May 2 and June 13, 2023, survey dates captured the early and late blooming periods for all the special-status plants with potential to occur in the survey area (see Table 1).

The one limiting factor of the surveys was the lack of access to some properties, which did not allow the botanists to walk transects in all parts of the survey area. These areas were observed from public rights of way and/or adjacent properties with access permission. Several of the inaccessible parcels support ruderal annual grassland; other properties were almost completely developed, with minimal areas of vegetation. However, because of the low habitat quality present in the survey area and dominance of non-native and invasive plant species in the ruderal annual grassland on accessible properties, the potential for undetected special-status plants on inaccessible properties is low.

References

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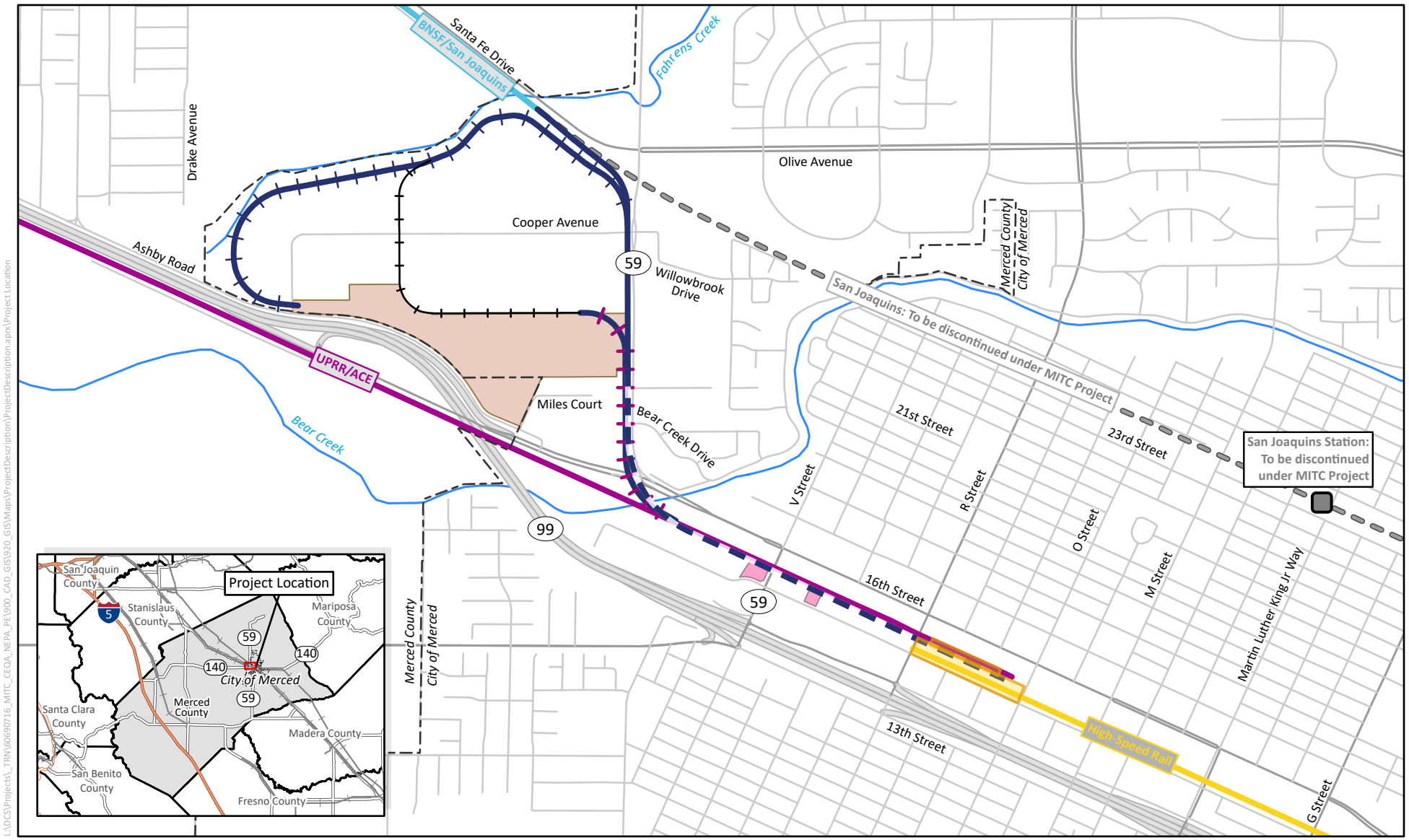
Attachment A

Figures



- Existing UPRR/Approved ACE
- Proposed High-Speed Rail
- Existing BNSF/San Joaquins
- UPRR Industrial Spur Track
- City of Merced Boundary
- Proposed Integrated Merced High-Speed Rail Station
- Approved ACE Merced Layover and Maintenance Facility

MITC Project

- San Joaquins: Elevated Track
- San Joaquins: At-grade Track
- MITC San Joaquins Layover and Maintenance Access Line
- Relocated ACE/UPRR Industrial Spur Track
- San Joaquins: To Be Discontinued under MITC Project
- Proposed Parking Facilities

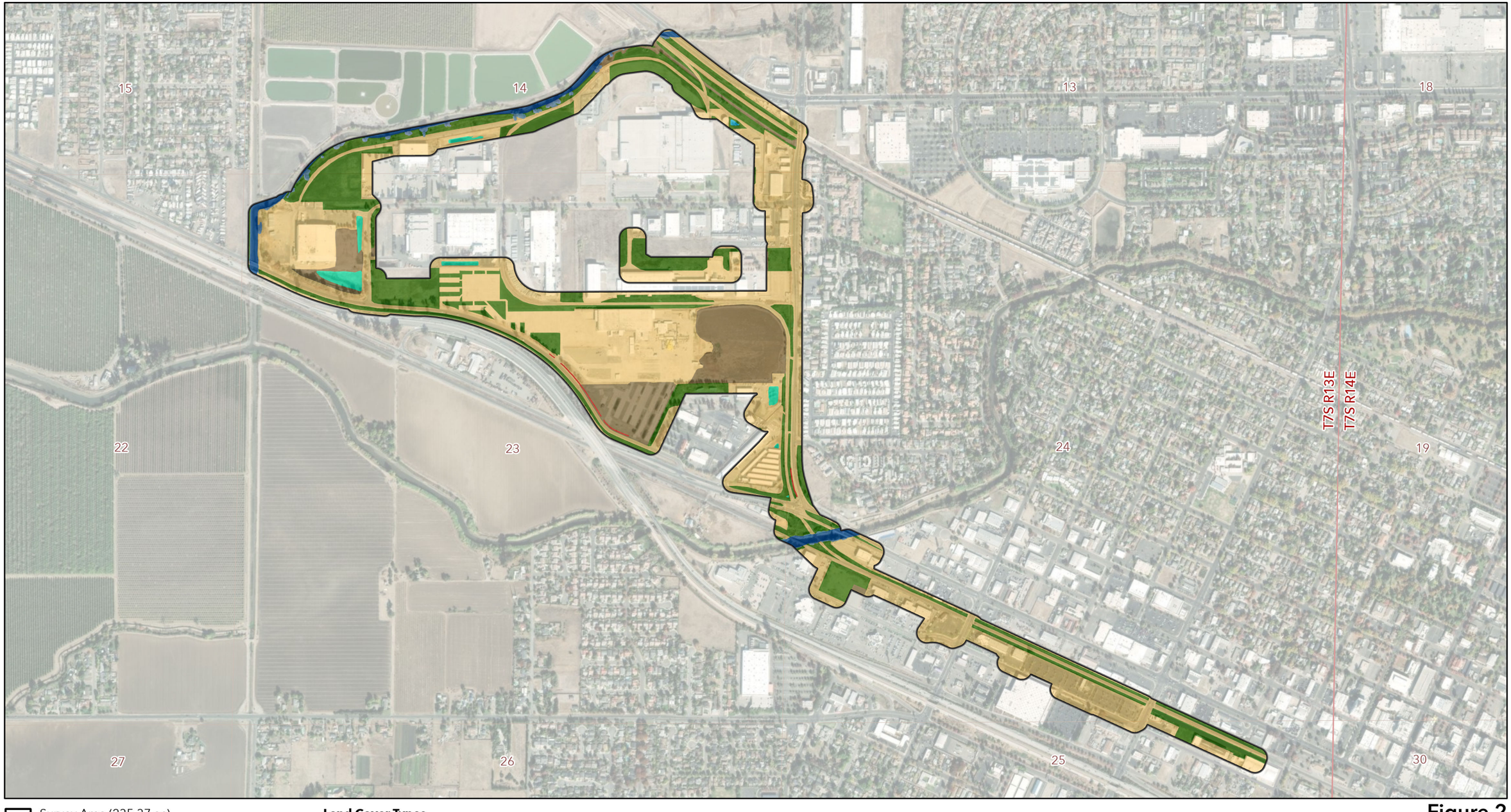
Data Source: City of Merced, Merced County, AECOM

0 1,000 2,000 Feet

N

MITC

Figure 1
Project Location
Merced Intermodal Track Connection Project



Survey Area (235.37 ac)

Land Cover Types

- Detention Basin
- Developed/Landscaped
- Disturbed/Unvegetated
- Freshwater Marsh
- Perennial Drainage
- Riparian
- Roadside Ditch
- Ruderal Annual Grassland

Notes:
Imagery Source: ESRI 2023
USGS Quadrangles: Atwater and Merced
PLSS: T7S - R13E - Sections 13, 14, 22, 23, 24 and 25
Prepared by: ICF
Prepared Date: March 19, 2024
Drawn by: B. Read

0 1,000 2,000 3,000 Feet

N

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Figure 2
Land Cover Types in the Survey Area
Merced Intermodal Track Connection Project

MITC

Attachment B

Site Photographs

Photo 1. Ruderal annual grassland, south of Cooper Avenue, looking southwest. May 2, 2023.

Photo 2. Excavated ruderal annual grassland on north side of Ashby Road, looking east. May 2, 2023.

Photo 3. Fahrens Creek and adjacent ruderal riparian, looking northeast. May 2, 2023.

Photo 4. Fahrens Creek and adjacent ruderal riparian, looking southwest. May 2, 2023.

Photo 5. Bear Creek and ruderal riparian, looking south. May 2, 2023.

Photo 6. Bear Creek and ruderal riparian (Arundo donax in foreground), looking west. May 2, 2023.

Photo 7. Upland detention basin at corner of Ashby Road and Cooper Avenue, looking west. May 2, 2023.

Photo 8. Upland detention basin on west side of Cooper Avenue, looking north. June 13, 2023.

Photo 9. Upland detention basin on east side of Cooper Avenue, looking east. May 2, 2023.

Photo 10. Upland detention basin south of Fahrens Creek, looking east. May 2, 2023.

Photo 11. Upland ditch on north side of Ashby Road with ruderal annual grassland, looking northwest. June 13, 2023.

Photo 12. Seasonal wetland, looking south. June 13, 2023.

Photo 13. Seasonal wetland, looking south. June 13, 2023.

Photo 14. Freshwater marsh, looking northwest. May 2, 2023.

Photo 15. Fahrens Creek confluence with irrigation channel, with freshwater marsh fringe, looking north. May 2, 2023.

Photo 16. Fahrens Creek with freshwater marsh, looking northeast. May 2, 2023.