# Sacramento Municipal Utility District
# Solano 4 Wind Project

Addendum No. 2 to Solano 4 Wind Project Environmental Impact Report • July 2023

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# Sacramento Municipal Utility District Solano 4 Wind Project

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Lead Agency:

SMUD–Environmental Services
6201 S Street, MS B209
Sacramento, CA 95817-1899

or

P.O. Box 15830 MS B209
Sacramento, CA 95852-1830
Ammon Rice, Supervisor, Environmental Services
916-732-7466
email: ammon.rice@smud.org

Prepared by:

AECOM
2020 L Street, Suite 300
Sacramento, CA 95811
Contact: Petra Unger
(916) 414-5800 or petra.unger@aecom.com

# ADDENDUM No. 2 TO SOLANO 4 WIND PROJECT ENVIRONMENTAL IMPACT REPORT

**Project Title:** Solano 4 Wind Project Environmental Impact Report (EIR), State Clearinghouse No. 2019012016

**Responsible Agency:** Sacramento Municipal Utility District (SMUD)

## Project Location

The Solano 4 Wind Project (project) site is located within the Solano County Wind Resource Area (WRA) in southern Solano County north of the confluence of the Sacramento and San Joaquin rivers and southwest of the city of Rio Vista. The project site comprises two geographically distinct areas owned by SMUD, Solano 4 East and Solano 4 West, the collection and home run lines, which total 2,549 acres, and a series of select locations where roadway improvements would be required to facilitate the transport of the oversized turbine blades to their proposed locations. The project's limit of disturbance (LOD) encompasses a total of approximately 307 acres. State Route (SR) 12 provides regional access to the project site. Montezuma Hills Road and Birds Landing Road provide local access to Solano 4 East, while Collinsville Road and Shiloh Road provide local access to Solano 4 West (see Figure 1 and Figure 2).

## Introduction

This addendum to the SMUD Solano 4 Wind Project EIR analyzes the environmental effects associated with some changes to the project footprint and roadway improvements at select locations in the project vicinity to determine whether the proposed changes would result in new or substantially more severe environmental impacts than those previously described in the EIR. SMUD is also proposing to draw water from the Sacramento River to use for dust control under an easement with the landowner to utilize riparian water rights. In addition, the construction contractor will use generators for onsite power generation instead of a direct tie into the local grid. The subject areas analyzed in this addendum include air quality, biological resources, cultural resources, transportation and traffic, Tribal cultural resources, and utilities and service systems.

The Solano 4 Wind Project EIR was certified by SMUD on August 20, 2021 (SMUD 2021). The EIR comprehensively examined the environmental impacts of the proposed project and serves as a project EIR. Based on the results of the subsequent environmental analysis provided herein, in accordance with Section 15164 of the State California Environmental Quality Act (CEQA) Guidelines, SMUD has determined that preparation of an addendum describing the proposed modifications/changes to the previously approved Solano 4 Wind Project and certified EIR meets the requirement of CEQA. SMUD has

previously prepared an Addendum to the Solano 4 Wind EIR to analyze potential project impacts resulting from groundwater use (SMUD 2022).

As a lead agency under the CEQA, SMUD has reviewed the determinations made in this addendum and in the EIR and the prior Addendum, and found that the potential environmental impacts of the SMUD Solano 4 Wind Project have been adequately addressed pursuant to CEQA.

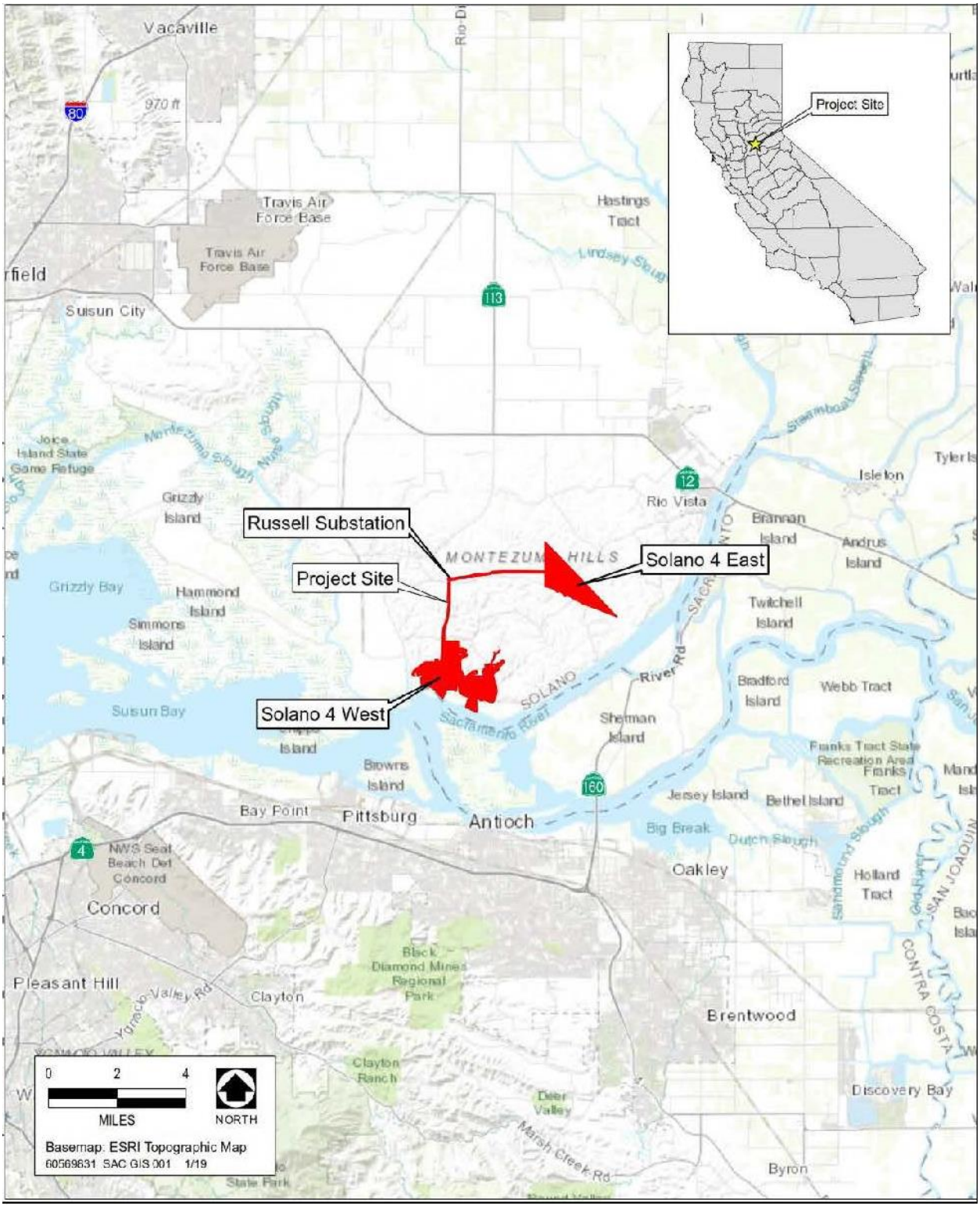


**Figure 1. Regional Location Map**

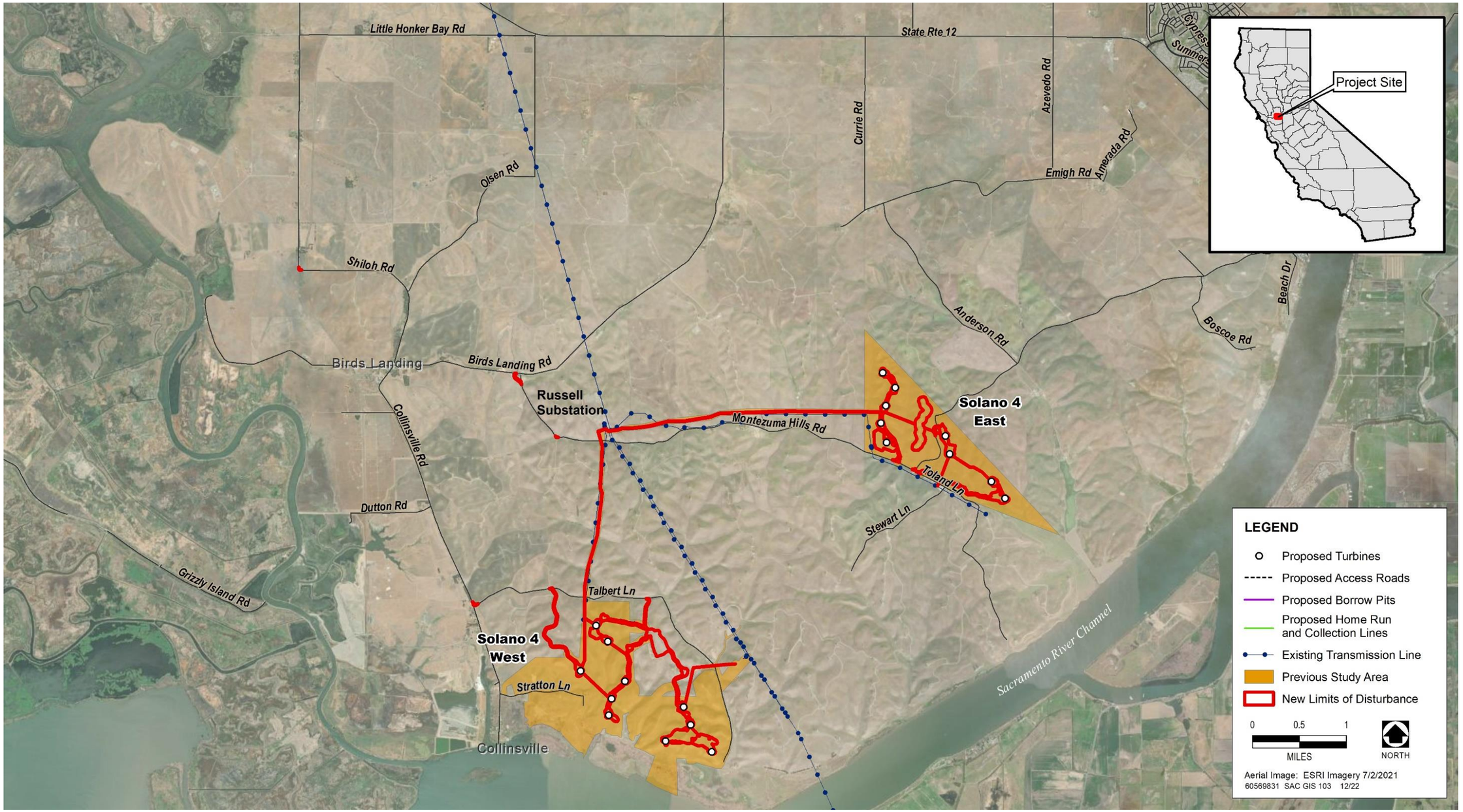


**Figure 2. Project Site Map**

## Previous Environmental Analyses

The environmental review process for the Solano Wind Project EIR involved the preparation of the following documents that are relevant to the consideration of the project:

- Draft Solano 4 Wind Project EIR, July 2019, State Clearinghouse No. 2019012016 (SMUD 2019)
- Final Solano 4 Wind Project EIR, July 2021, State Clearinghouse No. 2019012016 (SMUD 2021)
- Addendum 1. Solano 4 Wind Project EIR, July 2022, State Clearinghouse No. 2019012016 (SMUD 2022)

## CEQA Guidelines Regarding an Addendum to an EIR:

Altered conditions, changes, or additions to the description of a project that occur after certification of an EIR may require additional analysis under CEQA. The legal principles that guide decisions regarding whether additional environmental documentation is required are provided in the State CEQA Guidelines, which establish three mechanisms to address these changes: a subsequent environmental impact report (SEIR), a supplement to an EIR, and an addendum to an EIR.

Section 15162 of the State CEQA Guidelines describes the conditions under which a SEIR would be prepared. In summary, when an EIR has been certified for a project, no Subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measures or alternatives; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Section 15163 of the State CEQA Guidelines states that a lead or responsible agency may choose to prepare a supplement to an EIR rather than a Subsequent EIR if:

(1) any of the conditions described above for Section 15162 would require the preparation of a SEIR; and

(2) only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.

Use of an addendum meets the requirements of CEQA when a previously certified EIR has been prepared and some changes or revisions to the project are proposed, or the circumstances surrounding the project have changed, but none of the changes or revisions would result in significant new or substantially more severe environmental impacts, consistent with CEQA Section 21166 and State CEQA Guidelines Sections 15162, 15163, and 15164.

## Decision to Prepare an Addendum

SMUD evaluated the EIR adopted by the SMUD Board of Directors on August 20, 2021 and found that the potentially significant effects of the project have been analyzed adequately and have been avoided or mitigated. However, because SMUD's proposed limits of disturbance for construction and other activities have been modified since certification of the EIR due to completion of the 100% design and construction documents, SMUD has evaluated the modifications in reference to CEQA Sections 15162-15164, the standard for assessing when project changes require supplemental CEQA analysis. Neither the proposed revisions nor the circumstances under which they are being undertaken would result in any new significant impacts not discussed in the EIR, or any substantial increase in the severity of impacts identified by the EIR. In addition, no new information of substantial importance has become available since the EIR was prepared regarding new significant impacts or feasibility of mitigation measures or alternatives. Therefore, no supplemental analysis is required for the changes in the limits of

disturbance for construction and other activities. This addendum sets forth the analysis in support of that conclusion.

This addendum is intended to evaluate and confirm CEQA compliance for the proposed limits of disturbance for construction and other construction-related activities for the Solano 4 Wind Project, which would be a change or refinement relative to what is described and evaluated in the Solano 4 Wind Project EIR. This addendum is intended to evaluate all environmental topic areas for any changes in circumstances or the project description, as compared to the certified Solano 4 Wind Project EIR and prior Addendum and determine whether such changes were or were not adequately covered in the certified environmental documents. This addendum is not a traditional CEQA Environmental Checklist, per Appendix G of the CEQA Guidelines. The purpose of this addendum is to evaluate the checklist categories in terms of any "changed condition" (i.e., changed circumstances, project changes, or new information of substantial importance) that may result in a different environmental impact significance conclusion from the Solano 4 Wind Project EIR, taking into consideration current regulatory requirements and implementing procedures. This addendum has been modified from the Appendix G checklist to focus solely on the pertinent issue areas and help answer the questions to be addressed pursuant to CEQA Section 21166 and State CEQA Guidelines Section 15162, 15163, and 15164. SMUD evaluated the CEQA Appendix G Environmental Checklist and found the following environmental topic areas to be pertinent to this addendum: air quality, biological resources, cultural resources, transportation and traffic, Tribal cultural resources, and utilities and service systems. No other resource areas result in the need for additional detailed consideration.

## Minor Modification to the Solano 4 Wind Project

Based on the 100% design and construction drawings, minor modifications to the Solano 4 Wind Project include the following:

- The 10-acre laydown yard will now be located at the southwest corner of Solano 4 East (Phase 1) rather than at Solano 4 West as originally proposed. This is also where the construction office trailers will be located.

- Power to construction office trailers will be supplied by generators, rather than Pacific Gas & Electric Company (PG&E) distribution lines, which would take 22 months before PG&E could provide a connection.

- The location of the access road to Solano 4 East (prior Phase 1) has changed slightly from that analyzed in the EIR; similar to the prior road, construction of this road will result in minor wetland impacts.

- Additional borrow sites have been identified in Solano 4 East and West as shown in Figure 2.

- A new non-habitable, detached storage structure is proposed west of the existing Operation and Maintenance (O&M) building in a developed area. The existing fence west of the O&M building would be relocated to the west to include the new storage structure in the fenced-in area.

- The current alignment of the Solano 4 West homerun line running north-south will be located slightly farther west; the offset from the prior alignment is approximately 100 feet.

- Temporary road improvements may be needed at several offsite intersections for the transport and delivery of oversized equipment and materials, as shown in Figure 2.

- Water for dust control during construction will be drawn through a screened pump intake from the Sacramento River utilizing SMUD's existing riparian water rights and transporting it to the construction site via an easement with the landowner of the parcel adjacent to the Sacramento River.

## Regulatory Setting

The regulatory setting for each subject area discussed below is included in the Solano 4 Wind Project EIR (SMUD 2019).

## Environmental Setting

The environmental setting is discussed in detail in the Solano 4 Wind Project EIR (SMUD 2019). Additional field studies for biological, cultural, and Tribal cultural resources were conducted in support of the additional areas included in the 100% design impact footprint that were not previously analyzed in the EIR or the supporting technical studies. These additional technical studies are included as Appendix A (biological resources) and Appendix B (cultural and Tribal cultural resources) of this EIR Addendum 2 and describe the environmental setting present at the previously un-surveyed locations. No other technical studies are needed, as the environmental analysis in the EIR remains valid for all other resource topics.

## Significance Criteria

The criteria used for determining the significance of an impact for the proposed construction and operation of the project are based on Appendix G of the CEQA Guidelines, listed below.

The Solano 4 Wind Project EIR (2019) evaluated the potential for short-term, long-term, and operational impacts of the project. The impacts associated with the minor project changes are similar in nature to those previously discussed in the Solano 4 Wind Project

EIR. As such, the analysis below is focused on potential impacts associated with only those subject areas that may be impacted.

## Analysis

The EIR evaluated five potential resource areas with the potential to be affected by the minor project changes addressed in this addendum: air quality, biological resources, cultural resources, transportation and traffic, Tribal cultural resources, and utilities and service systems. The same significance thresholds in Appendix G of the State CEQA Guidelines were used for this addendum analysis as were used in the EIR.

### Air Quality

The project EIR described the regional PG&E grid as the main power source for construction. This option is no longer available, and the construction contractor has requested to use generators to power onsite infrastructure and diesel-powered pumps to pump construction water to be used for construction dust control. The following generators and pumps would be used at the indicated locations, times, and dates:

Generators:

- Stratton Lane Well (1 genset green) 25 KVA, generator will be in continuous operation until 5/31/2024;
- East Job Trailers (1 genset green) 25KVA, generator will be in continuous operation and will be removed from site by 6/15/2024;
- West Laydown Yard (1 genset green) 25 KVA, generator will be in continuous operation until 5/31/2024;
- East Laydown Yard (1 genset green) 273 HP, 220 KVA, generator will be in continuous operation until 5/31/2024;
- East Laydown Yard (1 genset white) 273 HP, 220 KVA, generator will be in continuous operation until 5/31/2024.

Diesel powered pumps for the lift tanks/water supply from groundwater wells for dust control:

- Toland Lane pump to lift tank. (direct drive, no generator) 25 HP, continuous operation until 5/31/2024.
- Stratton Lane pump to lift tank. (direct drive, no generator) 25 HP, continuous operation until 5/31/2024.

The project EIR analyzed impacts on air quality from construction including use of diesel powered equipment and generators. Impact 3.2-1 analyzed construction related exceedance of thresholds of significance established by the air district for criteria air pollutants and concluded that the impact was significant. Mitigation Measure 3.2-1:

"Reduce construction-related exhaust and dust emissions" included preparation of a fugitive dust control plan and mandates the use of control technology to limit the emission of pollutants including NOx and PM for all construction equipment, including diesel powered equipment and generators. The analysis concluded that with implementation of Mitigation Measure 3.2-1 impacts from construction related exceedances of thresholds would be less than significant. Thus, while the specific generators and pumps to be used were not included in the analysis at the time, the use of diesel powered equipment and generators was anticipated and included in the analysis, and emissions will be appropriately mitigated with the previously adopted mitigation measures. No new impacts would occur and no new mitigation would be required.

**Biological Resources**

The minor modifications to the Solano 4 Wind Project would result in impacts on biological resources similar to those analyzed in the EIR. The project EIR determined that the project could result in up to 0.1 acre of impacts to wetlands including approximately 0.07 acre of temporary impacts and 0.03 acre of permanent wetlands. The Project EIR also determined that impacts to vegetation communities would be up to 251.9 acres including up to 43.82 acres of permanent impacts and 208.07 acres of temporary impacts.

AECOM biologists conducted a biological resources survey on November 11, 2022, to map habitat types and identify and delineate potentially sensitive environmental resources, including wetlands and waters of the US, within the revised project footprint survey area. The supplemental biological resources survey and wetland delineation report (AECOM 2022) can be found in Appendix A of this Addendum. The results of the delineation of waters of the United States for the entire project site, including the revised project footprint survey area, have been verified by the USACE Sacramento District on June 9, 2023.

The acres of waters of the U.S. and wetlands delineated following U.S. Army Corps of Engineers (USACE) methodology, as well as upland habitat, are detailed in Tables 1 and 2 below. These acreages were determined by overlaying the 100% design project footprint with habitat types, wetlands and other waters mapped in the project area during prior and current supplemental studies. Of the USACE jurisdictional waters and wetlands delineated within the project area, the project would temporarily impact up to 0.0439 acre and permanently impact up to 0.049 acre. These additional impacts are minor, and when combined with impacts on prior delineated areas, remain below the impact acres analyzed in the Project EIR. Similarly, the additional impacts to vegetation communities in the revised project footprint (see Table 2) area are minor compared to overall project footprint analyzed and well within the footprint disclosed and analyzed in the Project EIR.

**Table 1. Potentially Jurisdictional Features (within November 11, 2022, Newly Surveyed Areas)**

| Feature | Biological Survey Area | Project Footprint |
|---|---|---|
| **ADJACENT WATERS:** | | |
| **Ephemeral Drainage (W5)** | 0.0005 acre | N/A* |
| **Perennial Swale (W1)** | 1.3100 acre | 1.1200 acre** |
| **Seasonal Swale (W2)** | 0.0201 acre | 0.0173 acre** |
| **Seasonal Swale (W3)** | 0.0800 acre | 0.0700 acre** |
| **Seasonal Wetland (SW-999)** | 0.0113 acre | 0.0096 acre |
| **TOTAL POTENTIALLY JURISDICTIONAL FEATURES** | 1.4219 acre | 1.2169 acre |

Source: Data compiled by AECOM in 2022 & Area West in 2016
*Not within project footprint.
**Use of horizontal directional drilling techniques will avoid temporary and permanent impacts to these features.
N/A = not applicable

**Table 2. Non-jurisdictional Upland Habitats (within November 11, 2022, Newly Surveyed Areas)**

| Upland Habitat | Acreage within Biological Survey Area | Additional Impact Acreage (Permanent) | Additional Impact Acreage (Temporary) |
|---|---|---|---|
| **Annual grasslands** | 0.09 | 0.0 | 0.0 |
| **Actively Farmed** | 1.57 | 0.0 | 0.0 |
| **Fallow** | 31.62 | 0.0 | 0.0 |
| **Grazed** | 138.48 | 4.07 | 10.76 |
| **Ruderal** | 0.31 | 0.01 | 0.06 |
| **Urban** | 4.02 | 0.03 | 0.57 |
| **TOTAL** | 176.09 | 4.11 | 11.39 |

Source: Data compiled by AECOM in 2022 & Area West in 2016

*Special-status Species Habitat*

At the survey area locations for potential road improvements near the intersection of Collinsville Road and Talbert Lane, and near the intersection of Montezuma Hills Road and Bird's Landing Road, mature stands of eucalyptus (*Eucalyptus* spp.) trees were observed less than 50 feet from the survey areas and are visible via aerial imagery. These tall, mature tree stands have the potential to support nesting birds and raptors, and the adjacent annual grasslands and agricultural croplands provide suitable nesting and foraging habitat for many species of birds and raptors, including but not limited to, California special-status species such as the Swainson's hawk and golden eagle, in addition to the various species protected by The Migratory Bird Treaty Act of 1918 (MBTA). As required by the project's EIR, focused pre-construction nesting bird and raptor surveys shall be conducted at these locations, as well as in other suitable nesting bird habitat, if construction occurs during the bird nesting season. Therefore, impacts on

special-status species habitat are similar to those identified in the Project EIR and will be appropriately mitigated by the mitigation previously adopted in the Project EIR.

*Water from Sacramento River for Dust Control*

SMUD is proposing to utilize existing riparian water rights to draw water via a screened pump intake from the Sacramento River to use for dust control under an easement with the landowner. The pump used to draw water from the river will be equipped with a brush-cleaned wedgewire drum screen to avoid fish species including delta smelt and juvenile salmonids from entering the pump. Best engineering practices will be followed in compliance with the California Department of Fish and Wildlife (CDFW) screening requirements. The pumping equipment will be located in a secondary containment berm to contain any potential fuel and oil spills. Water will be drawn from the Sacramento River at a rate of 100,000 gallons per day over about a 6-month period from June to December of 2023 as needed to control construction dust. This is a relatively minor rate compared to the river flow at this location.

These minor changes would not result in adverse effects on fish in the river from entrainment in pumps or through affecting overall river flows. Thus, the changes do not result in a new significant impact to the environment not previously disclosed in the Project EIR. All project mitigation measures previously adopted would be appropriately implemented as originally proposed.

**Cultural Resources**

Far Western Anthropological Research Group (Far Western) conducted a geoarchaeological sensitivity assessment of the majority of the APE south of Montezuma Hills Road (Scher and Whitaker 2016) and concluded that the majority of the Area of potential Effects (APE) is not sensitive for buried archaeological sites. Such sensitivity within the APE is limited to very narrow areas along creeks and drainages, such as the unnamed creek east of and parallel to Talbert Lane in Solano 4 West, and along Montezuma Hills Road. Far Western considered these areas to have the potential to contain buried archaeological sites.

A pedestrian survey of the amended project APE was conducted on November 11, 2022, by an AECOM archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for Archaeology. The survey consisted of walking 10- to 15-meter-wide transects across the entire expanded APE. The background research, literature review, records search, and field survey did not result in the identification of historic properties (National Register of Historic Places [NRHP]) or historical resources (California Register of Historical Resources [CRHR]) within the direct APE. The supplemental cultural resources report can be found in Appendix B (AECOM 2023).

Based on the background research, literature review, records search, and field survey, no historic properties (NRHP) or historical resources (CRHR) within the direct APE were identified.

These minor changes would not create any new significant impacts to the environment and all project mitigation measures previously adopted would be appropriately implemented as originally proposed.

**Transportation and Traffic**

The Solano 4 Wind Project EIR discussed that it may be necessary to improve existing public roads or use areas adjacent to the roads during construction to accommodate transportation of material such as the oversized wind turbine generator (WTG) components, including the blades (Chapter 2 Project Description, page 2-20). These improvements could be temporary or permanent, depending on the agreement with the Solano County Public Works and Building divisions and applicable private landowners. Temporary improvements would be restored to grassland, grazing lands, or other agricultural uses, as required, after completion of the project. While these improvements were discussed in general terms in the EIR, the exact location of these improvements was not available during the concept design phase which served as the baseline for the EIR. These locations have now been identified in the 90% design drawings and include the following:

- Southwest corner of State Route 12 and Birds Landing Road (see Figure 3)
- Northeast corner of Shiloh Road (see Figure 4)
- Southwest shortcut at Birds Landing Road and Montezuma Hills Road (see Figure 5)
- Northeast corner of Montezuma Hills Road (see Figure 6)
- Northeast corner of Collinsville Road and Talbert Lane (see Figure 7)

Additionally, some internal project site access roads would be realigned or widened to accommodate transportation of project materials. The 90% design limits of disturbance have been included in the habitat impacts included in Tables 10.2-1 and 10.2-2, and the roads as changed per the 100% design are not significantly different in area or location from the roads as analyzed in the EIR.

These minor changes would not create any new significant impacts to the environment and all project mitigation measures previously adopted would be appropriately implemented as originally proposed.

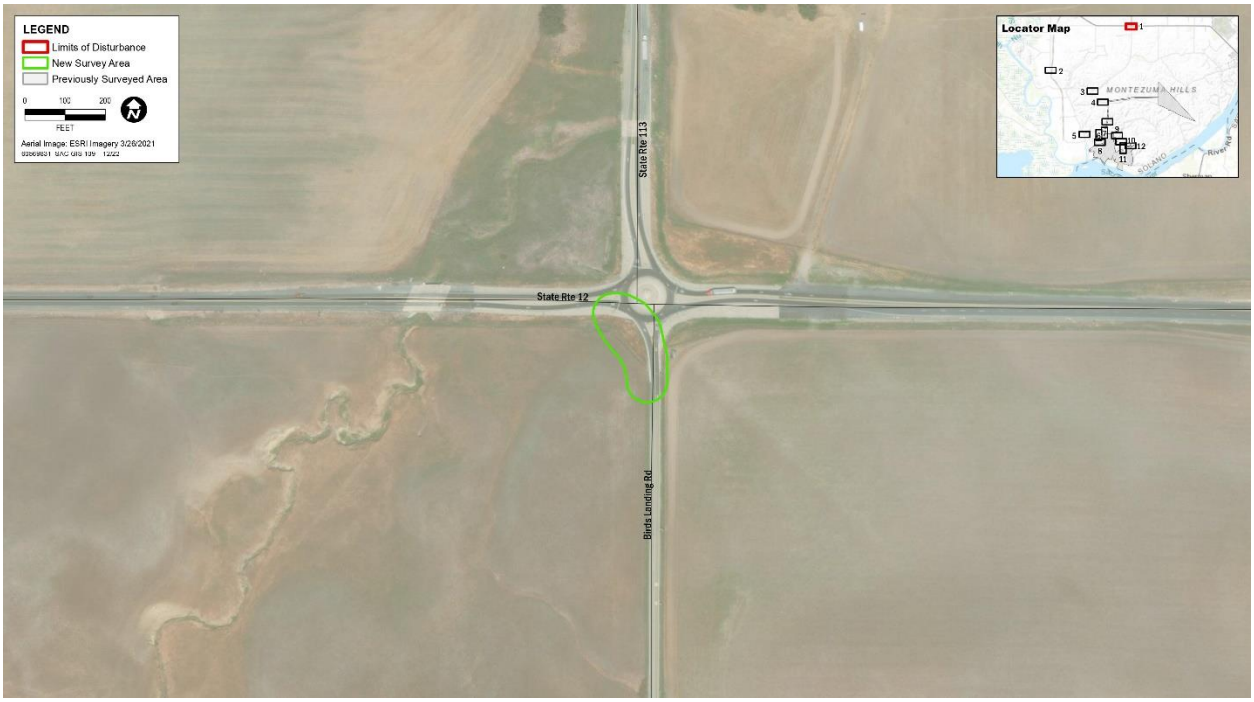


**Figure 3. Southwest corner of State Route 12 and Birds Landing Road**


**Figure 4. Northeast Corner of Shiloh Road**


**Figure 5. Southwest Shortcut at Birds Landing Road and Montezuma Hills Road**


**Figure 6. Northeast Corner of Montezuma Hills Road**


**Figure 7. Northeast Corner of Collinsville Road and Talbert Lane**

## Tribal Cultural Resources

As stated above, a pedestrian survey of the amended project APE was conducted on November 11, 2022, by an AECOM archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for Archaeology. The survey consisted of walking 10- to 15-meter-wide transects across the entire expanded APE. The background research, literature review, records search, and field survey did not result in the identification of historic properties (NRHP) or historical resources (CRHR) within the direct APE.

Native American Consultation

A letter was sent to the Native American Heritage Commission (NAHC) on December 5, 2022, requesting a search of the Sacred Lands File (SLF) and a list of Native American contacts for the project. A record search of the NAHC SLF was completed on December 16, 2022. The results were negative. However, the NAHC indicated that the absence of specific site information in the SLF does not necessarily mean the absence of cultural resources in any project area. Therefore, they provided a list of Native American tribes who may also have knowledge of cultural resources in the project area. See Appendix C of the supplemental cultural resources report for Native American consultation efforts and results. The supplemental cultural resources report can be found in Appendix B (AECOM 2023).

Based on the background research, literature review, records search, and field survey, and expanded Native American consultation, no Tribal cultural resources or SLF within the direct APE were identified.

These minor changes would not create any new significant impacts to tribal cultural resources and all project mitigation measures previously adopted would be appropriately implemented as originally proposed.

**Utilities and Service Systems**

The temporary construction office trailers were originally proposed to have electricity installed by PG&E and connecting to their electrical lines; however, there is a wait list of 22 months for PG&E to complete the work, which was deemed infeasible for the desired construction window. The construction contractor has requested to use generators to power onsite job trailers and infrastructure. This update is included for informational purposes only and does not cause any changes to the impact conclusions in the EIR.

## Explanation of Addendum for the Project

The minor modifications to the final project design do not constitute a substantial change to the original project description, will not involve any new environmental effects than those addressed in the 2021 EIR, and will not result in any significant environmental effects.

Therefore, none of the provisions of Section 15162 that would necessitate the preparation of a subsequent environmental document apply to the proposed changes to the final project design. Based on the scope of the proposed action, SMUD determined that the preparation of this addendum would properly address potential impacts associated with the project, in accordance with CEQA.

All CEQA documents prepared by SMUD are available for review at the SMUD Headquarters, 6201 S Street, Sacramento, California 95817. Pursuant to CEQA Guidelines (Section 15164(c)), “An addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration.”

## References

AECOM. 2022 (November). *Solano 4 Wind Project Supplemental Biological Resources Survey and Wetland Delineation Report*. Sacramento, CA.

AECOM 2023 (May). *Solano 4 Wind Project Supplemental Cultural Resources Report.* Sacramento, CA.

Scher, Naomi, and Adrian R. Whitaker. 2016. *Archaeological Survey and Geoarchaeological Sensitivity Report for the Proposed Solano Phase 4 Wind Project, Solano County, California*. Far Western Anthropological Research Group, Inc., Davis, CA.

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SMUD. 2021 (July). *Final Solano 4 Wind Project Environmental Impact Report, State Clearinghouse No. 2019012016*. Sacramento, CA. Prepared by AECOM, Sacramento, CA.

SMUD. 2022 (July). *Addendum 1. Solano 4 Wind Project Environmental Impact Report, State Clearinghouse No. 2019012016*. Sacramento, CA. Prepared by AECOM, Sacramento, CA.

**Responsible Agency Contact Person:**

Ammon Rice
Supervisor, Environmental Services
SMUD Environmental Services
6201 S Street, Mailstop B209, Sacramento, CA 95817
916-732-7466
email: ammon.rice@smud.org

***Acronyms***

| | |
|---|---|
| APE | Area of potential Effects |
| CEQA | California Environmental Quality Act |
| CRHR | California Register of Historical Resources |
| EIR | Environmental Impact Report |
| Far Western | Far Western Anthropological Research Group |
| LOD | limit of disturbance |
| MBTA | Migratory Bird Treaty Act of 1918 |
| NAHC | Native American Heritage Commission |
| NRHP | National Register of Historic Places |
| O&M | Operation and Maintenance |
| PG&E | Pacific Gas & Electric Company |
| Project | Solano 4 Wind Project |
| SEIR | subsequent environmental impact report |
| SMUD | Sacramento Municipal Utility District |
| SR | State Route |
| USACE | US Army Corps of Engineers |
| WRA | Wind Resource Area |
| WTG | wind turbine generator |

# Appendix A

# Supplemental Biological Resources Technical Study

AECOM
2020 L Street, Suite 300
Sacramento, CA 95811
T +1-916.414.5800; F+ 1-916.414.5850

Ammon Rice, Supervisor, Environmental Services
SMUD Environmental Services
6201 Street, MS B209
Sacramento, CA 95817-1899

December 8, 2022

**Subject: SMUD Solano 4 Wind Project – Supplemental Biological Resources Survey and Wetland Delineation Report**

Dear Mr. Rice,

SMUD requested that AECOM conduct a supplemental biological resources survey and wetland delineation of new proposed disturbance areas at the Solano 4 project site. The need for these supplemental surveys originated from recent changes in the project footprint based on the 90% design and the necessity for roadway improvements to facilitate project access and material deliveries during construction. AECOM biologists Jody Fessler and Ranie Shreckengost conducted a biological resources survey on November 11, 2022, to identify and delineate potentially sensitive environmental resources within the new project footprint survey area. For the purposes of this report, the “survey area” includes 12 select locations which had not been previously surveyed, and the North-South stretch of the homerun corridor which connects Solano 4 West to the Russell Substation, which is slightly offset from the corridor previously surveyed.

This report presents the results of a desktop analysis of the survey area and the biological resources survey. A detailed description of the delineation methods for potential waters of the United States, including wetlands, that meet the definitions identified in 33 Code of Federal Regulations (CFR) 328 has also been included within this memo. The delineation information presented in this report is to be considered preliminary until verified by the U.S. Army Corps of Engineers (USACE) Sacramento District and is supplemental to the previous delineation report for the Solano 4 project site previously submitted to the USACE (AECOM 2019).

## Project Location and Background

SMUD’s Solano Wind Project is located in the southern portion of Solano County, California, in the Montezuma Hills Wind Resource Area (MHWRA). The Solano Wind Project (project) consists of three phases developed between 2003 and 2012. To improve wind resources in the MHWRA and deliver more renewable energy to its customers, SMUD plans to construct the project in 2023. The project will involve removing existing wind turbine generators; constructing new wind turbine generators; constructing and improving access roads, constructing staging areas, meteorological towers, and an energy collection system; and completing minor upgrades to the existing Russell Substation. The project site comprises two geographically distinct areas owned

by SMUD, Solano 4 East and Solano 4 West, which are connected by the collection and homerun lines. The project will also require temporary road improvements at several intersections along the project access route to facilitate the transport of the oversized turbine blades and components to their proposed locations during construction. The Project area is generally bounded by the community of Collinsville to the west, the confluence of the Sacramento and San Joaquin rivers to the south, and the city of Rio Vista to the northeast.

In July 2017, Area West Environmental, Inc., completed a preliminary jurisdictional wetland determination for the Solano 4 West property and the initially proposed alignment for the North-South stretch of the homerun corridor. In April 2018, AECOM conducted a wetland delineation survey for Solano 4 East and the West-East stretch of the homerun corridor which connects Solano 4 East to the Russell Substation. The November 2022 90% design plans included a slight shift of the North-South alignment of the homerun corridor. Therefore, portions of the North-South homerun corridor required re-evaluation, in addition to some other shifted disturbance areas and the select roadway improvement areas identified as necessary for project access.

**Survey Methodology**

Prior to conducting the field survey, AECOM reviewed the relevant biological resources surveys associated with the project, recent aerial imagery, online geospatial wetlands information provided by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), and the U.S. Natural Resources Conservation Service (NRCS) Web Soil Survey for indicators or signatures associated with wetland and/or waters habitats.

For those areas where potential wetlands or water features were identified, a routine wetland delineation was performed in accordance with the procedures outlined in the Corps of Engineers Wetlands Delineation Manual (Wetlands Delineation Manual) (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (Arid West Supplement). These technical documents provide standardized guidelines and methodology for identifying features that may be subject to USACE jurisdiction under Section 404 of the Clean Water Act (CWA). Under this approach, a feature must support positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a jurisdictional wetland, and a drainage or stream feature must demonstrate a channel with a defined bed and bank. The ordinary high-water mark associated with a drainage or stream feature is typically defined by characteristics such as shelving, scour lines, and other natural linear features that further define the bed-and-bank portion of the channel that floods under normal conditions.

Identified wetland and water features were mapped using a combination of a sub-meter accurate Global Positioning Systems (GPS) Unit) in the field, figures and field data included within previously completed project delineation reports, and aerial imagery digitization using ArcMap 10.8.1 and ArcGIS online. Wetland determination data forms were completed in the field to collect accurate information on vegetation, hydrology, and soils.

The field survey was conducted on November 11, 2022, from 9 a.m. to approximately 3 p.m. in dry conditions with clear skies. Field methodology consisted of two biologists walking and driving the survey area, collecting representative photographs to depict field conditions, mapping habitat

types, and assessing each location for its potential to support sensitive biological resources. The biologists stopped multiple times to observe and visually scan the rolling hills, valleys, slopes, and vegetation within the survey area, and took detailed notes regarding areas which may support sensitive species or habitats.

## Results

*Waters of the U.S.*

One seasonal wetland was identified within the survey area and has been labelled as SW-999. The hydrology and dominant hydrophytic plant species observed within SW-999 are described within the individual data form included in Attachment A. For seasonal wetlands where no soil pits were dug, hydric soils were assumed to be present, because the NRCS Web Soil Survey identified hydric soils at these locations. These determinations were further supported by the USFWS NWI identifying hydric features in these locations or in the immediate vicinity.

Two seasonal swales were also delineated within the survey area and are labelled W-2 and W-3 (Attachment C, Figure 7). One perennial swale was delineated within the survey area and is labeled as W-1 (Attachment C, Figure 13), and one ephemeral drainage was delineated within the survey area and is labeled W-5 (Attachment C, Figure 10).

All of the delineated features identified generally direct flow towards the southeast to Chinese Cut and the Sacramento River. The USACE Sacramento District identifies the Sacramento River as a navigable waterway of the United States. As such, the Sacramento River is subject to USACE jurisdiction pursuant to Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. All of the delineated features within the survey area meet the definition of tributaries or adjacent waters, connect to tributaries, or are connected by direct surface flow to the Sacramento River; therefore, all tributaries and adjacent waters delineated within the survey area are considered potentially jurisdictional features pursuant to Section 404 of the CWA.

In summary, the 177.51-acre survey area investigated on November 11, 2022, contains a total of approximately 1.42 acres of wetlands and drainages which meet the definition of “Waters of the U.S.” and are potentially subject to USACE jurisdiction pursuant to Section 404 of the CWA. Please see Table 1 (below) for the calculated areas of individual wetland and other water features.

**Table 1. Potentially Jurisdictional Features in the Survey Area**

| Features (Waters of the U.S.) | Biological Survey Area |
|---|---|
| | |
| Ephemeral Drainage (W5) | 0.0005 acre |
| Perennial Swale (W1) | 1.3100 acre |
| Seasonal Swale (W2) | 0.0201 acre |
| Seasonal Swale (W3) | 0.0800 acre |
| Seasonal Wetland (SW-999) | 0.0113 acre |
| **TOTAL POTENTIALLY JURISDICTIONAL FEATURES** | 1.4219 acre |

Source: Data compiled by AECOM in 2022 & Area West in 2016

The results of this delineation of waters of the United States are contingent upon verification by the USACE Sacramento District.

*Upland habitats*

Approximately 176.09 acres of upland habitats are present in the survey area. These upland habitats consist of;

- annual grasslands dominated by wild oats (*Avena fatua)*, perennial ryegrass (*Lolium perenne)*, several species of sweetgrass (*Poa spp.)* and brome (B*romus spp.)* species, and perennial weeds such as yellow star thistle (*Centaurea solstitialis*), some of which are grazed by sheep or cattle
- actively farmed and recently tilled or harvested agricultural croplands with little to no vegetation,
- fallowed fields not currently in active agricultural production,
- annual grasslands grazed by sheep and cattle dominated by same species as annual grassland above
- ruderal roadside edges dominated by fennel (*Foeniculum vulgare)*, Medusa head (*Taeniatherum caput-medusae)*, yellow star thistle, and non-native annual grasses and weeds, and
- urban/developed area such as graveled or paved roadways and lots with little to no vegetation.

**Table 2. Upland Habitats in the Survey Area**

| Upland Habitat | Acreage within Biological Survey Area |
|---|---|
| Annual grasslands | 0.09 |
| Actively Farmed | 1.57 |
| Fallow | 31.62 |
| Grazed | 138.48 |
| Ruderal | 0.31 |
| Urban | 4.02 |
| **TOTAL** | 176.09 |

Source: Data compiled by AECOM in 2022 & Area West in 2016

*Special-status Species Habitat*

At the survey area locations depicted by Photo 3 (near the intersection of Collinsville Road and Talbert Lane) and Photo 6 (near the intersection of Montezuma Hills Road and Bird's Landing Road), mature stands of eucalyptus (*Eucalyptus* spp.) trees were observed less than 50 feet from the survey areas and are visible via aerial imagery (Attachment C, Figures 3 and 5). These tall, mature tree stands have the potential to support nesting birds and raptors, and the adjacent annual grasslands and agricultural croplands provide suitable nesting and foraging habitat for many species of birds and raptors, including but not limited to, California special-status species such as the Swainson's hawk and golden eagle, in addition to the various species protected by The Migratory Bird Treaty Act of 1918 (MBTA). As required by the project's EIR, focused pre-construction nesting bird and raptor surveys shall be conducted at these locations, as well as in other suitable nesting bird habitat, if construction occurs during the bird nesting season.

*Species Observed During Survey*

The following species were observed during the biological resources survey: turkey vulture, red-tailed hawk, American kestrel, meadowlark, killdeer, rock dove, starling, Brewer's blackbird, red-winged blackbird, crow, and scrub jay.

Wetland determination data forms and Area West's representative site photographs from the 2016 delineation have been included within **Attachment A**, AECOM's 2022 representative site photographs from the November 2022 site visit have been provided as **Attachment B**, and a Biological Survey Map Set, which visually represents the locations and extents, feature identification labels, and approximate size(s) of the identified and delineated waters (and wetlands) of the United States has been included as **Attachment C**.

The results of this report are expected to support an Addendum to the Solano 4 Environmental Impact Report and updated permit applications.

# ATTACHMENT A:
# Wetland Determination Data Forms* and Representative Site Photos

*Note: Selected data forms and photo pages have been extracted from the Area West 2016 PJD report to supplement this memo. Labels have been added to relevant data forms and photos in RED TEXT.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Solano Wind Farm Phase IV, West City/County: Solano County Sampling Date: 20221111

Applicant/Owner: Sacramento Municipal Utility District State: CA Sampling Point: SW-999

Investigator(s): R. Shreckengost & J. Fessler Section, Township, Range: Unsectioned, Range 2E, Township 3N

Landform (hillslope, terrace, etc.): Rolling valley hills Local relief (concave, convex, none): Concave Slope (%): 2-3%

Subregion (LRR): C Lat: 38.1216 Long: 121.8388 Datum: WGS 84

Soil Map Unit Name: Omni clay loam, 0-2% slopes NWI classification: R4SBA - 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:

Seasonal drainage is culverted beneath Montezuma-Hills Road. Large willow tree growing at 24" culvert outlet south of roadway.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | ____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | ____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5') | | | |
| 1. Typha angustifolia | 90 | Yes | OBL |
| 2. Picris echioides | 5 | No | FAC |
| 3. Distichlis spicata | 5 | No | FAC |
| 4. Centaurea aspera | - | - | NI* |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

**Dominance Test worksheet:**

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 90 | x 1 = | 90 |
| FACW species | | x 2 = | |
| FAC species | 10 | x 3 = | 30 |
| FACU species | | x 4 = | |
| UPL species | | x 5 = | |
| Column Totals: | 100 (A) | | 120 (B) |

Prevalence Index = B/A = 1.2

**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:

NI* = no wetland indicator status, not included in dominance / prevalence calculations

Upland vegetation upslope of drainage wetland was dominated by non-native annual grasses; California wild oat species, Centaurea aspera, and Taeniatherum caput-medusae observed as dominant.

## SOIL

Sampling Point: SW-999

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

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[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: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✔ No ☐

Remarks:

Hydric soils assumed; soil saturation and dark coloration observed at the surface level, and USDA soil classification as hydric. NWI classification: R4SBA.

## 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): _____

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✔ No ☐ Depth (inches): Surface

**Wetland Hydrology Present?** Yes ✔ No ☐

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

Remarks:

Representative Photo: SW-999

November 2022

Seasonal wetland with culvert flowing southwest beneath Montezuma-Hills Road.

November 2022

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Solano Wind Phase 4 City/County: Collinsville/Solano County Sampling Date: 7/1/2016

Applicant/Owner: SMUD State: CA Sampling Point: DP-I W-1

Investigator(s): Mark Noyes Section, Township, Range: S14, T3N, R1E

Landform (hillslope, terrace, etc.): Bass of hill Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Mediterranean California Lat: 38.105921 Long: -121.830252 Datum: WSG1984

Soil Map Unit Name: Omni clay loam NWI classification:

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:

Wetland

## VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 5x5) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 0 | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot size: 5x5) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 0 | = Total Cover | |
| **Herb Stratum** (Plot size: 5x5) | | | |
| 1. Polypogon monspeliensis | 15 | N | FACW |
| 2. Festuca perrenis | 30 | Y | FAC |
| 3. Distichilis spicata | 40 | Y | FAC |
| 4. Schoenoplectus americanus | 5 | N | OBL |
| 5. Helminthotheca echioides | 5 | N | FAC |
| 6. Hordeum marinum | 5 | N | FAC |
| 7. | | | |
| 8. | | | |
| | 95 | = Total Cover | |
| **Woody Vine Stratum** (Plot size: 5x5) | | | |
| 1. | | | |
| 2. | | | |
| | 0 | = 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: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (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:

Vegetation disturbed- grazed

## SOIL

Sampling Point: DP-I W-1

**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 |
|---|---|---|---|---|---|---|---|---|
| 0-3 | 10 YR 3/2 | 100 | | | | | Silty clay | |
| 3-18+ | 10 YR 4/2 | 85 | 5 YR 4/6 | 15 | D | M | Clay, clay | clay, clay loam |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[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: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

## 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): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

**Wetland Hydrology Present?** Yes ✓ No ___

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

Remarks:

Soil moist 4'' below surface, but not saturated.

# Arid West Ephemeral and Intermittent Streams OHWM Datasheet

**Project:** Solano Wind Phase 4
**Project Number:** 12-002-013
**Stream:** W-6
**Investigator(s):** Mark Noyes, Callen Keller

**Date:** 6/23/2016 **Time:** 11:45 am
**Town:** Collinsville **State:** CA
**Photo begin file#:** PP4 **Photo end file#:** PP4

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

Y ☐ / N ☒ Is the site significantly disturbed?

**Location Details:**
Approximately 0.34 miles west of Talbert Lane

**Projection:** WGS84 **Datum:** d_wgs_1984
**Coordinates:** 38.088287, -121.817360

**Potential anthropogenic influences on the channel system:**
Upslope road construction

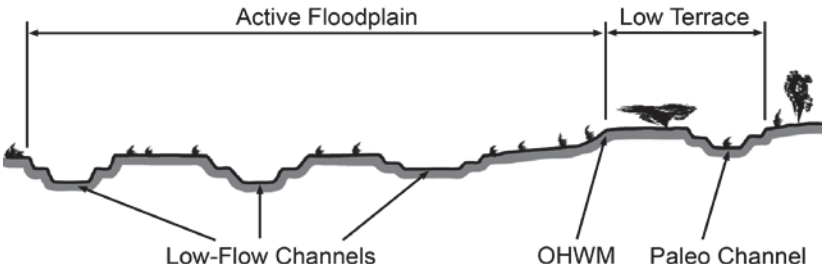
**Brief site description:**
Ephemeral drainage on side slope of steep hill in annual grassland

**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

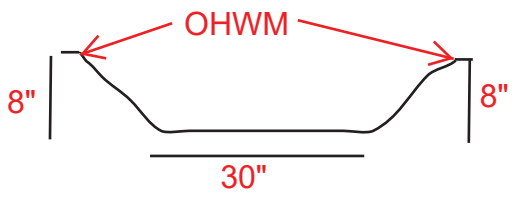



**Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:**

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:

**Project ID:** Solano Wind Phase 4 **Cross section ID:** OHWM-3 **Date:** 6/23/2016 **Time:** 11:45 am

## Cross section drawing:




## OHWM

**GPS point:** 38.088287, -121.817360

**Indicators:**

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

**Comments:**

OHWM is delineated by drainage in slope and change in vegetation cover from <1% to 90% outside of feature.

## Floodplain unit:

☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

**GPS point:** 38.088287, -121.817360

**Characteristics of the floodplain unit:**

Average sediment texture: Clay Loam

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:**

Due to steep banks, the OHWM and boundaries of the low flow channel are the same.

# Arid West Ephemeral and Intermittent Streams OHWM Datasheet

**Project:** Solano Wind Phase 4
**Project Number:**
**Stream:** Ephemeral Drainage 2 W-5
**Investigator(s):** Noyes, Mark

**Date:** 6/23/2016 **Time:** 12:00 pm
**Town:** Collinsville **State:** CA
**Photo begin file#:** PP4 **Photo end file#:**

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

**Location Details:**
50 ft. east of Talber Rd

**Projection:** WGS84 **Datum:** d_wgs_1984
**Coordinates:** 38.088293, -121.817385

**Potential anthropogenic influences on the channel system:**
Road grading and possible ground disking

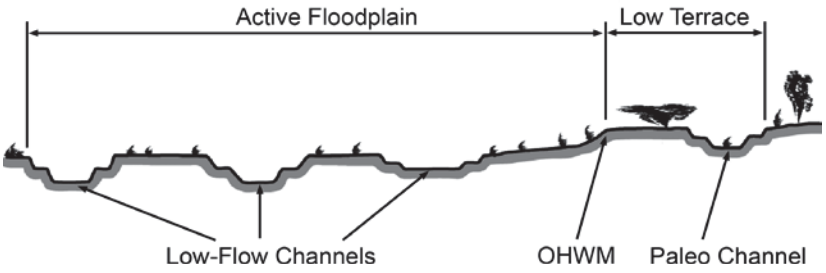
**Brief site description:**
Drainage coming off road, up-slope area goes under ground and the OHWM is where it comes back out of the ground again.

**Checklist of resources (if available):**

- [X] Aerial photography
  Dates:
- [ ] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [ ] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [X] 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



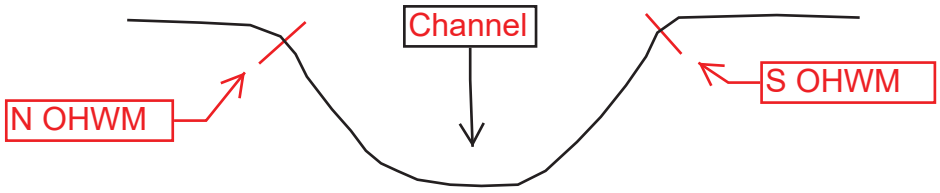

**Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:**

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
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

W-5

**Project ID:** **Cross section ID:** **Date:** **Time:**

**Cross section drawing:**




## OHWM

**GPS point:** N= 38.088293, -121.817385 and S= 38.088279, -121.817382

**Indicators:**

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

**Comments:**

Located on the edge of a terrace.

## Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

**GPS point:** _____

**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: Change in dominant plant species
- ☐ Other: _____
- ☐ Other: _____

**Comments:**

W-5

**Project ID:** **Cross section ID:** **Date:** **Time:**

**Floodplain unit:** ☐ Low-Flow Channel ☐ Active Floodplain ☒ Low Terrace

**GPS point:** 38.086440, -121.808167

**Characteristics of the floodplain unit:**

Average sediment texture: Sandy loam

Total veg cover: 40 % Tree: 0 % Shrub: 0 % Herb: 40 %

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

**GPS point:** _____

**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:**

Photo Point 1. Data Point A in a seasonal swale adjacent to annual grassland (facing south).
Coordinates: 38.087284, -121.807254
Taken on June 23, 2016.

Photo Point 2. Data Point C in an ephemeral drainage next to annual grassland (facing south).
Coordinates: 38.086524, -121.808219
Taken on June 23, 2016.

Photo Point 3. Ephemeral drainage surrounded by a developed area (facing north).
Coordinates: 38.086650, -121.808210
Taken on June 23, 2016.

W-5

Photo Point 4. Ephemeral drainage within annual grasslands (facing west).
Coordinates: 38.088287, -121.817360
Taken on June 23, 2016.

Photo Point 5. Data Point E in a perennial swale surrounded by a seasonal swale (facing northeast).
Coordinates: 38.078907, -121.832778
Taken on June 23, 2016.

Photo Point 6. Data Point G in a seasonal swale (right) next to Data Point H in an agricultural field (facing east)
Coordinates: 38.079149, -121.832816
Taken on June 23, 2016.

Photo Point 7. Boundary of perennial swale (left) and annual grassland (right) (facing east).
Coordinates: 38.105899, -121.830302
Taken on July 1, 2016.
W-1

Photo Point 8. Chairmaker's club-rush growing within Himalayan blackberry in perennial swale (facing east).
Coordinates: 38.105931, -121.830183
Taken on July 1, 2016. W-1

Photo Point 9. Seasonal swale surrounding perennial swale (background) (facing northeast).
Coordinates: 38.078540, -121.833466
Taken on July 1, 2016.

Photo Point 10. Brackish marsh just north of Stratton Road (facing east).
Coordinates: 38.082503, -121.840220
Taken on July 1, 2016.

Photo Point 11. Overview of vegetation communities near Stratton Road (facing south).
Coordinates: 38.083032, -121.838313
Taken on July 26, 2016.

Photo Point 12. Overview of vegetation communities near Stratton Road (facing southwest).
Coordinates: 38.083090, -121.838366
Taken on July 26, 2016.

# ATTACHMENT B:
# AECOM 2022 Representative Site Photographs

**Photo 1.** Photo facing south (38.1316, -121.8470) depicting a proposed Project access route shortcut at the southwest corner of Birds Landing Road and Montezuma Hills Road, narrow strips of annual grassland (background), and a graveled, farm-use parking area (AECOM 2022).

**Photo 2.** Photo facing north (38.1476, -121.8894) depicting Shiloh Road, a graveled pullout, narrow strips of ruderal habitat, and recently tilled agricultural cropland (AECOM 2022).

**Photo 3.** Photo facing north (38.0960, -121.8554) depicting Collinsville Road near turn onto Talbert Lane, mature eucalyptus trees, a narrow strip of annual grassland, and recently mowed agricultural cropland (AECOM 2022).

**Photo 4.** Photo facing north (38.0958, -121.8546) depicting a narrow strip of roadside vegetation (ruderal habitat), and recently mowed agricultural cropland off Talbert Lane. (AECOM 2022).

**Photo 5.** Photo facing south (38.0971, -121.8335) depicting an ephemeral swale channel which parallels Talbert Lane and has been identified as W-3 (AECOM 2022).

**Photo 6.** Photo facing north (38.1316, -121.8469) depicting mature eucalyptus trees near the intersection of Montezuma Hills Road and Birds Landing Road (AECOM 2022).

**Photo 7.** Photo facing southeast (38.0912, -121.8416) depicting an existing gravel access road, grazed annual grassland, and agricultural cropland (AECOM 2022).

**Photo 8.** Photo facing east (38.1216, -121.8388) depicting a narrow strip of roadside vegetation (ruderal habitat), and seasonal wetland along Montezuma Hills Road (AECOM 2022).

**Photo 9.** Photo facing southwest (38.0917, -121.8207) depicting a cattle-disturbed agricultural area and vast expanses of grazed annual grassland; proposed location of a laydown yard (AECOM 2022).

**Photo 10.** Photo facing west (38.0853, -121.8139) depicting an existing access road and frequently grazed annual grassland habitat with sparse vegetation; proposed location for a borrow site (AECOM 2022).

**Photo 11.** Photo facing north (38.0822, -121.8133) depicting an established cattle path at the toe of slopes and vast expanses of grazed annual grassland habitat; collection and homerun alignment (AECOM 2022).

**Photo 12.** Photo facing northwest (38.1837, -121.8061) depicting the roundabout intersection of State Route 12, Bird's Landing Road (AECOM 2022).

# ATTACHMENT C:
# Biological Resources Survey Map Set


C:\Users\clementl\OneDrive - AECOM Directory\Projects\60569831_SMUD_Solano4\02_Maps\60569831_SAC_GIS_104_Env_Survey_Maps.mxd 12/8/2022 ClementL SAC

Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 1: Biological Survey Map Set**

AECOM


C:\Users\clementl\OneDrive - AECOM Directory\Projects\60569831_SMUD_Solano4\02_Maps\60569831_SAC_GIS_104_Env_Survey_Maps.mxd 12/8/2022 ClementL SAC

Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 2: Biological Survey Map Set**

AECOM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Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 3: Biological Survey Map Set**

AECOM


C:\Users\clementl\OneDrive - AECOM Directory\Projects\60569831_SMUD_Solano4102_Maps\60569831_SAC_GIS_104_Env_Survey_Maps.mxd 12/8/2022 ClementL.SAC

Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 4: Biological Survey Map Set**

AECOM


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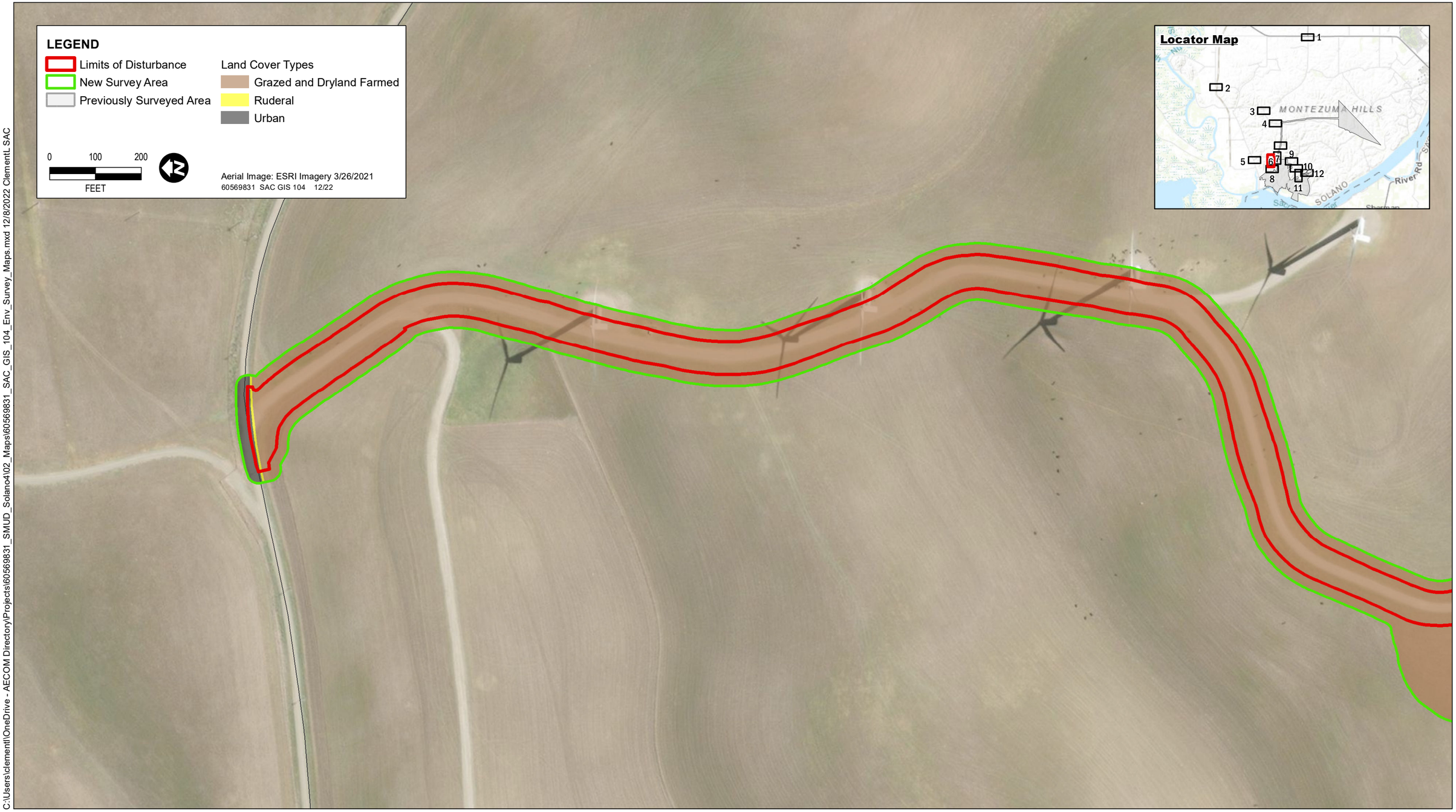
Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 5: Biological Survey Map Set**

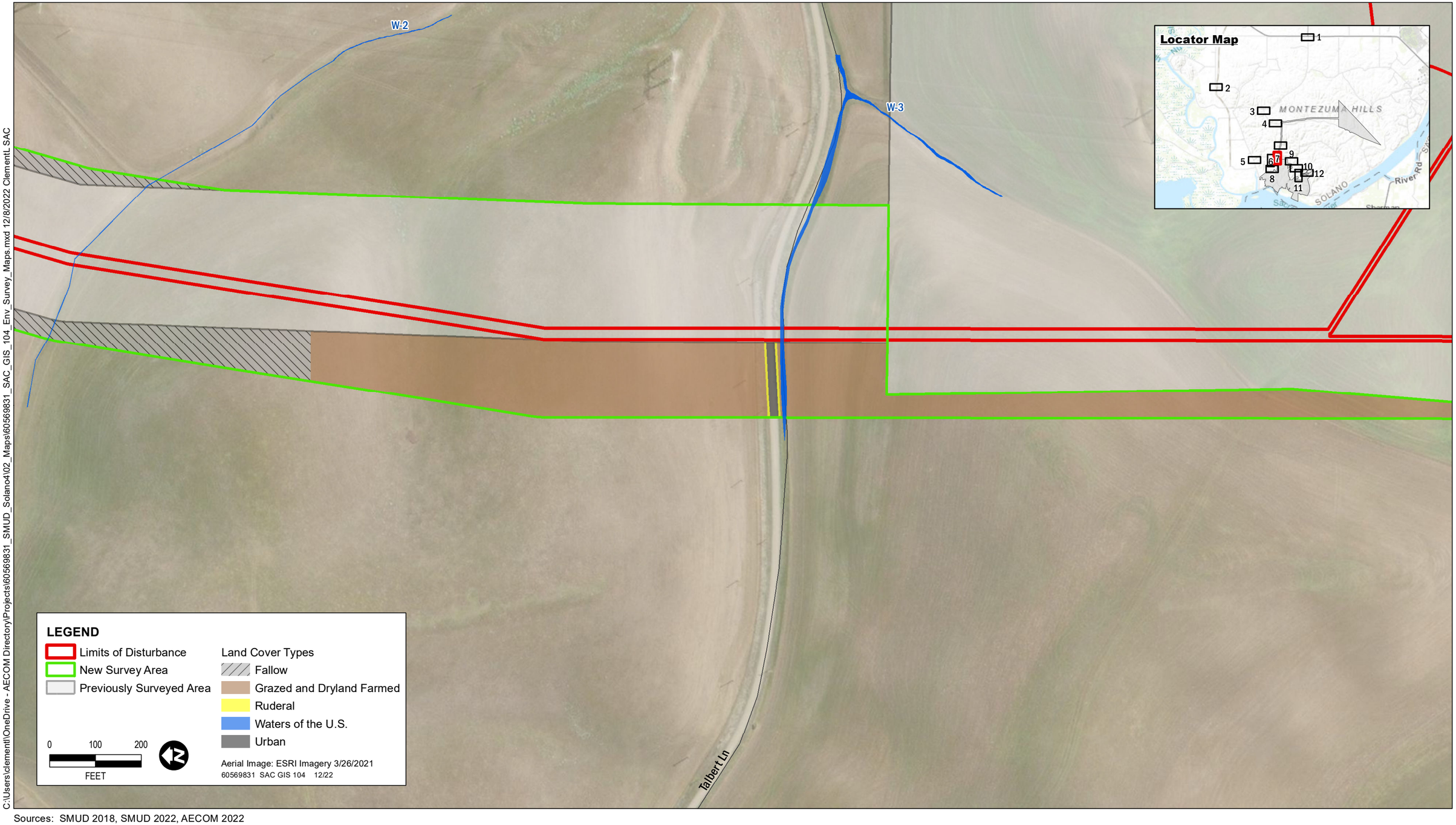
AECOM




Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 6: Biological Survey Map Set**

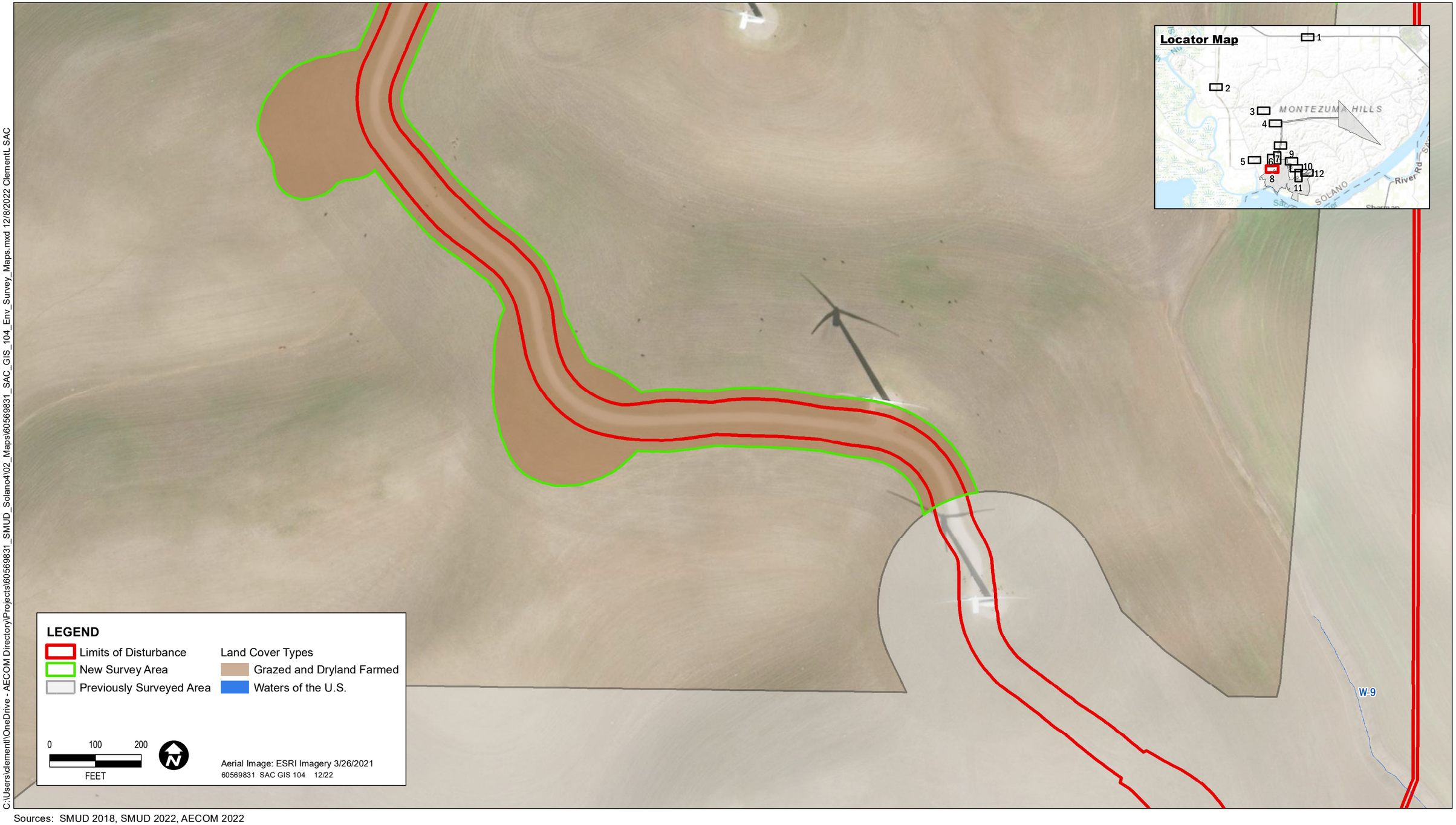
AECOM




Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 7: Biological Survey Map Set**

AECOM

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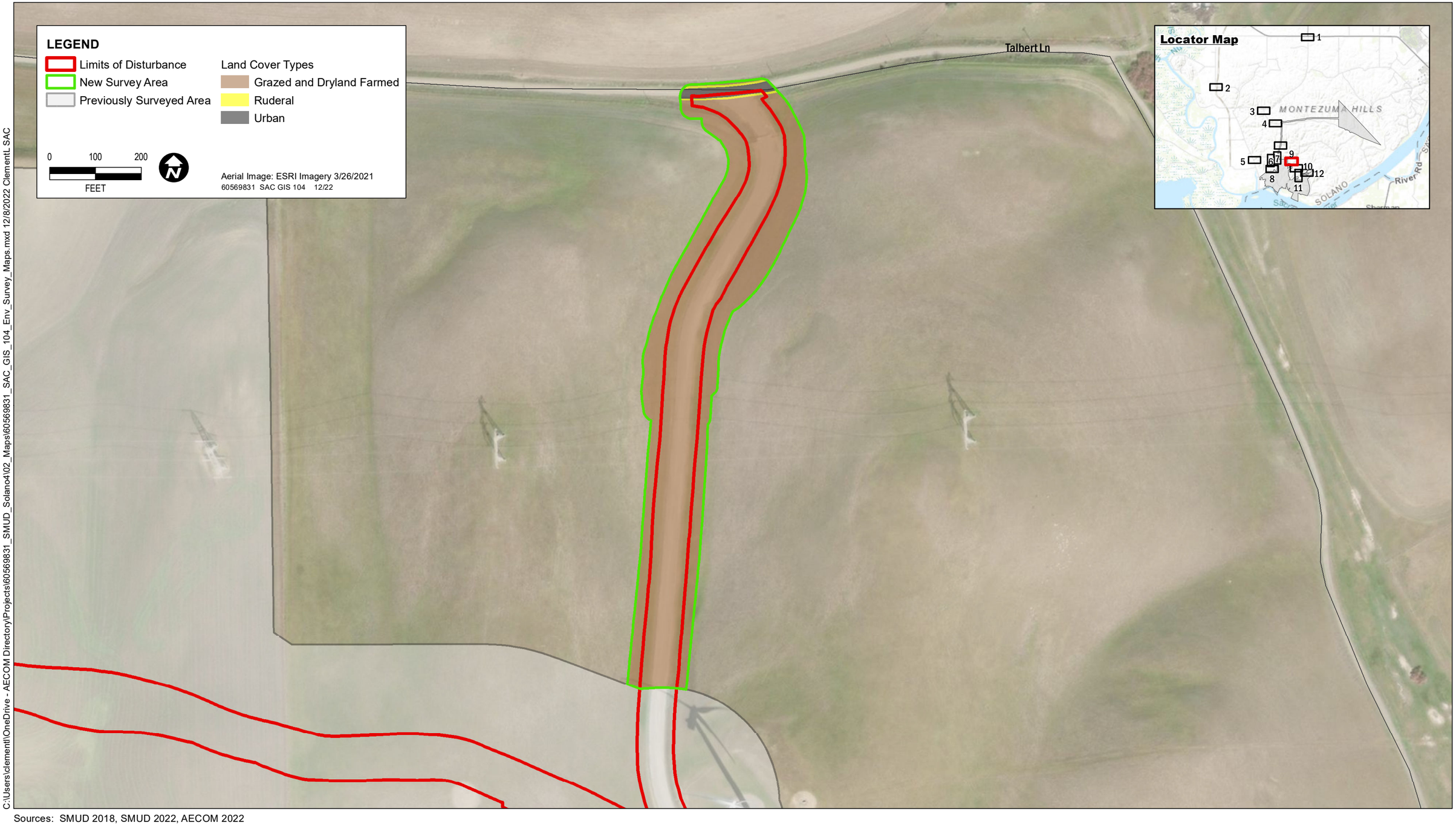
Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 8: Biological Survey Map Set**

AECOM

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Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 9: Biological Survey Map Set**

AECOM

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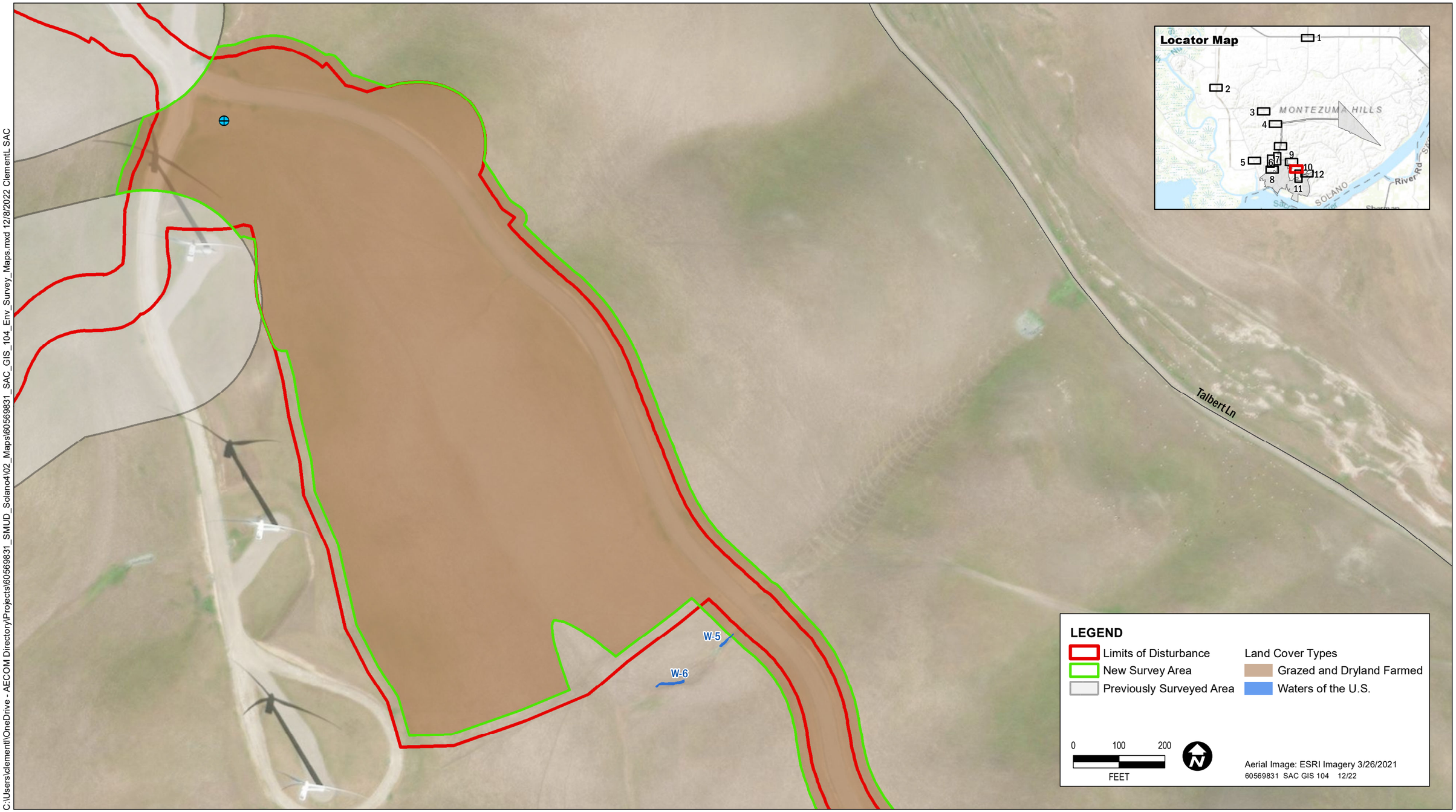
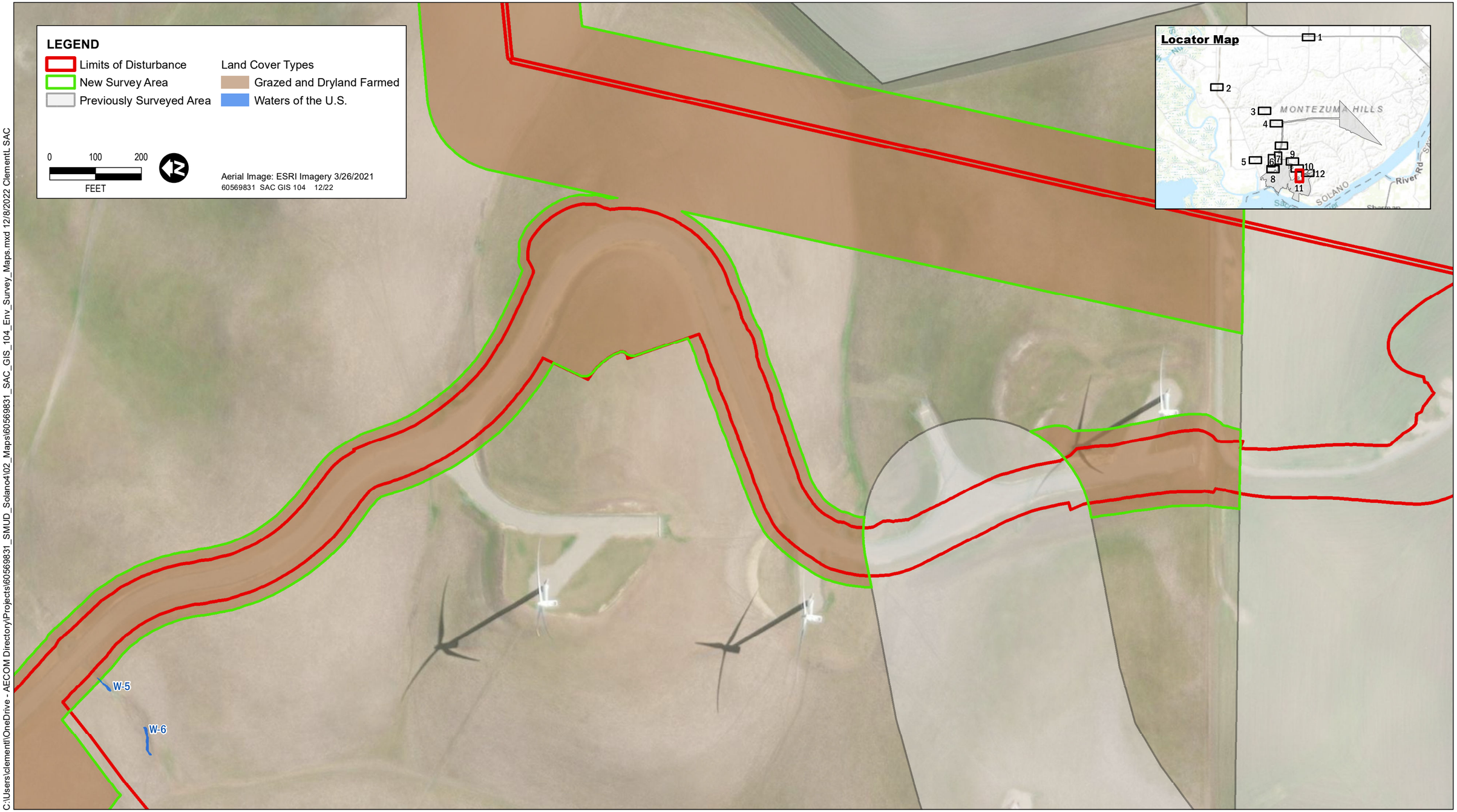



Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 10: Biological Survey Map Set**

AECOM

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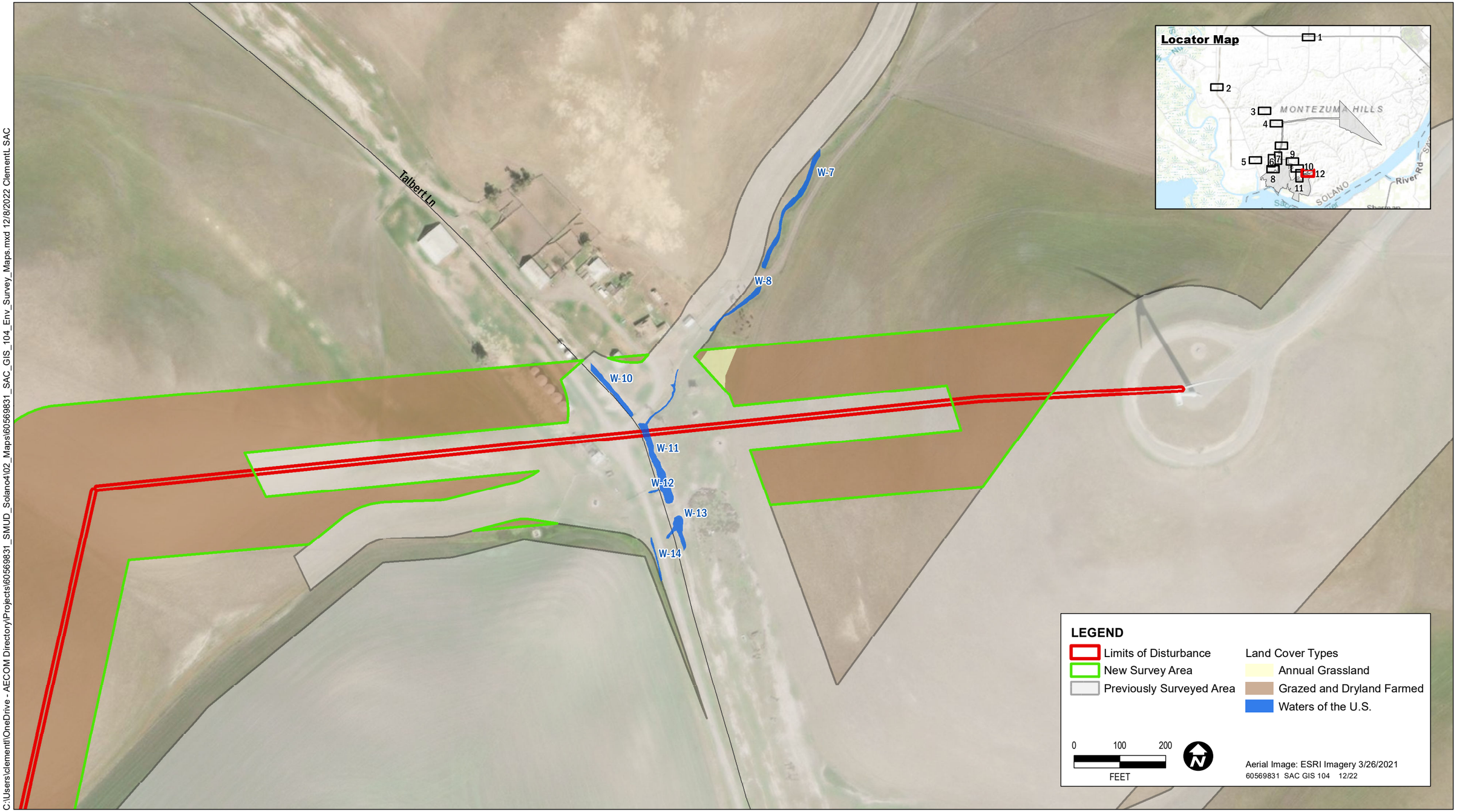
Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 11: Biological Survey Map Set**

AECOM

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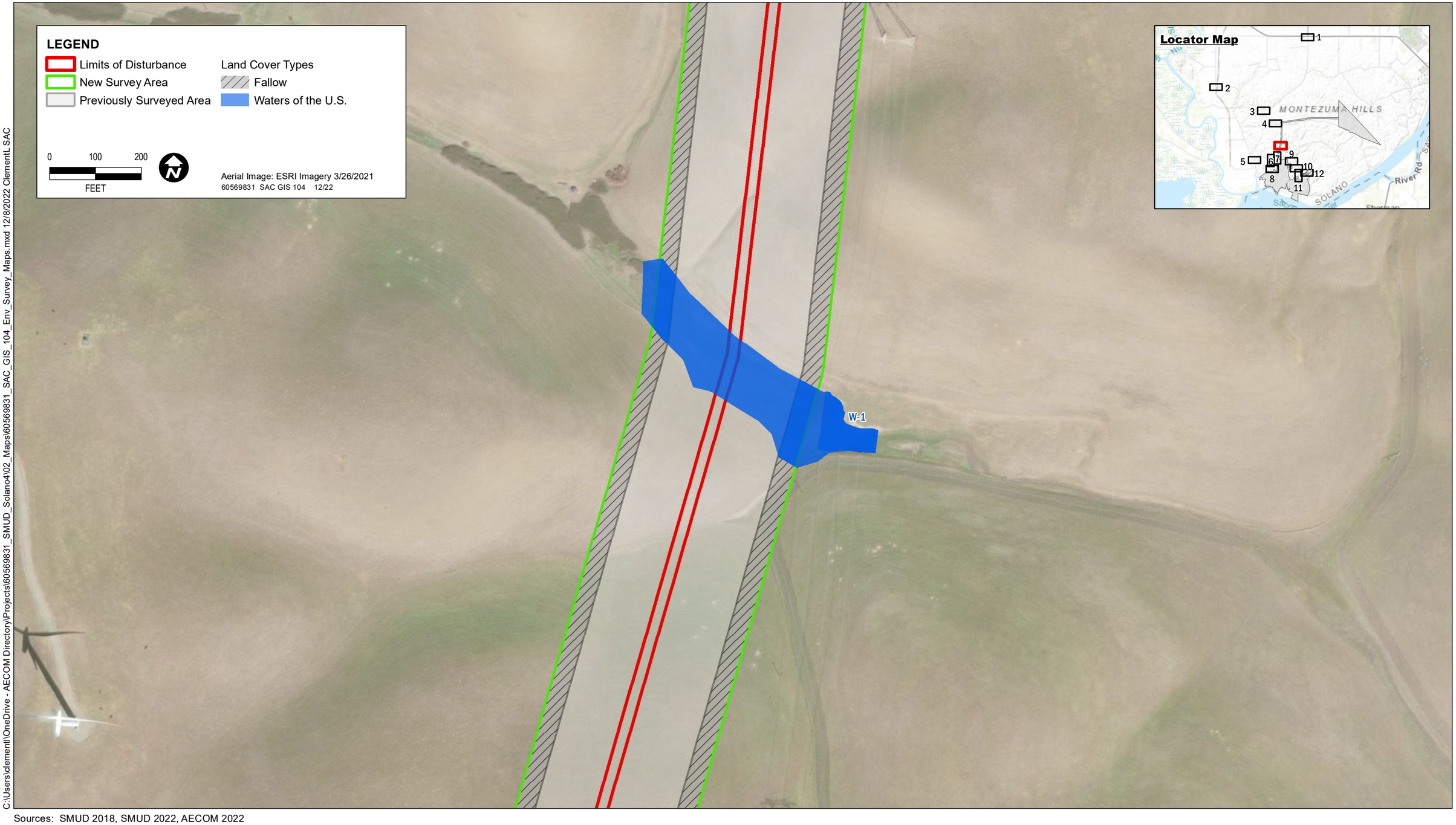
Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 12: Biological Survey Map Set**

AECOM

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Sources: SMUD 2018, SMUD 2022, AECOM 2022

**Figure 13: Biological Survey Map Set**

AECOM

# Appendix B

# Supplemental Cultural Resources Technical Study