

EXHIBIT J – Application for Site Certificate

JURISDICTIONAL WETLANDS

OAR 345-021-0010(1)(j)

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(j) Exhibit J. Information based on literature and field study, as appropriate, about waters of this state, as defined under ORS 196.800, including:

Rule Sections	Section	✓
(A) A description of all areas within the site boundary that might be waters of this state and a map showing the location of these features.	J.2	
(B) An analysis of whether construction or operation of the proposed facility would adversely affect any waters of this state.	J.3	
(C) A description of the significance of potential adverse impacts to each feature identified in (A), including the nature and amount of material the applicant would remove from or place in the waters analyzed in (B).	J.4	
(D) If the proposed facility would not need a removal-fill authorization, an explanation of why no such authorization is required for the construction and operation of the proposed facility.	J.5	
(E) If the proposed facility would need a removal-fill authorization, information to support a determination by the Council that the Oregon Department of State Lands should issue a removal-fill permit, including information in the form required by the Department of State Lands under OAR Chapter 141 Division 85.	NA	
(F) A description of proposed actions to mitigate adverse impacts to the features identified in (A) and the applicant's proposed monitoring program, if any, for such impacts.	J.7	

EXHIBIT J – Application for Site Certificate

JURISDICTIONAL WETLANDS

OAR 345-021-0010(1)(j)

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J.1 INTRODUCTION

Obsidian Solar Center LLC (Applicant) proposes to construct the Obsidian Solar Center (Facility) in Lake County, Oregon, with an alternating current generating capacity of up to 400 megawatts. Please refer to Exhibit B for Facility layout information and Exhibit C for Facility location information.

Exhibit J addresses the potential impacts of the proposed Facility on potential waters of the state within the analysis area, which the Project Order defines as the area within the site boundary. This exhibit provides the information required by Oregon Administrative Rules (OAR) 345-021-0010(1)(j): *Information based on literature and field study, as appropriate, about waters of this state, as defined under ORS 196.800.*

As described in Exhibit B, this Application for Site Certificate analyzes the potential impacts from two design scenarios: a stand-alone photovoltaic (PV) solar power generation build-out, and a PV solar power generation plus battery storage build-out. This exhibit analyzes the PV plus storage design scenario, which will likely have a greater potential impact on fish and wildlife resources than stand-alone PV due to the larger footprint and inclusion of battery storage enclosures.

As described in Exhibit B, the site boundary originally included four main Facility areas, referred to as Areas A through D, and associated generation tie (gen-tie) transmission line corridors. Applicant has since removed Area B from the site boundary to avoid potential impacts on cultural resources (refer to Exhibit S), big game winter range (refer to Exhibit P), potential pygmy rabbit (*Brachylagus idahoensis*) habitat (refer to Exhibit P), and large playas (refer to Appendix J-1) in that area. Applicant also removed Area C from the site boundary, as well as four gen-tie transmission line corridors that were associated with Areas B and C. This exhibit does not discuss Area B, Area C, or the removed gen-tie transmission line corridors further; however, the 2018 Waters Delineation Report provided in Appendix J-1 includes information about the removed areas. Refer to Appendix J-1 for more details regarding potential waters of the state in the removed areas.

Executive Summary

A total of 35 non-wetland waters (playas)—covering 13.61 acres—were detected and delineated within Area A, but no playas or any other waters occur in Area D or the gen-tie transmission line corridor. No wetlands occur on site. All playas are considered non-wetland waters due to the lack of hydric soil, qualifying hydric plant communities, and hydrology found within these areas. All of the on-site waters are internally drained. No streams, runoff channels, or other conveyances lead to or from the delineated features or from the Facility site. Applicant plans to construct solar modules on most or all playas within the site boundary, and the total fill will be about 14.8 cubic

yards. This is well below the Oregon Department of State Lands (DSL) threshold of 50 cubic yards of fill for needing removal-fill permit; therefore, the Facility will not require a removal-fill permit from DSL. Applicant submitted the Waters Delineation Report to DSL for review in October 2018, and DSL provided concurrence with the findings in a letter dated May 9, 2019 (see Appendix J-1). Applicant submitted the Waters Delineation Report to the United States Army Corps of Engineers (USACE) in November 2018; the USACE provided an Approved Jurisdictional Determination on April 4, 2019, which concluded that there are no federal jurisdictional waters (Waters of the United States) in the Site Boundary (see Appendix J-2).

Applicant proposes the following specific condition of approval for the Site Certificate:

1. Construction activities will be avoided, to the extent possible, within playas during periods of ponding or when surface soils are wet (e.g., in the days after a large rain event or snow melt).

J.2 DESCRIPTION AND LOCATION OF POTENTIAL WATERS OF THE STATE

OAR 345-021-0010(1)(j)(A) *A description of all areas within the site boundary that might be waters of this state and a map showing the location of these features.*

Response: A total of 35 non-wetland waters are present within the site boundary, all of which lie within Area A. These non-wetland waters occupy 13.61 acres total, range in size from 0.01 to 3.40 acres, and average 0.39 acres. Refer to Figure J-1 for locations of non-wetland waters delineated within the site boundary. No wetlands were detected within the site boundary. Applicant submitted the Waters Delineation Report to DSL for review in October 2018, and DSL provided concurrence with the findings in a letter dated May 9, 2019 (see Appendix J-1). Although most of the non-wetland waters support at least a very small amount of vegetation, the plant communities are not hydrophytic. In addition, the soils do not meet the definition of hydric soil. Refer to Appendix J-1 for a full description of potential waters of the state within the site boundary.

The non-wetland waters within the site boundary are best described as playas (also called playa lakes or dry lakes), which are unvegetated or lightly vegetated depressions in arid regions that exhibit seasonal to irregular flooding. Most playas remain dry for years and only support shallow inundation for a few days to a few weeks during large precipitation events or extended wet periods. They are typically underlain by stratified clay, silt, sand, and, commonly, soluble salts (USGS 2004). Playas within the site boundary were subdivided into those areas that support less than 5 percent plant cover (Playa Barrens) and those support ≥ 5 percent plant cover (Playa Mosaics) (Table J-1). The Playa Barrens within the site boundary are typically larger and more topographically depressed than the Playa Mosaics, but there are exceptions. Also, the Playa Barrens have a wider extent of nearly saturated surfaces and/or standing surface water, but there

are a few Playa Mosaics that support shallow standing water (generally less than 1 foot deep) as well. The Playa Mosaics typically support 10 to 30 percent total plant cover, mainly shrubs on round to elliptical mounds that are generally 2.0 to 4.0 feet diameter and 0.5 to 2.0 feet tall. The mounded areas were considered upland inclusions and were not included in acreage and volumetric fill calculation in Table J-1. The unvegetated playas or unvegetated portions of playas (Playa Barrens) are classified as Palustrine Unconsolidated Shore, Mud (PUS3) due to the i) unconsolidated substrates with less than 75 percent cover by stones, boulders, or bedrock, ii) less than 5 percent cover by vegetation, and/or iii) hydrologic regime that supports standing water at a seasonal to temporary time scale. The vegetated playas or vegetated portions of playas (Playa Mosaics) are classified as Palustrine Emergent, Persistent (PEM1) communities due to the same conditions described above in i) and iii), and the presence of vegetation above 5 percent with shrub cover ranging from 5 to 25 percent and herbaceous cover ranging from 5 to 10 percent.

Most of the playas within the site boundary are “soft playas,” meaning that they lack a cemented layer near the surface. As a result, these playas allow much greater rates of infiltration than “hard playas” and thereby may support inundation for relatively shorter periods, even during wet periods. Soft playas are characterized by a soft, often moist, friable surface that develops from capillary input of groundwater and subsequent deposition of evaporite minerals. The surfaces of this playa type are loosely compacted and may be damp to dry during the summer months (Brostoff et al. 2001). Despite the drier than normal conditions during the investigation, all playas within the site boundary exhibited a thin, moist layer at the soil surface.

Ordinary high water mark (OHWM) indicators occur within every playa in the site boundary. The OHWM heights range from about 0.5 to 2 feet above the playa bottoms. Indicators used to delineate the location of each OHWM are provided in Attachment B of Appendix J-1. Each playa exhibits polygonal mud cracks over more than 50 percent of the ground surface. Mud cracks form when fine-grained sediments lose their contained water (Brostoff et al. 2001) and are also a primary indicator of wetland hydrology (indicator B10) in the Arid West (USACE 2010). However, as stated in the Arid West Regional Supplement:

Surface soil cracks are often seen in recent fine sediments and in concave landscape positions where water has ponded long enough to destroy surface soil structure, such as in seasonally ponded depressions, lake fringes, tidal flats, and floodplains. Use caution, however, as they may also occur in temporary ponds and puddles in nonwetlands; these situations are easily distinguished by the absence of hydrophytic vegetation and/or hydric soils.

Although the playas within the site boundary exhibit mud cracks that are sometimes indicative of wetland hydrology, the vegetation and soils do not support their classification as wetlands. The playas delineated within the site boundary are either too sparsely vegetated to qualify as wetlands

(Playa Barrens) or are primarily vegetated with non-hydrophytic species (Playa Mosaics). Furthermore, soils observed within the delineated playas do not meet hydric soil criteria.

While some playas may be classified as wetlands under certain conditions, playas are typically non-wetland waters (Brostoff et al. 2001). For example, where groundwater is generally at or near the soil surface, playas may exhibit the three wetland parameters (hydrophytic vegetation, hydric soil, and wetland hydrology) described above. But more commonly, playas are persistently dry due to an erratic hydrologic regime and the lack of a shallow water table. Between wet periods, the surface of a playa typically becomes desiccated, forming polygonal cracks and fissures in clay-rich sediment (USGS 2004).

Most of the playas within the site boundary belong to the Palustrine type according to the Cowardin classification because they are i) less than 20 acres, ii) lack active wave-formed or bedrock shoreline features, and iii) support water depths in the deepest part of the basin less than 2 meters (6.6 feet) at low water conditions (Cowardin et al. 1979).

Table J-1 Playa Barrens and Playa Mosaics within the Site Boundary and Expected Fill Volumes

Feature Name	Total Area of Feature (acres)^(a)	Expected Volume of Fill (cubic yards)^(b)
<i>Playa Barrens</i>		
Playa-08	0.74	0.82
Playa-11	3.40	3.77
Playa-16	0.09	0.10
<i>Subtotals</i>	4.23	4.69
<i>Playa Mosaic</i>		
Playa-09	0.62	0.69
Playa-10	0.83	0.92
Playa-12	0.25	0.28
Playa-13	0.17	0.19
Playa-14	0.76	0.84
Playa-15	1.57	1.74
Playa-24	0.17	0.19
Playa-25	0.10	0.11
Playa-26	0.08	0.09
Playa-27	0.06	0.07
Playa-28	0.04	0.04
Playa-29	0.02	0.02
Playa-30	0.03	0.03

Table J-1 Playa Barrens and Playa Mosaics within the Site Boundary and Expected Fill Volumes

Feature Name	Total Area of Feature (acres)^(a)	Expected Volume of Fill (cubic yards)^(b)
Playa-31	0.02	0.02
Playa-32	0.03	0.03
Playa-33	0.79	0.88
Playa-34	0.03	0.03
Playa-35	0.02	0.02
Playa-36	0.01	0.01
Playa-37	0.02	0.02
Playa-38	0.01	0.01
Playa-39 ^(c)	0.12	0.00
Playa-40	0.12	0.14
Playa-41	0.07	0.08
Playa-42	0.04	0.05
Playa-43 ^(c)	0.13	0.01
Playa-44	0.09	0.10
Playa-45 ^(c)	0.10	0.10
Playa-46	1.35	1.50
Playa-47	0.09	0.10
Playa-48	0.95	1.05
Playa-49	0.69	0.76
<i>Subtotals</i>	9.38	10.11
Total	13.61	14.80

Notes:

- ^(a) Acreages for playa mosaics account for the percent of each delineated playa feature that consists of upland inclusion; acreages were adjusted to remove upland inclusions. See revised Table E-1 in Appendix J-1 for details.
- ^(b) Volume of fill is conservatively calculated assuming each I-beam post is 11 feet long (inserted up to 8 feet deep into the ground, with 3 additional feet to account for all ordinary high water mark heights, which are all 2 feet or less), has two 4-inch “flanges” and one 6-inch “web,” and has surfaces up 0.5 inches thick. Additionally, the calculations assume 56 posts per acre.
- ^(c) This playa mosaic is located partially within a Facility avoidance area. Only the portion outside the avoidance area will have permanent impacts (i.e., presence of I-beams to support solar modules), and are included in the volumetric calculation. In Playa-39, 0.12 acres are omitted from fill calculations; in Playa-43, 0.12 acres are omitted from fill calculations; and in Playa-45, 0.01 acres are omitted from fill calculations.

J.3 ANALYSIS OF POTENTIAL IMPACTS TO POTENTIAL WATERS OF THE STATE

OAR 345-021-0010(1)(j)(B) *An analysis of whether construction or operation of the proposed facility would adversely affect any waters of this state.*

Response: Construction and operation of the Facility will have temporary and permanent (i.e., life of the Facility) impacts on potential waters of the state (i.e., playas) within the site boundary, specifically in Area A, but these impacts will not rise to the level of significant nor require a removal/fill permit from DSL. Applicant removed Area B from consideration for development, in part to avoid potential impacts on the relatively large playas comprising 136 acres (refer to Exhibit B for further discussion of removal of Area B and Appendix J-1 for description of waters in Area B). There are 13.61 acres of playas remaining within the site boundary (refer to Table J-1); however, 0.25 acres of three playas (combined) lie within areas that will be avoided during construction and operation to prevent impacts on cultural resources.

Some playas are located in areas that will not contain solar modules, inverter pads, or other permanent Facility components; therefore, permanent fill will not occur in these locations. However, for purposes of analyzing impacts conservatively and to allow greater flexibility when finalizing the final Facility design, Applicant assumes that all playas that are not located in a cultural resource avoidance area will contain Facility components. As such, Applicant assumes that Facility components will be constructed within the 13.36 acres of playas that do not lie within the abovementioned avoidance areas. Direct impacts on the soils within the playas will be limited to the metal I-beam posts that support each row of solar modules, which will be driven into the soil to a depth of up to 8 feet. Cables will be suspended aboveground within playa boundaries to avoid impacts from trenching. No excavation or grading will be necessary in the playas (other than pile driving the I-beam posts) to install the solar PV modules, and normal water flow and ponding should continue after installation. Applicant conservatively included an additional 3 feet of I-beam length (for 11 feet total) in the volumetric fill calculations to account for all possible OHWM values for the on-site playas (all playas have OHWM of about 2 feet or lower). Table J-1 presents the per-playa and total volumetric fill necessary to install solar PV modules within playas.

Vehicle, equipment, and foot traffic may also have temporary, direct impacts on playas during construction and operation of the Facility. Applicant will employ as few personnel, vehicles, and equipment as necessary to construct solar PV modules within playas to minimize traffic-related impacts. Likewise, construction activities will be avoided, to the extent possible, within playas during periods of ponding or when surface soils are wet (e.g., in the days after a large rain event or snow melt). During dry periods, the surfaces of the playas are firm, and given the expected limited presence of personnel, vehicles, and equipment, traffic-related impacts on playa soils will be minimal to non-existent. During operation, foot and vehicle traffic will be considerably less than during construction, and Applicant will avoid maintenance activities within playas to the

extent practicable. Facility retirement impacts will be similar to construction in nature, but will require fewer vehicles, equipment, and personnel.

The presence of solar PV modules during construction and operation will shade portions of the playas. The shaded areas could reduce evapotranspiration of ponded water and potentially extend water inundation over time. Shade could also potentially facilitate the introduction and growth of more shade-tolerant plants within the playas. Because the solar modules will be installed in rows approximately 15 feet apart, the panels will only cover about 30 percent of the ground surface within the site boundary, which correlates to about 4.01 acres of playa that will be covered by panels. Because each row of panels will be mounted 4 feet off the ground on a single-axis tracker that rotates 60 degrees to the east and west, the actual shaded areas will change throughout the day. Therefore, shading will affect only a minor portion of the acreage in which solar PV modules will be installed within the playas. The shaded areas will shift throughout the day, and full shading will likely be limited to portions of the areas directly under the panels. Areas between the rows of modules and some areas near the edges of modules may be subject to shading for small portions of the day or may not experience shading at all. For this reason, playas may experience slightly longer periods of ponding, but ponding periods are not likely to change significantly. In addition, the playas would likely maintain the current difficult growing conditions and shade tolerant vegetation would not likely be established.

While it is possible that other potential Facility-related impacts on playas within the site boundary may occur due to accidental chemical spills or inadvertent introduction of non-native plant species, the likelihood of such impact is low given the measures that Applicant will implement. Applicant will implement a Spill Management Plan to minimize the potential for chemical spill impacts, and will restrict refueling and maintenance of vehicles and the storage of hazardous chemicals to within at least 100 feet of playas to minimize the risk of spills in or near playas. The Revegetation and Noxious Weed Control Plan (included as Appendix P-3 of Exhibit P) will minimize potential introduction or spread of non-native plants within playas. With the implementation of the plans noted above, the potential for impacts on playas associated with chemical spills and noxious weeds will be minimal.

The construction, operation, and retirement of the Facility will not have significant adverse impacts on potential waters of the state given Applicant's efforts to avoid or minimize activities within playas, and the implementation measures presented in Section J.7.

J.4 DESCRIPTION OF THE SIGNIFICANCE OF POTENTIAL IMPACTS TO POTENTIAL WATERS OF THE STATE

OAR-345-021-0010(1)(j)(C) *A description of the significance of potential adverse impacts to each feature identified in (A), including the nature and amount of material the applicant would remove from or place in the waters analyzed in (B).*

Response: Applicant will install solar PV modules within portions of all 35 playas within the site boundary. Section J.3 describes the nature of the impacts on the playas. Construction of the Facility will not require removal of material from the playas; however, construction of the solar PV modules will require placing metal I-beam posts into the playas via pile driving. No additional materials will be placed within the playas. Table J-1 lists all playa features within the site boundary and the expected volume of fill for each.

J.5 IF AUTHORIZATION OF REMOVAL-FILL IS NOT REQUIRED

OAR 345-021-0010(1)(j)(D) *If the proposed facility would not need a removal-fill authorization, an explanation of why no such authorization is required for the construction and operation of the proposed facility.*

Response: Applicant will not need a removal-fill authorization from DSL because construction and operation of the Facility will require less than 50 cubic yards of fill to potential waters of the state (DSL 2016). Construction of solar panels on top of I-beam posts will remove the need to excavate playas for installation and will dramatically reduce removal/fill of playas. A total of approximately 14.8 cubic yards of material (I-beams) will be placed in playas (refer to Table J-1). In addition, the USACE provided an Approved Jurisdictional Determination on April 4, 2019, which concluded that there are no federal jurisdictional waters (Waters of the United States) in the Site Boundary; therefore, federal authorization of removal-fill is also not required (see Appendix J-2).

J.6 SUPPORT FOR ISSUANCE OF REMOVAL-FILL PERMIT

OAR 345-021-0010(1)(j)(E) *If the proposed facility would need a removal-fill authorization, information to support a determination by the Council that the Oregon Department of State Lands should issue a removal-fill permit, including information in the form required by the Department of State Lands under OAR Chapter 141 Division 85.*

Response: Based on the fill volume of approximately 14.8 cubic yards, Applicant will not need a removal-fill authorization (refer to Section J.5).

J.7 PROPOSED IMPACT MITIGATION AND MONITORING

OAR 345-021-0010(1)(j)(F) *A description of proposed actions to mitigate adverse impacts to the features identified in (A) and the applicant's proposed monitoring program, if any, for such impacts.*

Response: Applicant will implement the measures listed below to avoid or minimize impacts on the playas described in Section J.2. Applicant does not propose a monitoring program.

Limit Disturbance Areas: Applicant will limit soil disturbance within waters of the state (i.e., playas) to using pile-driven I-beam posts to support the solar PV modules, as feasible. No grading or other excavation will occur within playas. Main construction or operation travel routes will not be placed through playas, if possible.

Avoid Wet Periods: To reduce tire rutting in playas, Facility construction and operation personnel will avoid work within playas during periods of ponding or when surface soils are wet, unless required for safety reasons.

Minimize Soil Compaction: Applicant will minimize compaction of soils and rutting through appropriate use of construction equipment (e.g., low ground-pressure equipment and temporary construction mats).

Erosion Control BMPs/Measures: Applicant will use silt fencing, hay bales (certified weed-free), fiber rolls, or other methods to avoid or reduce erosion and sediment transport, as described in the Erosion and Sediment Control Plan (refer to Appendix I-1 of Exhibit I).

Spill Management Plan: Applicant will prepare a Spill Management Plan for the construction, operation, and retirement of the Facility before each phase. Every construction or maintenance crew will carry appropriate emergency spill response equipment, as described in the Spill Management Plan. If a spill occurs, the crew will temporarily halt work to eliminate the source of the spill and contain and clean up the material and before resuming work.

Restrict Refueling and Maintenance Areas: Applicant will restrict the refueling and maintenance of vehicles and the storage of fuels and hazardous chemicals to within at least 100 feet of playas or other waters, and groundwater wells, or as otherwise required by federal, state, or local regulations.

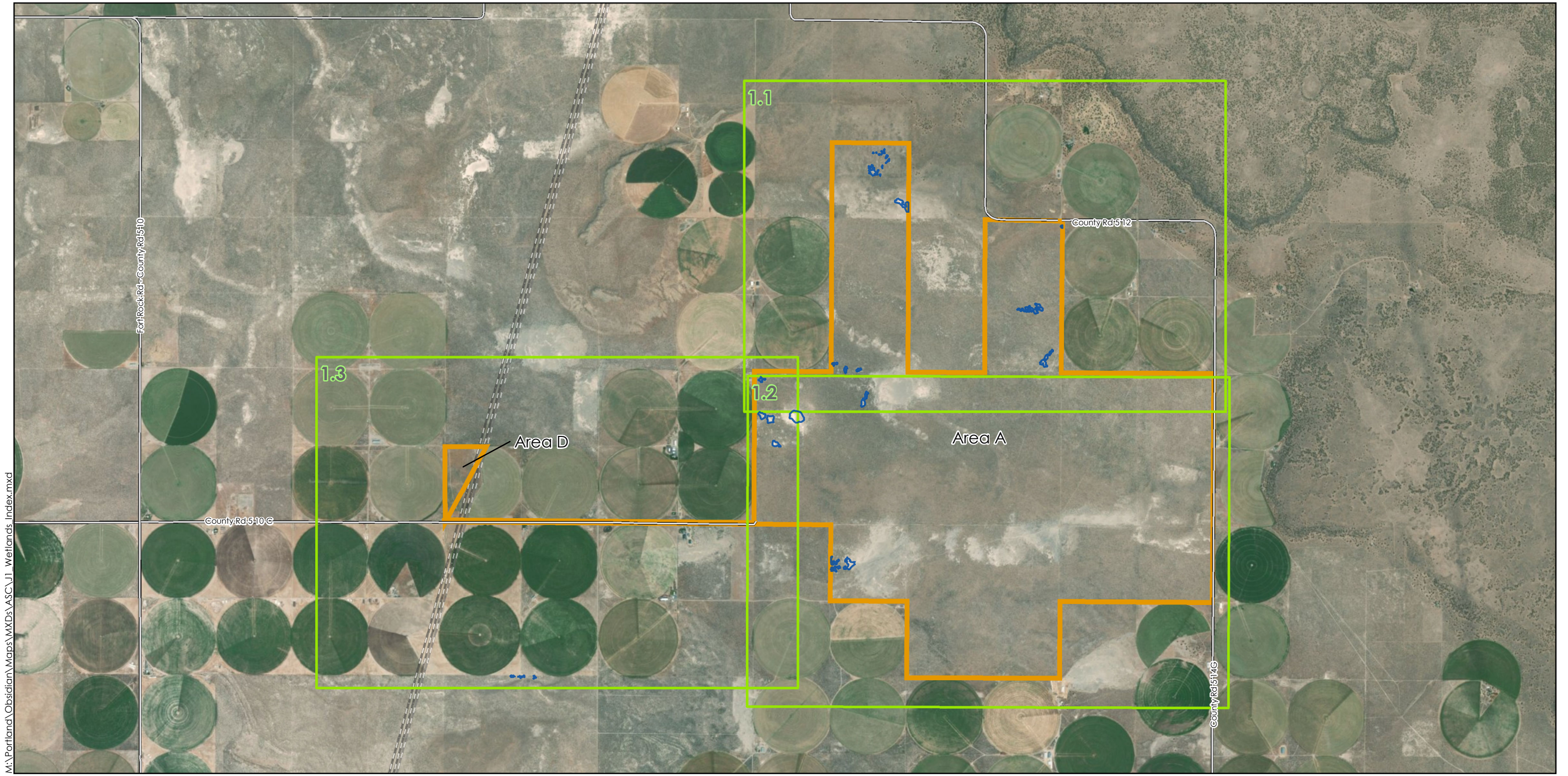
Demarcation of Waters Boundaries: During all phases, the boundaries of all playas will be clearly demarcated to ensure that Facility personnel avoid these features except as needed to complete necessary activities.

Noxious Weed Control: Applicant will identify, control, and minimize the spread of non-native invasive species and noxious weeds, to the extent practicable, as described in the Revegetation and Noxious Weed Control Plan (included as Appendix P-3 of Exhibit P). All vehicles and construction equipment will be cleaned of noxious weed seeds or other plant parts before arriving on the Facility site. Vehicle washing will occur in designated areas within the site boundary only.

Environmental Monitor: A full-time or part-time environmental monitor will be on site during construction to ensure that measures are being implemented successfully.

J.8 REFERENCES

- Brostoff, William, Lichvar, Robert, and Sprecher, Steven. 2001. *Delineating Playas in the Arid Southwest; A Literature Review*. Department of the Army, Corps of Engineers.
- Cowardin LM, Carter V, Golet FC, LaRoe ET. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish & Wildlife Service Pub. FWS/OBS-79/31, Washington, DC.
- _____. 2016. *Removal-Fill Guide – A Guide to the Removal-Fill Permit Process*. Salem, Oregon. https://www.oregon.gov/dsl/WW/Documents/Removal_Fill_Guide.pdf Accessed June 14, 2018.
- Esri. 2019. “World Imagery” [basemap]. Scale Not Given. <https://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08febac2a9>. Accessed October 10, 2019.
- USACE (U.S. Army Corps of Engineers). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region V2.0*. ERDC/CRREL TR-08-28. Environmental Laboratory. U.S. Army Corps of Engineers. Vicksburg, Mississippi.
- USGS (U.S. Geological Survey). 2004. “Playas.” USGS Western Region Geology and Geophysics Science Center <http://pubs.usgs.gov/of/2004/1007/playas.html> Accessed July 6, 2018.



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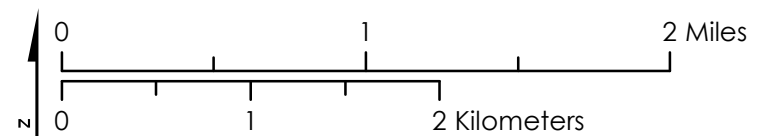
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-  Site Boundary
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-  PGE Transmission Line (500kV)
-  Highways/Roads

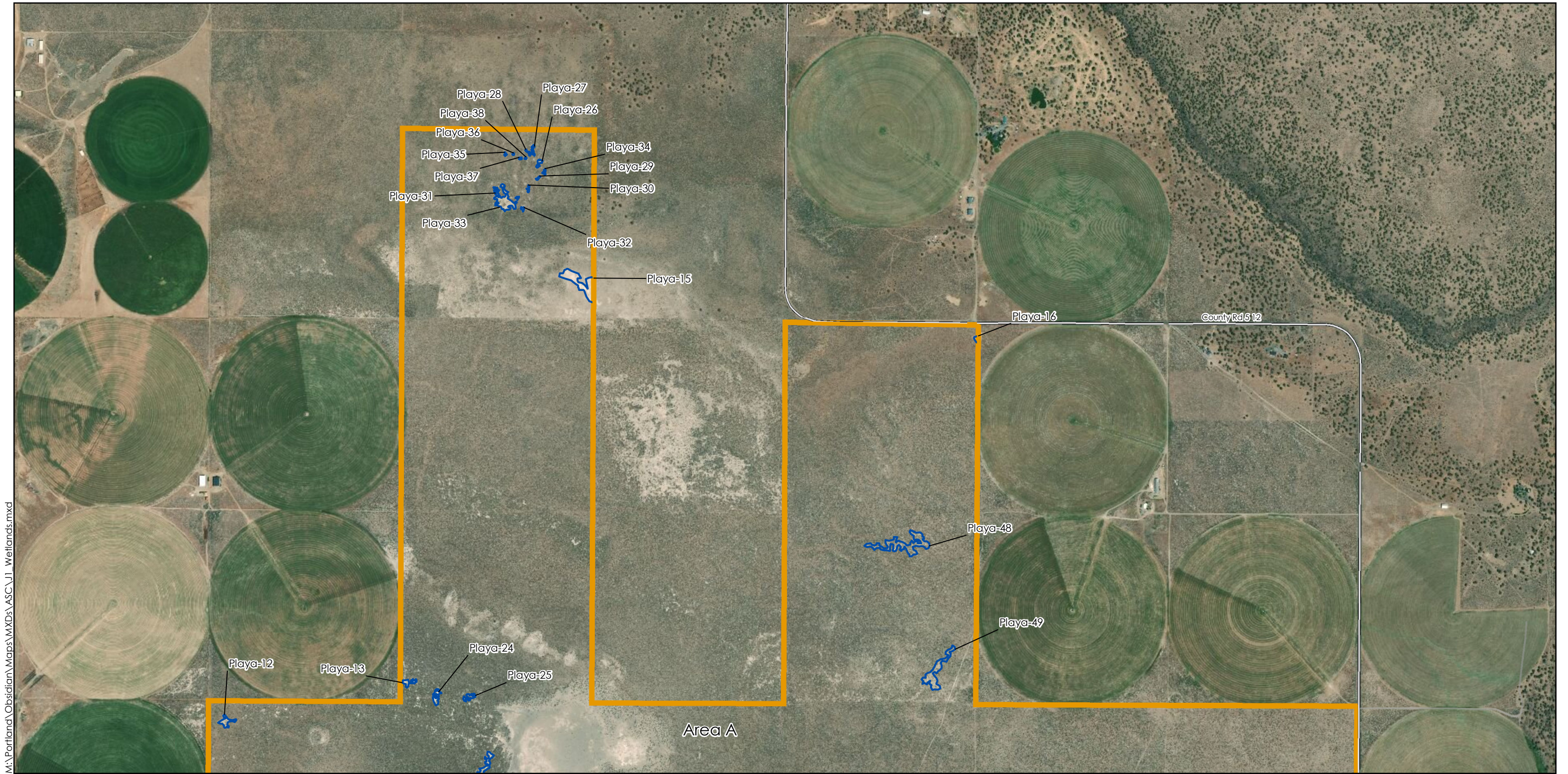
Figure J-1
Locations of Non-Wetland Waters
Tile Index

Obsidian Solar Center

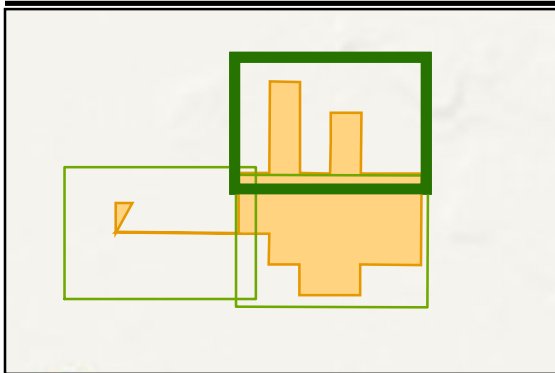
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Obsidian Solar Center LLC





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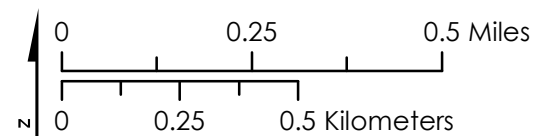
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-  Site Boundary

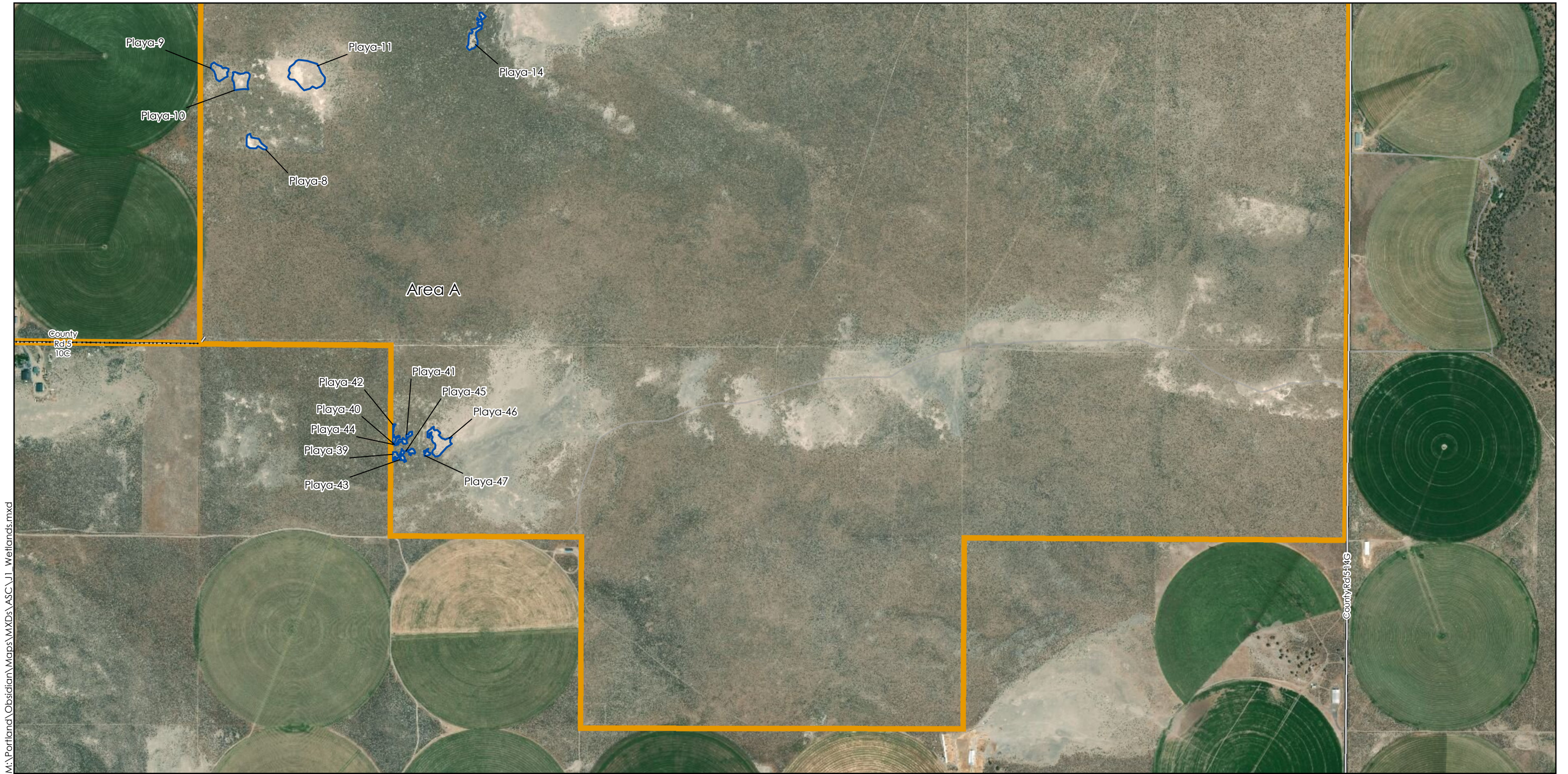
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Locations of Non-Wetland Waters

Obsidian Solar Center

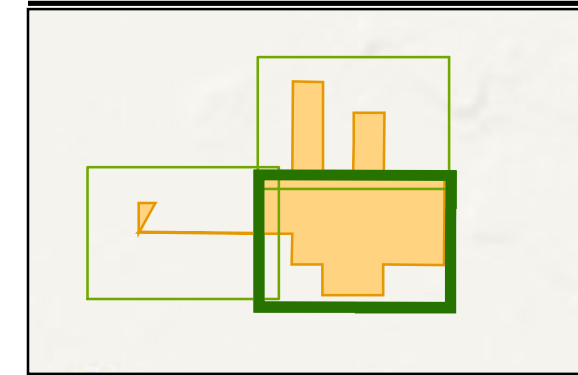
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Obsidian Solar Center LLC





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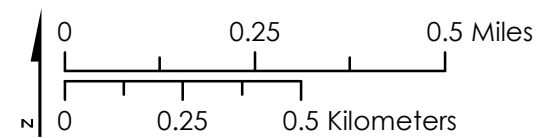
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-  Gen-tie Transmission Line

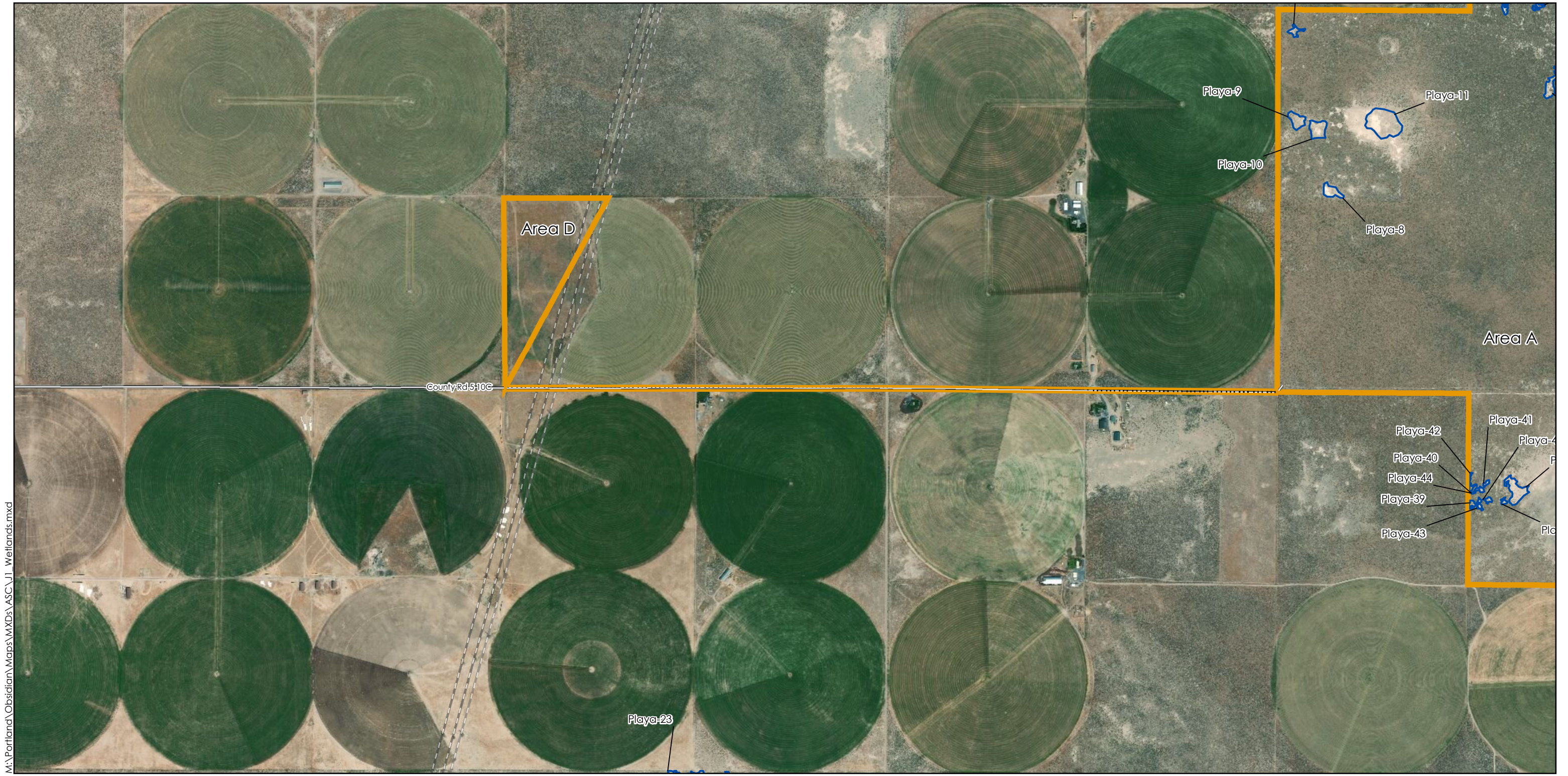
Figure J-1.2
Locations of Non-Wetland Waters

Obsidian Solar Center

October 2019

Obsidian Solar Center LLC





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Figure J-1.3
Locations of Non-Wetland Waters

Obsidian Solar Center

October 2019

Obsidian Solar Center LLC

Sources: Esri 2019

Appendix J-1

2018 Waters Delineation Report



Oregon

Kate Brown, Governor

Department of State Lands

775 Summer Street NE, Suite 100

Salem, OR 97301-1279

(503) 986-5200

FAX (503) 378-4844

www.oregon.gov/dsl

State Land Board

May 9, 2019

Obsidian Solar Center LLC
Attn: Michelle Slater
5 Centerpointe Drive Suite 250
Lake Oswego, OR 97035

Kate Brown
Governor

Bev Clarno
Secretary of State

Re: WD # 2018-0581 Wetland Delineation Report for the
Obsidian Solar Center, Lake County;
Full and Partial Tax Lots in T 26S R 15E Sections 13 and 24 and
T 26S R 16E Sections 5, 8, 9 and 15-22 (See Attachment 1);

Tobias Read
State Treasurer

Dear Ms. Slater:

The Department of State Lands has reviewed the wetland delineation report prepared by Ecology and Environment, Inc. for the site referenced above. Please note that study areas D and E include only portions of the tax lots described in Attachment 1 (refer to the attached maps). Based upon the information presented in the report and additional information submitted upon request, we concur with the wetland and waterway boundaries as mapped in revised Figures 2 and 2.1-2.11 of the report. Please replace all copies of the preliminary wetland maps with these final Department-approved maps.

Within the three study areas (A, D, and E), 35 playa lakes (Playas 8-15 and 24-49) were identified. The playas are subject to the permit requirements of the state Removal-Fill Law. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more below the ordinary high-water line (OHWL) of a non-wetland water (or the 2-year recurrence interval flood elevation if OHWL cannot be determined). No wetlands were identified within the three study areas.

The playas are grouped in the attached Table E-1 as either playa barrens or playa mosaics, the latter containing areas of upland that are patchy and interspersed with waters. The table summarizes the percentage of each mosaic that is *upland* and therefore not jurisdictional. This information should be used to adjust removal/fill volumes for impacts within individual mosaics.

This concurrence is for purposes of the state Removal-Fill Law only. Federal or local permit requirements may apply as well. The Army Corps of Engineers will determine jurisdiction for purposes of the Clean Water Act. We recommend that you attach a copy of this concurrence letter to both copies of any subsequent joint permit application to speed application review.

Please be advised that state law establishes a preference for avoiding impacts to wetland and other waters. Because measures to avoid and minimize impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. Please phone me at 503-986-5300 if you have any questions.

Sincerely,



Lynne McAllister
Jurisdiction Coordinator

Approved by



Peter Ryan, PWS
Aquatic Resource Specialist

Enclosures

ec: Ilja Nieuwenhuizen, Ecology & Environment, Inc.
Lake County Planning Department
Benny Dean, Corps of Engineers
Bethany Harrington, DSL
Kellen Tardaewether, ODOE

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

Fully completed and signed report cover forms and applicable fees are required before report review timelines are initiated by the Department of State Lands. Make checks payable to the Oregon Department of State Lands. To pay fees by credit card, go online at: <https://apps.oregon.gov/DSL/EPS/program?key=4>.

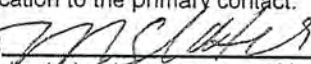
Attach this completed and signed form to the front of an unbound report or include a hard copy with a digital version (single PDF file of the report cover form and report, minimum 300 dpi resolution) and submit to: **Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279**. A single PDF of the completed cover form and report may be e-mailed to: **Wetland_Delineation@dsl.state.or.us**. For submittal of PDF files larger than 10 MB, e-mail DSL instructions on how to access the file from your ftp or other file sharing website.

Contact and Authorization Information

<input checked="" type="checkbox"/> Applicant <input type="checkbox"/> Owner Name, Firm and Address: Obsidian Solar Center LLC 5 Centerpointe Drive Suite 250 Lake Oswego, Oregon 97035	Business phone # (503) 245-8800 Mobile phone # (optional) E-mail: mslater@obsidianrenewables.com
--	--

<input type="checkbox"/> Authorized Legal Agent, Name and Address (if different): Michelle Slater Centerpointe Drive Suite 250 Lake Oswego, Oregon 97035	Business phone # (503) 245-8800 Mobile phone # (optional) E-mail: mslater@obsidianrenewables.com
---	--

I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact.

Typed/Printed Name: Michelle Slater Signature: 
Date: 10/12/2018 Special instructions regarding site access: coordinate landowner approval before accessing.

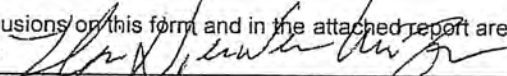
Project and Site Information

Project Name: Obsidian Solar Center	Latitude: <u>43.307998-43.315395</u> Longitude: <u>-120.799289 -120.828609</u> decimal degree - centroid of site or start & end points of linear project
Proposed Use: Solar photovoltaic power generation project.	Tax Map # see Attachment 1 Tax Lot(s) see Attachment 1
Project Street Address (or other descriptive location): County Road 5-14G (Oil Dri Road) near Fort Rock, Oregon 97638	Tax Map # see Attachment 1 Tax Lot(s) see Attachment 1
City: Near Fort Rock County: Lake	Township 26S Range 15E/16E Section see Att.1 QQ Use separate sheet for additional tax and location information
	Waterway: none River Mile: none

Wetland Delineation Information

Wetland Consultant Name, Firm and Address: Ilja Nieuwenhuizen Ecology & Environment, Inc. 333 SW Fifth Ave, Suite 600 Portland, Oregon 97204	Phone # (503) 248-5600 Mobile phone # (if applicable) E-mail: inieuwenhuizen@ene.com
--	--

The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge.

Consultant Signature:  Date: 10/12/2018

Primary Contact for report review and site access is Consultant Applicant/Owner Authorized Agent

Wetland/Waters Present? Yes No Study Area size: 4,080 Total Wetland Acreage: Wetland 0, Playa 17.2

Check Applicable Boxes Below

<input type="checkbox"/> R-F permit application submitted	<input type="checkbox"/> Fee payment submitted \$ <u>EFSC</u> project
<input type="checkbox"/> Mitigation bank site	<input type="checkbox"/> Fee (\$100) for resubmittal of rejected report
<input type="checkbox"/> Industrial Land Certification Program Site	<input type="checkbox"/> Request for Reissuance. See eligibility criteria. (no fee) DSL # _____ Expiration date _____
<input type="checkbox"/> Wetland restoration/enhancement project (not mitigation)	
<input type="checkbox"/> Previous delineation/application on parcel If known, previous DSL # _____	<input type="checkbox"/> LWI shows wetlands or waters on parcel Wetland ID code _____

For Office Use Only

DSL Reviewer: LM Fee Paid Date: ___ / ___ / ___ DSL WD # 2018-0681
Date Delineation Received: 9/18/18 Scanned: Electronic: DSL App.# _____

WD2018-0581

Obsidian Solar Center –

Revised Table E-1 of Appendix J-1 Waters Delineation Report

May 6, 2019: Columns added to report percent water and percent upland of each playa mosaic feature.

Table E-1 Playa Barrens and Playa Mosaics in the Study Area (revised 5/7/2019)

Feature Name	Area (acres)	Percent Upland within Delineated Feature ¹	Adjusted Area Consisting of Waters (acres) ²
<i>Playa Barrens</i>			
Playa-08	0.74	0	0.74
Playa-11	3.40	0	3.40
Playa-16	0.09	0	0.09
<i>Subtotals</i>	4.2		4.2
<i>Playa Mosaic</i>			
Playa-09	0.82	25	0.62
Playa-10	1.10	25	0.83
Playa-12	0.33	25	0.25
Playa-13	0.20	15	0.17
Playa-14	0.95	20	0.76
Playa-15	1.75	10	1.57
Playa-24	0.28	40	0.17
Playa-25	0.17	40	0.10
Playa-26	0.09	15	0.08
Playa-27	0.07	20	0.06
Playa-28	0.04	15	0.04
Playa-29	0.03	10	0.02
Playa-30	0.04	15	0.03
Playa-31	0.03	10	0.02

Table E-1 Playa Barrens and Playa Mosaics in the Study Area (revised 5/7/2019)

Feature Name	Area (acres)	Percent Upland within Delineated Feature¹	Adjusted Area Consisting of Waters (acres)²
Playa-32	0.03	10	0.03
Playa-33	1.06	25	0.79
Playa-34	0.04	15	0.03
Playa-35	0.02	20	0.02
Playa-36	0.01	15	0.01
Playa-37	0.02	20	0.02
Playa-38	0.01	10	0.01
Playa-39	0.16	25	0.12
Playa-40	0.15	25	0.12
Playa-41	0.09	20	0.07
Playa-42	0.05	25	0.04
Playa-43	0.16	20	0.13
Playa-44	0.13	30	0.09
Playa-45	0.13	25	0.10
Playa-46	1.42	5	1.35
Playa-47	0.11	20	0.09
Playa-48	2.11	55	0.95
Playa-49	1.39	50	0.69
<i>Subtotals</i>	13.0		9.37
Total	17.24		13.61

Notes:

¹ Percent of each delineated playa feature that is upland (playa mosaics contain upland inclusions). To be conservative, percentages of uplands are rounded down to the nearest 5%.

² Acres of waters within each delineated playa mosaic, adjusted to remove upland inclusions (only applies to playa mosaics).

WD2018-0581

Attachment 1

Table 1 Obsidian Solar Center Taxlot Information (revised March 14, 2019)

Map and Tax Lot	Owner Name	Owner Address	City	State	ZIP	Portion of Facility
26516E000001900	FINE HAROLD L & JUDY E	83391 CONNLEY LN	SILVER LAKE	OR	97638	Facility
26516E000002700	COIT FAMILY TRUST	2578 S LYON AVE	MENDOTA	CA	93640	Facility
26516E000002702	MOREHOUSE RICHARD & VIRGINIA	80429 CONNLEY LN	SILVER LAKE	OR	97638	Facility
26516E000002708	MOREHOUSE RICHARD & VIRGINIA	80429 CONNLEY LN	SILVER LAKE	OR	97638	Facility
26516E000004600	STATE OF OREGON DEPT OF STATE LANDS	775 SUMMER ST NE STE 100	SALEM	OR	97301	Facility
26515E000001800	DINSDALE SAMUEL C & ALICE J	57673 FORT ROCK ROAD	SILVER LAKE	OR	97638	Facility and Gen-tie Transmission Line
26516E000004700	FINE HAROLD L & JUDY E*	83391 CONNLEY LN	SILVER LAKE	OR	97638	Gen-tie Transmission Line*
26516E000005300	FINE HAROLD L & JUDY*	83391 CONNLEY LN	SILVER LAKE	OR	97638	Gen-tie Transmission Line*
26516E000005400	FINE HAROLD L & JUDY E*	83391 CONNLEY LN	SILVER LAKE	OR	97638	Gen-tie Transmission Line*
26515E000003000	LA FRANCHI RON*	580 N CENTRAL	COQUILLE	OR	97423	Gen-tie Transmission Line*
26515E000003200	FINE TROY D & ROBERTA K*	83394 CONNLEY LANE	SILVER LAKE	OR	97638	Gen-tie Transmission Line*
26516E000005500	FORMAN SHANE & JACEY*	83136 CONNLEY LANE	SILVER LAKE	OR	97638	Gen-tie Transmission Line*
26516E000005601	FORMAN SHANE & JACEY*	83136 CONNLEY LANE	SILVER LAKE	OR	97638	Gen-tie Transmission Line*
26516E000005700	FINE TROY D & ROBERTA K	83394 CONNLEY LANE	SILVER LAKE	OR	97638	Facility and Gen-tie Transmission Line
26516E000005701	FORMAN SHANE & JACEY	83136 CONNLEY LANE	SILVER LAKE	OR	97638	Facility

Notes:

*For surveys along the gen-tie transmission line corridor, the survey crew remained within the Lake County 60-foot wide roadway easement. Tax lots added to this revised version of the table are tracked in blue underlined text.

Table 2 Township, Range, Section Information

Township	Range	Section
26S	15E	13, 24
26S	16E	5, 8, 9, 15, 16, 17, 18, 19, 20, 21, 22

Obsidian Solar Center

2018 Waters Delineation Report

August 2018

Prepared for:

Obsidian Solar Center, LLC

5 Centerpointe Drive, Suite 250

Lake Oswego, Oregon 97035

Prepared by:

Ecology and Environment, Inc.

333 SW Fifth Avenue, Suite 600

Portland, Oregon 97204

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List of Abbreviations and Acronyms

Term	Definition
°F	degrees Fahrenheit
BONAP	Biota of North America Program
DSL	Oregon Department of State Lands
E & E	Ecology and Environment, Inc.
EPA	U.S. Environmental Protection Agency
Facility	Obsidian Solar Center
gen-tie	generation tie
GPS	global positioning system
HGM	hydrogeomorphic
kV	kilovolt
met	meteorological
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
SSURGO	Soil Survey Geographic
Study Area	area surveyed for the Obsidian Solar Center Wetland and Waters Delineation
USACE	U.S. Army Corps of Engineers
WETS Table	Wetland Table

A) LANDSCAPE SETTING AND LAND USE

A-1) Purpose and Scope

This Wetland and Waters Delineation Report presents the results of a delineation of wetlands and other waters that would be affected by construction of the Obsidian Solar Center (Facility) proposed by Obsidian Solar Center LLC. The proposed solar power generation facility will be situated in undeveloped lands near Fort Rock, Oregon, which is in northern Lake County. The Facility will have a generating capacity of up to 400 megawatts. The survey area for this report (hereafter, the Study Area) includes over 7,500 acres across five potential development sites, named Areas A, B, C, D, and E, as well as potential generation tie (gen-tie) transmission line corridors to connect these areas (refer to Figure 1, Attachment A).

Ecology and Environment, Inc. (E & E) prepared this report to document the wetlands and other waters within the Study Area (refer to Figure 2, Attachment A for delineated waters within the Study Area).

A-2) Ecoregion, Climate and Hydrologic Unit Code

The Study Area is located within the Pluvial Lake Basins, U.S. Environmental Protection Agency (EPA) Level IV ecoregion (EPA 2017). This ecoregion is one of nine different types that occur within the Northern Basin and Range, EPA Level III ecoregion.

The predominant potential natural vegetation of the Northern Basin and Range is sagebrush steppe, which is typically dominated by shrubs such as big sagebrush (*Artemisia tridentata*) and rubber rabbitbrush (*Ericameria nauseosa*) and cool season grasses such as Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass (*Pseudoroegneria spicata*). Juniper-dominated woodland occurs on rugged, stony uplands. In Oregon, the western two-thirds of the Northern Basin and Range ecoregion is internally drained. (Thorson et al. 2003)

The Pluvial Lake Basins ecoregion contained vast lakes during the Pleistocene epoch that have now mostly disappeared. This ecoregion is characterized by gently sloping, internally drained basins with lake terraces, playas, beach plains, stream terraces, intermittent lakes, fan skirts, and cool springs. Elevation varies from 4,200 to 6,200 feet. (Thorson et al. 2003)

This ecoregion has warm summer temperatures (typically 51 to 82 degrees Fahrenheit (°F) and cool winter temperatures (typically 18 to 38°F). Precipitation is less than 10 inches per year, with most occurring spring, winter, and fall; only 1.74 inches (approximately 18 percent of the yearly total) falls in July through August. Much of the winter precipitation is in the form of snow, and snowfall typically occurs eight months out of the year (NOAA n.d.).

The Study Area is located within the Thorn Lake Watershed, Hydrologic Unit Code 171200050 (USGS 2018). Thorn Lake is approximately 7.5 miles south of the southern edge of the Study Area, but the on-site waters are internally draining, and there does not appear to be any surface water connection with Thorn Lake or any other waters situated outside the Study Area.

A-3) Land Cover

The Study Area is located in Christmas Valley in northern Lake County in south-central Oregon, and is within privately and publicly owned land (Figure 3, Attachment A). The site is in a rural area approximately 5.5 miles southeast of Fort Rock and 7.8 miles northwest of Christmas Valley, which are both unincorporated communities. The five parcels (A through E) that make up the site are not contiguous, but are proximate to each other, spanning a 5-mile-wide area.

The proposed Facility site, including the gen-tie transmission line corridors, is undeveloped except for a few dirt roads and barbed wire fences; no structures are currently present. The predominant land use within the Study Area is cattle grazing at intensities ranging from very light to moderate. No land within the Study Area is used for growing crops or is anticipated for agriculture use in the future. The areas adjacent to the Study Area are primarily used for growing alfalfa via pivot irrigation. Each pivot plot comprises a quarter-section (160 acres).

Most of the land within the Study Area supports native shrubland mixed with introduced forage grasses, as well as native grasses and other herbaceous plants. However, Area D and the northeast portion of Area E are artificially maintained as pasture. These areas are dominated by introduced grasses and forbs with minimal to no shrubs.

The Study Area is essentially flat except for the moderately sloped, stable, and well vegetated sand dunes within Areas A and B. These dunes rise at approximately 20 to 40 percent grade and up to 50 feet above the surrounding ground surface.

A-4) National Wetland Inventory and National Hydrography Dataset

The National Wetlands Inventory (NWI) (USFWS 2018) and National Hydrography Dataset (NHD) (USGS 2017) indicate the presence of non-wetland waters in the Study Area (refer to Figure 4, Attachment A). The NWI indicates the presence of several Palustrine wetlands and ponds, primarily in Area B. Two small Palustrine features are identified in Area A, and none are indicated in Areas C, D, or E. Also mapped in Area B is a Lacustrine littoral unconsolidated shore feature adjacent to two Palustrine scrub-shrub wetland communities. The NHD identifies these same features as waterbodies and indicates that no streams occur within the Study Area.

A-5) Soil Survey

There are 11 soil map units (hereafter referred to as soil types) identified by the Soil Survey Geographic (SSURGO) database, which is managed by the Natural Resources Conservation

Service (NRCS), as occurring within the Study Area (Soil Survey Staff, NRCS 2017). Soil types are a collection of areas that contain the same soil components or miscellaneous areas or both. They are defined by their landscape position, profile characteristics, relationships to one another, and suitability for various uses (NRCS 2012).

Figure 5 in Attachment A illustrates the locations and geographic extent of the soil types within the Study Area. Table A-1, below, presents the acreage of each soil type within each portion of the Study Area, including the gen-tie transmission line corridors.

Table A-1 Acreage of each Soil Type within Study Area

Soil Map Unit #	Soil Type (Map Unit) Name	Area A	Area B	Area C	Area D	Area E	Gen-tie Corridors	Totals
200	Abert ashy loamy sand, 0 to 2 percent slopes	1,543.7	63.7	316.9	0	0	6.0	1,930.3
217	Bonnick-Fort Rock Complex, 0 to 2 percent slopes	289.1	0	0	0	0	0	289.1
313	Flagstaff Complex, 0 to 1 percent slopes	0	44.0	0	0	0	0	44.0
320	Fort Rock-Lapham Complex, 0 to 2 percent slopes	0	0	4.7	0	0	0	4.7
470	Morehouse ashy loamy fine sand, 0 to 2 percent slopes	1,080.0	1,103.6	114.7	43.7	138.4	20.6	2,501.0
472	Morehouse ashy loamy fine sand, 2 to 20 percent slopes	930.2	152.5	0	0	18.1	2.9	1,103.7
520	Playas	0	100.2	0	0	0	0	100.2
572	Salhouse ashy loamy fine sand, strongly alkaline, 2 to 20 percent slopes	0	436.6	0	0	0	0	436.6
613	Suckerflat ashy loamy sand, 0 to 8 percent slopes	0	146.2	0	0	0	0	146.2
628	Thornlake Complex, 0 to 2 percent slopes	0	1,031.0	0	0	2.1	0	1,033.1
667	Wegert-Kunceider Complex, cool, 0 to 15 percent slopes	13.1	0	0	0	0	0	6.4
	Totals	3,814.0	3,077.7	436.2	43.7	158.6	29.5	7,559.7

Abert ashy loamy sand consists of very deep, moderate to moderately slow permeable, well drained soils that formed in eolian material derived from volcanic ash over lacustrine deposits derived from mixed volcanic rocks and volcanic ash. Abert ashy loamy sand soils are found on lakebeds. In a representative profile, the surface layer is grayish brown ashy loamy sand about 2 inches thick. The subsoil is light brownish gray ashy sandy loam about 6 inches thick. These layers are pH neutral or circum-neutral (pH 7.0–7.2). The substratum is pale brown ashy loam about 5 inches thick and is moderately alkaline. This non-hydric soil has moderately low runoff potential (Hydrologic Soil Group B) due to the moderately deep profile, moderate proportion of coarse-textured particles, and lack of impermeable layers.

Bonnick-Fort Rock Complex consists of very deep, rapid permeable, somewhat excessively drained soils that formed in volcanic ash and lacustrine deposits derived from volcanic rocks, such as basalt and tuff. Both Bonnick and Fort Rock soils are found on lake terraces. In a representative profile, the surface layer is grayish brown ashy loamy sand about 3 inches thick. The subsoil is grayish brown gravelly ashy loamy sand about 7 inches thick. The substratum is pale brown gravelly ashy loamy sand about 18 inches thick. Each of these layers is typically mildly alkaline (pH 7.4–7.8). This non-hydric soil has low runoff potential (Hydrologic Soil Group A) due to the deep profile, high proportion of coarse-textured particles, and lack of impermeable layers.

Flagstaff Complex consists of very deep, very slowly permeable, moderately well drained soils that formed in lacustrine deposits derived from volcanic ash. The local phase of this soil is ashy very fine sandy loam surface. Flagstaff soils are found on lakebeds. In a representative profile, the surface layer is light brownish gray ashy sandy loam about 4 inches thick. The subsoil is pale brown ashy silty clay loam about 8 inches thick. The substratum is very pale brown paragravelly ashy silt loam about 4 inches thick. This non-hydric soil has high runoff potential (Hydrologic Soil Group D) due to the high proportion of clay and silt particles, though it lacks impermeable layers. Ponding is occasional and brief, and typically occurs in winter and early spring at depths up to 3 inches.

Fort Rock-Lapham Complex consists of very deep, somewhat excessively drained soils that formed in volcanic ash over lacustrine deposits derived from volcanic rocks, such as basalt and tuff. Both Fort Rock and Lapham soils are found on lake terraces. In a representative profile, the surface layer is grayish brown gravelly ashy loamy sand about 5 inches thick. The subsoil is grayish brown gravelly ashy sandy loam about 11 inches thick. The substratum is pale brown ashy loamy sand about 12 inches thick. Each of these layers is typically mildly alkaline (pH 7.4–7.8). This non-hydric soil has low runoff potential (Hydrologic Soil Group A) due to the deep profile, high proportion of coarse-textured particles, and lack of impermeable layers.

Morehouse ashy loamy fine sand soils consist of very deep, somewhat excessively drained soils that formed in eolian sand and volcanic ash over lacustrine deposits derived from volcanic rocks.

The Morehouse series soils are found on stable dunes in basins on lakebeds. In a representative profile, the surface layer is grayish brown ashy loamy fine sand about 5 inches thick. The subsoil is grayish brown ashy loamy sand about 17 inches thick. The substratum is light brownish gray ashy loamy sand about 19 inches thick. Each of these layers is typically strongly alkaline (pH 8.5–9.0). This non-hydric soil has low runoff potential (Hydrologic Soil Group A) due to the deep profile, high proportion of coarse-textured particles, and lack of impermeable layers.

Morehouse ashy loamy fine sand soils consist of very deep, somewhat excessively drained soils that formed in eolian sand and volcanic ash over lacustrine deposits derived from volcanic rocks. In a representative profile, the surface layer is grayish brown ashy loamy fine sand about 5 inches thick. The subsoil is grayish brown ashy loamy sand about 17 inches thick. The substratum is light brownish gray ashy loamy sand about 19 inches thick. Each of these layers is typically strongly alkaline (pH 8.5–9.0). This non-hydric soil has low runoff potential (Hydrologic Soil Group A) due to the deep profile, high proportion of coarse-textured particles, and lack of impermeable layers.

Playa soils consist of poorly drained soils that formed in volcanic ash and lacustrine deposits derived from mixed volcanic rocks. Playa soils are found on dry lakebeds. In a representative profile, the surface layer is stratified clay to silty clay loam about 6 inches thick. The subsoil is stratified clay to silty clay loam about 54 inches thick. This hydric soil has high runoff potential (Hydrologic Soil Group D) due to the high proportion of clay and silt particles. However, runoff is generally retained at the soil surface, as ponding is typically frequent and persistent and may be up to 12 inches deep during winter and spring.

Salhouse ashy loamy fine sandy soils consist of very deep, somewhat excessively drained soils that formed in eolian material derived from volcanic ash over lacustrine deposits derived from volcanic rocks. Salhouse series soils are found on stable dunes on beach ridges and sand sheets on lakebeds. In a representative profile, the surface layer is light brownish gray ashy loamy fine sand about 5 inches thick. This layer is moderately alkaline (pH = 8.0). The subsoil is grayish brown ashy loamy sand about 37 inches thick. The substratum is grayish brown ashy silt loam about 19 inches thick. These lower layers are strongly alkaline (pH = 8.6). This non-hydric soil has low runoff potential (Hydrologic Soil Group A) due to the deep profile, high proportion of coarse-textured particles, and lack of impermeable layers.

Suckerflat ashy loamy sand soils are shallow, well drained soils that formed in volcanic ash over slope alluvium and colluvium derived from basalt and tuff-breccia. Suckerflat series soils are found on lava plains, lava plateaus, and hills. In a representative profile, the surface layer is dark grayish brown ashy loamy sand about 8 inches thick. The subsoil is grayish brown cobbly ashy loam about 10 inches thick. The soil is underlain by fractured basalt. This non-hydric soil has high runoff potential (Hydrologic Soil Group D) due to the shallow profile and underlayment by relatively impermeable bedrock. However, this soil does not support ponding or flooding.

Thornlake Complex soils consist of very deep, well drained soils that formed in lacustrine deposits derived from volcanic ash. The local phase of this soil is strongly alkaline. Thornlake series soils are found on lakebeds. In a representative profile, the surface layer is light brownish gray ashy sandy loam about 7 inches thick. The upper subsoil is very pale brown ashy loam about 18 inches thick. These layers are moderately alkaline (pH = 8.2-8.3). The lower subsoil is light brownish gray ashy sandy loam about 36 inches thick. This layer is strongly alkaline (pH = 8.6). This non-hydric soil has moderately low runoff potential (Hydrologic Soil Group B) due to the moderately deep profile, moderate proportion of coarse-textured particles, and lack of impermeable layers.

Wegert-Kunceider Complex soils consist of shallow to moderately deep, moderately rapid permeable, somewhat excessively drained soils that formed in volcanic ash and pumice over residuum derived from basalt. Both Wegert and Kunceider series soils are found on lava plains and lava plateaus underlain by fractured basalt. In a representative profile, the surface layer is dark grayish brown gravelly ashy loamy sand about 2 inches thick. The subsoil is grayish brown ashy loamy sand about 4 inches thick. These layers are typically neutral to circum-neutral (pH 7.0-7.2). The substratum is pale brown extremely cobbly ashy loamy sand about 9 inches thick. This layer is typically slightly alkaline (pH 7.4-7.8). Although the Wegert component has low runoff potential (Hydrologic Soil Group A), this non-hydric soil map unit has high runoff potential due to the Kunceider component's shallow profile and underlayment by relatively impermeable bedrock. However, this soil does not support ponding or flooding.

B) SITE ALTERATIONS

Most of the Study Area is used for low-intensity cattle grazing, which has caused minor alterations to the native shrub communities. Only Area D contains areas that had been cleared and utilized for agricultural production. The entirety of Area D, which totals 43.7 acres, had been irrigated to produce crops but was recently converted to grassland pasture.

No fill placement or removal appears to have occurred within any waters in the Study Area. No structures or grading intended to impede water flow have been established within the Study Area. Furthermore, no ditches, drainage tiles, culverts, or other artificial means of drainage have been installed near the on-site waters or any portion of the Study Area.

C) PRECIPITATION DATA AND ANALYSIS

E & E analyzed precipitation data from two National Weather Service meteorological (met) stations located in proximity to and at elevations similar to the Study Area. The Poplars met station is closer (approximately 6.0 miles southwest of the center of Area A and 1.75 miles southwest of the center of Area B) than the Silver Lake RS met station (approximately 17.1 miles southwest of the center of Area A and 13.2 miles southwest of the center of Area B), but

the Silver Lake RS met station maintains long-term data and thereby supports Wetlands (WETS) Tables, which are critical to assessing statistical normality of precipitation. For the most recent period for which both stations have nearly continuous data (1983 to 2002), annual precipitation averaged 8.66 inches at the Silver Lake RS met station and 10.46 inches at the Poplars met station. For both stations, over 50 percent of a year’s precipitation occurs from November through March (NOAA 2018).

E & E used recently observed precipitation data from the Poplars met station. The Silver Lake RS met station stopped recording precipitation data in 2016. Tables C-1a and C-1b display the daily precipitation data for the dates of the on-site wetland investigations and the two weeks prior to those investigations.

Table C-1a Daily Precipitation Data from the Poplars, Oregon Meteorological Station for Two Weeks prior to and including the March 18–22, 2018, Survey

Date	Observed Precipitation (inches)
3/4/2018	0.00
3/5/2018	0.00
3/6/2018	0.00
3/7/2018	0.00
3/8/2018	0.00
3/9/2018	0.11
3/10/2018	0.00
3/11/2018	0.00
3/12/2018	0.00
3/13/2018	0.00
3/14/2018	0.00
3/15/2018	0.00
3/16/2018	0.54
3/17/2018	0.00
3/18/2018	0.00
3/19/2018	0.35
3/20/2018	0.00
3/21/2018	0.00
3/22/2018	0.24

Table C-1b Daily Precipitation Data from the Poplars, Oregon Meteorological Station for Two Weeks prior to and including the June 19, 2018, Survey

Date	Observed Precipitation (inches)
6/5/2018	0.00
6/6/2018	0.00
6/7/2018	0.00
6/8/2018	0.00
6/9/2018	0.18
6/10/2018	0.00
6/11/2018	0.00
6/12/2018	0.00
6/13/2018	0.00
6/14/2018	0.00
6/15/2018	0.00
6/16/2018	0.00
6/17/2018	0.00
6/18/2018	0.01
6/19/2018	0.00

WETS Tables are provided by the NRCS National Water and Climate Center for met stations with long-term data (more than 30 years) to define thresholds for normal monthly precipitation. As with most WETS Tables, the thresholds of normality are based on data collected from 1971 through 2000. These thresholds are set such that the lowermost 30 percent of values is abnormally low and the uppermost 30 percent of values is abnormally high, which results in only a 40 percent chance that a given month’s precipitation will be determined to be normal.

E & E compared precipitation data for the months prior to and including the survey dates with WETS Table precipitation thresholds to determine whether these months exhibited Abnormally Low, Normal, or Abnormally High levels of precipitation (Table C-2). These determinations may be skewed toward Abnormally High given that observed data are derived from the Poplars met station, whereas the WETS Table information is derived from the Silver Lake RS met station, which recorded an average of 18 percent less precipitation than the Poplars for the same 20-year period (1983 to 2002). Despite the potential skew, precipitation was mostly below normal during the months leading up to the March survey.

Table C-2 Precipitation Normality for the Three Months Leading up to and including the Survey Dates

Month	Observed ¹ for Month (inches)	30-year Average (1971–2000) for Month ² (inches)	30% Chance Less Than ² (inches)	30% Chance More Than ² (inches)	Precipitation Normality
December 2017	0.05	1.19	0.52	1.42	Abnormally Low
January 2018	1.04	0.93	0.41	1.13	Normal
February 2018	0.19	0.69	0.34	0.84	Abnormally Low
March 2018	1.27	0.81	0.43	0.99	Abnormally High
April 2018	1.27	0.74	0.36	0.90	Abnormally High
May 2018	1.21	1.11	0.46	1.31	Normal
June 2018	0.46	0.81	0.37	0.95	Normal

Note: Field surveys occurred March 18–23, 2018, and June 19, 2018.

¹ Observed values derived from the Poplars met station

² 30-year averages and 30% chance thresholds derived from the Silver Lake RS met station

Utilizing the method outlined in Section 650.1903 of the NRCS Engineering Field Handbook, antecedent precipitation leading up to the March survey was found to be abnormally low, whereas antecedent precipitation leading up to the June survey was abnormally high (NRCS 1997). However, as expected, the greater precipitation and colder temperatures in winter caused the ground to be wetter in March than in June.

According to data from the Poplars met station, cumulative precipitation has been below 100 percent (1981 to 2010 average) for the entirety of the water year, which began October 1, 2017, and ends September 30, 2018. Despite the above normal precipitation that occurred in March and April and the normal precipitation that occurred in May and June, cumulative precipitation was well below normal during both the March and June surveys (Table C-3).

Table C-3 Cumulative Monthly Precipitation for the Water Year

Month	Observed Cumulative Precipitation for Water Year (inches)	Percent of Average Water Year Accumulation
December 2017	3.42	36.0%
January 2018	4.51	50.3%
February 2018	5.57	44.2%
March 2018	6.7	59.0%

Table C-3 Cumulative Monthly Precipitation for the Water Year

Month	Observed Cumulative Precipitation for Water Year (inches)	Percent of Average Water Year Accumulation
April 2018	7.66	68.1%
May 2018	9	71.4%
June 2018	9.85	69.9%

The U.S. Drought Monitor determined that the Summer Lake watershed, Hydrologic Unit Code 17120005, has been under a severe drought (category D2) from February through June of 2018 (National Drought Mitigation Center 2018). This determination is made from several measurements with a focus on precipitation over the previous one to three months, and indicates that crop or pasture losses are likely and that water shortages are common.

D) METHODS

Prior to the field delineation, E & E reviewed publicly available data sets to determine the locations of potential wetlands, streams, or other waters. Digital base maps were prepared with georeferenced aerial imagery, as well as ArcGIS layers that included Study Area boundaries, SSURGO, NWI, and NHD.

Two E & E biologists conducted the on-site investigation March 18–23, 2018 and returned on June 19, 2018. The biologists conducted the March 2018 survey prior to the start of the growing season as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth. In contrast, the June 2018 investigation occurred during the growing season, as evidenced by the full foliage development of all on-site vegetation. The growing season in the Study Area is typically short, as evidenced by the 80-day duration of ambient temperatures above 28°F for 5 years in 10 at the nearby Poplars met station; this period typically extends from June 22 to September 9 (NRCS 2012).

E & E applied the routine on-site determination methods outlined in the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (ELab 1987) and followed guidance in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region V2.0 (USACE 2010) to document and delineate wetlands. E & E derived additional guidance from review of the Oregon Department of State Lands (DSL) delineation report requirements on their Technical Resources website (DSL n.d.).

E & E documented and delineated non-wetland waters along their ordinary high water mark (OHWM) in accordance with A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008), USACE Regulatory Guidance Letter 05-05 (USACE 2005), and DSL's Removal-Fill Guide (DSL 2016). They also consulted Delineating Playas in the Arid Southwest – A Literature Review (Brostoff et al. 2001). Refer to Attachment B for OHWM and Arid West Wetland Determination Datasheets.

These guidance documents were used to create a data form specific to Palustrine/Lacustrine non-wetland waters. This data form presents check boxes for OHWM indicators derived from the guidance listed above and prompts other information regarding bed substrate, anthropogenic influence, and habitat conditions. E & E completed this form for the points where they took notes and photographs, but did not complete a Regional Supplement wetland data form.

E & E collected data points within waters and adjacent upland areas to demonstrate differences between these two community types and substantiate delineation of the waters. They established plots and data points in NWI-mapped waters, in NRCS-mapped hydric soil types, and in areas that exhibited indicators of potential presence of wetlands or other waters. E & E investigated all potential waters identified by the NWI and NHD. No Local Wetland Inventory maps cover the Study Area.

Vascular plants were identified to species in each plot with nomenclature used by the Biota of North America Program (BONAP) database (Kartesz 2015). E & E determined the wetland indicator status of each plant species using the National Wetland Plant List (Lichvar et al. 2016).

E & E biologists used a tablet computer that had the abovementioned base maps uploaded and a wireless connection to a global positioning system (GPS) unit with sub-meter accuracy and real-time correction to navigate through the Study Area and digitally mark waters, data points, and other features. They noted and applied aerial photo signatures (e.g., characteristics including color and texture) of waters and upland communities during the on-site investigation. E & E used the information gathered during the field investigation, including the correlation between aerial photo signature and landscape features, to guide the delineation.

E & E determined the Cowardin classification (FGDC 2013) and the hydrogeomorphic (HGM)-based classification for Oregon (Adamus 2001) for each water delineated. The Cowardin classification characterizes and differentiates wetlands and other waters according to their landscape position, salinity, hydrologic regime, substrate, and other attributes. The HGM-based classification characterizes and differentiates wetlands and other waters according to their water source, hydrodynamics, and landscape position. Both classifications are used to provide insight into impact analysis and mitigation planning.

E) DESCRIPTION OF WETLANDS AND NON-WETLAND WATERS

E & E did not detect any wetlands in the Study Area. E & E determined that all on-site waters within the Study Area are non-wetland waters. Although most of the non-wetland waters are vegetated, E & E determined that the plant communities are not hydrophytic. E & E also determined that the soils do not meet the definition of hydric. All the on-site waters, however, exhibit some OHWM indicators despite the lack of surface water in the vast majority of these features during the site investigations. Refer to Attachment C for the photographic log of all waters delineated onsite.

The on-site waters are best described as playas (also called playa lakes or dry lakes), which are unvegetated or lightly vegetated depressions in arid regions that exhibit seasonal to irregular flooding. Most playas remain dry for years and only support shallow inundation for a few days to a few weeks during large precipitation events or extended wet periods. They are typically underlain by stratified clay, silt, sand, and, commonly, soluble salts (USGS 2004).

Playas are typically non-wetland waters but may be classified as wetlands under certain conditions (Brostoff et al. 2001). Where groundwater is generally at or near the soil surface, playas may exhibit the three wetland parameters (hydrophytic vegetation, hydric soil, and wetland hydrology). However, most playas are persistently dry due to the lack of a shallow water table and an erratic hydrologic regime and therefore are considered non-wetland waters. Between wet periods, the surface of the playa typically becomes desiccated, forming polygonal cracks and fissures in clay-rich sediment (USGS 2004).

The limited extent of hydrophytic species, the sparse and patchy plant cover, and the arid climate led the investigators to utilize the wetland determination procedure described in Chapter 5 of the Regional Supplement for “Sparse and patchy vegetation.” This method is well-suited for wetlands and other non-wetland waters characterized as playas. E & E determined that all the on-site waters should be identified as non-wetland waters due to the lack of hydrophytic vegetation, lack of hydric soil, and presence of OHWM indicators.

The total on-site area occupied by playas is 153.26 acres, with 17.24 acres in Area A and 136.02 acres in Area B. No playas or any other waters occur in Area C, Area D, Area E, or the gen-tie transmission line corridors.

Thirty-five of the 48 playas delineated occur in Area A, ranging in size from 0.01 to 3.40 acres and averaging 0.42 acres. Although fewer in number, the playas in Area B are generally much larger, ranging in size from 0.06 to 53.58 acres and averaging 10.46 acres. The two relatively large playas in Area B (Playa-1 and Playa-3) have a combined area of 102.6 acres, which is 75.0 percent of the playa acreage in Area B and 37.6 percent of the playa acreage within the Study Area. Excluding these two large playas, the average size of playas in Area B is 2.85 acres.

E & E subdivided playas into areas supporting less than 5 percent plant cover (Playa Barrens) and those supporting 5 percent or greater plant cover (Playa Mosaics) (Table E-1). Both types exhibited playa-like surfaces, mainly polygonal mud cracks, over more than 50 percent of their area. The Playa Barrens in the Study Area are typically larger and more topographically depressed than the Playa Mosaics, but there are exceptions. Also, the Playa Barrens seemed to have a wider extent of nearly saturated surfaces and/or standing surface water during the investigation, but there were a few Playa Mosaics that supported shallow standing water (generally less than 1 foot deep) as well. The Playa Mosaics typically support 10 to 30 percent total plant cover, mainly shrubs on round to elliptical mounds that are generally 2.0 to 4.0 feet diameter and 0.5 to 2.0 feet tall.

Table E-1 Playa Barrens and Playa Mosaics in the Study Area

Feature Name	Area A (acres)	Area B (acres)
<i>Playa Barrens</i>		
Playa-02	N/A	7.73
Playa-03	N/A	53.62
Playa-05	N/A	9.76
Playa-06	N/A	5.22
Playa-08	0.74	N/A
Playa-11	3.40	N/A
Playa-16	0.09	N/A
<i>Subtotals</i>	4.2	76.3
<i>Playa Mosaic</i>		
Playa-01	N/A	49.00
Playa-04	N/A	2.11
Playa-07	N/A	0.25
Playa-09	0.82	N/A
Playa-10	1.10	N/A
Playa-12	0.33	N/A
Playa-13	0.20	N/A
Playa-14	0.95	N/A
Playa-15	1.75	N/A
Playa-17	N/A	6.94
Playa-19	N/A	0.95
Playa-20	N/A	0.10
Playa-21	N/A	0.06
Playa-22	N/A	0.14
Playa-23	N/A	0.13
Playa-24	0.28	N/A
Playa-25	0.17	N/A
Playa-26	0.09	N/A
Playa-27	0.07	N/A
Playa-28	0.04	N/A

See revised Table E-1 in DSL Concurrence Letter (above)

Table E-1 Playa Barrens and Playa Mosaics in the Study Area

Feature Name	Area A (acres)	Area B (acres)
Playa-29	0.03	N/A
Playa-30	0.04	N/A
Playa-31	0.03	N/A
Playa-32	0.03	N/A
Playa-33	1.06	N/A
Playa-34	0.04	N/A
Playa-35	0.02	N/A
Playa-36	0.01	N/A
Playa-37	0.02	N/A
Playa-38	0.01	N/A
Playa-39	0.16	N/A
Playa-40	0.15	N/A
Playa-41	0.09	N/A
Playa-42	0.05	N/A
Playa-43	0.16	N/A
Playa-44	0.13	N/A
Playa-45	0.13	N/A
Playa-46	1.42	N/A
Playa-47	0.11	N/A
Playa-48	2.11	N/A
Playa-49	1.39	N/A
Subtotals	13.0	59.7
Total	17.2	136.0

Key:

N/A = not applicable

Playa Mosaics in Area A are typically vegetated by green rabbitbrush (*Chrysothamnus viscidiflorus*) and other xerophytic species that are not listed in the National Wetland Plant List and therefore do not possess a wetland indicator status in the Arid West or any other region (Lichvar et al. 2016). In general, species that do not have a wetland indicator status are assumed to be adapted to upland conditions (USACE 2010). Green rabbitbrush commonly occurs in sagebrush steppe communities and in more saline communities such as those dominated by shadscale saltbush (*Atriplex confertifolia*) (Tirmenstein 1999). Playa Mosaics in Area B support a predominance of shadscale saltbush with a modicum of green rabbitbrush and rubber rabbitbrush (*Ericameria nauseosa*). Shadscale saltbush also has no wetland status indicator and generally prefers alkaline conditions (pH 7.5–9.0) and well drained soils, but may inhabit a wide range of soil textures from fine to gravelly (Tilley and St. John 2013). Playa Mosaics in both Area A and Area B support a few other upland species that have no wetland indicator status and typically occur at subdominant levels; these species include big sagebrush (*Artemisia tridentata*), broom snakeweed (*Gutierrezia sarothrae*), and cheatgrass (*Bromus tectorum*).

Many playas in both Area A and Area B support varying amounts of seaside saltgrass (*Distichlis spicata*), which is rated as facultative (FAC), meaning that it occurs in wetlands and non-wetlands with relatively equal frequency (Lichvar et al. 2016). This species is adapted to a broad range of environmental conditions across its wide geographic range. Such conditions include saline soils of salt marshes, alkaline soils of alkali flats, and sandy soils of arid environments that are never flooded (Hauser 2006; NRCS 2010). E & E observed this species in greatest abundance within uplands of Area B that are underlain by soils with finely textured sand at the surface horizon.

In general, the same species found in the playas also occur throughout the uplands within the Study Area. Except for shadscale saltbush, all the plant species commonly occurring in the playas are far more abundant in the adjacent uplands. In contrast, shadscale saltbush appears to occur outside the delineated playa boundaries only somewhat more frequently than it does within the playas. Thus, species composition was not useful for discerning playas from uplands.

Total vegetation cover is much greater in the on-site uplands compared to the playas and the Playa Mosaics. Uplands in the Study Area typically support 35 to 55 percent cover by shrubs and 5 to 25 percent cover by herbaceous plants (mainly grasses). Also often present in the uplands and almost entirely lacking in the playas is moss, at 2 to 4 percent cover, and biotic crust, at 3 to 10 percent cover.

There are multiple patches of sand dune communities in the Study Area that also support little to no vegetation. However, these communities lack the indicators of OHWM that are readily apparent within the playas.

Soil profiles in the playas were found to be fairly distinct from those of the uplands. Soils observed in the playas had subsurface horizons (generally extending from 6 inches below ground surface to 12 inches or deeper) that consistently exhibited relatively high value and low chroma when dry and thin surface horizons (extending from 0 to 2 inches below ground surface) that are finely textured (many fine silts). In addition, playa soils tended to have angular blocky structure within the subsurface horizons. Although several upland soil profiles showed subsurface horizons with high value and low chroma when dry, several others did not. Soils in the uplands generally lacked the distinctly fine texture at the surface or had a mix of fine silt and sand in the uppermost horizon. Subsurface horizons in the upland profiles tended to have more rounded and granular structure.

Most importantly, none of the soil profiles examined in the Study Area met the hydric soil criteria. No redoximorphic features were found in any of the profiles.

The subsurface horizons that showed high value/low chroma when dry were found in all the playa soil profiles, and many of the upland profiles as well. The value of these horizons typically declined from 5–7 to 3–4 when moistened. This decrease in soil color is in alignment with the

series descriptions for nearly all the soils in Study Area (National Cooperative Soil Survey 2010a, 2010b, 2011a, 2011b, 2011c, 2011d, 2011e, 2011f). Due to the moderate soil color values when moist plus the lack of redoximorphic features, the horizons do not qualify as depleted matrices. As a result, the soil profiles do not meet hydric soil indicators involving the presence of a depleted matrix (i.e., A11 Depleted Below Dark Surface, A12 Thick Dark Surface, F3 Depleted Matrix, or F7 Depleted Dark Surface).

The finer texture at the surface indicates sediment deposition associated with inundation over the past few years, possibly over the course of several decades. However, most playas appear to support surface water infrequently, perhaps only a few days each year or every few years, as determined by the widespread xerophytic vegetation on relatively small mounds (0.5 to 2 feet tall), the limited number of playas supporting inundation during the dates of the Google Earth aerial photos for the site, and the even fewer playas supporting inundation during the investigation. The few playas that appear to support seasonal inundation, likely persisting for several weeks in winter and spring, include the two largest (Playa-1 and Playa-3) and a few others (Playa-2, Playa-6 and Playa-17); all these are over 5 acres and located in Area B.

Most of the playas within the Study Area are “soft playas,” meaning that they lack a cemented layer near the surface. As a result, these playas allow much greater rates of infiltration than “hard playas” and thereby may support inundation for relatively shorter periods. Soft playas are characterized by a soft, often moist, friable surface that develops from capillary input of groundwater and subsequent deposition of evaporite minerals. The surfaces of this playa type are loosely compacted and may be damp to dry during the summer months (Brostoff et al. 2001). Despite the drier than normal conditions during the investigation, all playas within the Study Area exhibited a thin moist layer at the soil surface.

Some OHWM indicators were found in every playa in the Study Area. Each playa exhibited polygonal mud cracks across more than 50 percent of the ground surface. Mud cracks form when fine-grained sediments lose their contained water (Brostoff et al. 2001) and are a primary indicator wetland hydrology (indicator B10) in the Arid West (USACE 2010). However, as stated in the Arid West Regional Supplement, “Surface soil cracks are often seen in recent fine sediments and in concave landscape positions where water has ponded long enough to destroy surface soil structure, such as in seasonally ponded depressions, lake fringes, tidal flats, and floodplains. Use caution, however, as they may also occur in temporary ponds and puddles in nonwetlands; these situations are easily distinguished by the absence of hydrophytic vegetation and/or hydric soils” (USACE 2010). Thus, the mud cracks were interpreted as an indicator of periodic inundation, but not as an indicator of a wetland hydrologic regime.

Most of the playas in the Study Area belong to the Palustrine System according to the Cowardin classification because they are i) less than 20 acres, ii) lack active wave-formed or bedrock shoreline features, and iii) support water depths in the deepest part of the basin less than 2 meters

(6.6 feet) at low water conditions (Cowardin et al. 1979). The unvegetated playas or unvegetated portions of playas (Playa Barrens) are classified as Palustrine Unconsolidated Shore, Mud (PUS3) due to the i) unconsolidated substrates with less than 75 percent cover by stones, boulders or bedrock, ii) less than 5 percent cover by vegetation, and/or iii) hydrologic regime that supports standing water at a seasonal to temporary time scale. The vegetated playas or vegetated portions of playas (Playa Mosaics) are classified as Palustrine Emergent, Persistent (PEM1) communities due to the same conditions described above in i) and iii), and the presence of vegetation above 5 percent with shrub cover ranging from 5 to 25 percent and herbaceous cover ranging from 5 to 10 percent.

The two large playas in Area B (Playa-1 and Playa-3) belong to the Lacustrine System according to the Cowardin classification because they are greater than 20 acres (Cowardin et al. 1979). These playas also appeared to exhibit some wave-formed shorelines as evidenced by steep to nearly vertical slopes along the OHWM. Although neither appear to support water depths greater than 2 meters in the deepest part of their basins, these are the only playas that show readily observable and extensive inundation in an aerial photograph dated May 29, 2006 (Google Earth n.d.). Most of their area consists of Playa Barrens, with some Playa Mosaic areas in narrow sections and along the fringes.

The HGM-based classification for Oregon is Depressional Alkaline due to the depressions lacking outlet channels and apparent presence of shallow, seasonal standing water that is likely pH >8.0 (Adamus 2001).

F) DEVIATION FROM LWI OR NWI

The geographic extent, location, and attributes of wetlands and other waters delineated in the Study Area are substantially different from the mapped wetlands and waters presented by NWI and NHD. As mentioned above, no Local Wetland Inventory maps cover the Study Area.

Only two of the 35 playas delineated in Area A are mapped by NWI. The geographic extent of each water is somewhat different between the NWI and E & E delineation. Both of these features are classified by NWI as Palustrine unconsolidated shoreline, intermittently flooded (PUSJ) features, whereas E & E classified one as a Palustrine, unconsolidated mud shoreline that is intermittently flooded (PUS3J) and one as PUS3J/Palustrine emergent persistently, temporarily flooded (PEM1A). NWI mapped a total of 1.1 acre of waters in Area A, whereas E & E determined that there are 16.65 acres of waters in this part of the Study Area.

Fourteen features are mapped by NWI as occurring in Area B. Three of the features are encompassed by one playa (Playa-1), seven coincide with waters delineated by E & E, and the remaining four were determined to be uplands. There is not much agreement between NWI and E & E regarding classification—most of the features are mapped by NWI as PUSJ, whereas

E & E classified most of the Area B waters as PUS3J/PEM1A. NWI mapped a total of 82.82 acres of waters in Area B, whereas E & E determined that there are 135.99 acres of waters in this part of the Study Area.

G) MAPPING METHOD

Data points in the field were collected using a sub-meter GPS (Trimble Geo7X), which provided real-time correction. The iPad tablets were connected via Bluetooth to Bad Elf GPS Pro+, which enabled access to satellite imagery and a full range of basemap features to improve field navigation and photo interpretation during the field survey. E & E marked the data point locations and playa boundaries. They used the information gathered during the field investigation, including the correlation between aerial photo signature and landscape features, to guide the delineation of the playas.

H) ADDITIONAL INFORMATION

As discussed in Brostoff et al. (2001), playas do not exhibit normal wetland indicators with hydrophytic plant communities and hydric soil indicators. Brostoff et al. (2001) assert that hydrophytic plant communities generally do not assemble and hydric soils do not develop in playas for very similar reasons: low soil organic matter, high pH, high salinity, limited microbial activity, and erratic hydrologic regime.

The playas within the Study Area do not qualify as wetlands due to the lack of hydrophytic vegetation and/or hydric soil. As mentioned above, much of the playas are not sufficiently vegetated to qualify as wetlands. Those that are vegetated typically support xerophytic species that do not have a wetland indicator status. In general, species that do not have a wetland indicator status are assumed to be adapted to upland conditions (USACE 2010).

Approximately one-half of the total on-site area occupied by playas is underlain by the Playas soil map unit, the only hydric soil mapped by NRCS as occurring on site (Table H-1). Within the Study Area, this soil type is only mapped within Area B. Another 35 percent of the playa area is underlain by Salhouse ashy loamy fine sand, a somewhat excessively drained soil formed in lacustrine deposits derived from volcanic rocks. The remaining 15 percent of the playa area is supported by soil map units similar to the Salhouse soil. Soil profiles observed in playas within the Playas soil type were not very different from soil profiles in playas within other NRCS-mapped soil types.

Table H-1 Soil Types Supporting Playas and Playa Mosaics in the Study Area

Soil Map Unit (Soil Type)	Playa (acres)	Playa Mosaic (acres)	Grand Total (acres)	Percent Total
Abert ashy loamy sand, 0 to 2 percent slopes	0.09	0.82	0.91	0.62%
Morehouse ashy loamy fine sand, 0 to 2 percent slopes	0	0.14	0.14	0.09%
Morehouse ashy loamy fine sand, 2 to 20 percent slopes	4.15	4.31	8.46	5.82%
Playas	22.71	49.00	71.71	49.34%
Salhouse ashy loamy fine sand, strongly alkaline, 2 to 20 percent slopes	53.58	0	53.58	36.86%
Thornlake complex, 0 to 2 percent slopes	0	10.56	10.56	7.27%
Total	80.53	64.82	145.35	100.00%

These subsurface horizons that showed high value/low chroma colors when dry and medium value/low chroma when moist may be the result of carbonate accumulation rather than iron reduction or translocation via persistent saturation. As described above, the soil profiles underlying the playas do not meet hydric soil indicators involving the presence of a depleted matrix due to the medium value/low chroma colors when moist. Calcium carbonates and other carbonates are commonly found in alkaline soils, which are typical of arid and semiarid climates. As described above, all the soils within the Study Area are alkaline and many have layers that are strongly alkaline (pH 8.5-9.0) and a few are very strongly alkaline (pH>9.0) (National Cooperative Soil Survey 2010a 2010b, 2011a, 2011b, 2011c, 2011d, 2011e, 2011f).

Although none of the on-site soils are known to exhibit calcic horizons, which often exhibit high value and low chroma and may therefore be mistaken for a depleted matrix (USACE 2010), the subsurface horizons described above are similar to calcic horizons, and may share many of the same qualities. A calcic horizon is an illuvial layer enriched with calcium carbonate and other carbonates over a thickness of 6 inches or more and typically has a calcium carbonate equivalent content of 15 percent or more. Two of the six soil types that support playas in the Study Area are described by the county soil survey as having subsurface horizons that are heavily influenced by carbonate accumulation (NRCS 2012). As described above, most of the playas within the Study Area are soft playas.. However, excavation of two profiles in two separate playas was restricted above 12 inches below ground surface due to shovel refusal. The restrictive horizons were apparently cemented; the horizons were not gravelly or rocky and there is no evidence of

artificial compaction. Cemented layers in arid environments is often caused by carbonate accumulation (Thomas 2011).

D) RESULTS AND CONCLUSIONS

The waters delineated within the Study Area total 153.26 acres with 17.24 acres in Area A and 136.02 acres in Area B. No playas or any other waters occur in Area C, Area D, Area E, or the gen-tie transmission line corridors.

No wetlands occur on site. Playas or portions of playas that have less than 5 percent total plant cover (Playa Barrens) are too sparsely vegetated to qualify as wetlands. Playas or portions of playas that have 5 percent or more total plant cover (Playa Mosaics) are primarily vegetated with non-hydrophytic species. Furthermore, soils observed within the delineated playas did not meet hydric soil criteria. Although all playas within the Study Area exhibited surface soil cracks, an indicator of wetland hydrology, this evidence of recent inundation is known to occur in non-wetlands waters distinguished from wetlands by the absence of hydrophytic vegetation and/or hydric soils (USACE 2010).

All the on-site waters are internally drained. No streams, runoff channels, or other conveyances lead to or from the delineated features.

J) DISCLAIMER

This report documents the investigation, best professional judgment, and conclusions of the investigator. It is correct and complete to the best of the investigator's knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with Oregon Administrative Rules 141-090-0005 through 141-090-0055.

K) REFERENCES

- Adamus, P. 2001. *Guidebook for Hydrogeomorphic (HGM)-based Assessment of Oregon Wetland and Riparian Sites: Statewide Classification and Profiles*. Oregon Department of State Lands. Salem, Oregon.
https://www.oregon.gov/dsl/WW/Documents/hydro_guide_class.pdf Accessed July 13, 2018.
- Brostoff, William, Robert Lichvar, and Steven Sprecher. 2001. *Delineating Playas in the Arid Southwest: A Literature Review*. Department of the Army, Corps of Engineers.

Cowardin L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish & Wildlife Service Pub. FWS/OBS-79/31, Washington, DC.

DSL (Oregon Department of State Lands). Not Dated. “Technical Resources – Delineation Report Requirements.” Salem, Oregon. <https://www.oregon.gov/dsl/WW/Pages/Resources.aspx#requirements> Accessed June 12, 2018.

_____. 2016. *Removal-Fill Guide – A Guide to the Removal-Fill Permit Process*. Salem, Oregon. https://www.oregon.gov/dsl/WW/Documents/Removal_Fill_Guide.pdf Accessed June 14, 2018.

ELab (Environmental Laboratory). 1987. *U.S. Army Corps of Engineers Wetland Delineation Manual*. (Technical Report Y-87-1). U.S. Army Waterways Experimental Station. Vicksburg, Mississippi.

EPA (U.S. Environmental Protection Agency). 2017. Ecoregion Download Files by State-Region 10. <https://www.epa.gov/eco-research/ecoregion-download-files-state-region-10#pane-35> Accessed May 4, 2018.

Esri. 2018. “World Imagery” [basemap]. Scale Not Given. <https://www.arcgis.com/home/item.html?id=10df2279f9684e4a9f6a7f08febac2a9>. Accessed August 2, 2018.

FGDC (Federal Geographic Data Committee). 2013. *Classification of Wetlands and Deepwater Habitats of the United States*. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC. <https://www.fgdc.gov/standards/projects/wetlands/nvcs-2013>.

Google Earth. Imagery Date: May 29, 2006. Christmas Valley, Oregon. 43.2763°, -120.9187°, Eye alt: 11,609 feet. <http://www.earth.google.com> Accessed July 13, 2018.

Hauser, A. Scott. 2006. “*Distichlis spicata*.” In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). <https://www.fs.fed.us/database/feis/plants/graminoid/disspi/all.html> Accessed July 6, 2018.

Kartesz, J.T. 2015. The Biota of North America Program (BONAP). North American Vascular Flora. Taxonomic Data Center. Chapel Hill, North Carolina. <http://www.bonap.org>. Accessed May 10, 2018.

Lichvar, R. W., M. Butterwick, N. C. Melvin, and W. N. Kirchner. 2016. The National Wetland Plant List: 2016 Update of Wetland Ratings.

Lichvar, R. W. and McColley, S. M. 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*. A

Delineation Manual. ERDC/CRREL TR-08-12. Cold Regions Research and Engineering Laboratory. U.S. Army Corps of Engineers. Hanover, New Hampshire.

National Cooperative Soil Survey. 2010. Abert Series. Rev. GJW-TDT-JVC-JBF.

https://soilseries.sc.egov.usda.gov/OSD_Docs/A/ABERT.html Accessed July 3, 2018.

_____. 2010b. Bonnick Series. Rev. GJW-TDT-JVC-JBF.

https://soilseries.sc.egov.usda.gov/OSD_Docs/B/BONNICK.html Accessed July 3, 2018.

_____. 2011a. Flagstaff Series. Rev. GJW-TDT-JVC-JBF.

https://soilseries.sc.egov.usda.gov/OSD_Docs/F/FLAGSTAFF.html Accessed July 3, 2018.

_____. 2011b. Fort Rock Series. Rev. GJW-TDT-JVC-JBF.

https://soilseries.sc.egov.usda.gov/OSD_Docs/F/FORT_ROCK.html Accessed July 3, 2018.

_____. 2011c. Morehouse Series. Rev. GJW-TDT-JVC-JBF.

https://soilseries.sc.egov.usda.gov/OSD_Docs/M/MOREHOUSE.html Accessed July 3, 2018.

_____. 2011d. Salhouse Series. Rev. GJW-TDT-JVC-JBF.

https://soilseries.sc.egov.usda.gov/OSD_Docs/S/SALHOUSE.html Accessed July 3, 2018.

_____. 2011e. Thornlake Series. Rev. GJW-TDT-JVC-JBF.

https://soilseries.sc.egov.usda.gov/OSD_Docs/T/THORNLAKE.html Accessed July 3, 2018.

_____. 2011f. Wegert Series. Rev. GJW-TDT-JVC-JBF.

https://soilseries.sc.egov.usda.gov/OSD_Docs/W/WEGERT.html Accessed July 3, 2018.

National Drought Mitigation Center. 2018. "Contiguous U.S." University of Nebraska- Lincoln, National Oceanic and Atmospheric Administration, and U.S. Department of Agriculture.

. <http://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?conus> Accessed August 8, 2018.

NOAA (National Oceanic and Atmospheric Administration) Regional Climate Centers. Not Dated. Agricultural Climate Information System (AgCIS) for Lake County, OR.

<http://agacis.rcc-acis.org/?fips=41037> Accessed July 6, 2018.

NRCS (Natural Resources Conservation Service). 2012. "Published Soil Surveys for Oregon." U.S. Department of Agriculture.

<https://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=OR> Accessed May 7, 2018.

- _____. 2010. Saltgrass *Distichlis spicata* (L.) Greene. *Plant Fact Sheet*. USDA. https://plants.usda.gov/factsheet/pdf/fs_disp.pdf Accessed July 6, 2018.
- _____. 1997. "NRCS Engineering Field Handbook Hydrology Chapters." NEH Part 630. U.S. Department of Agriculture. <https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/manage/hydrology/?cid=stelprdb1043063> Accessed July, 2018
- Soil Survey Staff, NRCS (Natural Resources Conservation Service). 2017. Soil Survey Geographic Database (SSURGO). United States Department of Agriculture. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/>. Accessed May 9, 2018.
- Thomas, David S. G. 2011. *Arid Zone Geomorphology: Process, Form and Change in Drylands*. Third Edition. Wiley-Blackwell. West Sussex, UK
- Thorson, T. D., S. A. Bryce, D.A. Lammers, A. J. Woods, J. M. Omernik, J. Kagan, D.E. Pater, and J.A. Comstock. 2003. Ecoregions of Oregon (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,500,000). <https://www.epa.gov/eco-research/ecoregion-download-files-state-region-10> Accessed May 4, 2018.
- Tilley, D. and L. St. John. 2013. Plant Guide for Shadscale Saltbush (*Atriplex confertifolia*). USDA-Natural Resources Conservation Service, Plant Materials Centers. Aberdeen, Idaho. https://plants.usda.gov/plantguide/pdf/pg_atco.pdf Accessed July 6, 2018.
- Tirmenstein, D. 1999. *Chrysothamnus viscidiflorus*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). <https://www.fs.fed.us/database/feis/plants/shrub/chrvis/all.html> Accessed July 9, 2018.
- USACE (U.S. Army Corps of Engineers). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region V2.0. ERDC/CRREL TR-08-28. Environmental Laboratory. U.S. Army Corps of Engineers. Vicksburg, Mississippi.
- _____. 2005. Regulatory Guidance Letter 05-05. Ordinary High Water Mark Identification. <http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf>. Accessed March 17, 2017.
- USFWS (U. S. Fish and Wildlife Service). 2018. National Wetlands Inventory (NWI). Ecological Services. <http://www.fws.gov/wetlands/> Accessed July 6, 2018.
- USGS (U.S. Geological Survey). 2004. Playas. USGS Western Region Geology and Geophysics Science Center <http://pubs.usgs.gov/of/2004/1007/playas.html> Accessed July 6, 2018.

_____. 2017. National Hydrography Dataset (NHD). The National Map.
http://nhd.usgs.gov/NHD_High_Resolution.html Accessed July 6, 2018.

_____. 2018. Science in Your Watershed, Locate Your Watershed.
<https://water.usgs.gov/wsc/cat/17120005.html>. Accessed August 8, 2018.

ATTACHMENT A

Figures

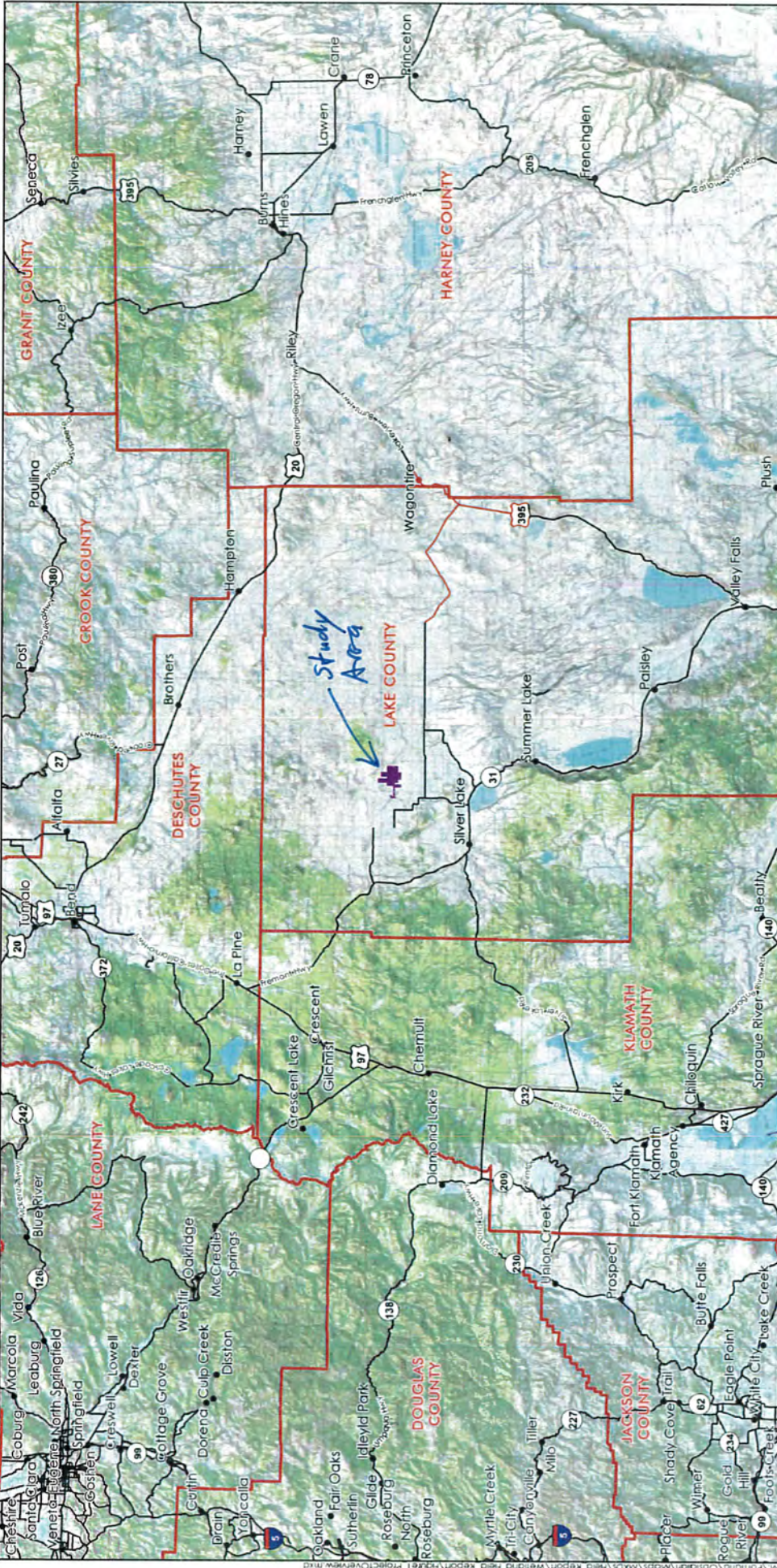
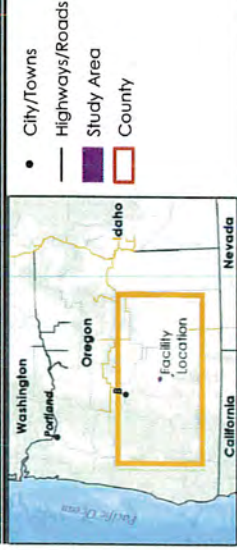


Figure 1
Study Area Location
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January 2019

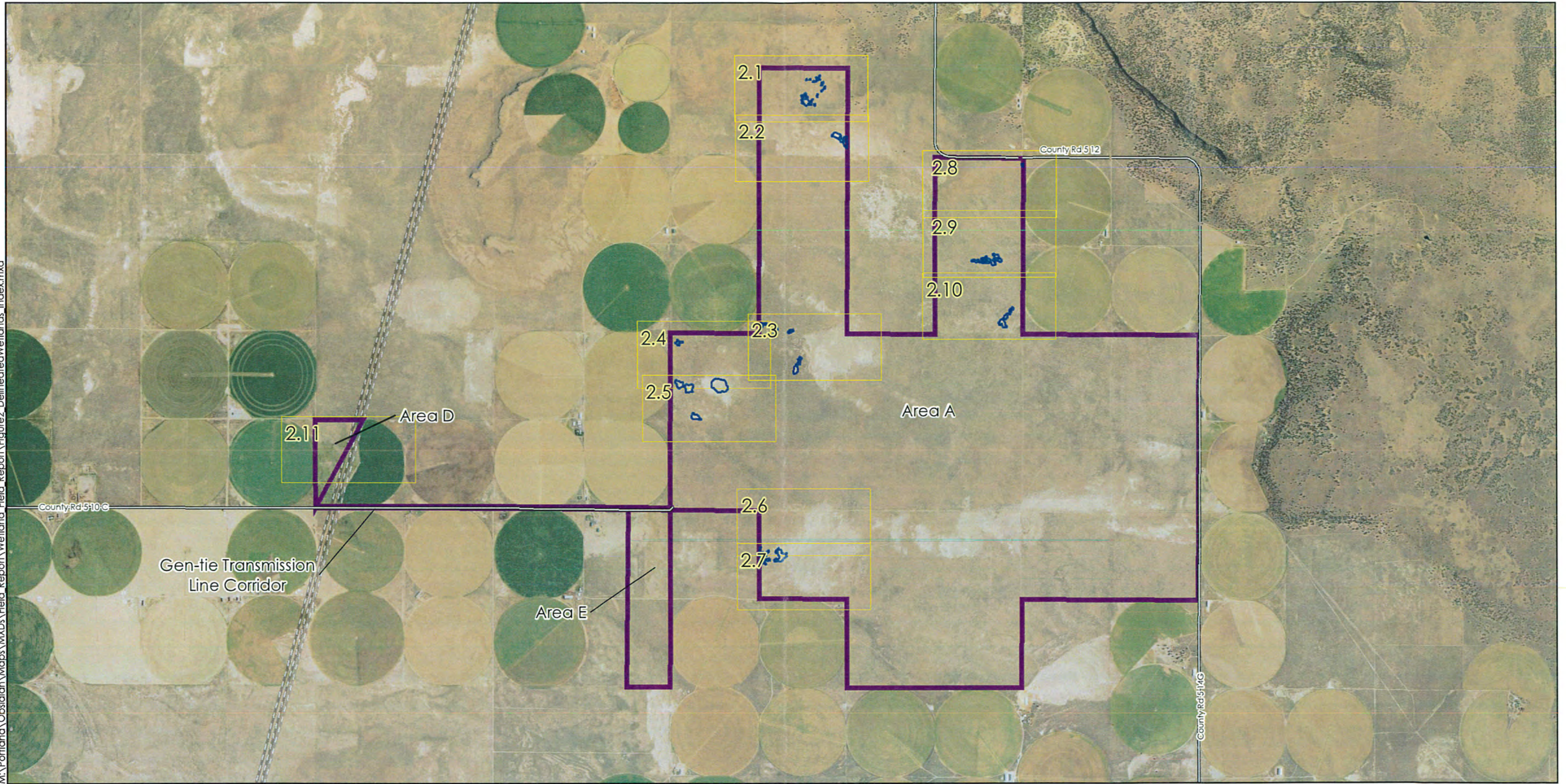
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WD2018-0581



Sources: Esri 2018

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-  Playa Ordinary High Water Boundary – Not Wetland
-  Extents for Figures 2.1 - 2.11
-  Study Area Boundary
-  Bonneville Power Administration Transmission Line (500kV)
-  PGE Transmission Line (500kV)
-  Highways/Roads

Note: Plot locations and the boundaries of wetlands and other waters were marked in the field via sub-meter GPS (Trimble Geo 7X). The GPS was set to only record data when sub-meter accuracy was achieved.

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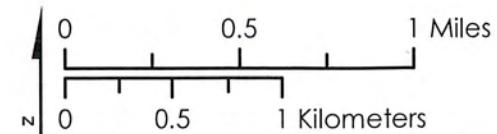


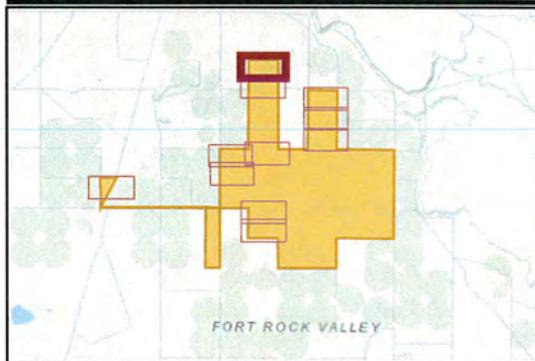
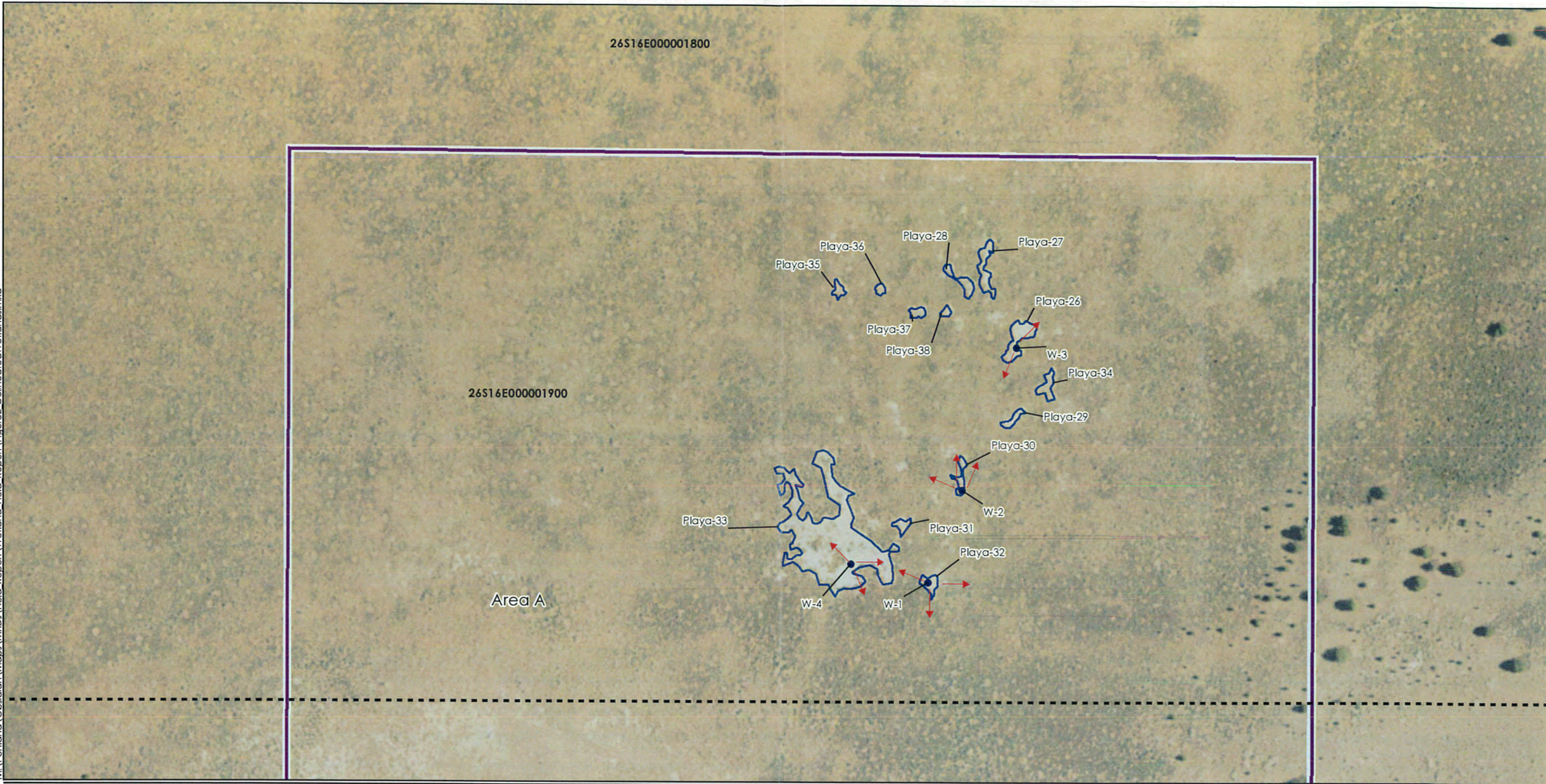
Figure 2
Delineated Waters Tile Index

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January 2019

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- Data Point
- ➔ Photograph Location and Direction of View
- - - Match Line with Adjacent Overlapping Figure
- ⊞ Playa Ordinary High Water Boundary – Not Wetland
- ▭ Study Area Boundary

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DSL WD # 2018-0581

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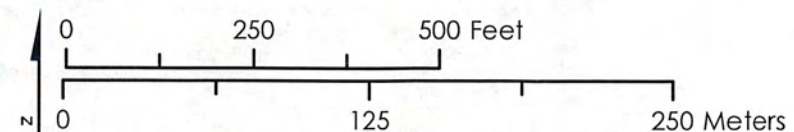


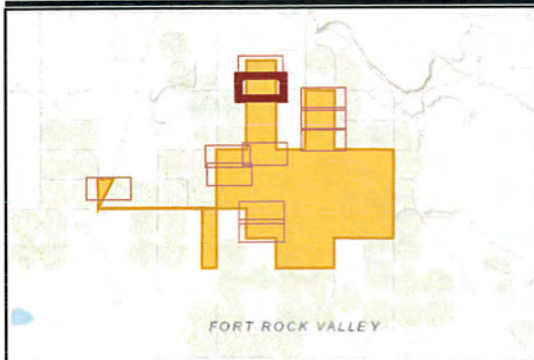
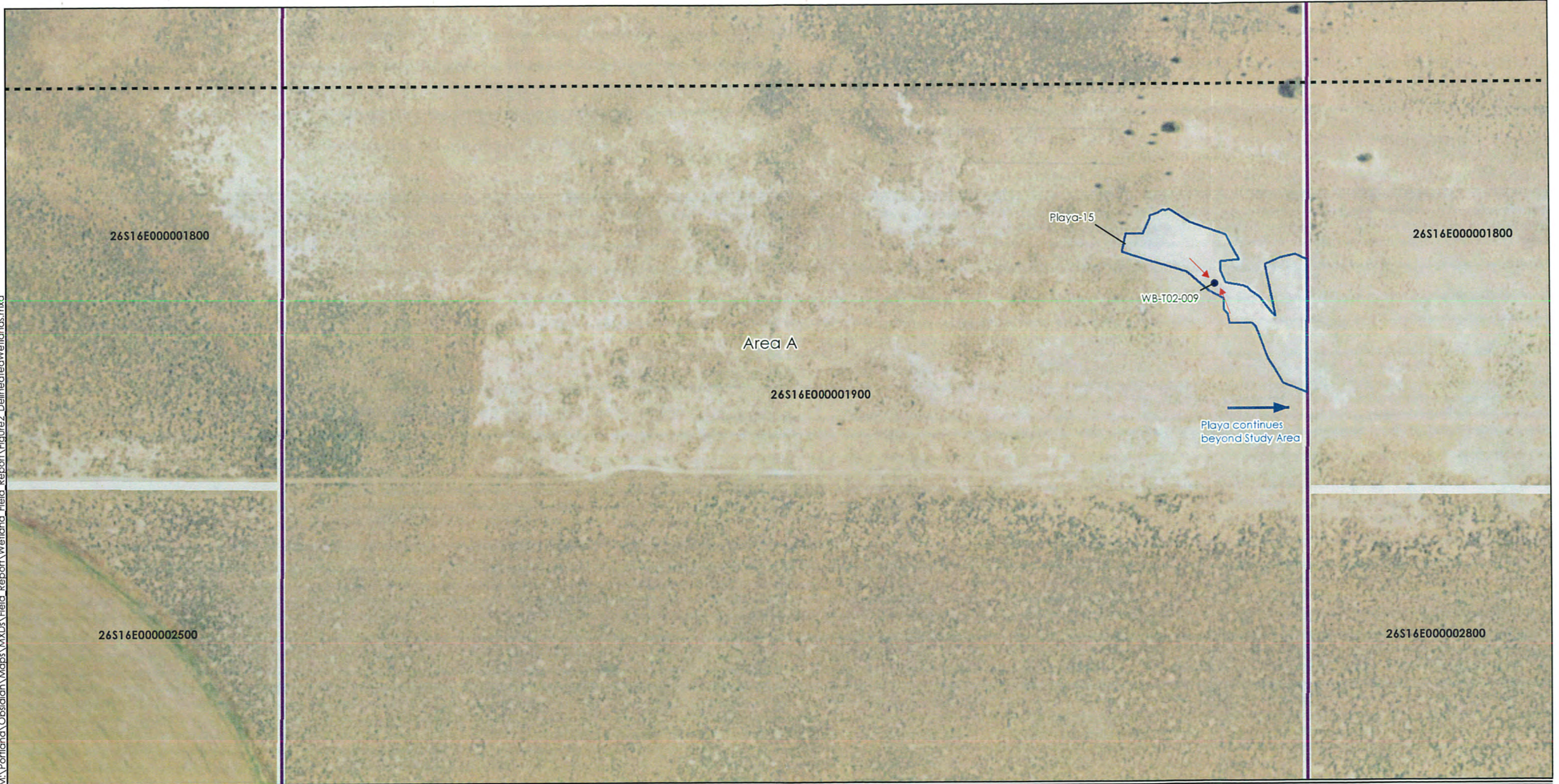
Figure 2.1
Delineated Waters

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- Data Point
- ➔ Photograph Location and Direction of View
- - - Match Line with Adjacent Overlapping Figure
- ⊞ Playa Ordinary High Water Boundary – Not Wetland
- ▭ Study Area Boundary
- ▭ Tax Lot Boundary

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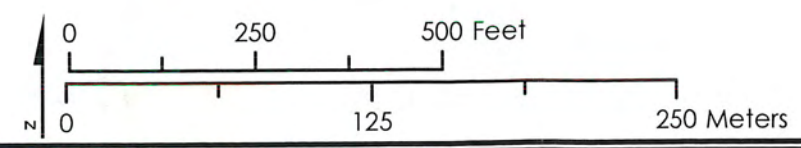
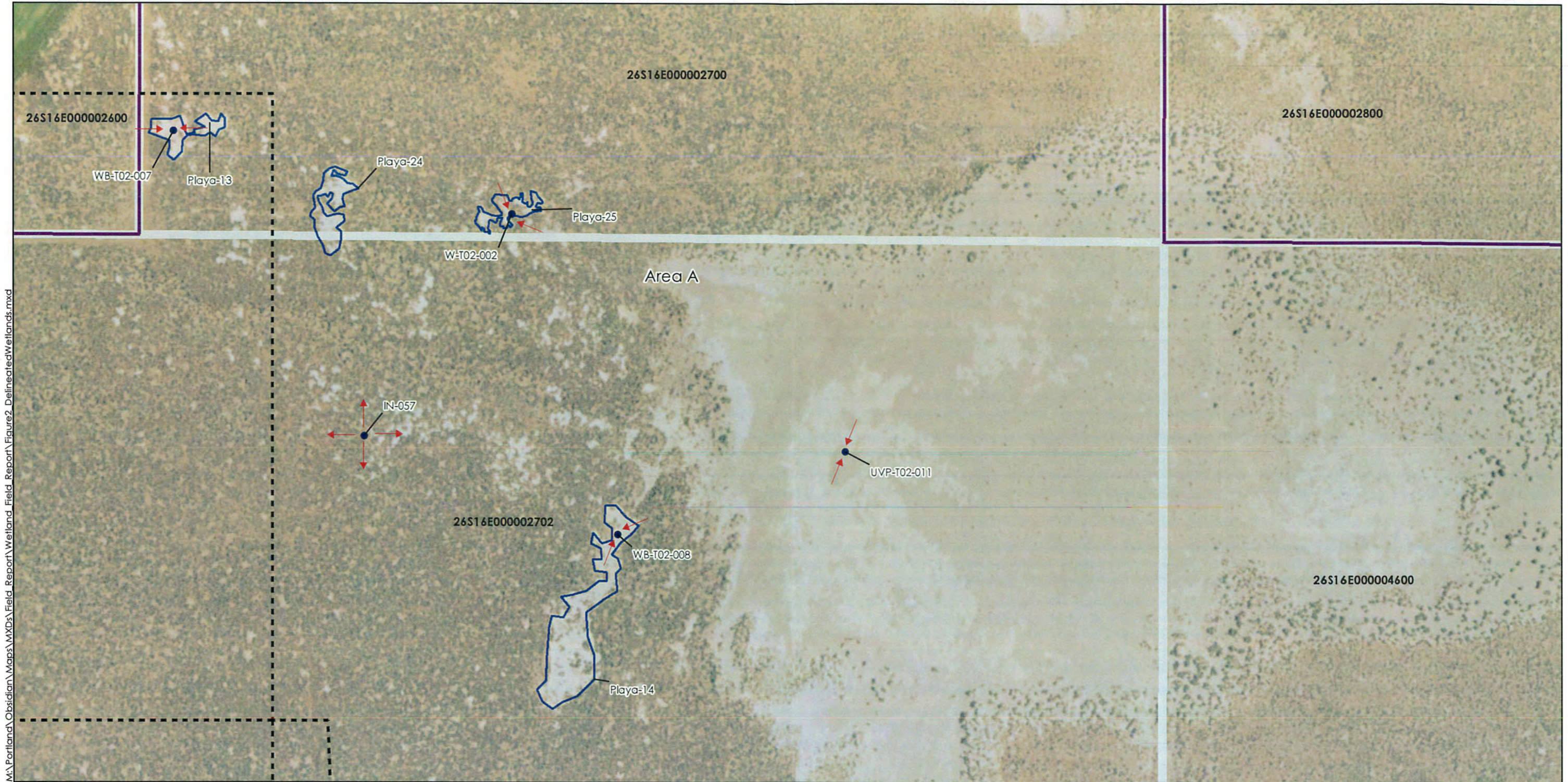


Figure 2.2
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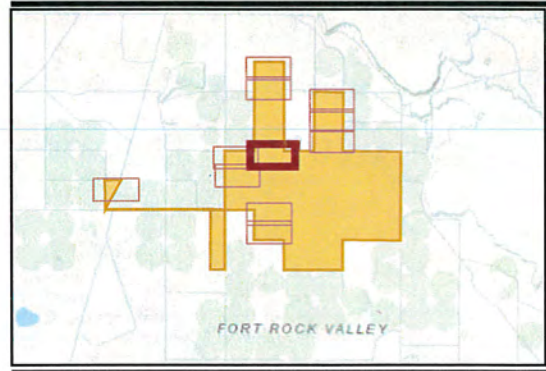
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- - - Match Line with Adjacent Overlapping Figure
- 👤 Playa Ordinary High Water Boundary – Not Wetland
- ▭ Study Area Boundary
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Note: Plot locations and the boundaries of wetlands and other waters were marked in the field via sub-meter GPS (Trimble Geo 7X). The GPS was set to only record data when sub-meter accuracy was achieved.

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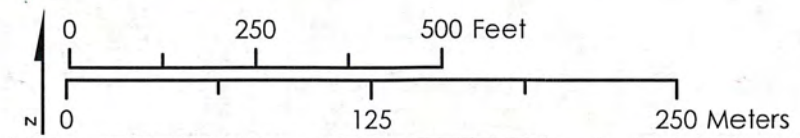


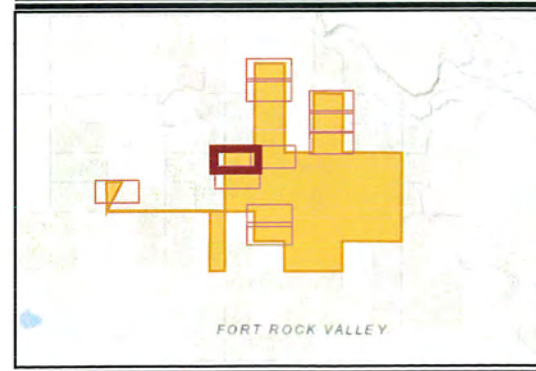
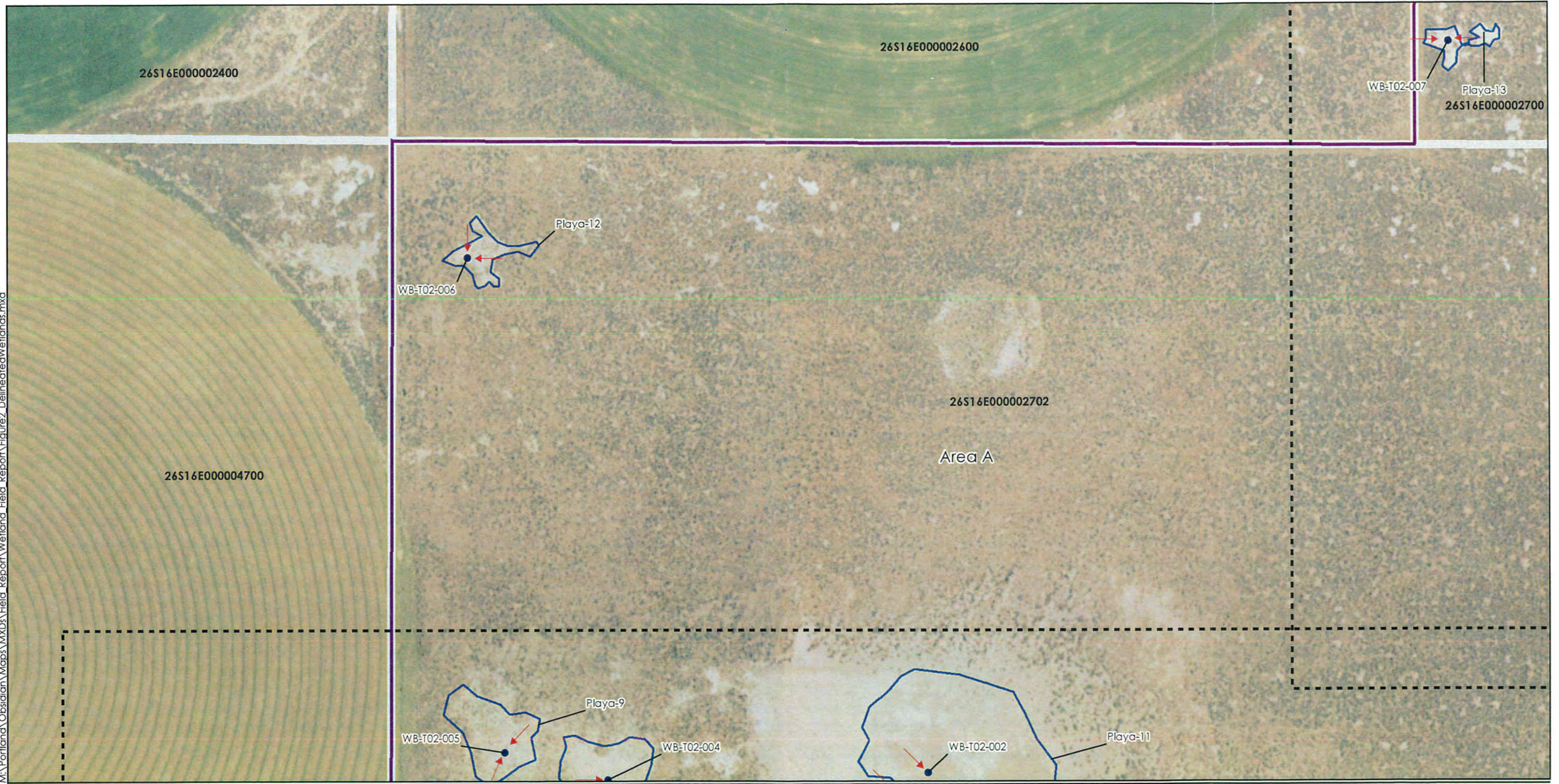
Figure 2.3
Delineated Waters

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- Data Point
 - ➔ Photograph Location and Direction of View
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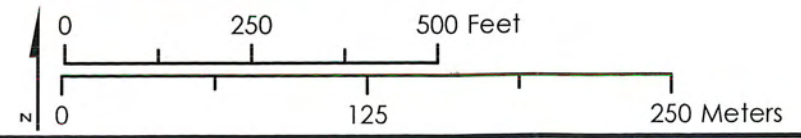


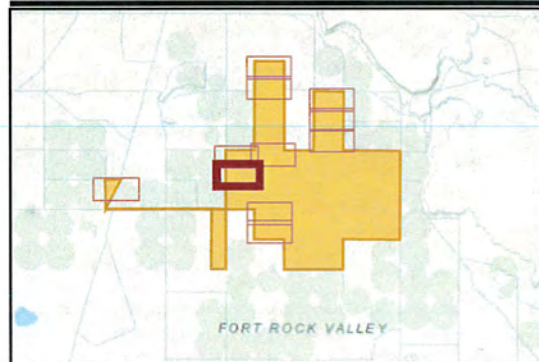
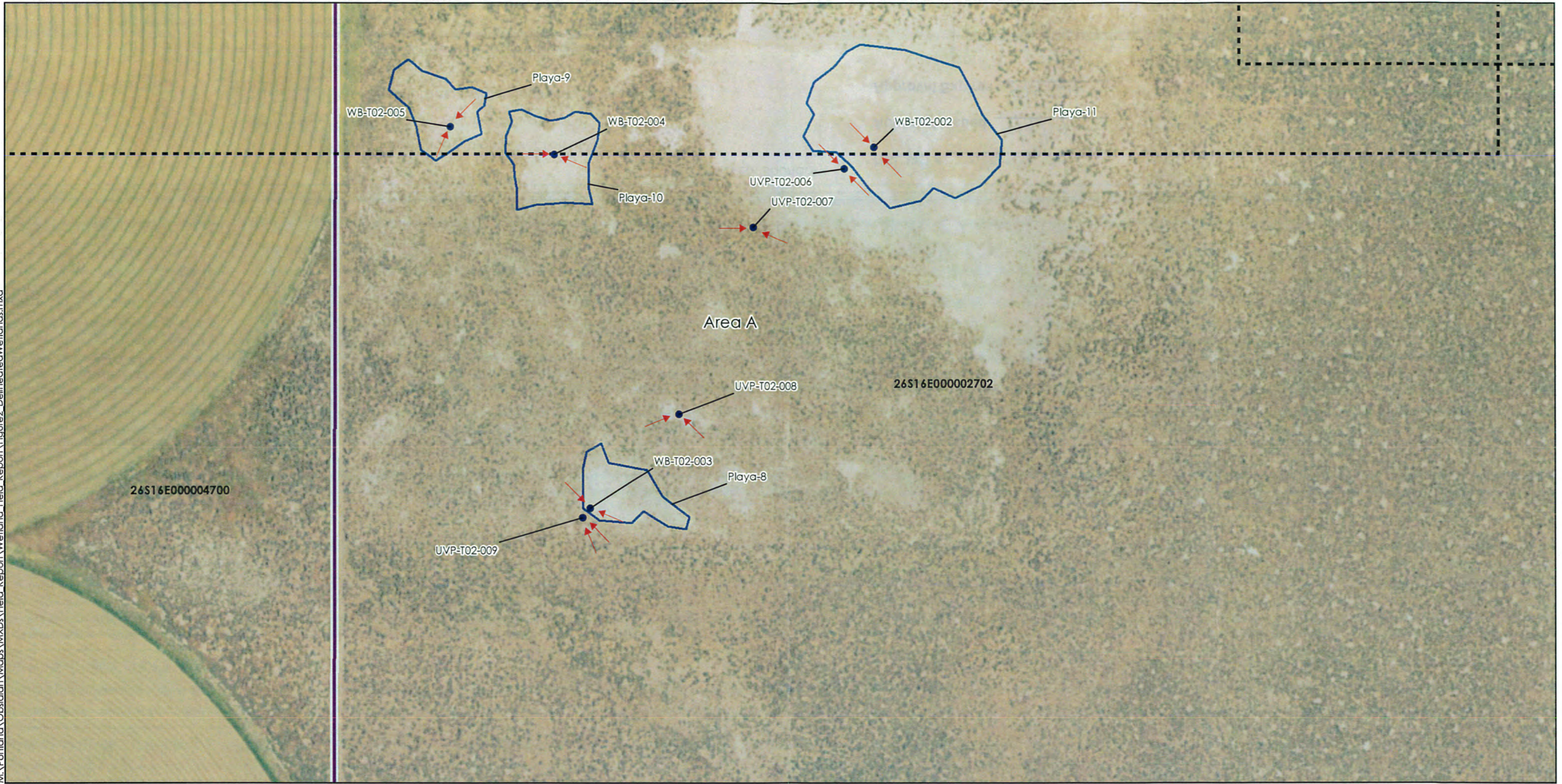
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- Data Point
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- - - Match Line with Adjacent Overlapping Figure
- ⬮ Playa Ordinary High Water Boundary – Not Wetland
- ▭ Study Area Boundary
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Note: Plot locations and the boundaries of wetlands and other waters were marked in the field via sub-meter GPS (Trimble Geo 7X). The GPS was set to only record data when sub-meter accuracy was achieved.

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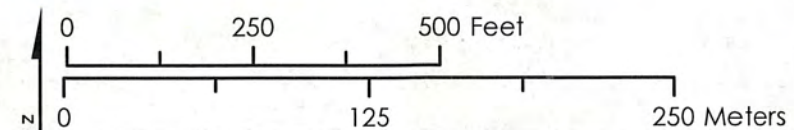


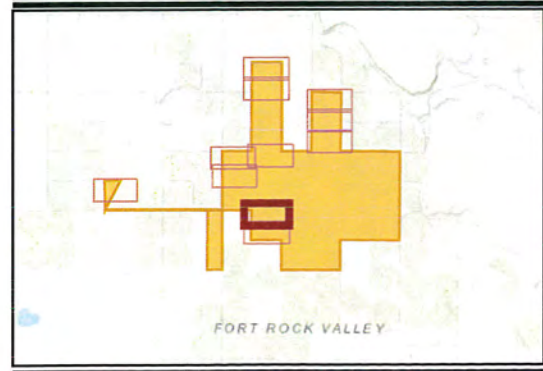
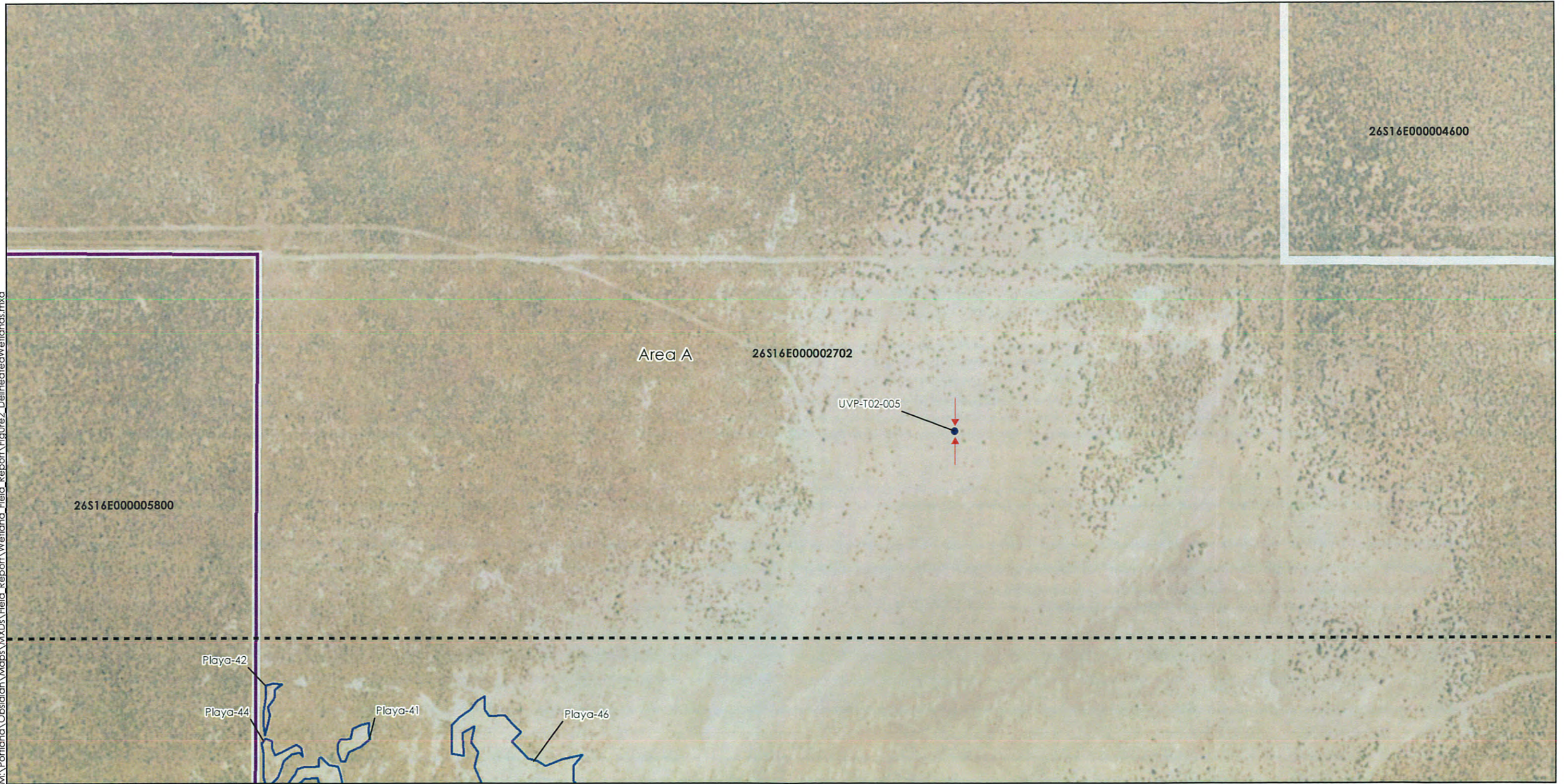
Figure 2.5
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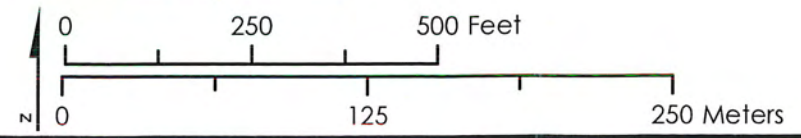


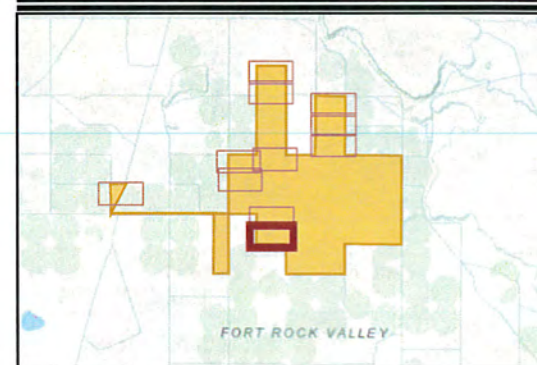
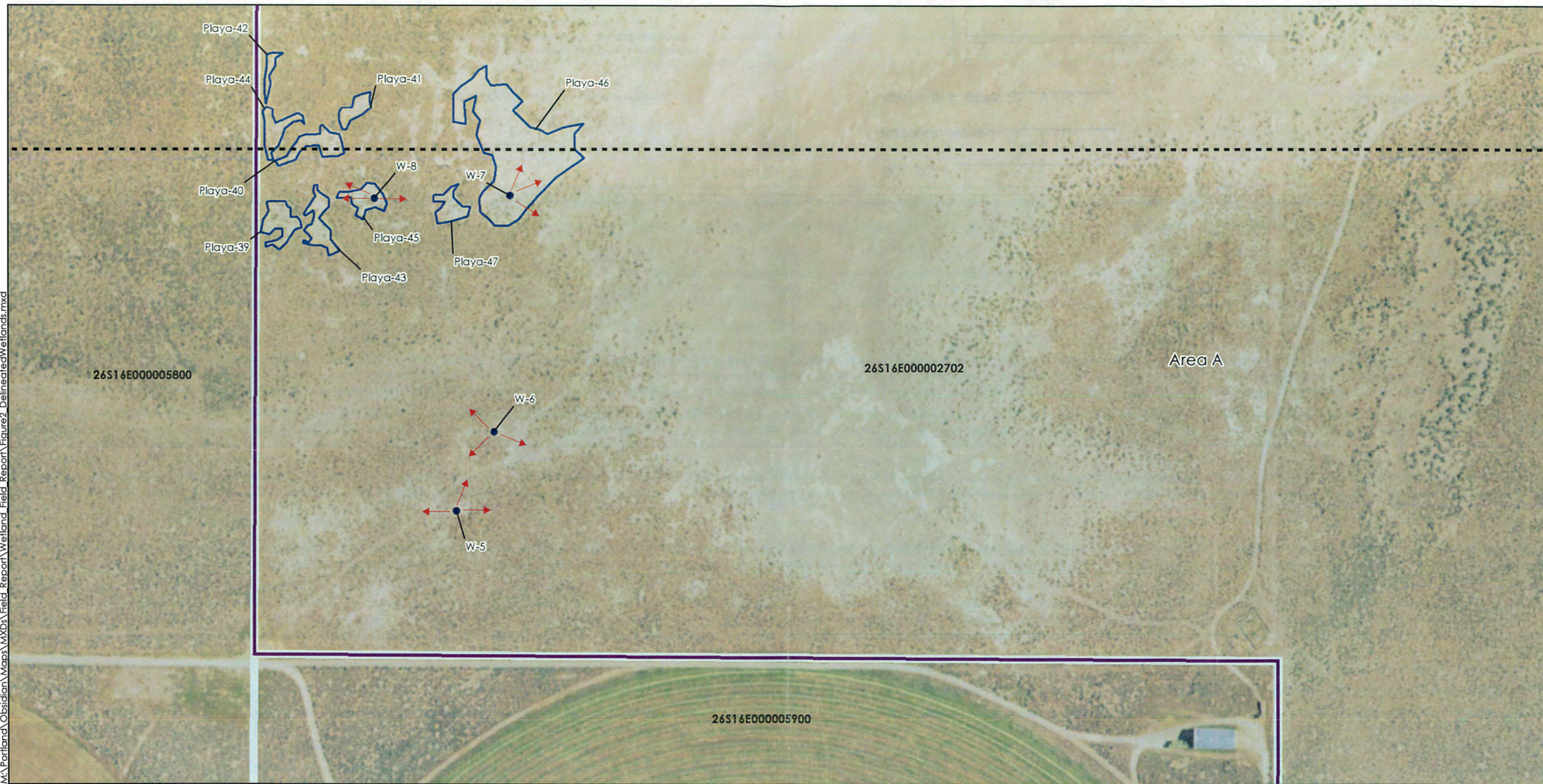
Figure 2.6
Delineated Waters

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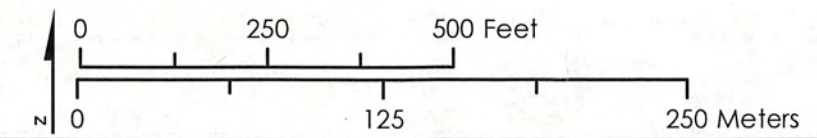
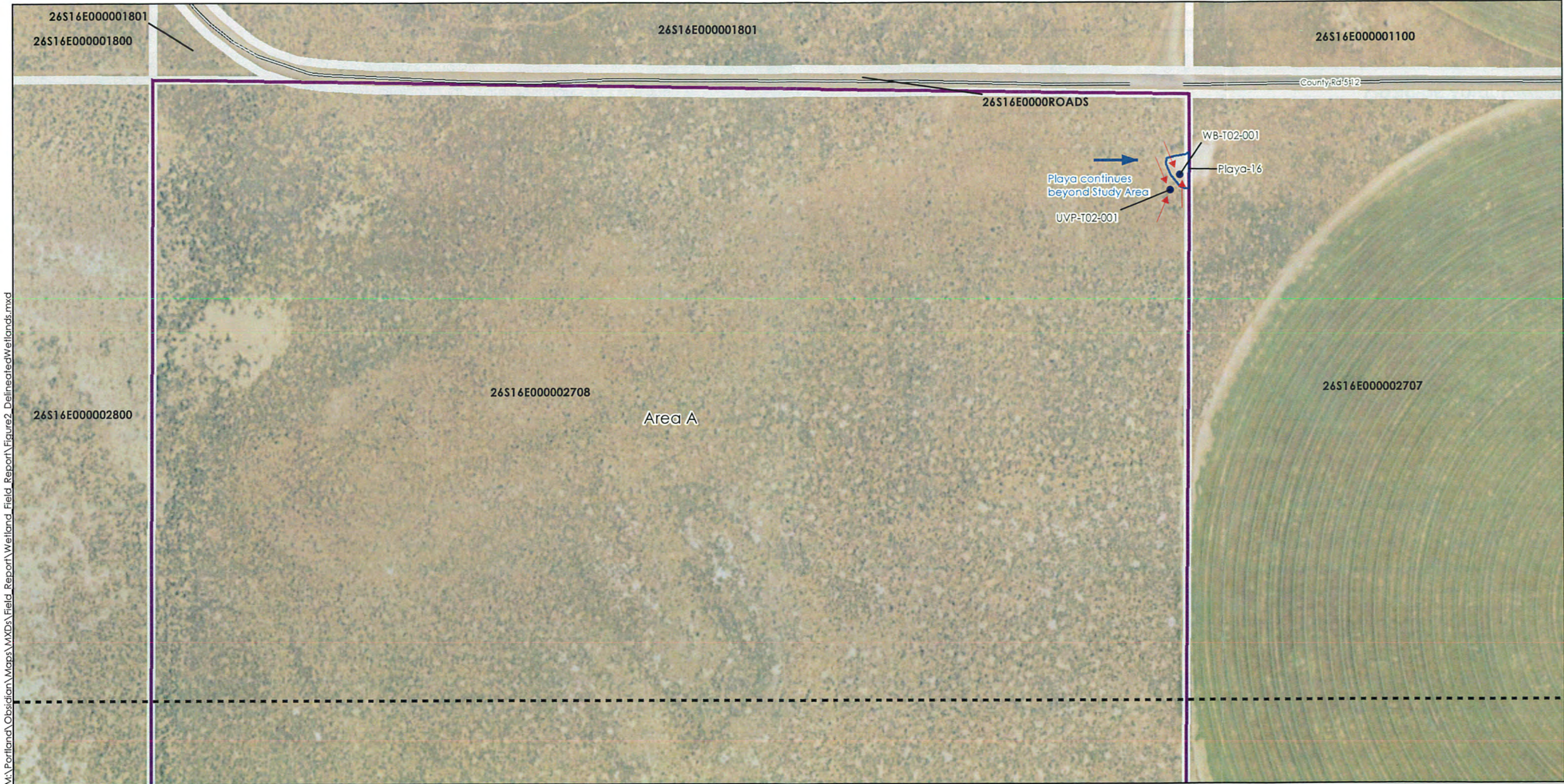


Figure 2.7
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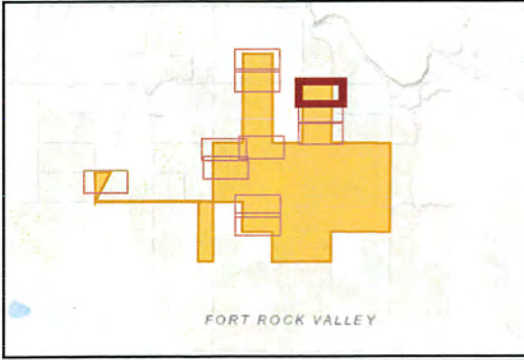
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 - Match Line with Adjacent Overlapping Figure
 - ⊕ Playa Ordinary High Water Boundary – Not Wetland
 - ▭ Study Area Boundary
 - ▭ Tax Lot Boundary
 - == Highways/Roads
- Note: Plot locations and the boundaries of wetlands and other waters were marked in the field via sub-meter GPS (Trimble Geo 7X). The GPS was set to only record data when sub-meter accuracy was achieved.

DSL WD # 2018-0581
 Approval Issued 5/9/19
 Approval Expires 5/9/24

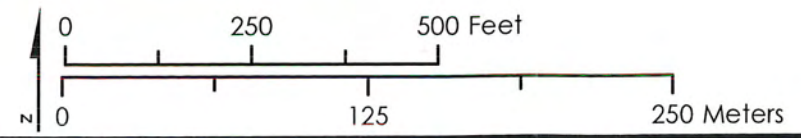


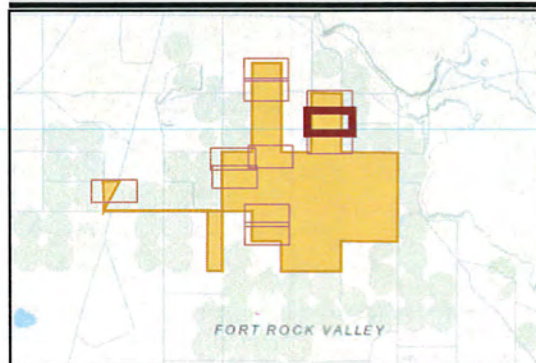
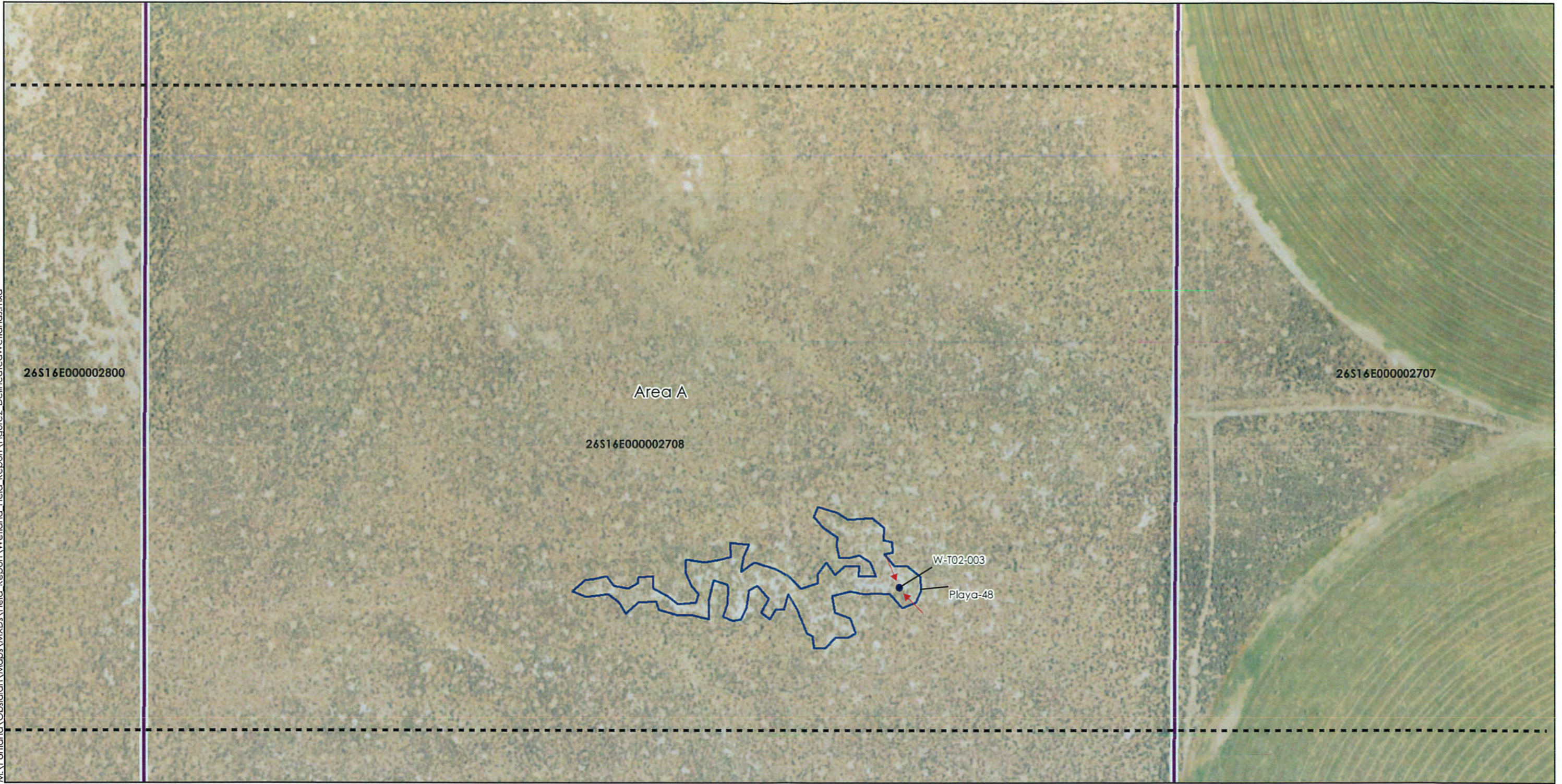
Figure 2.8
Delineated Waters

Obsidian Solar Center

February 2019

Obsidian Solar Center LLC

M:\Portland\Obsidian\Maps\MXDs\Field_Report\Wetland_Field_Report\Figure2_DelineatedWetlands.mxd



- Data Point
- ➔ Photograph Location and Direction of View
- - - Match Line with Adjacent Overlapping Figure
- ⊞ Playa Ordinary High Water Boundary – Not Wetland
- ▭ Study Area Boundary

Note: Plot locations and the boundaries of wetlands and other waters were marked in the field via sub-meter GPS (Trimble Geo 7X). The GPS was set to only record data when sub-meter accuracy was achieved.

▭ Tax Lot Boundary

DSL WD # 2018-0581

Approval Issued 5/9/19

Approval Expires 5/9/24

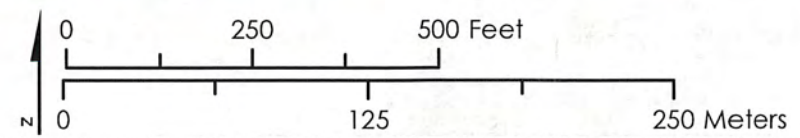


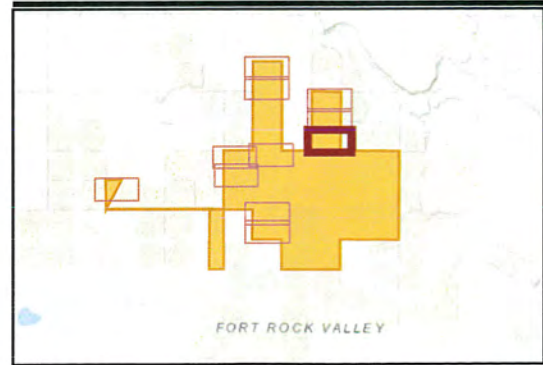
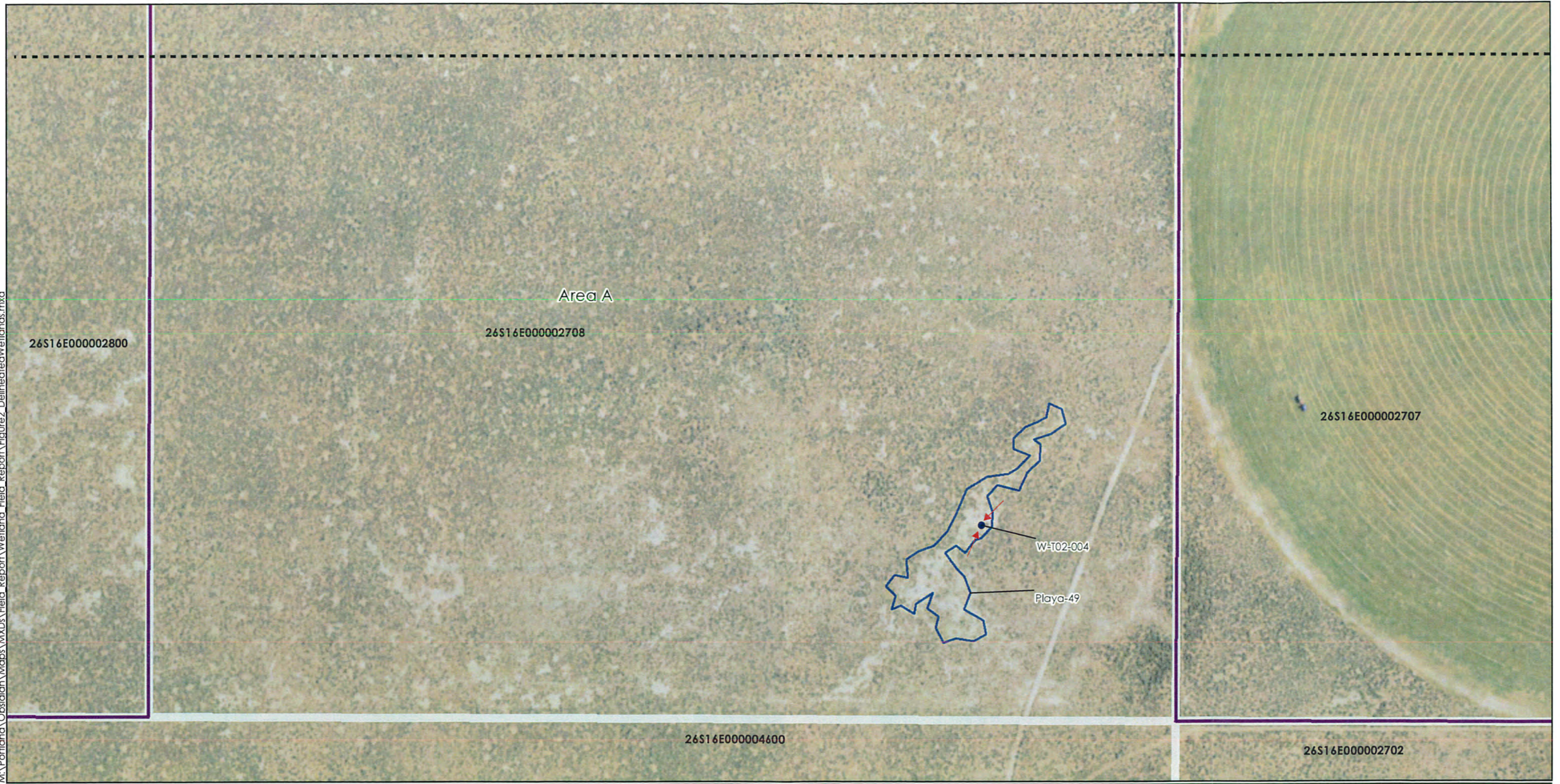
Figure 2.9
Delineated Waters

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- Data Point
- ➔ Photograph Location and Direction of View
- - - Match Line with Adjacent Overlapping Figure
- ⊞ Playa Ordinary High Water Boundary – Not Wetland
- ▭ Study Area Boundary
- ▭ Tax Lot Boundary

Note: Plot locations and the boundaries of wetlands and other waters were marked in the field via sub-meter GPS (Trimble Geo 7X). The GPS was set to only record data when sub-meter accuracy was achieved.

DSL WD # 2018-0581
 Approval Issued 5/9/19
 Approval Expires 5/9/24

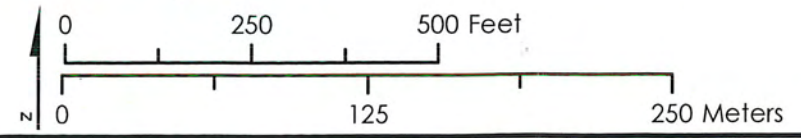


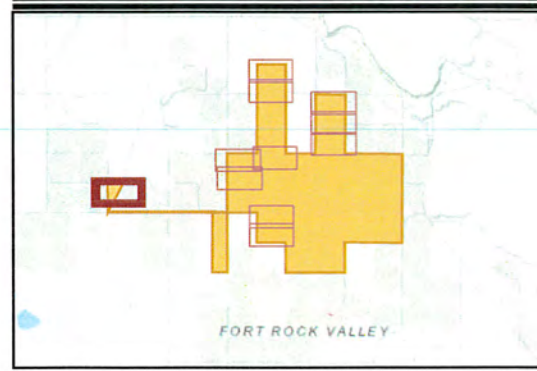
Figure 2.10
Delineated Waters

Obsidian Solar Center

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M:\Portland\Obsidian\Maps\MXD's\Field_Report\Wetland_Field_Report\Figure2_DelineatedWetlands.mxd



- Data Point
- ➔ Photograph Location and Direction of View
- ▭ Study Area Boundary
- ▭ Tax Lot Boundary
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)

Note: Plot locations and the boundaries of wetlands and other waters were marked in the field via sub-meter GPS (Trimble Geo 7X). The GPS was set to only record data when sub-meter accuracy was achieved.

DSL WD # 2018-0581
 Approval Issued 5/9/19
 Approval Expires 5/9/24

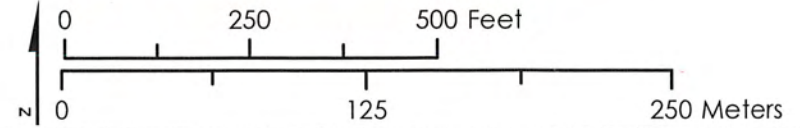
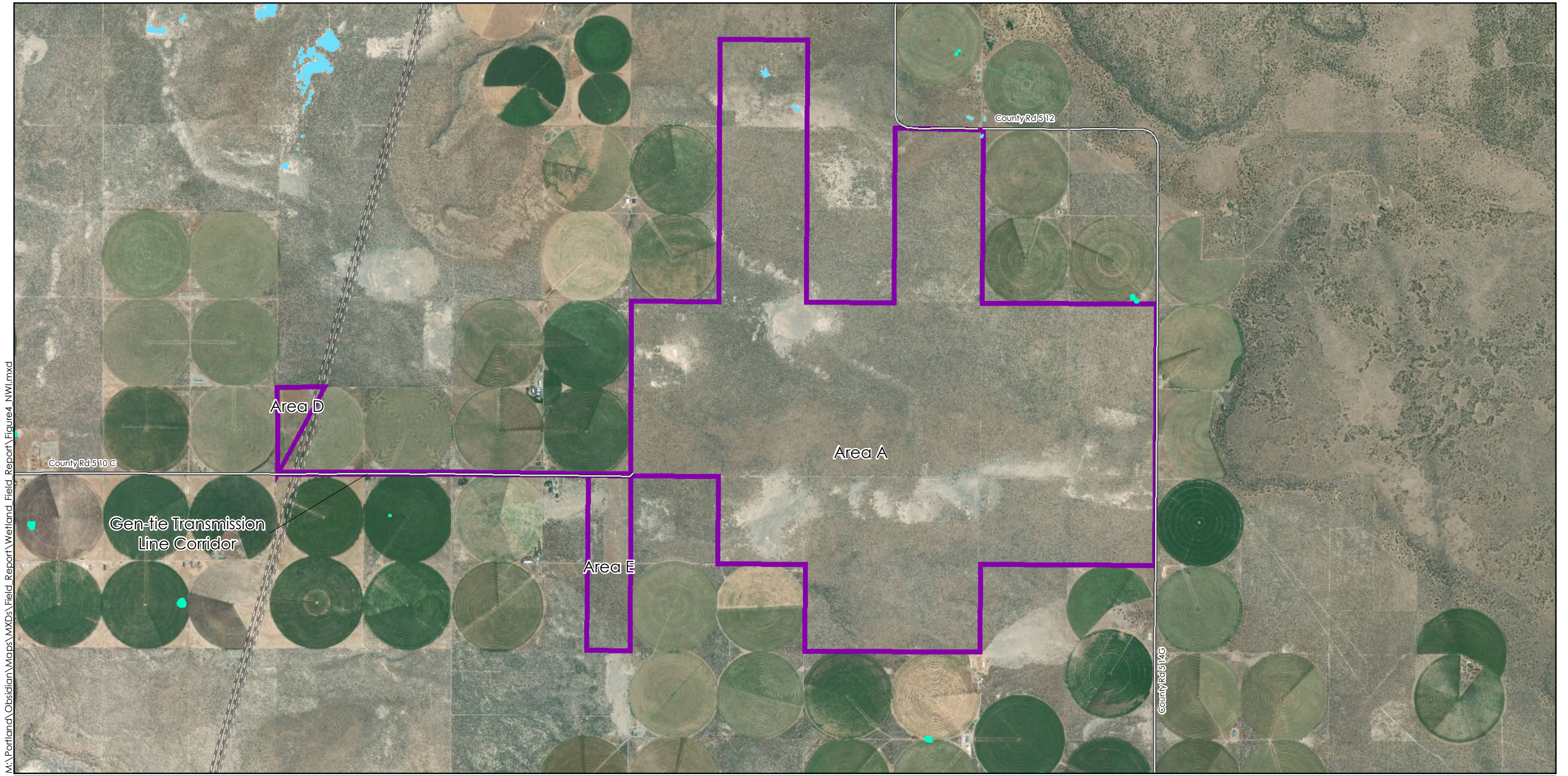


Figure 2.11
Delineated Waters

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- Study Area Boundary
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads
- Palustrine Emergent Wetland (PEM)
- Palustrine Unconsolidated Shore (PUS)

NWI-Mapped Wetlands and Other Waters

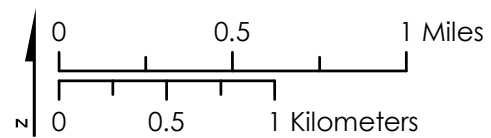


Figure 4
National Wetland
Inventory (NWI)

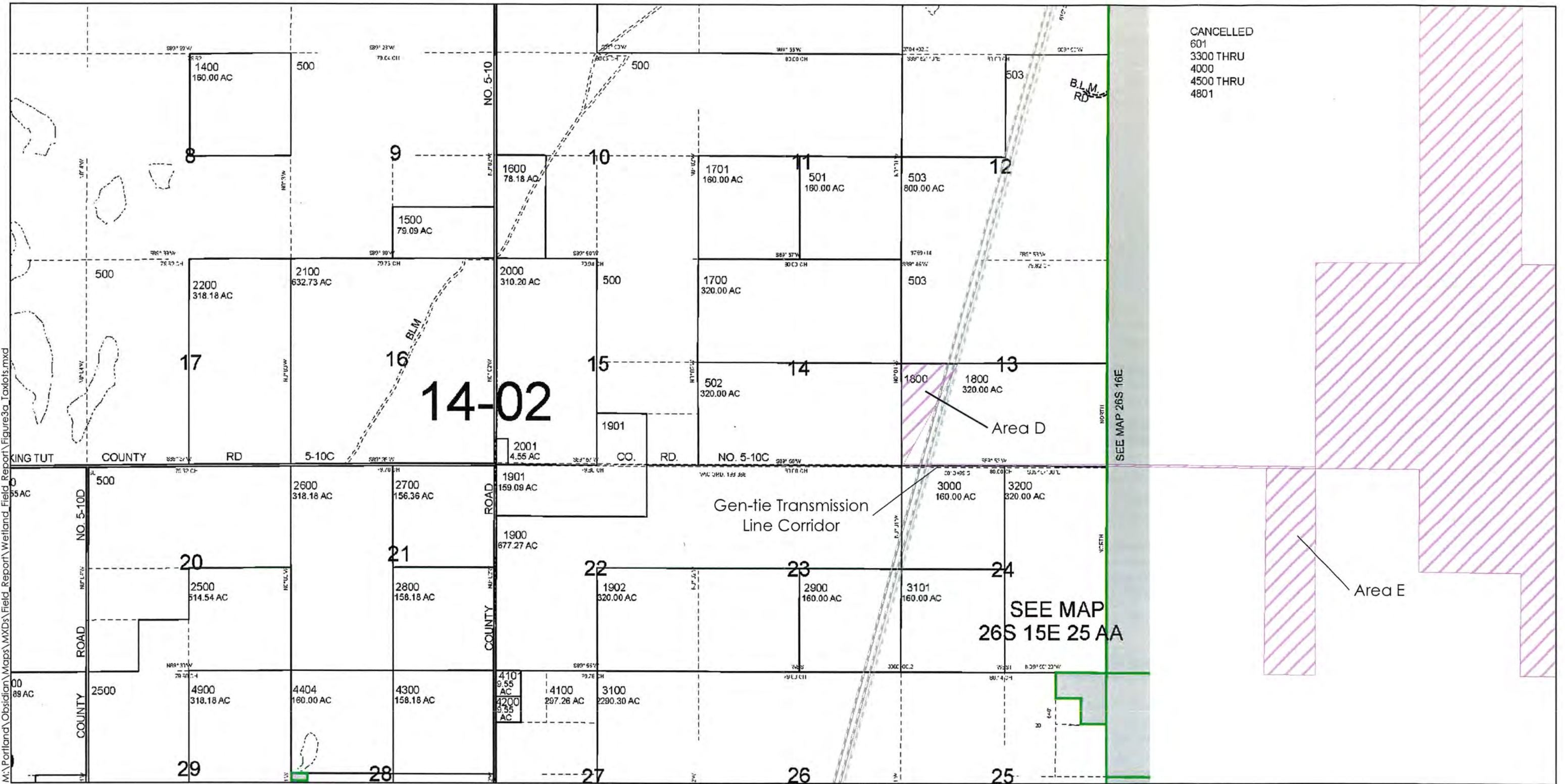
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January 2019

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Sources: Esri 2018, USFWS 2018

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- Study Area
- Tax Lot Boundary
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)

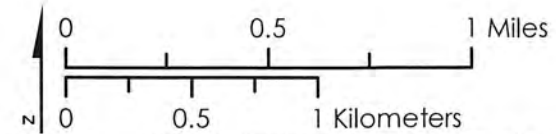
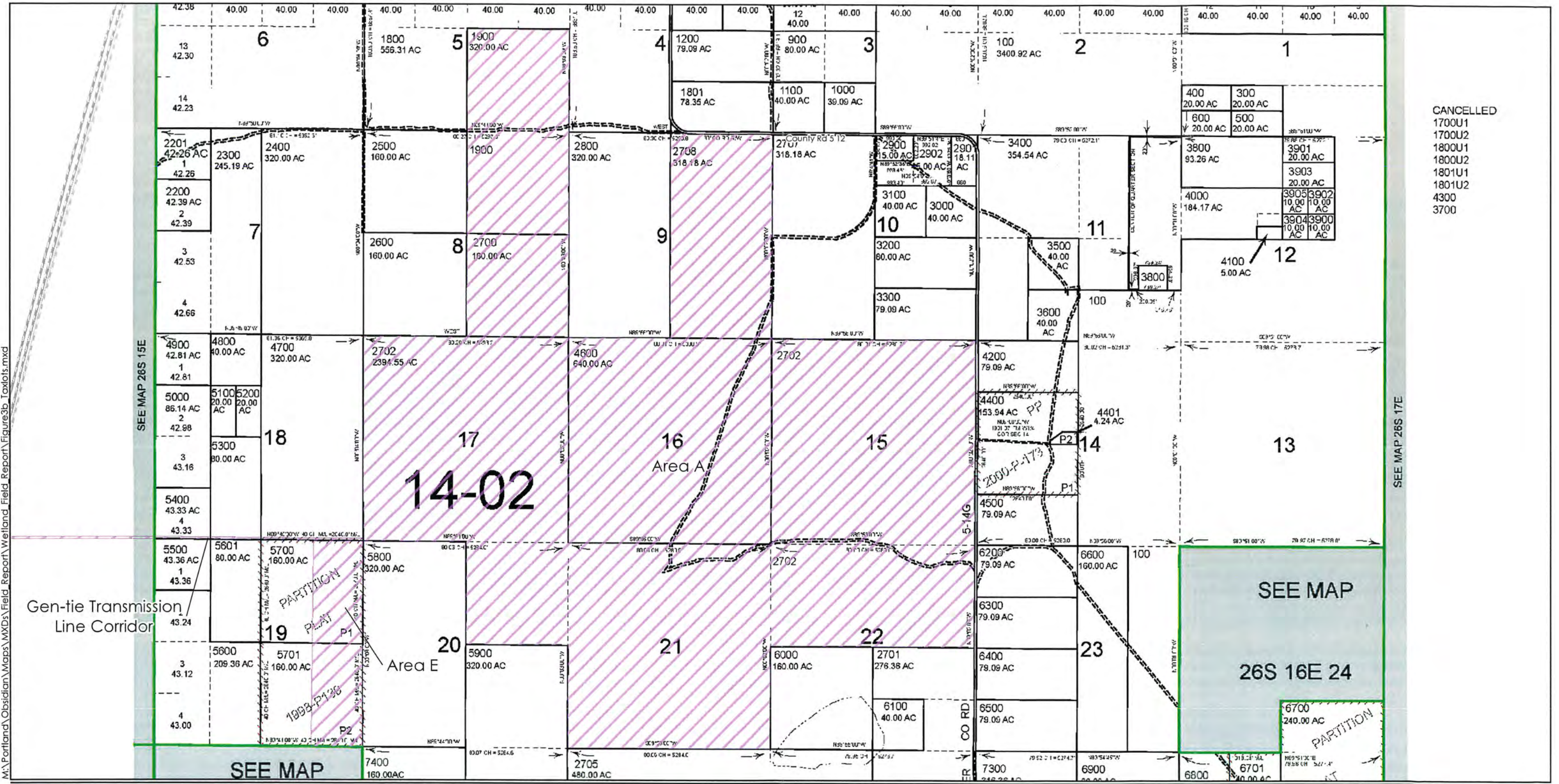


Figure 3a
Tax Lots
W02018-0581
Obsidian Solar Center

January 2019

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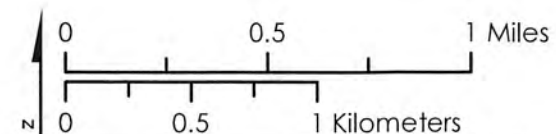


CANCELLED
 1700U1
 1700U2
 1800U1
 1800U2
 1801U1
 1801U2
 4300
 3700



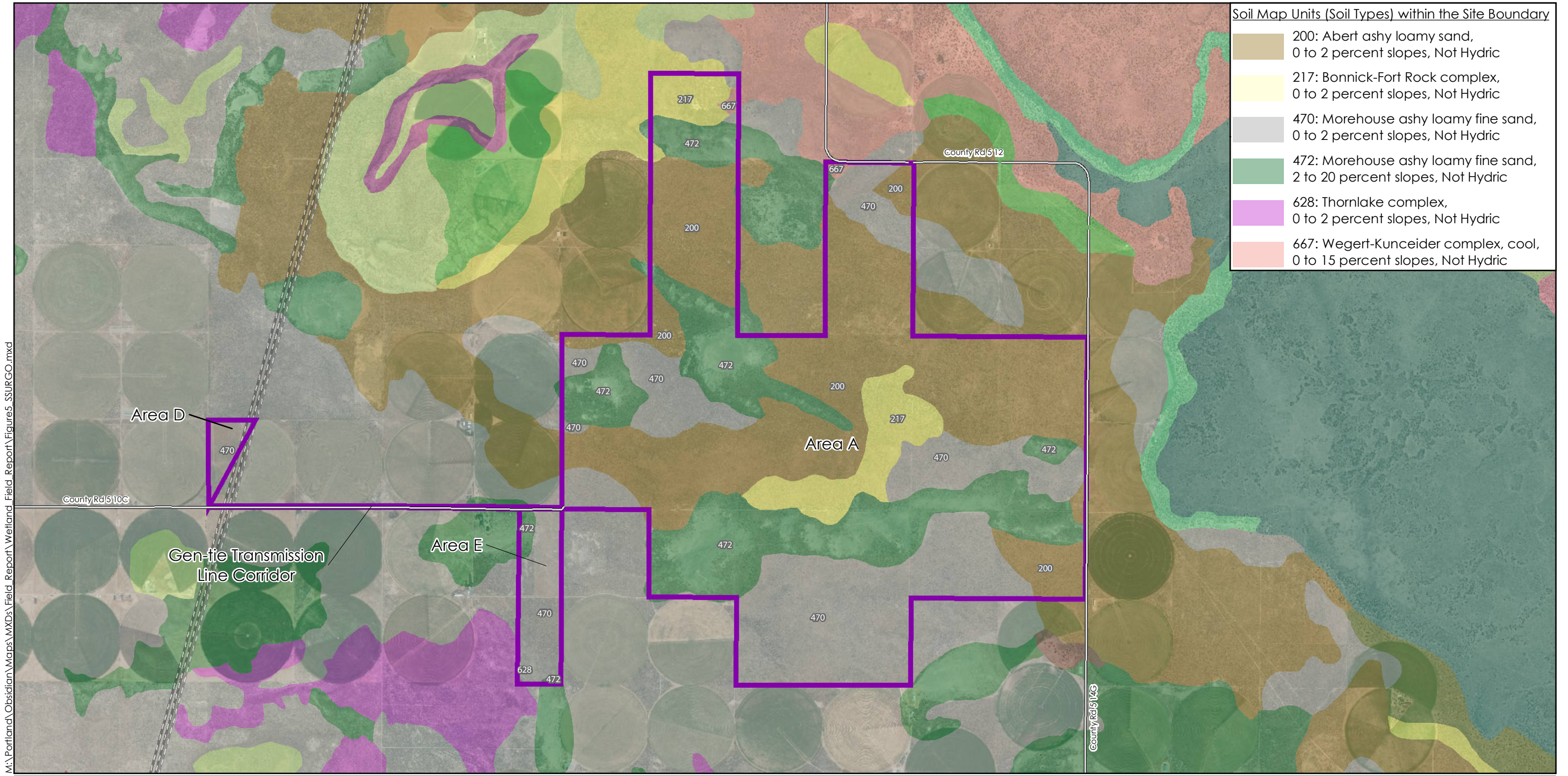
- Study Area
- Tax Lot Boundary
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)

Figure 3b
 Tax Lots
 WD2018-0581
 Obsidian Solar Center



January 2019

Obsidian Solar Center LLC



Soil Map Units (Soil Types) within the Site Boundary

200: Abert ashy loamy sand, 0 to 2 percent slopes, Not Hydric
217: Bonnick-Fort Rock complex, 0 to 2 percent slopes, Not Hydric
470: Morehouse ashy loamy fine sand, 0 to 2 percent slopes, Not Hydric
472: Morehouse ashy loamy fine sand, 2 to 20 percent slopes, Not Hydric
628: Thornlake complex, 0 to 2 percent slopes, Not Hydric
667: Wegert-Kunceider complex, cool, 0 to 15 percent slopes, Not Hydric

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- Study Area Boundary
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads

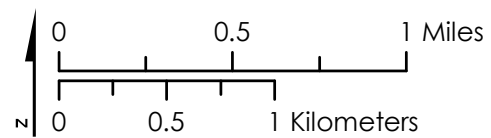


Figure 5
Soil Map Units (Soil Types)

Obsidian Solar Center

January 2019

Obsidian Solar Center LLC

Sources: Esri 2018, Soil Survey Staff, NRCS 2017

ATTACHMENT B
Ordinary High Water Mark and Arid
West Wetland Determination Data
Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar Center - Area B City/County: Christmas Valley / Lake Sampling Date: 03/19/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: U-T01-001
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: 35, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): flat Slope (%): 0
 Subregion (LRR): D - Interior Deserts Lat: 43.270685 Long: -120.911161 Datum: NAD 1983
 Soil Map Unit Name: Thornlake complex, 0 to 2 percent slopes Field Cowardin classification: UPL
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: UPL
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Upland steppe east of Playa-3, which is sampled by WB-T01-001 and W-T01-001; Site is abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC. (17120005)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft. dia.</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>29</u></td> <td>x 5 = <u>145</u></td> </tr> <tr> <td>Column Totals: <u>49</u> (A)</td> <td><u>205</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.18</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>29</u>	x 5 = <u>145</u>	Column Totals: <u>49</u> (A)	<u>205</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>20</u>	x 3 = <u>60</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>29</u>	x 5 = <u>145</u>																	
Column Totals: <u>49</u> (A)	<u>205</u> (B)																	
<u>29</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. <u>Ericameria nauseosa</u>	<u>25</u>	<u>Y</u>	<u>NL</u>															
2. <u>Atriplex confertifolia</u>	<u>3</u>	<u>N</u>	<u>NL</u>															
3. <u>Artemisia tridentata</u>	<u>1</u>	<u>N</u>	<u>NL</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
<u>29</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. dia.</u>)																		
1. <u>Distichlis spicata</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
<u>20</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
% Bare Ground in Herb Stratum <u>45</u>		% Cover of Biotic Crust <u>0</u>																
Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 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 <input checked="" type="checkbox"/>																		

Remarks:
 Gray rabbitbrush-dominated scrub. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: U-T01-001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	5Y 2.5/1	100					SL	Granular
6-12	2.5Y 3/2	100					LS	Angular blocky

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

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

Restrictive Layer (if present): Type: <u>Cemented Layer</u> Depth (inches): <u>12</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--	---

Remarks:
Restrictive layer at 12 inches bgs. Many pebbles and some organic litter at surface. No hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
---	---

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

Remarks:
Soil upper layer is moist, not saturated. Lower layer is somewhat dry.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar- Site B City/County: Christmas Valley / Lake Co Sampling Date: 03/20/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: U-T01-002
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: 36, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Convex Slope (%): 4
 Subregion (LRR): D - Interior Deserts Lat: 43.26788 Long: -120.897979 Datum: NAD 1983
 Soil Map Unit Name: Thornlake complex, 0 to 2 percent slopes Field Cowardin classification: UPL
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: UPL
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Upland plot just west of Playa-5. Plot is on a gentle slope approximately 5 feet above surface elevation of W-T01-002. Site is abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC. (17120005)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft. dia.</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.333333</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border: none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>55</u></td> <td>x 5 = <u>275</u></td> </tr> <tr> <td>Column Totals: <u>60</u> (A)</td> <td><u>290</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.83</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>5</u>	x 3 = <u>15</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>55</u>	x 5 = <u>275</u>	Column Totals: <u>60</u> (A)	<u>290</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>5</u>	x 3 = <u>15</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>55</u>	x 5 = <u>275</u>																	
Column Totals: <u>60</u> (A)	<u>290</u> (B)																	
<u>55</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. <u>Artemisia tridentata</u>	<u>35</u>	<u>Y</u>	<u>NL</u>															
2. <u>Chrysothamnus viscidiflorus</u>	<u>20</u>	<u>Y</u>	<u>NL</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
<u>55</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. dia.</u>)																		
1. <u>Leymus cinereus</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
<u>5</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
% Bare Ground in Herb Stratum <u>60</u>		% Cover of Biotic Crust <u>0</u>																

Hydrophytic Vegetation Indicators:
 ___ Dominance Test is >50%
 ___ Prevalence Index is ≤3.0¹
 ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks:
 Sagebrush steppe; Moss cover = 15% Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: U-T01-002

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	2.5Y 2.5/1	100					COSL	Subangular blocky
6-9.5	2.5Y 4/2	100					SL	Angular blocky
9.5-13	2.5Y 5/2	100					SL	Angular blocky
13-16	2.5Y 7/2	100					SL	Granular
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.)						Indicators for Problematic Hydric Soils³:		
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> 1 cm Muck (A9) (LRR C)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> 2 cm Muck (A10) (LRR B)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1)			<input type="checkbox"/> Reduced Vertic (F18)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Stratified Layers (A5) (LRR C)			<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)			<input type="checkbox"/> Redox Dark Surface (F6)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Depleted Dark Surface (F7)					
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Redox Depressions (F8)					
<input type="checkbox"/> Sandy Mucky Mineral (S1)			<input type="checkbox"/> Vernal Pools (F9)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)								
Restrictive Layer (if present):						Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Type: _____ Depth (inches): _____								
Remarks:								

HYDROLOGY

Wetland Hydrology Indicators:					
Primary Indicators (minimum of one required; check all that apply)			Secondary Indicators (2 or more required)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)			
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)			
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)			
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)			
Field Observations:			Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____			
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____			
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					
Soil somewhat moist in upper layer, fairly dry in lower layers. No hydrology indicators present.					

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar- Site B City/County: Christmas Valley / Lake Co Sampling Date: 03/20/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: U-T01-003-1
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: 36, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Convex Slope (%): 2
 Subregion (LRR): D - Interior Deserts Lat: 43.266877 Long: -120.88682 Datum: NAD 1983
 Soil Map Unit Name: Thornlake complex, 0 to 2 percent slopes Field Cowardin classification: UPL
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: UPL
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Plot in hummocky upland playette just south of Playa-19. Hummocks 2.5 feet high. Site is abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC. (17120005)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft. dia.</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">Total % Cover of:</td> <td style="width:50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>30</u></td> <td>x 5 = <u>150</u></td> </tr> <tr> <td>Column Totals: <u>30</u> (A)</td> <td><u>150</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>5</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>30</u>	x 5 = <u>150</u>	Column Totals: <u>30</u> (A)	<u>150</u> (B)	Prevalence Index = B/A = <u>5</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>30</u>	x 5 = <u>150</u>																			
Column Totals: <u>30</u> (A)	<u>150</u> (B)																			
Prevalence Index = B/A = <u>5</u>																				
<u>0</u> = Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>30 ft. dia.</u>)																				
1. <u>Atriplex confertifolia</u>	<u>20</u>	<u>Y</u>	<u>NL</u>																	
2. <u>Chrysothamnus viscidiflorus</u>	<u>10</u>	<u>Y</u>	<u>NL</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
<u>30</u> = Total Cover																				
Herb Stratum (Plot size: <u>5 ft. dia.</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>0</u> = Total Cover																				
Woody Vine Stratum (Plot size: <u>30 ft. dia.</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
<u>0</u> = Total Cover																				
% Bare Ground in Herb Stratum <u>70</u>		% Cover of Biotic Crust <u>0</u>																		

Hydrophytic Vegetation Indicators:
 ___ Dominance Test is >50%
 ___ Prevalence Index is ≤3.0¹
 ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks:
 Sagebrush steppe. No hydrophytic vegetation indicators met. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: U-T01-003-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6.5	10YR 3/3	100					LS	granular
6.5-12	10YR 4/3	100					LS	granular/single grain

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

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

- 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 Soils³:

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

³Indicators 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:

No hydric soil indicators present. High value, medium chroma lower layer when dry, but value much lower when moist.

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:

No hydrology indicators. Soil somewhat moist.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar- Site A City/County: Christmas Valley / Lake Co Sampling Date: 03/21/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: U-T02-001
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: S9, T26S, R16E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Flat Slope (%): 1
 Subregion (LRR): D - Interior Deserts Lat: 43.336305 Long: -120.819116 Datum: NAD 1983
 Soil Map Unit Name: Abert ashy loamy sand, 0 to 2 percent slopes Field Cowardin classification: UPL
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: PUSJ
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Upland plot for Playa-16. Plot located within NWI-mapped PUSJ and approximately 50 feet SW of W-T02-001. Plot elevation is approximately 4 feet above the playa surface.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft. dia.</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>78</u></td> <td>x 5 = <u>390</u></td> </tr> <tr> <td>Column Totals: <u>78</u> (A)</td> <td><u>390</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>5</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>78</u>	x 5 = <u>390</u>	Column Totals: <u>78</u> (A)	<u>390</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>78</u>	x 5 = <u>390</u>																	
Column Totals: <u>78</u> (A)	<u>390</u> (B)																	
<u>33</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. <u>Artemisia tridentata</u>	<u>30</u>	<u>Y</u>	<u>NL</u>															
2. <u>Gutierrezia sarothrae</u>	<u>2</u>	<u>N</u>	<u>NL</u>															
3. <u>Chrysothamnus viscidiflorus</u>	<u>1</u>	<u>N</u>	<u>NL</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
<u>33</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. dia.</u>)																		
1. <u>Bromus tectorum</u>	<u>40</u>	<u>Y</u>	<u>NL</u>															
2. <u>Agropyron cristatum</u>	<u>5</u>	<u>N</u>	<u>NL</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
<u>45</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
% Bare Ground in Herb Stratum <u>50</u>		% Cover of Biotic Crust <u>0</u>																

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks:
 Big sagebrush-dominated shrubland. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: U-T02-001

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-9	10YR 3/3	100					SL	
9-16	7.5YR 3/2	100					SIL	value = 6 when dry

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

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

³Indicators 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:

No hydric soil indicators. High value, low chroma lower layer when dry, but value much lower when moist. Soil does not meet F3 due to moist colors. Furthermore, soil color likely the result of carbonate accumulation rather than iron reduction or translocation.

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 somewhat moist in upper layer and somewhat dry in lower layer. No wetland hydrology indicators present. Conditions are abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC (17120005).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar Center - Area B City/County: Christmas Valley / Lake Co Sampling Date: 03/19/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: UVP-T01-001
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: S35, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): D - Interior Deserts Lat: 43.266016 Long: -120.903376 Datum: NAD 1983
 Soil Map Unit Name: _____ Field Cowardin classification: UPL
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: PEM1A
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes _____ No
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Plot documents upland conditions in small depression mapped by NWI as PEM1A. Conditions are abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HLIC (17120005)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>0</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>50</u></td> <td>x 4 = <u>200</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>60</u> (A)</td> <td><u>250</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.17</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>50</u>	x 4 = <u>200</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>60</u> (A)	<u>250</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>50</u>	x 4 = <u>200</u>																	
UPL species <u>10</u>	x 5 = <u>50</u>																	
Column Totals: <u>60</u> (A)	<u>250</u> (B)																	
<u>Sapling/Shrub Stratum</u> (Plot size: _____)																		
1. <u>Ericameria nauseosa</u>	<u>10</u>	<u>Y</u>	<u>NL</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
<u>10</u> = Total Cover																		
<u>Herb Stratum</u> (Plot size: _____)																		
1. <u>Elymus elymoides</u>	<u>50</u>	<u>N</u>	<u>FACU</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
<u>50</u> = Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>																
Remarks: Elymus elymoides widespread in the depression sampled, but nearly absent in surrounding areas. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.																		

Remarks:
 Elymus elymoides widespread in the depression sampled, but nearly absent in surrounding areas. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: UVP-T01-001

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	7.5YR 3/3	100					SL	granular
6-12.5	10YR 5/2	100					LS	higher value when dry
12.5-15	2.5Y 4/2	85	7.5YR 4/6	15	C	M	LS	
15-18	10YR 4/2	100					LS	unconsolidated

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

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

³Indicators 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:

No hydric soil indicators. High value, low chroma lower layer when dry, but value much lower when moist. Soil does not meet F3 due to moist colors. Furthermore, soil color likely the result of carbonate accumulation rather than iron reduction or translocation.

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:

Somewhat moist in upper 6 inches of soil, and fairly dry 6-24 inches below ground surface.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar Center - Area B City/County: Christmas Valley / Lake Co Sampling Date: 03/20/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: UVP-T01-002
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: S36, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR): D - Interior Deserts Lat: 43.272842 Long: -120.88149 Datum: NAD 1983
 Soil Map Unit Name: Morehouse ashy loamy fine sand, 2 to 20 percent slopes Field Cowardin classification: UPL
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: UPL
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Exploratory point in relatively flat point with little indication that wetlands or waters are present. Conditions are abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC (17120005)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft. dia.</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.333333</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>40</u></td> <td>x 3 = <u>120</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>47</u></td> <td>x 5 = <u>235</u></td> </tr> <tr> <td>Column Totals: <u>97</u> (A)</td> <td><u>395</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.07</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>40</u>	x 3 = <u>120</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>47</u>	x 5 = <u>235</u>	Column Totals: <u>97</u> (A)	<u>395</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>40</u>	x 3 = <u>120</u>																	
FACU species <u>10</u>	x 4 = <u>40</u>																	
UPL species <u>47</u>	x 5 = <u>235</u>																	
Column Totals: <u>97</u> (A)	<u>395</u> (B)																	
<u>46</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. <u>Atriplex confertifolia</u>	<u>20</u>	<u>Y</u>	<u>NL</u>															
2. <u>Chrysothamnus viscidiflorus</u>	<u>15</u>	<u>Y</u>	<u>NL</u>															
3. <u>Artemisia tridentata</u>	<u>5</u>	<u>N</u>	<u>NL</u>															
4. <u>Gutierrezia sarothrae</u>	<u>1</u>	<u>N</u>	<u>NL</u>															
5. _____	_____	_____	_____															
<u>46</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. dia.</u>)																		
1. <u>Distichlis spicata</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>															
2. <u>Elymus elymoides</u>	<u>10</u>	<u>N</u>	<u>FACU</u>															
3. <u>Bromus tectorum</u>	<u>1</u>	<u>N</u>	<u>NL</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
<u>51</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
% Bare Ground in Herb Stratum <u>40</u>		% Cover of Biotic Crust <u>15</u>																

Remarks:
 Shrubland. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: UVP-T01-002

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2	100					SL	subangular blocky
3-9	7.5YR 4/2	100					SL	subangular blocky
9-16	2.5Y 4/2	60					SL	mixed matrix; subangular blocky
9-16	7.5YR 4/2	40					SL	angular blocky; mixed matrix

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

³Indicators 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 <input checked="" type="checkbox"/>
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Remarks:
Sandy loam at surface, loamy sand below; No hydric soil indicators present

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil somewhat moist 0-6 inches bgs; Soil fairly dry 6-24 inches bgs. A few polygonal soil surface cracks, but covering approximately 30% of ground surface. Due to the absence of hydrophytic vegetation and/or hydric soils, surface soil cracks indicate periodic inundation, but not necessarily wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar Center - Area B City/County: Christmas Valley / Lake Sampling Date: 03/19/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: WB-T01-001
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: S35, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Flat Slope (%): 0
 Subregion (LRR): D - Interior Deserts Lat: 43.270528 Long: -120.911913 Datum: NAD 1983
 Soil Map Unit Name: Playas Field Cowardin classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: PUSJ
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Plot in unvegetated part of Playa-3, a large mostly unvegetated playa. Plot is >100 feet from the OHWM. Conditions are abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC. (17120005)	

VEGETATION – Use scientific names of plants.

<p><u>Tree Stratum</u> (Plot size: <u>30 ft. dia.</u>)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:40%;">Absolute % Cover</th> <th style="width:20%;">Dominant Species?</th> <th style="width:20%;">Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td></tr> <tr><td align="center" colspan="3"><u>0</u> = Total Cover</td></tr> </tbody> </table> <p><u>Sapling/Shrub Stratum</u> (Plot size: <u>30 ft. dia.</u>)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td></tr> <tr><td align="center" colspan="3"><u>0</u> = Total Cover</td></tr> </tbody> </table> <p><u>Herb Stratum</u> (Plot size: <u>5 ft. dia.</u>)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td></tr> <tr><td>7. _____</td><td>_____</td><td>_____</td></tr> <tr><td>8. _____</td><td>_____</td><td>_____</td></tr> <tr><td align="center" colspan="3"><u>0</u> = Total Cover</td></tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: <u>30 ft. dia.</u>)</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td></tr> <tr><td align="center" colspan="3"><u>0</u> = Total Cover</td></tr> </tbody> </table> <p>% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust <u>0</u></p>	Absolute % Cover	Dominant Species?	Indicator Status	1. _____	_____	_____	2. _____	_____	_____	3. _____	_____	_____	4. _____	_____	_____	<u>0</u> = Total Cover			1. _____	_____	_____	2. _____	_____	_____	3. _____	_____	_____	4. _____	_____	_____	5. _____	_____	_____	<u>0</u> = Total Cover			1. _____	_____	_____	2. _____	_____	_____	3. _____	_____	_____	4. _____	_____	_____	5. _____	_____	_____	6. _____	_____	_____	7. _____	_____	_____	8. _____	_____	_____	<u>0</u> = Total Cover			1. _____	_____	_____	2. _____	_____	_____	<u>0</u> = Total Cover			<p>Dominance Test worksheet:</p> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>0</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
Absolute % Cover	Dominant Species?	Indicator Status																																																																							
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<p>Hydrophytic Vegetation Indicators:</p> ___ 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)																																																																									
<p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p>																																																																									
<p>Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/></p>																																																																									

Remarks:
 Entirely devoid of vascular and non-vascular plants. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: WB-T01-001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-0.5	5Y 3/1	100					SICL	granular
0.5-5.5	2.5Y 4/4	100					SICL	angular blocky
5.5-6.5	2.5Y 4/2	100					LS	angular blocky
6.5-16	2.5Y 3/2	100					LFS	angular blocky

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

³Indicators 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 <input checked="" type="checkbox"/>
--	--

Remarks:
No hydric soil indicators present. Playas soil map unit described as being formed in volcanic ash and lacustrine deposits derived from volcanic rock. High value, low chroma in lower layer when dry, but value much lower when moist. Soil color likely the result of carbonate accumulation rather than iron reduction or translocation.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Water Marks (B1) (Riverine)
	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Crayfish Burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0.5</u>	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Saturation from the surface to 0.5 inches below ground surface. Moist but not saturated from 0.5 to 6.5 inches bgs, somewhat moist below. Saturation apparently derived from slow infiltration of precipitation; subsurface layers relatively dry. Polygonal surface cracks ("mud-cracks") widespread - 90% cover. Due to the absence of hydrophytic vegetation and/or hydric soils, surface soil cracks indicate periodic inundation, but not necessarily wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar- Site B City/County: Christmas Valley / Lake Co Sampling Date: 03/19/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: WB-T01-002
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: S36, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): D - Interior Deserts Lat: 43.267876 Long: -120.896942 Datum: NAD 1983
 Soil Map Unit Name: Playas Field Cowardin classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: PUSJ
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Plot within unvegetated part of Playa-5. Conditions are abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC: (17120005)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft. dia.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>0</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>0</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>0</u> (A)	<u>0</u> (B)
Total % Cover of:	Multiply by:																	
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UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>0</u> (A)	<u>0</u> (B)																	
<u>0</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. dia.</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>																

Hydrophytic Vegetation Indicators:
 ___ Dominance Test is >50%
 ___ Prevalence Index is ≤3.0¹
 ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks:
 No vegetation in this part of the playa. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: WB-T01-002

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	2.5Y 4/4	100					SICL	Subangular blocky
6-16	2.5Y 5/3	100					SICL	Platy

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

³Indicators 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 <input checked="" type="checkbox"/>
--	--

Remarks:
 No hydric soil indicators. Lower layer has high value, medium chroma lower layer when dry, but value much lower when moist. Soil color likely the result of carbonate accumulation rather than iron reduction or translocation.

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Very moist in upper 0.5 inch. Soil below is was somewhat dry. Due to the absence of hydrophytic vegetation and/or hydric soils, surface soil cracks indicate periodic inundation, but not necessarily wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar Center - Area B City/County: Christmas Valley / Lake Co Sampling Date: 03/19/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: W-T01-001A-1
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: S35, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Concave Slope (%): 7
 Subregion (LRR): D - Interior Deserts Lat: 43.270539 Long: -120.911264 Datum: NAD 1983
 Soil Map Unit Name: _____ Field Cowardin classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: UPL
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	

Remarks:
 Plot within vegetated fringe of Playa-3, a large and mostly unvegetated playa. Fringe is sloped and has much ash in upper soil layer. Conditions are abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC (17120005)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)																												
1. _____	_____	_____	_____																													
2. _____	_____	_____	_____																													
3. _____	_____	_____	_____																													
4. _____	_____	_____	_____																													
_____ = Total Cover				Prevalence Index worksheet: <table border="0"> <tr> <td colspan="2">Total % Cover of:</td> <td colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td><u>0</u></td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td><u>0</u></td> <td>x 2 =</td> <td><u>0</u></td> </tr> <tr> <td>FAC species</td> <td><u>25</u></td> <td>x 3 =</td> <td><u>75</u></td> </tr> <tr> <td>FACU species</td> <td><u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species</td> <td><u>10</u></td> <td>x 5 =</td> <td><u>50</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>35</u> (A)</td> <td></td> <td><u>125</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.57</u>	Total % Cover of:		Multiply by:		OBL species	<u>0</u>	x 1 =	<u>0</u>	FACW species	<u>0</u>	x 2 =	<u>0</u>	FAC species	<u>25</u>	x 3 =	<u>75</u>	FACU species	<u>0</u>	x 4 =	<u>0</u>	UPL species	<u>10</u>	x 5 =	<u>50</u>	Column Totals:	<u>35</u> (A)		<u>125</u> (B)
Total % Cover of:		Multiply by:																														
OBL species	<u>0</u>	x 1 =	<u>0</u>																													
FACW species	<u>0</u>	x 2 =	<u>0</u>																													
FAC species	<u>25</u>	x 3 =	<u>75</u>																													
FACU species	<u>0</u>	x 4 =	<u>0</u>																													
UPL species	<u>10</u>	x 5 =	<u>50</u>																													
Column Totals:	<u>35</u> (A)		<u>125</u> (B)																													
<u>Sapling/Shrub Stratum</u> (Plot size: <u>30 ft. dia.</u>)																																
1. <u>Atriplex confertifolia</u>	<u>10</u>	<u>Y</u>	<u>NL</u>																													
2. _____	_____	_____	_____																													
3. _____	_____	_____	_____																													
4. _____	_____	_____	_____																													
5. _____	_____	_____	_____																													
_____ = Total Cover																																
<u>Herb Stratum</u> (Plot size: <u>5 ft. dia.</u>)																																
1. <u>Distichlis spicata</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>																													
2. _____	_____	_____	_____																													
3. _____	_____	_____	_____																													
4. _____	_____	_____	_____																													
5. _____	_____	_____	_____																													
6. _____	_____	_____	_____																													
7. _____	_____	_____	_____																													
8. _____	_____	_____	_____																													
_____ = Total Cover																																
<u>Woody Vine Stratum</u> (Plot size: _____)																																
1. _____	_____	_____	_____																													
2. _____	_____	_____	_____																													
_____ = Total Cover																																
% Bare Ground in Herb Stratum <u>75</u>	% Cover of Biotic Crust <u>0</u>																															
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 <input checked="" type="checkbox"/>																																

Remarks:
 Vegetation dead-standing. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: W-T01-001A-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	N 3/1	100					LS	Granular
3-5	N 3/1	50						
3-5	2.5Y 3/2	48	7.5YR 4/6	2			LS	Granular
5-8	2.5Y 3/2	98	7.5YR 4/6	2			SIL	Angular blocky
8-18	2.5Y 3/2	80					SIL	Angular blocky
8-18	2.5Y 5/4	20					SiL	angular blocky

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Soils³:

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

³Indicators 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:

No hydric soil indicators. Insufficient redox to meet F6 Redox Dark Surface. Ashy sediment in surface layer.

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? Yes No _____ Depth (inches): 0.5
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No

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

Remarks:

Due to the absence of hydrophytic vegetation and/or hydric soils, surface soil cracks indicate periodic inundation, but not necessarily wetland hydrology. Some fluffy salt deposits, indicating evaporation of saline groundwater and not an indicator of recent inundation. Most surface cracks covered by ashy sand.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar- Site City/County: Christmas Valley / Lake Co Sampling Date: 03/19/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: W-T01-002-1
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: S36, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): D - Interior Deserts Lat: 43.270539 Long: -120.911264 Datum: NAD 1983
 Soil Map Unit Name: Flagstaff complex, 0 to 1 percent slopes Field Cowardin classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: UPL
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Plot near west edge of Playa-5. Conditions are abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC (17120005)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft. dia.</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>23</u></td> <td>x 5 = <u>115</u></td> </tr> <tr> <td>Column Totals: <u>23</u> (A)</td> <td><u>115</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>5</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>23</u>	x 5 = <u>115</u>	Column Totals: <u>23</u> (A)	<u>115</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>0</u>	x 4 = <u>0</u>																	
UPL species <u>23</u>	x 5 = <u>115</u>																	
Column Totals: <u>23</u> (A)	<u>115</u> (B)																	
<u>0</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. <u>Atriplex confertifolia</u>	<u>15</u>	<u>Y</u>	<u>NL</u>															
2. <u>Chrysothamnus viscidiflorus</u>	<u>8</u>	<u>Y</u>	<u>NL</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
<u>23</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. dia.</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. dia.</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
% Bare Ground in Herb Stratum <u>80</u>		% Cover of Biotic Crust <u>0</u>																

Hydrophytic Vegetation Indicators:
 ___ Dominance Test is >50%
 ___ Prevalence Index is ≤3.0¹
 ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks:
 Shrubs only on elevated hummocks. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: W-T01-002-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/3	100					SICL	subangular blocky
5-16	2.5Y 5/4	100					SICL	angular blocky

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

³Indicators 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 <input checked="" type="checkbox"/>
--	--

Remarks:
No hydric soil indicators. High value, low chroma lower layer when dry, but value much lower when moist. Soil does not meet F3 due to moist colors. Furthermore, soil color likely the result of carbonate accumulation rather than iron reduction or translocation.

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Surface soil cracks across playa; sediment deposits thin along playa fringe and along edges of vegetated hummocks elevated up to 2 feet above unvegetated ground.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar- Site B City/County: Christmas Valley / Lake Co Sampling Date: 03/20/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: W-T01-003-1
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: S36, T26S, R15E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Concave Slope (%): 1
 Subregion (LRR): D - Interior Deserts Lat: 43.267047 Long: -120.886829 Datum: NAD 1983
 Soil Map Unit Name: Thornlake complex, 0 to 2 percent slopes Field Cowardin classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: PUSJ
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: Wetland plot for Playa-19. Conditions are abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC (17120005)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft. dia.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>30 ft. dia.</u>)				
1. <u>Chrysothamnus viscidiflorus</u>	<u>8</u>	<u>Y</u>	<u>NL</u>	
2. <u>Atriplex confertifolia</u>	<u>5</u>	<u>Y</u>	<u>NL</u>	
3. <u>Artemisia tridentata</u>	<u>2</u>	<u>N</u>	<u>NL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>15</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft. dia.</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft. dia.</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>80</u>		% Cover of Biotic Crust <u>0</u>		

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
 Total Number of Dominant Species Across All Strata: 2 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species 0 x 1 = 0
 FACW species 0 x 2 = 0
 FAC species 0 x 3 = 0
 FACU species 0 x 4 = 0
 UPL species 15 x 5 = 75
 Column Totals: 15 (A) 75 (B)
 Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:
 ___ Dominance Test is >50%
 ___ Prevalence Index is ≤3.0¹
 ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks:
 Shrubs not yet leafed out. Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: W-T01-003-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	2.5Y 4/2	100					L	Granular
2-6	7.5YR 4/3	100					SIL	Angular blocky

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

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

Restrictive Layer (if present): Type: <u>Cemented Layers</u> Depth (inches): <u>6</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:
 Lower layer below 6 inches bgs is nearly impermeable due to cemented layer.

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
 Remarks:
 Soil moist but not saturated 0-2 in bgs, and somewhat moist below. Due to the absence of hydrophytic vegetation and/or hydric soils, surface soil cracks indicate periodic inundation, but not necessarily wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Obsidian Solar- Site A City/County: Christmas Valley / Lake Co Sampling Date: 03/21/2018
 Applicant/Owner: Obsidian State: OR Sampling Point: W-T02-001
 Investigator(s): Greg Mazer, Rachel Locke Section, Township, Range: S10, T26S, R16E
 Landform (hillslope, terrace, etc.): abandoned lake beds & t Local relief (concave, convex, none): Concave Slope (%): 2
 Subregion (LRR): D Lat: 43.336413 Long: -120.819023 Datum: NAD 1983
 Soil Map Unit Name: Abert ashy loamy sand, 0 to 2 percent slopes Field Cowardin classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No If no, explain in Remarks NWI Cowardin classification: PUSJ
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation N, Soil N, or Hydrology N 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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: WB-T02-001 - Plot for Playa-16. Conditions are abnormally dry as determined by the NRCS method for assessing 3-month antecedent precipitation and severe drought rating by the U.S. Drought Monitor Index for the Summer Lake HUC (17120005)	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft. dia.</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>0</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border: none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>0</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>0</u> (A)	<u>0</u> (B)	Prevalence Index = B/A = <u>0</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>0</u> (A)	<u>0</u> (B)																			
Prevalence Index = B/A = <u>0</u>																				
<u>2</u> = Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>30 ft. dia.</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
<u>2</u> = Total Cover																				
Herb Stratum (Plot size: <u>5 ft. dia.</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>0</u> = Total Cover																				
Woody Vine Stratum (Plot size: <u>30 ft. dia.</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
<u>0</u> = Total Cover																				
% Bare Ground in Herb Stratum <u>100</u>		% Cover of Biotic Crust <u>0</u>																		

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks:
 Growing season has not yet begun as determined by the limited extent of herbaceous plant emergence, bud burst, or other evidence of seasonal vegetation growth.

SOIL

Sampling Point: W-T02-001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	10YR 3/2	100					Silty Loam	Granular
1-6	10YR 3/2	100					Silty Clay	platy/ horizontal bedding

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)			Indicators for Problematic Hydric Soils ³ :		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Reduced Vertic (F18)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Red Parent Material (TF2)			
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)					

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

Restrictive Layer (if present): Type: <u>Duripan</u> Depth (inches): <u>6</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Moist but not saturated below 1 inch bgs. Surface water mainly in truck ruts. Due to the absence of hydrophytic vegetation and/or hydric soils, surface soil cracks indicate periodic inundation, but not necessarily wetland hydrology.

Data Point ID: P-T01-001

Water ID: Playa-4

Project: Obsidian Solar Center (Site B)	Date: 3/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):
 natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)
Notes: Mud-cracks cover approximately 95 percent of ground surface within the playa, and less than 20 percent of the ground surface in the adjacent upland. Playa similar to Playa-3. Vegetation at much lower cover relative to adjacent uplands.

Predominant Bed Substrate (check all that apply):
 Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
Notes: Silty Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)
Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)
Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:
 cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %
 cover of plants rooted within 20-ft width above OHWM: Total: 49 % Tree: % Shrub: 29 % Vine: % Herb: 20 % Moss: %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Atriplex confertifolia</i>	Yes	<i>Ericameria nauseosa</i>	Yes
		<i>Atriplex confertifolia</i>	No
		<i>Distichlis spicata</i>	Yes

Aquatic flora:
 free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent
Species: no aquatic species present

Aquatic fauna:
 insects arachnids crustaceans mollusks fish amphibians birds mammals
Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is Playa-4, a playa mosaic that is approximately 2 acres. No standing water, but uppermost 0.5 inch of soil was saturated. Some salt deposits near the edges of the playa. *Atriplex confertifolia* present at about 15% cover across most of the playa; shrubs situated on hummocks ranging from 0.5 to 1.5 feet in height.

Data Point ID: P-T01-002 Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):
 natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)
Notes: No distinctive OHWM or indicators of a water present. Although site is within a topographic depression, no indications present that there is persistent or periodic saturation or inundation. Mud-cracks are not distinct and cover much less than 50% of ground surface.

Predominant Bed Substrate (check all that apply):
 Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
Notes: No OHWM present. Surface substrate is sandy loam.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)
Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)
Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:
 cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %
 cover of plants rooted within 20-ft width above OHWM: Total: 65 % Tree: % Shrub: 15 % Vine: % Herb: 50 % Moss: %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Ericameria nauseosa</i>	Yes
		<i>Distichlis spicata</i>	Yes
		<i>Elymus elymoides</i>	No

Aquatic flora:
 free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent
Species: no aquatic species present

Aquatic fauna:
 insects arachnids crustaceans mollusks fish amphibians birds mammals
Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point in area mapped as PEM1A by NWI. This area does not meet qualifications for playa or other waters, and is thereby an upland. No evidence of surface water. Bare ground is approximately 25 percent.

Data Point ID: P-T01-003

Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: No distinctive OHWM or indicators of a water present. Although site is within a topographic depression, no indications present that there is persistent or periodic saturation or inundation. Mud-cracks are not distinct and cover much less than 50% of ground surface. Vegetation

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: No distinctive OHWM. Sandy loam at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 35 % Tree: % Shrub: 10 % Vine: % Herb: 25 % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Ericameria nauseosa</i>	Yes
		<i>Distichlis spicata</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point in area mapped as PEM1A by NWI. This area does not meet qualifications for playa or other waters, and is thereby an upland. Some snow patches throughout the upland. Much moss, but none of it appears to be hydrophytic. Bare ground cover is approximately 35 percent.

Data Point ID: P-T01-004 Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks are not distinct and cover much less than 50% of ground surface.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: The area is predominantly a Sandy Loam with no distinct changes between depressional area and adjacent 'upland like' surfaces.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 85 % Tree: % Shrub: 75 % Vine: % Herb: 10 % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Chrysothamnus viscidiflorus</i>	Yes
		<i>Atriplex confertifolia</i>	No
		<i>Distichlis spicata</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point in area mapped as PEM1A by NWI. This area does not meet qualifications for playa or other waters, and is thereby an upland. Bare ground is approximately 25 percent.

Data Point ID: P-T01-005 Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):
 natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Small patches of unvegetated to lightly vegetated areas with polygonal mud-cracks present and interspersed across a broad area. Cover of these patches is less than 20 percent of the overall area.

Predominant Bed Substrate (check all that apply):
 Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: No evidence of OHWM. Surface substrate in this depressional area is predominantly sandy loam.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)
Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:
 cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %
 cover of plants rooted within 20-ft width above OHWM: Total: 60 % Tree: % Shrub: 60 % Vine: % Herb: % Moss: %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Chrysothamnus viscidiflorus</i>	No
		<i>Artemisia tridentata</i>	No
		<i>Atriplex confertifolia</i>	Yes

Aquatic flora:
 free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent
Species: no aquatic species present

Aquatic fauna:
 insects arachnids crustaceans mollusks fish amphibians birds mammals
Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is an upland playette. Patches without mud-cracks or any other indicators of water interspersed throughout the area and comprise approximately 80 percent cover. NRCS mapped Flagstaff complex soil, which is moderately well drained, but belongs to hydrologic soil group D. Insufficient evidence of persistent or periodic saturation or inundation to qualify as a water.

Data Point ID: P-T01-006

Water ID: Playa-6

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 75 percent of ground surface within the playa, and less than 5 percent of the ground surface in the adjacent upland. Shallow ponding present – standing water up to 2 inches deep in the lowest part of the depression. Thin layer of recently deposited sediment present, sediment ranging from silt to sand to pebbles (small gravel). Playa is mostly unvegetated except for some *Distichlis spicata* along the north edge.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 10 % Tree: % Shrub: % Vine: % Herb: 10 % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Distichlis spicata</i>	No	<i>Chrysothamnus viscidiflorus</i>	Yes
		<i>Artemisia tridentata</i>	No
		<i>Bromus tectorum</i>	No
		<i>Distichlis spicata</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point is within Playa-6, a playa mapped by NWI as a PUSJ, and named McCall Lake. The playa covers approximately 5 acres. Standing water present as described above. In higher portions of the playa, the uppermost 1 inch of soil was saturated to very moist. *Distichlis spicata* present at low cover along much of the playa’s north edge where it is sloping up about 3 feet to the adjacent upland.

Data Point ID: P-T01-007

Water ID: Playa-7

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 80 percent of ground surface within the playa, and less than 10 percent of the ground surface in the adjacent upland. Much less vegetated in playa relative to adjacent upland.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 15 % Tree: % Shrub: 5 % Vine: % Herb: 10 % Moss: %
 cover of plants rooted within 20-ft width above OHWM: Total: 47 % Tree: 35 % Shrub: % Vine: % Herb: 10 % Moss: 2 %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Distichlis spicata</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Atriplex confertifolia</i>	Yes	<i>Atriplex confertifolia</i>	Yes
		<i>Distichlis spicata</i>	Yes

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point is within Playa-7, which is about 0.25 acres and is within an area mapped by NWI as a PUSJ. No standing water in the playa, but top 0.5 inch of soil was moist. Biotic crust is much more abundant in the adjacent upland.

Data Point ID: P-T01-008

Water ID: Playa-20

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 90 percent of ground surface within the playa, and less than 10 percent of the ground surface in the adjacent upland. Much less vegetated in playa relative to adjacent upland.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam in the uppermost soil layer within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 22 % Tree: % Shrub: 12 % Vine: % Herb: 10 % Moss: %
 cover of plants rooted within 20-ft width above OHWM: Total: 70 % Tree: % Shrub: 45 % Vine: % Herb: 15 % Moss: 10 %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Atriplex confertifolia</i>	No	<i>Artemisia tridentata</i>	No
<i>Distichlis spicata</i>	Yes	<i>Distichlis spicata</i>	Yes

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point within Playa-20, which covers approximately 0.1 acres. No standing water present, but uppermost 0.5 inch of soil was moist during the investigation. Some fluffy salt deposits, which indicate evaporation from groundwater and not recent inundation, near the edges of the playa.

Data Point ID: P-T01-009

Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area is an upland. No polygonal mud-cracks or other indicators of recurrent inundation or saturation are present.

Predominant Bed Substrate (check all that apply):

- Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil in uppermost layer is a Loamy Sand.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 62 % Tree: % Shrub: 37 % Vine: % Herb: 25 % Moss: %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Artemisia tridentata</i>	No
		<i>Chrysothamnus viscidiflorus</i>	Yes
		<i>Atriplex confertifolia</i>	No
		<i>Distichlis spicata</i>	Yes

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point is within an upland. No indicators of recurrent surface water or saturation. However, uppermost 0.5 inch of soil was moist during the investigation. Thornlake complex soil, which is non-hydric and belongs to hydrologic soil group B.

Data Point ID: P-T01-010

Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area sampled is an upland with no indicators of recurrent inundation or saturation, and no evidence of an OHWM.

Predominant Bed Substrate (check all that apply):

- Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Uppermost layer of soil is a Loamy Sand.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 28 % Tree: % Shrub: 24 % Vine: % Herb: 3 % Moss: 1 %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Artemisia tridentata</i>	Yes
		<i>Gutierrezia sarothrae</i>	No
		<i>Leymus cinereus</i>	No
		<i>biotic crust</i>	No
		<i>moss</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: The area sampled is a sand dune that does not exhibit any indicators of recurrent saturation or inundation. However, upper 0.5 inch of soil was moist during the investigation.

Data Point ID: P-T01-011 Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):
 natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area sampled is an upland with no indicators of an OHWM.

Predominant Bed Substrate (check all that apply):
 Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Uppermost layer of soil is a Loamy Sand.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:
 cover of plants rooted within 20-ft width below OHWM: Total: ____% Tree: ____% Shrub: ____% Vine: ____% Herb: ____% Moss: ____%
 cover of plants rooted within 20-ft width above OHWM: Total: 13 % Tree: ____% Shrub: 5 % Vine: ____% Herb: 8 % Moss: ____%
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Chrysothamnus viscidiflorus</i>	Yes
		<i>Distichlis spicata</i>	Yes

Aquatic flora:
 free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent
Species: no aquatic species present

Aquatic fauna:
 insects arachnids crustaceans mollusks fish amphibians birds mammals
Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is an upland that does not exhibit any OHWM indicators. Area appears to be an abandoned playa – it is within a slight topographic depression that is mostly covered with wind-blown sand. No signs of recurrent saturation or inundation, but uppermost 0.5 inch of soil was moist during the investigation.

Data Point ID: P-T01-012

Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area sampled is an upland with no indicators of an OHWM.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand, fairly moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 23 % Tree: % Shrub: 18 % Vine: % Herb: 5 % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Chrysothamnus viscidiflorus</i>	Yes
		<i>Artemisia tridentata</i>	No
		<i>Bromus tectorum</i>	No
		<i>Distichlis spicata</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is an upland that does not exhibit any OHWM indicators. It may be an extinct playa – it is within a slight topographic depression that is mostly covered with wind-blown sand. No signs of recurrent saturation or inundation, but uppermost 0.5 inch of soil was moist during the investigation.

Data Point ID: P-T01-013

Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area sampled is an upland with some polygonal cracks, but not covering more than 10 percent of the total area.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Uppermost soil layer is a Loamy Sand

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 80 % Tree: % Shrub: 12 % Vine: % Herb: 66 % Moss: %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Atriplex confertifolia</i>	Yes
		<i>Artemisia tridentata</i>	No
		<i>Lepidium perfoliatum</i>	Yes
		<i>Agropyron cristatum</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is an upland that does not exhibit any OHWM indicators. It may be an extinct playa – it is within a slight topographic depression that is well vegetated by non-hydrophytic species. No signs of recurrent saturation or inundation, but uppermost 0.5 inch of soil was moist during the investigation. Heterogeneous hummocks up to 0.5 feet high and supporting shrubs are present throughout the area.

Data Point ID: P-T01-014 Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):
 natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mudcracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area sampled is an upland with no indicators of an OHWM.

Predominant Bed Substrate (check all that apply):
 Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand, fairly moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 4 % Tree: % Shrub: 2 % Vine: % Herb: 2 % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Elymus elymoides</i>	No
		<i>Chrysothamnus viscidiflorus</i>	No
		<i>Leymus cinereus</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is an upland that does not exhibit any OHWM indicators. It may be an extinct playa – it is within a slight topographic depression that is mostly covered with wind-blown sand. No signs of recurrent saturation or inundation, but uppermost 0.5 inch of soil was somewhat moist during the investigation.

Data Point ID: P-T01-015 Water ID: n/a

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):
 natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: No indicators of an OHWM present.

Predominant Bed Substrate (check all that apply):
 Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Uppermost layer of soil is a Loamy Sand, somewhat moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: ___% Tree: ___% Shrub: ___% Vine: ___% Herb: ___% Moss: ___%

cover of plants rooted within 20-ft width above OHWM: Total: 15% Tree: ___% Shrub: 10% Vine: ___% Herb: 5% Moss: ___%

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Atriplex confertifolia</i>	Yes
		<i>Chrysothamnus viscidiflorus</i>	No
		<i>Agropyron cristatum</i>	Yes
		<i>Sisymbrium altissimum</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is an upland that does not exhibit any OHWM indicators. It is a gently sloped dune rising approximately 20 feet above the surrounding ground surface. The southwest-facing part of the dune is somewhat sparsely vegetated whereas the northeast-facing part of the dune is well vegetated.

Data Point ID: P-T01-016

Water ID: Playa-21

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks and salt crust cover approximately 80 percent of ground surface within the playa, and less than 10 percent of the ground surface in the adjacent upland. Much less vegetated in playa relative to adjacent upland.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Uppermost soil layer is Silty Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 5 % Tree: % Shrub: 5 % Vine: % Herb: % Moss: %
 cover of plants rooted within 20-ft width above OHWM: Total: 25 % Tree: % Shrub: 20 % Vine: % Herb: 5 % Moss: 3 %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Atriplex confertifolia</i>	Yes	<i>Atriplex confertifolia</i>	Yes
		<i>Chrysothamnus viscidiflorus</i>	No
		<i>Bromus tectorum</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: This playa is 0.06 acres and very near the northern boundary of Area B. Although no standing water was present, the uppermost 0.5 inch of soil was moist during the investigation. There are abundant mud-cracks and salt crust throughout the playa. There are two other very similar playas (Playa-22 and Playa-23) situated to the west of Playa-21.

Data Point ID: P-T01-018/P-T01-019

Water ID: Playa-1

Project: Obsidian Solar Center (Site B)	Date: 3/20/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 80 percent of ground surface near the edge of the playa, as sampled by P-T01-018, and less than 1 percent of the ground surface in the adjacent upland, as sampled by P-T01-019. Much less vegetated near playa edge relative to adjacent upland.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Uppermost layer of soil is Silt Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 16 % Tree: % Shrub: 16 % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 49 % Tree: % Shrub: 43 % Vine: % Herb: 5 % Moss: 1 %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Atriplex confertifolia</i>	Yes	<i>Atriplex confertifolia</i>	Yes
		<i>Chrysothamnus viscidiflorus</i>	No
		<i>Bromus tectorum</i>	No
		biotic crust	No
		moss	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from P-T01-018 and P-T01-019, which are situated on either side of the OHWM of the southern arm of Playa-1. P-T01-17 sampled the interior of the playa and is approximately 150 feet northwest of P-T01-018. Playa-1 is vegetated by *Atriplex confertifolia* at 15% cover and *Chrysothamnus viscidiflorus* at 1% cover; shrubs are perched on hummocks rising 0.5-1 feet high above an otherwise flat surface. Same shrub species present at P-T01-017, but at less cover. No standing water was present during the investigation, but the uppermost 0.5 inch of soil was moist. Abundant, well-defined mud-cracks and a thin layer of fine sediment at the soil surface occur throughout the playa. Within the adjacent upland, sampled by P-T01-019, vegetation cover is much greater. In addition, there is biotic crust at 5 percent cover and bare ground at 45 percent cover.

Data Point IDs: P-T01-021/P-T01-022Water ID: Playa-1

Project: Obsidian Solar Center	Date: 3/20/2018	Project Feature:
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	<input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

OHWM continuous? yes no n/a

Notes: Mud-cracks cover 80-90 percent of ground surface in this part of the playa, and less than 1 percent of the ground surface in the adjacent upland. Cover of salt deposits is 70% in the playa and 5% in the upland. Vegetation much less abundant in playa.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Loamy Sand in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 5 % Tree: % Shrub: 5 % Vine: % Herb: % Moss: %
cover of plants rooted within 20-ft width above OHWM: Total: 22 % Tree: % Shrub: 20 % Vine: % Herb: 2 % Moss: %
plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Atriplex confertifolia</i>	Yes	<i>Atriplex confertifolia</i>	Yes
		<i>Distichlis spicata</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from P-T01-021 and P-T01-022. P-T01-020 sampled an interior portion of the playa with blue-gray aerial photo signature, and is approximately 400 feet southwest of P-T01-021. Playa-1 is approximately 49 acres. No standing water within the Playa, but top 1 inch of soil was saturated. Abundant mud-cracks, fine sediment deposits, and salt deposits in this part of the playa. Upland is on a terrace approximately 3.5 feet above the playa surface. Mud-cracks cover approximately 1% and salt deposits cover 5% in the adjacent upland within 20 feet of the OHWM.

Data Point ID: W-T02-003

Water ID: Playa-48

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover more than 50 percent of ground surface in this playa mosaic, and less than 50 percent of the ground surface in the adjacent upland. Plant cover and vigor much less in playa relative to adjacent upland. OHWM is moderately distinct.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silt Loam within the playa, and both Silt Loam and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 35 % Tree: % Shrub: 25 % Vine: % Herb: 3 % Moss: 7 %

cover of plants rooted within 20-ft width above OHWM: Total: 65 % Tree: % Shrub: 45 % Vine: % Herb: 10 % Moss: 10 %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No
moss	No	<i>moss</i>	No
Biotic crust	No		

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is a playa mosaic. Plant species composition in the playa is very similar to adjacent upland, but plant cover in the playa is much less. Very moist in uppermost 0.5 inch of soil, but not saturated.

Data Point ID: W-T02-004

Water ID: Playa-49

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover more than 50 percent of ground surface within the playa, and less than 50 percent of the ground surface in the adjacent upland. Plant cover and vigor much less in playa relative to adjacent upland. OHWM is moderately distinct.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silt Loam within the playa, and Silt Loam and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 35 % Tree: % Shrub: 25 % Vine: % Herb: 2 % Moss: 10 %

cover of plants rooted within 20-ft width above OHWM: Total: 65 % Tree: % Shrub: 45 % Vine: % Herb: 10 % Moss: 10 %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No
moss	No	moss	No
Biotic crust	Yes	Biotic crust	Yes

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from W-T02-004. Area sampled is a playa mosaic. Plant species composition in the playa is very similar to adjacent upland, but cover in the playa is much less. Very moist in uppermost 0.5 inch of soil, but not saturated. Biotic crust is widespread in playa where mud-cracks are weakly defined or absent.

Data Point ID: UVP-T02-004 Water ID: n/a

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: No indicators of an OHWM present.

Predominant Bed Substrate (check all that apply):

- Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand, somewhat moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: ____% Tree: ____% Shrub: ____% Vine: ____% Herb: ____% Moss: ____%
 cover of plants rooted within 20-ft width above OHWM: Total: 1% Tree: ____% Shrub: ____% Vine: ____% Herb: 1% Moss: ____%
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Distichlis spicata</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from UVP-T02-004. Area sampled has a dark aerial signature, and is a relatively unvegetated upland sandy plain. No evidence of wetland hydrology or OHWM.

Data Point ID: UVP-T02-005

Water ID: n/a

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: No indicators of an OHWM present.

Predominant Bed Substrate (check all that apply):

- Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand, somewhat moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: ___% Tree: ___% Shrub: ___% Vine: ___% Herb: ___% Moss: ___%

cover of plants rooted within 20-ft width above OHWM: Total: 3% Tree: ___% Shrub: 2% Vine: ___% Herb: 1% Moss: ___%

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Artemisia tridentata</i>	No
		<i>Leymus cineris</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point within an upland sandy plain with a light aerial signature. No evidence of recurrent saturation or inundation.

Data Point ID: WB-T02-002/UVP-T02-006

Water ID: Playa-11

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature:
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	<input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Polygonal mud-cracks widespread in the playa, which was sampled by WB-T02-002. Within the sparsely vegetated upland sampled by UVP-T02-006, mud-cracks cover less than 30 percent of the ground and are weakly to moderately well defined. Also present in the sparsely vegetated upland are large hummocks up to 3 feet tall. Within the well vegetated upland sampled by UVP-T02-007, mud-cracks cover less than 5 percent of the ground and are weakly expressed. Hummocks present, but less pronounced than in the sparsely vegetated upland area.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil in the playa and the sparsely vegetated upland are both Clay Loam.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 2 % Tree: % Shrub: 2 % Vine: % Herb: % Moss: %
 cover of plants rooted within 20-ft width above OHWM: Total: 3 % Tree: % Shrub: 2 % Vine: % Herb: 1 % Moss: %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	No	<i>Chrysothamnus viscidiflorus</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: WB-T02-002 is within Playa-11, and UVP-T02-006 is within the sparsely vegetated, silt-laden, hummocky upland area immediately adjacent to Playa-11. WB-T02-002 is approximately 50 feet north of UVP-T02-006. The playa has a dark aerial photo signature. It is flat with widespread mud-cracks. The sparsely vegetated upland area adjacent to the playa has large hummocks and relatively few mud-cracks that are moderately well defined.

Data Point ID: UVP-T02-007

Water ID: n/a

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: No indicators of an OHWM present.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand, somewhat dry at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: ___% Tree: ___% Shrub: ___% Vine: ___% Herb: ___% Moss: ___%

cover of plants rooted within 20-ft width above OHWM: Total: 75% Tree: ___% Shrub: 35% Vine: ___% Herb: 35% Moss: 5%

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Artemisia tridentata</i>	Yes
		<i>Chrysothamnus viscidiflorus</i>	Yes
		<i>Bromus tectorum</i>	Yes

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point within the well-vegetated upland situated approximately 300 feet southwest of Playa-11. No evidence of recurrent saturation or inundation. Hummocks in this community are approximately 0.5 to 1.0 feet tall. Bare ground cover approximately 40 percent of the ground surface.

Data Point ID: UVP-T02-008

Water ID: n/a

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Polygonal mud-cracks cover approximately 40 percent of the ground surface, and not strongly expressed. No evidence of recent sediment deposition.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand across most of the community, with some Silty Clay Loam in mud-crack areas.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: ___% Tree: ___% Shrub: ___% Vine: ___% Herb: ___% Moss: ___%

cover of plants rooted within 20-ft width above OHWM: Total: 39% Tree: ___% Shrub: 30% Vine: ___% Herb: 7% Moss: 2%

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Chrysothamnus viscidiflorus</i>	Yes
		<i>Artemisia tridentata</i>	No
		<i>Bromus tectorum</i>	Yes
		<i>Elymus elimoides</i>	No
		moss	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is a relatively poorly vegetated portion of an upland playette; this area has many mud-cracks that are poorly to moderately well defined. The surrounding upland area has higher vegetation cover, but comprised of the same species.

Data Point ID: WB-T02-003/UVP-T02-009

Water ID: Playa-9

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Polygonal mud-cracks widespread and moderately well defined in the playa, as sampled by WB-T02-003. Within the well vegetated upland sampled by UVP-T02-009, mud-cracks cover less than 30 percent of the ground and are weakly expressed.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is Clay Loam in the playa, and Loamy Sand in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 5 % Tree: % Shrub: 3 % Vine: % Herb: 2 % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 69 % Tree: % Shrub: 42 % Vine: % Herb: 25 % Moss: 2 %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	No	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	Yes
<i>Bromus tectorum</i>	No	<i>Gutierrezia sarothrae</i>	No
		<i>Bromus tectorum</i>	Yes

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: WB-T02-003 is within Playa-9, which is flat with widespread mud-cracks and sparsely vegetated. The adjacent upland is slightly elevated above the playa, has few mud-cracks and is well vegetated with xerophytes.

Data Point ID: WB-T02-004

Water ID: Playa-10

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 80 percent of ground surface within the playa complex, and less than 30 percent of the ground surface in the adjacent upland. Vegetation cover much less within playa relative to outside of playa.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Sandy Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 20 % Tree: % Shrub: 14 % Vine: % Herb: 5 % Moss: 1 %
cover of plants rooted within 20-ft width above OHWM: Total: 60 % Tree: % Shrub: 45 % Vine: % Herb: 10 % Moss: 5 %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No
<i>Gutierrezia sarothrae</i>	No	<i>Gutierrezia sarothrae</i>	No
<i>Bromus tectorum</i>	Yes	<i>Bromus tectorum</i>	Yes
		Moss	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent
Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals
Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point within Playa Mosaic. No standing water in the playa, but the uppermost 0.5 inch of soil was moist during the investigation. Vegetation in playa primarily on small hummocks, rising 0.5-1.5 feet above the otherwise flat surface.

Data Point ID: WB-T02-006

Water ID: Playa-12

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 80 percent of ground surface within the playa complex, and less than 20 percent of the ground surface in the adjacent upland.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes:

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 22 % Tree: % Shrub: 14 % Vine: % Herb: 5 % Moss: 3 %

cover of plants rooted within 20-ft width above OHWM: Total: 65 % Tree: % Shrub: 45 % Vine: % Herb: 15 % Moss: 5 %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No
<i>Bromus tectorum</i>	Yes	<i>Bromus tectorum</i>	Yes
<i>Moss</i>	No	<i>Moss</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point within Playa Mosaic. No standing water in the playa, but the uppermost 0.5 inch of soil was moist during the investigation. Large part of playa sloped at 2-3 percent. Vegetation in playa primarily on small hummocks, rising 0.5-1.0 feet above the otherwise flat surface.

Data Point ID: WB-T02-007

Water ID: Playa-13

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 60 percent of ground surface within the playa complex, and less than 5 percent of the ground surface in the adjacent upland.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Clay Loam within the playa, and Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 27 % Tree: % Shrub: 16 % Vine: % Herb: 9 % Moss: 2 %

cover of plants rooted within 20-ft width above OHWM: Total: 70 % Tree: % Shrub: 50 % Vine: % Herb: 15 % Moss: 5 %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No
<i>Bromus tectorum</i>	Yes	<i>Bromus tectorum</i>	Yes
<i>Moss</i>	No	<i>Moss</i>	No
<i>Lepidium perfoliatum</i>	No	<i>Lepidium perfoliatum</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks Data point within Playa Mosaic. No standing water in the playa, but the uppermost 0.5 inch of soil was moist during the investigation. Some salt deposits observed near the edges of the playa.

Data Point ID: W-T02-002

Water ID: Playa-25

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 55 percent of ground surface within the playa complex, and less than 45 percent of the ground surface in the adjacent upland.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Clay Loam and Sandy Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 46 % Tree: % Shrub: 37 % Vine: % Herb: 1 % Moss: 8 %

cover of plants rooted within 20-ft width above OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No
<i>Moss</i>	Yes	<i>Moss</i>	Yes
<i>Lepidium perfoliatum</i>	No	<i>Lepidium perfoliatum</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point within Playa Mosaic. No standing water in the playa, but the uppermost 0.5 inch of soil was moist during the investigation. Some salt deposits observed near the edges of the playa.

Data Point ID: UVP-T02-011

Water ID: n/a

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover 30 percent of the surface and are not well defined.

Predominant Bed Substrate (check all that apply):

- Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Fine Sandy Loam, somewhat moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent saturation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %
 cover of plants rooted within 20-ft width above OHWM: Total: 2 % Tree: % Shrub: 1 % Vine: % Herb: 1 % Moss: %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Chrysothamnus viscidiflorus</i>	No
		<i>Lepidium perfoliatum</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area sampled is a sparsely vegetated, upland sandy plain with somewhat rolling topography. Appears to be an abandoned playa that has been mostly covered by wind-blown sand. Graded to the north at 2-3 percent.

Data Point ID: WB-T02-008

Water ID: Playa-14

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover 80 percent of the surface.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 14 % Tree: % Shrub: 12 % Vine: % Herb: 1 % Moss: 1 %

cover of plants rooted within 20-ft width above OHWM: Total: 70 % Tree: % Shrub: 50 % Vine: % Herb: 15 % Moss: 5 %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No
<i>Lepidium perfoliatum</i>	No	<i>Lepidium perfoliatum</i>	No
<i>Bromus tectorum</i>	No	<i>Bromus tectorum</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point is within the northern part of a Playa Mosaic. This portion of the playa is less well vegetated than most of the playa. No standing water present.

Data Point ID: WB-T02-009

Water ID: Playa-15

Project: Obsidian Solar Center (Site A)	Date: 3/21/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):
 natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)
Notes: Mud-cracks cover 90 percent of the surface in the playa, and less than 40 percent of the surface in the adjacent upland. Some silt-sized sediment deposits evident across playa including along edges of some very small hummocks.

Predominant Bed Substrate (check all that apply):
 Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
Notes: Silty Clay Loam within the playa, and Silt Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)
Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)
Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:
 cover of plants rooted within 20-ft width below OHWM: Total: 3 % Tree: % Shrub: 2 % Vine: % Herb: 1 % Moss: %
 cover of plants rooted within 20-ft width above OHWM: Total: 20 % Tree: % Shrub: 5 % Vine: % Herb: 15 % Moss: %
 plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	No	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Distichlis spicata</i>	No	<i>Distichlis spicata</i>	Yes

Aquatic flora:
 free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent
Species: no aquatic species present

Aquatic fauna:
 insects arachnids crustaceans mollusks fish amphibians birds mammals
Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point is in a Playa Barrens portion of the playa. However, the southern part of this playa is a Playa Mosaic. The Playa Barrens area is shallowly concave.

Data Point ID: UVP-T02-012

Water ID: n/a

Project: Obsidian Solar Center (Site C)	Date: 3/22/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area is an upland meadow with no wetlands or waters features.

Predominant Bed Substrate (check all that apply):

- Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand, somewhat moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 47 % Tree: % Shrub: 2 % Vine: % Herb: 45 % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Sysimbrium altissimum</i>	Yes
		<i>Ericameria nauseosa</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Area is an upland meadow dominated by weedy herbs. No standing water, soil surface cracks, or salt crust. Other areas with a similar aerial photo signature are dominated by *Leymus cinereus*.

Data Point ID: UVP-T02-013

Water ID: n/a

Project: Obsidian Solar Center (Site C)	Date: 3/22/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area is an upland meadow with no wetlands or waters features.

Predominant Bed Substrate (check all that apply):

- Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand, somewhat moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 43 % Tree: % Shrub: 38 % Vine: % Herb: % Moss: 5 %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Artemisia tridentata</i>	Yes
		<i>Ericameria nauseosa</i>	Yes
		<i>Gutierrezia sarothrae</i>	No
		<i>moss</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point taken within an sagebrush steppe with a ‘mottled’ aerial signature. No standing water, soil surface cracks, or salt crust is present.

Data Point ID: UVP-T02-014

Water ID: n/a

Project: Obsidian Solar Center (Site C)	Date: 3/22/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area is an upland meadow with no wetlands or waters features.

Predominant Bed Substrate (check all that apply):

- Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand, somewhat moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 65 % Tree: % Shrub: 47 % Vine: % Herb: 3 % Moss: 15 %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Artemisia tridentata</i>	No
		<i>Ericameria nauseosa</i>	Yes
		<i>Bromus tectorum</i>	No
		moss	No
		<i>Sysimbrium altissimum</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point is within a scrub upland with a relatively dark aerial photo signature. No standing water, soil surface cracks, or salt crust is present.

Data Point ID: WB-T02-010

Water ID: Playa-2

Project: Obsidian Solar Center (Site B)	Date: 3/22/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover 90 percent of the surface in the playa.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

- subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0% Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: % Tree: % Shrub: % Vine: % Herb: % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
none			

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point taken within the interior of Playa-2, in a portion of the playa mapped by NWI as a PUSA. This part of the playa is Playa Barrens. See WB-T02-011/UVP-T02-015 for information about the edge of the playa and the adjacent upland.

Data Point ID: WB-T02-011/UVP-T02-015

Water ID: Playa-2

Project: Obsidian Solar Center (Site B)	Date: 3/22/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover 90 percent of the surface in the playa, and less than 40 percent of the surface in the adjacent upland. Some silt-sized sediment deposits evident across playa including along edges of some very small hummocks.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 9 % Tree: % Shrub: 7 % Vine: % Herb: 2 % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Artemisia confertifolia</i>	Yes
		<i>Sysimbrium altissimum</i>	No

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Data point is near the edge of the playa, and just outside of the area mapped by NWI as a PUSA. This area is Playa Mosaic. See WB-T02-010 for information about the playa interior, which is a Playa Barrens.

Data Point ID: UVP-T02-016

Water ID: n/a

Project: Obsidian Solar Center (Site D)	Date: 3/22/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

- natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area is an upland meadow with no wetlands or waters features.

Predominant Bed Substrate (check all that apply):

- Below the OHWM:** bedrock boulder cobble gravel sand silt clay organic matter other
Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Loamy Sand, somewhat moist at surface.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 0 % Tree: % Shrub: % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 65 % Tree: % Shrub: 6 % Vine: % Herb: 58 % Moss: 1 %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Artemisia confirtifolia</i>	No
		<i>Ericameria nauseosa</i>	No
		<i>Salsola tragus</i>	No
		moss	No
		<i>Sysimbrium altissimum</i>	Yes

Aquatic flora:

- free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

- insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from UVP-T02-016. This area appears to have been mechanically cleared at some point in the past few decades. Data point taken within a fallow field within Site D. Area is an upland weedy field. No standing water, soil surface cracks, or salt crust.

Data Point ID: W-1

Water ID: Playa-32

Project: Obsidian Solar Center (Site A)	Date: 6/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 75 percent of ground surface within the playa complex, and less than 10 percent of the ground surface in the adjacent upland.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 8 % Tree: % Shrub: 8 % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 65 % Tree: % Shrub: 65 % Vine: % Herb: % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from W-1, within a bright aerial image. No standing water or salt crust. Soil surface cracks cover 75% of the total area, with some silted in edges of the playa complex.

Data Point ID: W-2

Water ID: Playa-30

Project: Obsidian Solar Center (Site A)	Date: 6/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 65 percent of ground surface within the playa complex, and less than 10 percent of the ground surface in the adjacent upland.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 8 % Tree: % Shrub: 8 % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 60 % Tree: % Shrub: 60 % Vine: % Herb: % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from W-2, within a bright aerial image. No standing water or salt crust. Soil surface cracks cover 65% of the total area, with some silted in edges of the playa complex.

Data Point ID: W-3

Water ID: Playa-26

Project: Obsidian Solar Center (Site A)	Date: 6/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 90 percent of ground surface within the playa complex, and less than 5 percent of the ground surface in the adjacent upland.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 15 % Tree: % Shrub: 15 % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 60 % Tree: % Shrub: 60 % Vine: % Herb: % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentate</i>	No	<i>Artemisia tridentata</i>	No
<i>Juniperus occidentalis</i>	No		

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from W-3, within a bright aerial image. No standing water or salt crust. Soil surface cracks cover 90% of the total area. The edges of the playa complex have been silted in.

Data Point ID: W-4

Water ID: Playa-33

Project: Obsidian Solar Center (Site A)	Date: 6/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 70 percent of ground surface within the playa complex, and less than 5 percent of the ground surface in the adjacent upland. Biotic crust (5% cover) beginning to form on top of mud cracks throughout the playa complex.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Sandy Loam in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 15 % Tree: % Shrub: 15 % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 80 % Tree: 15 % Shrub: 65 % Vine: % Herb: % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentate</i>	No	<i>Artemisia tridentata</i>	No
<i>Juniperus occidentalis</i>	No	<i>Juniperus occidentalis</i>	Yes

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from W-4, a large playa complex with a bright aerial image. No standing water or salt crust. Soil surface cracks cover 70% of the total area, with some biotic crust forming on top of the playa surfaces.

Data Point ID: W-5 Water ID: n/a

Project: Obsidian Solar Center (Site A)	Date: 6/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area is an upland playette with weakly expressed playa surfaces.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Silty Loamy, soil surface is dry.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: ___% Tree: ___% Shrub: ___% Vine: ___% Herb: ___% Moss: ___%

cover of plants rooted within 20-ft width above OHWM: Total: 38% Tree: ___% Shrub: 23% Vine: ___% Herb: 15% Moss: ___%

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Chrysothamnus viscidiflorus</i>	Yes
		<i>Artemisia tridentata</i>	No
		<i>Bromus tectorum</i>	Yes
		<i>Distichlis spicata</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from W-5, a large upland playette with a bright aerial image. No standing water or salt crust. Soil surface cracks are weakly expressed and cover 5% of the total area.

Data Point ID: W-6 Water ID: n/a

Project: Obsidian Solar Center (Site A)	Date: 6/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Area is an upland playette with weakly expressed playa surfaces.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Soil is a Silty Loamy, soil surface is dry.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of wetland hydrology or recurrent inundation.

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: ___% Tree: ___% Shrub: ___% Vine: ___% Herb: ___% Moss: ___%

cover of plants rooted within 20-ft width above OHWM: Total: 35% Tree: ___% Shrub: 27% Vine: ___% Herb: 8% Moss: ___%

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
		<i>Chrysothamnus viscidiflorus</i>	Yes
		<i>Artemisia tridentata</i>	Yes
		<i>Bromus tectorum</i>	Yes
		<i>Distichlis spicata</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from W-6, an upland playette with a bright aerial image. No standing water or salt crust. Soil surface cracks are weakly expressed and cover 5% of the total area.

Data Point ID: W-7

Water ID: Playa-47

Project: Obsidian Solar Center (Site A)	Date: 6/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 50 percent of ground surface within the playa mosaic, and less than 10 percent of the ground surface in the adjacent upland.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other
 Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Loamy Sand in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water
 subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 25 % Tree: % Shrub: 25 % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 55 % Tree: % Shrub: 55 % Vine: % Herb: % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentate</i>	No	<i>Artemisia tridentata</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from W-7, a large playa mosaic with a bright aerial image. No standing water. Soil surface cracks cover 50% of the total area, with some salt crust in low points and around the edges of the complex.

Data Point ID: W-8

Water ID: Playa-45

Project: Obsidian Solar Center (Site A)	Date: 6/19/2018	Project Feature: <input type="checkbox"/> right-of-way <input checked="" type="checkbox"/> project facility <input type="checkbox"/> access road <input type="checkbox"/> staging/storage Area <input type="checkbox"/> other: _____
Location: Christmas Valley – Lake County, OR	Observers: Greg Mazer, Rachel Locke (E & E)	

Ordinary High Water Mark (OHWM) Indicators (one or more may also be present well below OHWM):

natural line impressed on bank including scour, shelving and exposed roots textural change in depositional sediment
 change in character of soil change in abundance and distinctiveness of mud-cracks wrack line
 change in amount or coarseness of water-borne organic litter and debris water-stained vegetation, organic litter or structures
 change in plant community (species composition, vigor and/or plant cover) other (explain in Notes)

Notes: Mud-cracks cover approximately 90 percent of ground surface within the playa mosaic, and less than 10 percent of the ground surface in the adjacent upland. Soil surface cracks are strongly expressed.

Predominant Bed Substrate (check all that apply):

Below the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Above the OHWM: bedrock boulder cobble gravel sand silt clay organic matter other

Notes: Silty Clay Loam within the playa, and Loamy Sand in the adjacent upland.

Anthropogenic Influence: natural artificially created altered (via historical or recent earth-moving activity)

Notes:

Hydrologic Connectivity: open channel(s) leading to a water culvert(s) leading to a water

subsurface hydrologic connection to a water (explain in Notes) isolated (explain in Notes) not applicable (explain in Notes)

Notes: No evidence of subsurface hydrologic connections upgradient or downgradient from the water

Habitat Conditions:

cover of plants rooted within 20-ft width below OHWM: Total: 25 % Tree: % Shrub: 25 % Vine: % Herb: % Moss: %

cover of plants rooted within 20-ft width above OHWM: Total: 65 % Tree: % Shrub: 65 % Vine: % Herb: % Moss: %

plant cover above the water: open/full sun lightly shaded moderately shaded deeply shaded

Species rooted below OHWM:	Dominant?	Species rooted above OHWM:	Dominant?
<i>Chrysothamnus viscidiflorus</i>	Yes	<i>Chrysothamnus viscidiflorus</i>	Yes
<i>Artemisia tridentata</i>	No	<i>Artemisia tridentata</i>	No

Aquatic flora:

free floating (non-algae) algae moss rooted floating leaf rooted submerged rooted emergent

Species: no aquatic species present

Aquatic fauna:

insects arachnids crustaceans mollusks fish amphibians birds mammals

Species: no aquatic species present

Other habitat features: none

General description/other remarks: Information presented here is derived from W-8, a large playa mosaic with a bright aerial image. No standing water. Soil surface cracks cover 90% of the total area, with some salt crust in low points and around the edges of the complex.

ATTACHMENT C

Photographic Log



Point ID: WB-T02-001

Date: 3/21/2018

Playa ID: Playa-16

Project Area: A

Comment: Playa Barrens; standing water in tire ruts; view north from near center of playa



Point ID: WB-T02-001

Date: 3/21/2018

Playa ID: Playa-16

Project Area: A

Comment: Playa Barrens; standing water in tire ruts; view south-southeast from near center of playa



Point ID: WB-T02-001

Date: 3/21/2018

Playa ID: Playa-16

Project Area: A

Comment: Playa Barrens soil profile



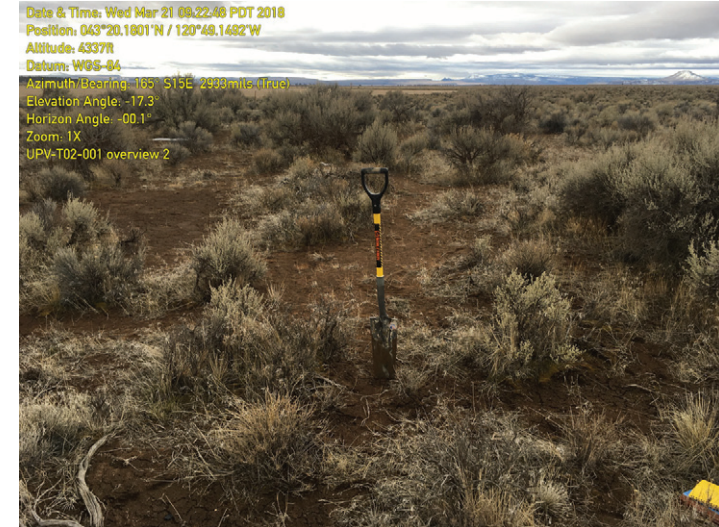
Point ID: UVP-T02-001

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland - Vegetated with No Playa-like Features; southwest of Playa-16; view north-northeast



Point ID: UVP-T02-001

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland - Vegetated with No Playa-like Features; southwest of Playa-16;; view south-southeast



Point ID: UVP-T02-001

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland soil profile



Point ID: W-T02-003

Date: 3/21/2018

Playa ID: Playa-48

Project Area: A

Comment: Playa Mosaic; view northwest



Point ID: W-T02-003

Date: 3/21/2018

Playa ID: Playa-48

Project Area: A

Comment: Playa Mosaic; view south-southeast



Point ID: W-T02-004

Date: 3/21/2018

Playa ID: Playa-49

Project Area: A

Comment: Playa Mosaic; view southwest



Point ID: W-T02-004

Date: 3/21/2018

Playa ID: Playa-49

Project Area: A

Comment: Playa Mosaic; view north-northeast



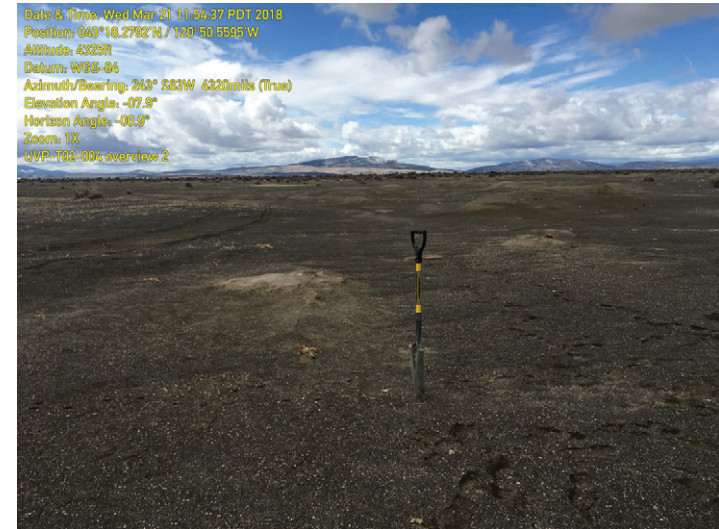
Point ID: UVP-T02-004

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland - Unvegetated; sandy plain with dark aerial photo signature; view northeast



Point ID: UVP-T02-004

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland - Unvegetated; sandy plain with dark aerial photo signature; view west-southwest



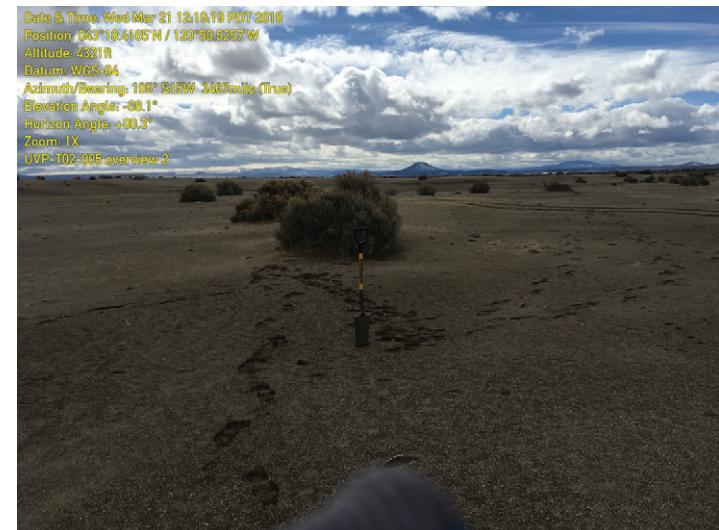
Point ID: UVP-T02-005

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland - Unvegetated; sandy plain with light aerial photo signature; view north



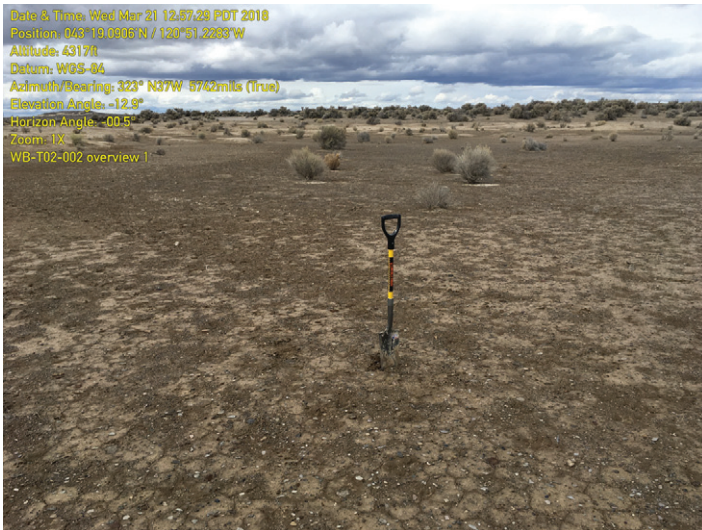
Point ID: UVP-T02-005

Date: 3/21/2018

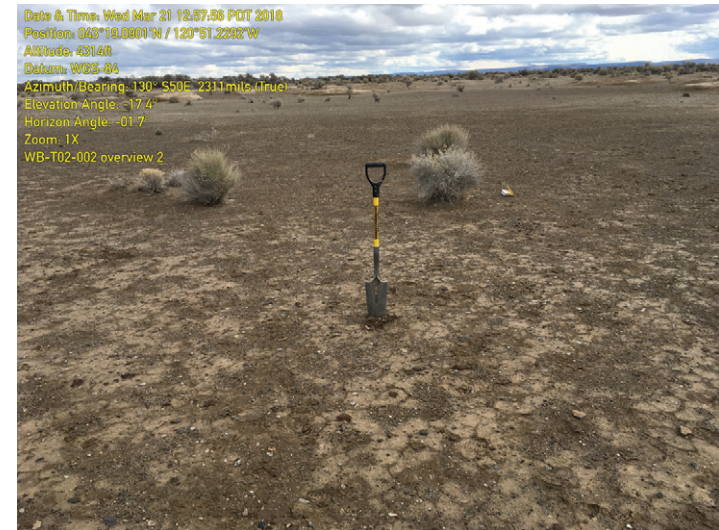
Playa ID: n/a

Project Area: A

Comment: Upland - Unvegetated sandy plain with light aerial photo signature; view south-southwest



Point ID: WB-T02-002 **Date:** 3/21/2018
Playa ID: Playa-11 **Project Area:** A
Comment: Playa Barrens - interior; view northwest



Point ID: WB-T02-002 **Date:** 3/21/2018
Playa ID: Playa-11 **Project Area:** A
Comment: Playa Barrens - interior; view southeast



Point ID: UVP-T02-006 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** A
Comment: Upland - Vegetated with No Playa-like Features 50 feet southwest of Playa-11 - small silty dunes in area with bright aerial photo signature; view north-northwest



Point ID: UVP-T02-006 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** A
Comment: Upland - Vegetated with No Playa-like Features 50 feet southwest of Playa-11 - small silty dunes in area with bright aerial photo signature; view southeast



Point ID: UVP-T02-007

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland - Vegetated with No Playa-like Features 300 feet south-west of Playa-11 - sagebrush steppe; view east



Point ID: UVP-T02-007

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland - Vegetated with No Playa-like Features 300 feet south-west of Playa-11 - sagebrush steppe; view west-northwest



Point ID: UVP-T02-008

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; view northwest



Point ID: UVP-T02-008

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; view east-northeast



Point ID: WB-T02-003

Date: 3/21/2018

Playa ID: Playa-8

Project Area: A

Comment: Playa Mosaic; view southeast



Point ID: WB-T02-003

Date: 3/21/2018

Playa ID: Playa-8

Project Area: A

Comment: Playa Mosaic; view north-northwest



Point ID: WB-T02-003

Date: 3/21/2018

Playa ID: Playa-8

Project Area: A

Comment: Mudcracks close-up



Point ID: UVP-T02-009

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; south of Playa-8; view northwest



Point ID: UVP-T02-009

Date: 3/21/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; south of Playa-8; view west-northwest



Point ID: WB-T02-004

Date: 3/21/2018

Playa ID: Playa-10

Project Area: A

Comment: Playa Mosaic - interior; view east



Point ID: WB-T02-004

Date: 3/21/2018

Playa ID: Playa-10

Project Area: A

Comment: Mudcracks close-up



Point ID: WB-T02-004

Date: 3/21/2018

Playa ID: Playa-10

Project Area: A

Comment: Playa Mosaic - interior; view west-northwest



Point ID: WB-T02-005 **Date:** 3/21/2018
Playa ID: Playa-9 **Project Area:** A
Comment: Playa Barrens - interior; view southwest



Point ID: WB-T02-005 **Date:** 3/21/2018
Playa ID: Playa-9 **Project Area:** A
Comment: Playa Barrens - interior; view north-northeast



Point ID: WB-T02-005 **Date:** 3/21/2018
Playa ID: Playa-9 **Project Area:** A
Comment: Mudcracks close-up



Point ID: WB-T02-006

Date: 3/21/2018

Playa ID: Playa-12

Project Area: A

Comment: Playa Barrens - interior; view south



Point ID: WB-T02-006

Date: 3/21/2018

Playa ID: Playa-12

Project Area: A

Comment: Playa Barrens - interior; view west



Point ID: WB-T02-006

Date: 3/21/2018

Playa ID: Playa-12

Project Area: A

Comment: Mudcracks close-up



Point ID: WB-T02-007

Date: 3/21/2018

Playa ID: Playa-13

Project Area: A

Comment: Playa Barrens - interior; view east



Point ID: WB-T02-007

Date: 3/21/2018

Playa ID: Playa-13

Project Area: A

Comment: Playa Barrens - interior; view west



Point ID: WB-T02-007

Date: 3/21/2018

Playa ID: Playa-13

Project Area: A

Comment: Standing water within interior of Playa



Point ID: WB-T02-007

Date: 3/21/2018

Playa ID: Playa-13

Project Area: A

Comment: Mudcracks close-up



Point ID: W-T02-002 **Date:** 3/21/2018
Playa ID: Playa-25 **Project Area:** A
Comment: Playa Mosaic; view north-northwest



Point ID: W-T02-002 **Date:** 3/21/2018
Playa ID: Playa-25 **Project Area:** A
Comment: Playa Mosaic; view south-southeast



Point ID: IN-057 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** A
Comment: Upland - Vegetated with No Playa-like Features; view north



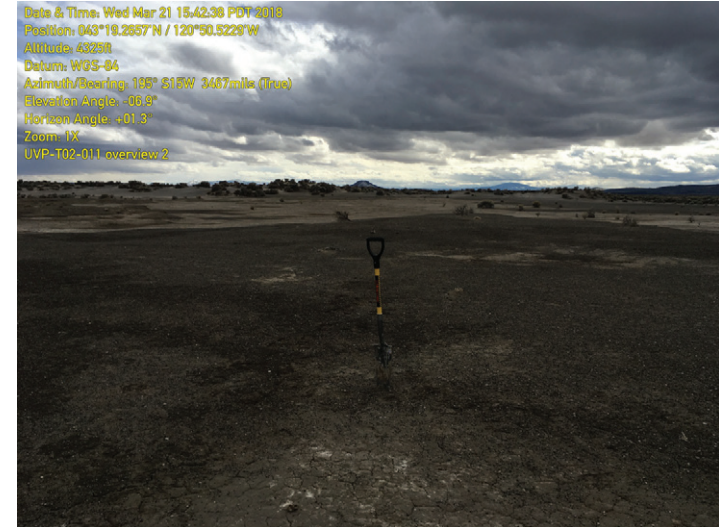
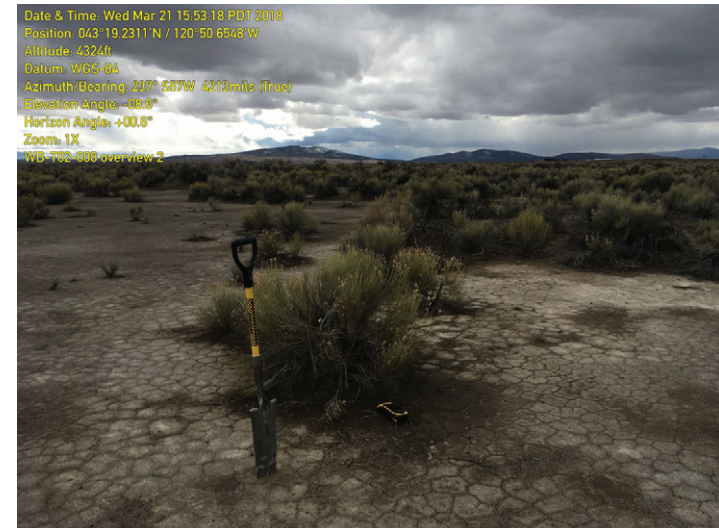
Point ID: IN-057 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** A
Comment: Upland - Vegetated with No Playa-like Features; view west



Point ID: IN-057 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** A
Comment: Upland - Vegetated with No Playa-like Features; view south



Point ID: IN-057 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** A
Comment: Upland - Vegetated with No Playa-like Features; view east

**Point ID:** UVP-T02-011**Date:** 3/21/2018**Playa ID:** n/a**Project Area:** A**Comment:** Upland - Unvegetated; silty plain (abandoned playa); view north-northeast**Point ID:** UVP-T02-011**Date:** 3/21/2018**Playa ID:** n/a**Project Area:** A**Comment:** Upland - Unvegetated; silty plain (abandoned playa); view south-southwest**Point ID:** WB-T02-008**Date:** 3/21/2018**Playa ID:** Playa-14**Project Area:** A**Comment:** Playa Barrens - interior; view north-northeast**Point ID:** WB-T02-008**Date:** 3/21/2018**Playa ID:** Playa-14**Project Area:** A**Comment:** Playa Barrens - interior; view west-southwest



Point ID: WB-T02-009 **Date:** 3/21/2018
Playa ID: Playa-15 **Project Area:** A
Comment: Playa Barrens - interior; view north-northwest



Point ID: WB-T02-009 **Date:** 3/21/2018
Playa ID: Playa-15 **Project Area:** A
Comment: Playa Barrens - interior; view southeast



Point ID: W-1

Date: 6/19/2018

Playa ID: Playa-32

Project Area: A

Comment: Playa Mosaic; view west-northwest



Point ID: W-1

Date: 6/19/2018

Playa ID: Playa-32

Project Area: A

Comment: Playa Mosaic; view south



Point ID: W-1

Date: 6/19/2018

Playa ID: Playa-32

Project Area: A

Comment: Playa Mosaic; view east



Point ID: W-1

Date: 6/19/2018

Playa ID: Playa-32

Project Area: A

Comment: Mudcracks close-up



Point ID: W-2

Date: 6/19/2018

Playa ID: Playa-30

Project Area: A

Comment: Playa Mosaic; view north-northeast



Point ID: W-2

Date: 6/19/2018

Playa ID: Playa-30

Project Area: A

Comment: Playa Mosaic; view west-northwest



Point ID: W-2

Date: 6/19/2018

Playa ID: Playa-30

Project Area: A

Comment: Playa Mosaic; view north



Point ID: W-2

Date: 6/19/2018

Playa ID: Playa-30

Project Area: A

Comment: Mudcracks close-up



Date & Time: Tue Jun 19 11:37:05 PDT 2018
Position: 043°20.5700'N / 120°50.5115'W
Altitude: 4331ft
Datum: WGS-84
Azimuth/Bearing: 034° N34E 0440mils (True)
Elevation Angle: -10.9°
Horizon Angle: -00.8°
Zoom: 1X
W-3

Point ID: W-3 **Date:** 6/19/2018
Playa ID: Playa-26 **Project Area:** A
Comment: Playa Mosaic; view northeast



Date & Time: Tue Jun 19 11:37:13 PDT 2018
Position: 043°20.5795'N / 120°50.5119'W
Altitude: 4331ft
Datum: WGS-84
Azimuth/Bearing: 192° S12W 3413mils (True)
Elevation Angle: -12.6°
Horizon Angle: -00.9°
Zoom: 1X
W-3

Point ID: W-3 **Date:** 6/19/2018
Playa ID: Playa-26 **Project Area:** A
Comment: Playa Mosaic; view south-southwest



Date & Time: Tue Jun 19 11:37:00 PDT 2018
Position: 043°20.5700'N / 120°50.5115'W
Altitude: 4331ft
Datum: WGS-84
Azimuth/Bearing: 130° S50E 1778mils (True)
Elevation Angle: -05.2°
Horizon Angle: -00.1°
Zoom: 1X
W-3

Point ID: W-3 **Date:** 6/19/2018
Playa ID: Playa-26 **Project Area:** A
Comment: Mudcracks close-up



Point ID: W-4

Date: 6/19/2018

Playa ID: Playa-33

Project Area: A

Comment: Playa Mosaic; view east



Point ID: W-4

Date: 6/19/2018

Playa ID: Playa-33

Project Area: A

Comment: Playa Mosaic; view south-southeast



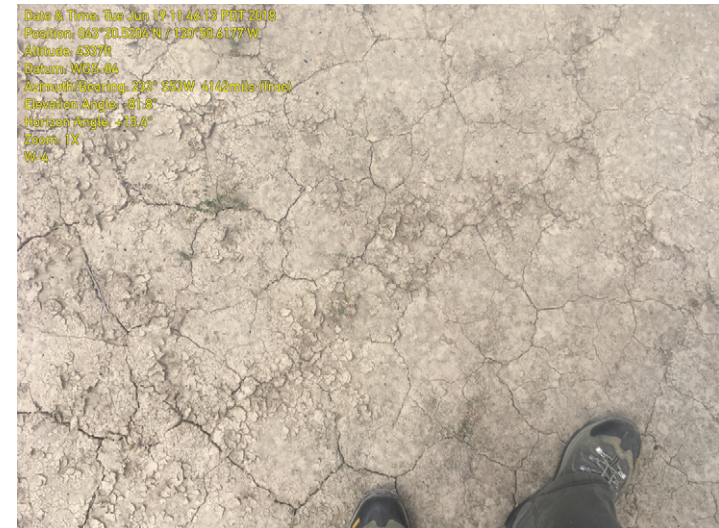
Point ID: W-4

Date: 6/19/2018

Playa ID: Playa-33

Project Area: A

Comment: Playa Mosaic; view northwest



Point ID: W-4

Date: 6/19/2018

Playa ID: Playa-33

Project Area: A

Comment: Mudcracks close-up



Date & Time: Tue Jun 19 15:51:00 PDT 2018
 Position: 043°18.1099'N / 120°50.8191'W
 Altitude: 4319ft
 Datum: WGS 84
 Azimuth/Bearing: 006° NNEE 1929mils (True)
 Elevation Angle: -09.8°
 Horizon Angle: -02.4°
 Zoom: 1X
 W-5

Point ID: W-5

Date: 6/19/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; view east



Date & Time: Tue Jun 19 15:51:09 PDT 2018
 Position: 043°18.1096'N / 120°50.8191'W
 Altitude: 4319ft
 Datum: WGS 84
 Azimuth/Bearing: 017° N17E 0302mils (True)
 Elevation Angle: -21.6°
 Horizon Angle: -60.7°
 Zoom: 1X
 W-5

Point ID: W-5

Date: 6/19/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; view north-northeast



Date & Time: Tue Jun 19 15:51:21 PDT 2018
 Position: 043°18.1100'N / 120°50.8161'W
 Altitude: 4324ft
 Datum: WGS 84
 Azimuth/Bearing: 324° NNW 4871mils (True)
 Elevation Angle: -11.6°
 Horizon Angle: +30.9°
 Zoom: 1X
 W-5

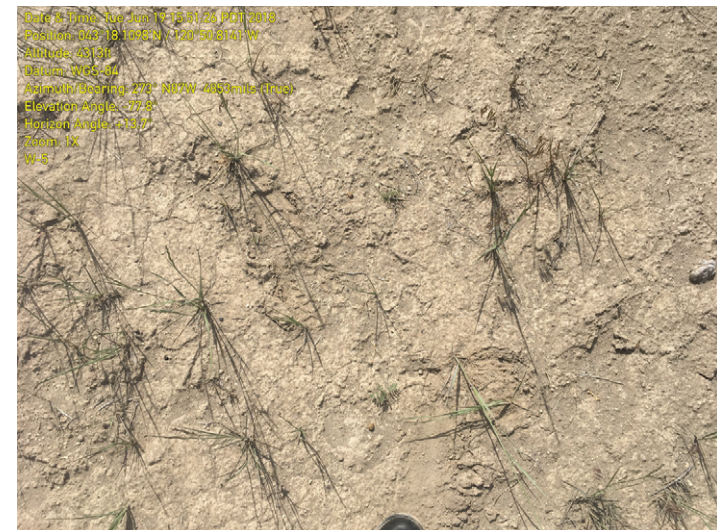
Point ID: W-5

Date: 6/19/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; view west



Date & Time: Tue Jun 19 15:51:24 PDT 2018
 Position: 043°18.1096'N / 120°50.8161'W
 Altitude: 4319ft
 Datum: WGS 84
 Azimuth/Bearing: 278° NNW 4866mils (True)
 Elevation Angle: -27.8°
 Horizon Angle: +23.9°
 Zoom: 1X
 W-5

Point ID: W-5

Date: 6/19/2018

Playa ID: n/a

Project Area: A

Comment: Ground close-up, mudcracks limited in extent and weakly expressed



Point ID: W-6

Date: 6/19/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; view east-southeast



Point ID: W-6

Date: 6/19/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; view northwest



Point ID: W-6

Date: 6/19/2018

Playa ID: n/a

Project Area: A

Comment: Upland Playette; view southwest



Point ID: W-6

Date: 6/19/2018

Playa ID: n/a

Project Area: A

Comment: Ground close-up, mudcracks limited in extent and weakly expressed



Point ID: W-7

Date: 6/19/2018

Playa ID: Playa-46

Project Area: A

Comment: Playa Mosaic; view north-northeast



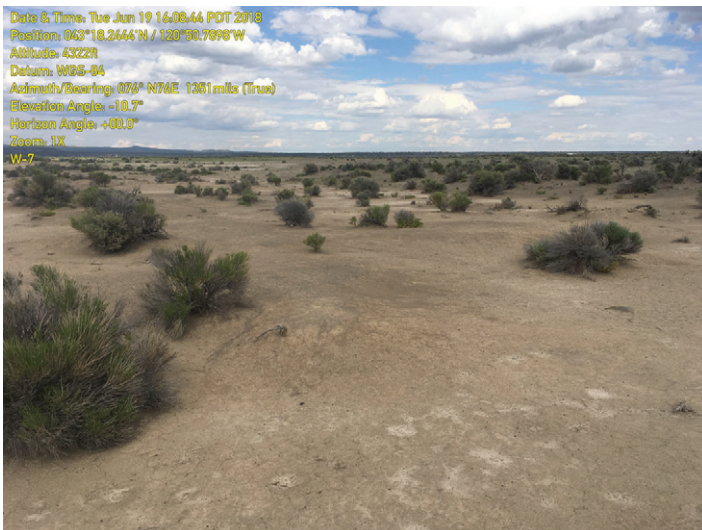
Point ID: W-7

Date: 6/19/2018

Playa ID: Playa-46

Project Area: A

Comment: Playa Mosaic; view south-southwest



Point ID: W-7

Date: 6/19/2018

Playa ID: Playa-46

Project Area: A

Comment: Playa Mosaic; view east-northeast



Point ID: W-7

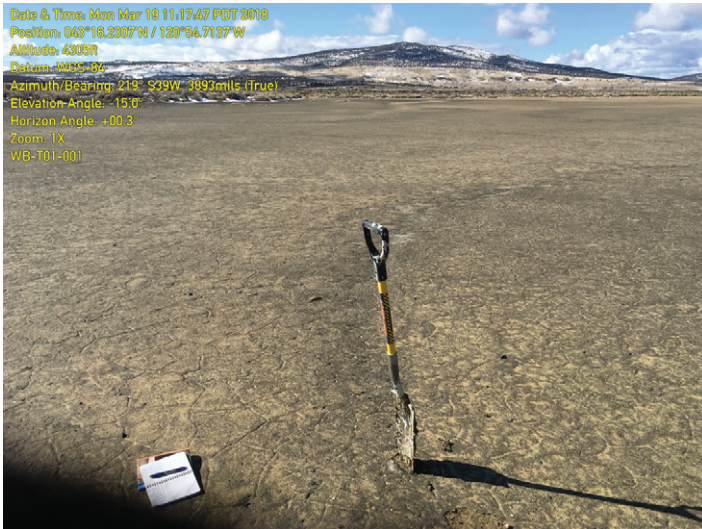
Date: 6/19/2018

Playa ID: Playa-46

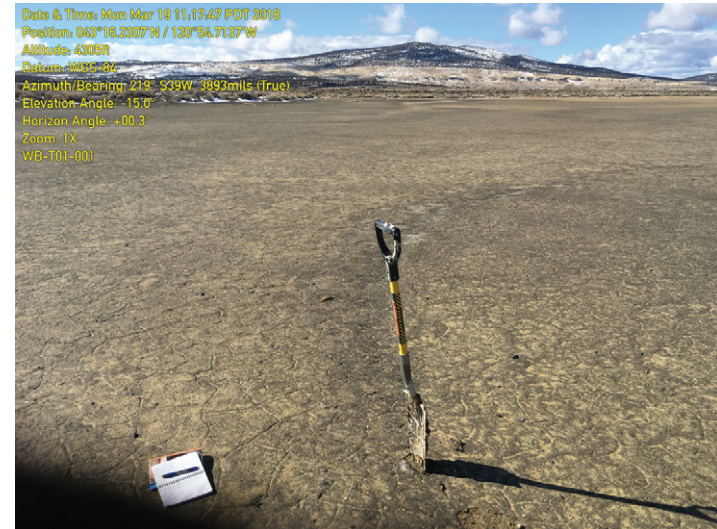
Project Area: A

Comment: Mudcracks close-up

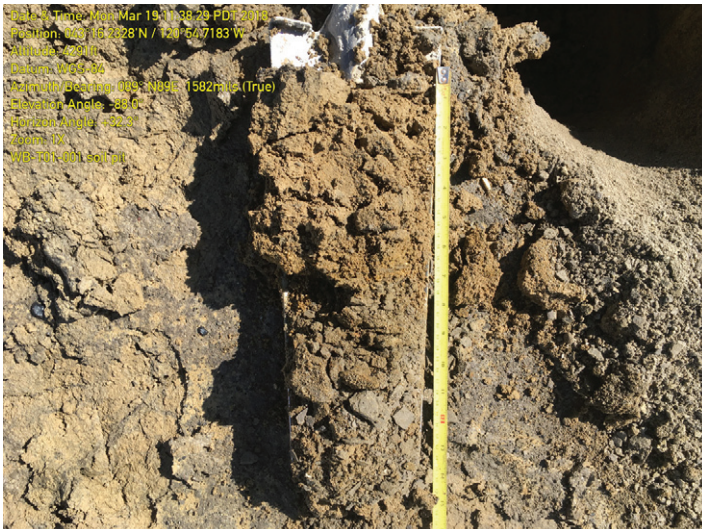
**Point ID:** W-8**Date:** 6/19/2018**Playa ID:** Playa-45**Project Area:** A**Comment:** Playa Mosaic; view west**Point ID:** W-8**Date:** 6/19/2018**Playa ID:** Playa-45**Project Area:** A**Comment:** Playa Mosaic; view west-northwest**Point ID:** W-8**Date:** 6/19/2018**Playa ID:** Playa-45**Project Area:** A**Comment:** Playa Mosaic; view east**Point ID:** W-8**Date:** 6/19/2018**Playa ID:** Playa-45**Project Area:** A**Comment:** Mudcracks close-up



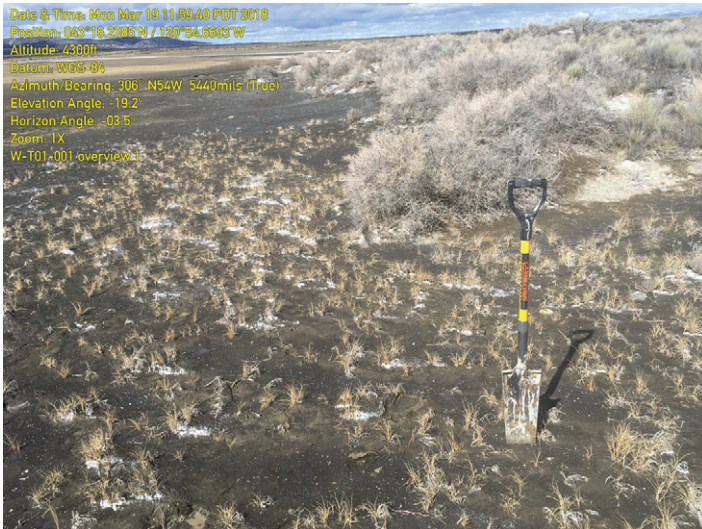
Point ID: WB-T01-001 **Date:** 3/19/2018
Playa ID: Playa-03 **Project Area:** B
Comment: Playa Barrens - interior; view southwest



Point ID: WB-T01-001 **Date:** 3/19/2018
Playa ID: Playa-03 **Project Area:** B
Comment: Playa Barrens mudcracks



Point ID: WB-T01-001 **Date:** 3/19/2018
Playa ID: Playa-03 **Project Area:** B
Comment: Playa Barrens soil profile



Point ID: W-T01-001

Date: 3/19/2018

Playa ID: Playa-03

Project Area: B

Comment: Playa Mosaic along edge of Playa-03; view northwest



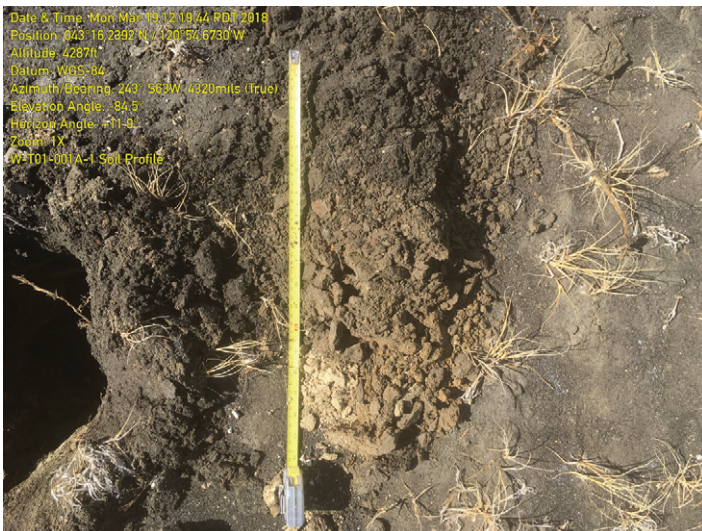
Point ID: W-T01-001

Date: 3/19/2018

Playa ID: Playa-03

Project Area: B

Comment: Playa Mosaic along edge of Playa-03; view south-southeast



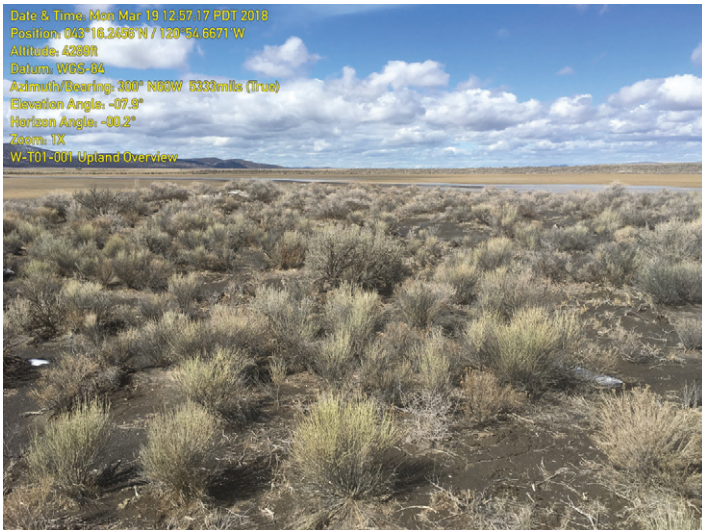
Point ID: W-T01-001

Date: 3/19/2018

Playa ID: Playa-03

Project Area: B

Comment: Playa Mosaic soil profile



Point ID: U-T01-001

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; adjacent to Playa-03; view west-northwest; WB-T01-001 in background



Point ID: U-T01-001

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; adjacent to Playa-03; view west-southeast



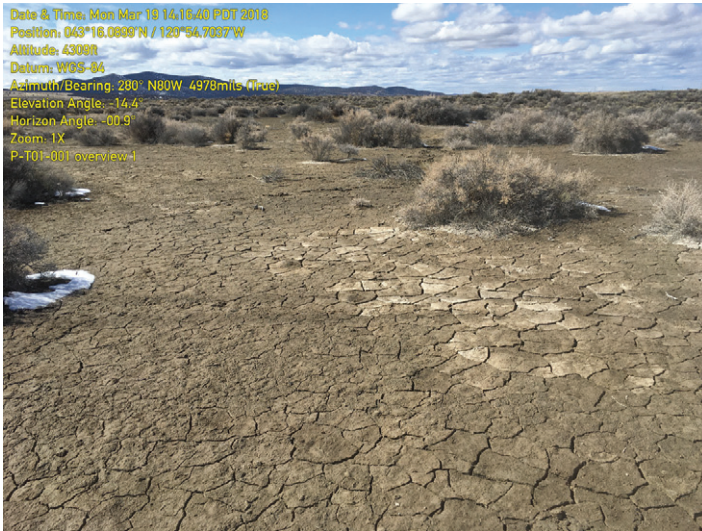
Point ID: U-T01-001

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland soil profile



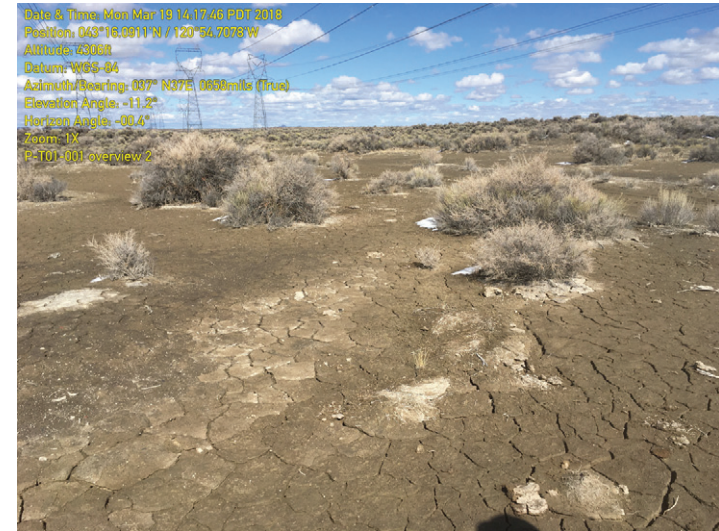
Point ID: P-T01-001

Date: 3/19/2018

Playa ID: Playa-04

Project Area: B

Comment: Playa Mosaic; view west



Point ID: P-T01-001

Date: 3/19/2018

Playa ID: Playa-04

Project Area: B

Comment: Playa Mosaic; view northeast



Point ID: IN-009 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** B
Comment: Upland - Vegetated with No Playa-like Features; view north



Point ID: IN-009 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** B
Comment: Upland - Vegetated with No Playa-like Features; view west



Point ID: IN-009 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** B
Comment: Upland - Vegetated with No Playa-like Features; view south



Point ID: IN-009 **Date:** 3/21/2018
Playa ID: n/a **Project Area:** B
Comment: Upland - Vegetated with No Playa-like Features; view east



Point ID: UVP-T01-001

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; in a depression mapped by NWI as wetland; view east



Point ID: UVP-T01-001

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland soil profile



Point ID: P-T01-002

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; in a depression mapped by NWI as wetland; view northwest



Point ID: P-T01-002

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; in a depression mapped by NWI as wetland; view northeast



Point ID: P-T01-003

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; mapped by NWI as wetland; view northwest



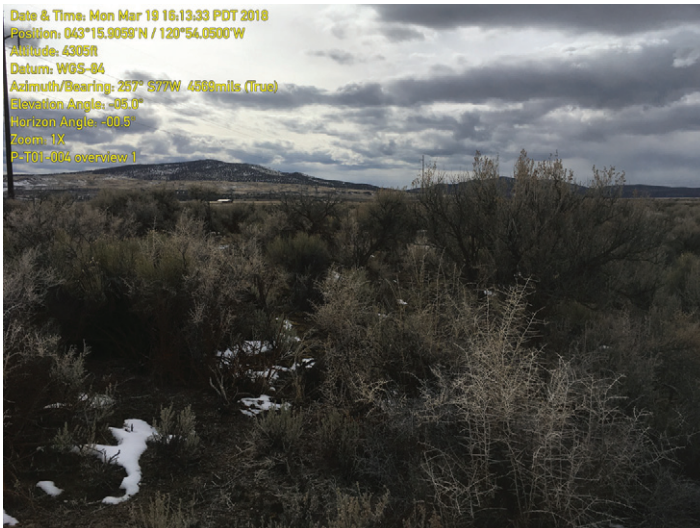
Point ID: P-T01-003

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; mapped by NWI as wetland; view east



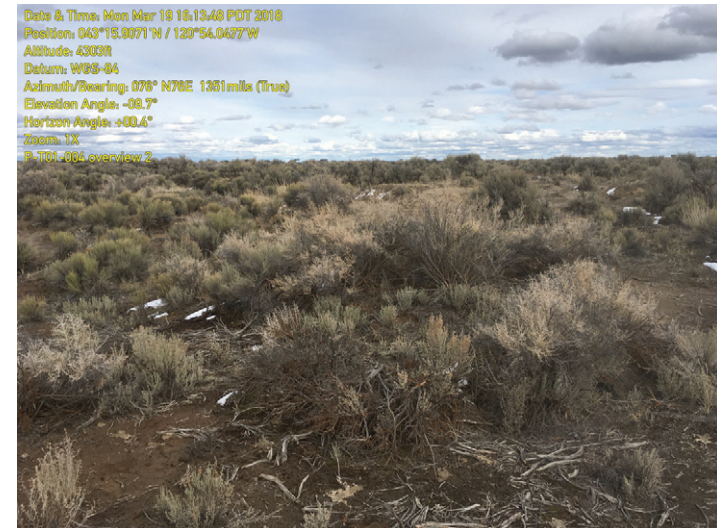
Point ID: P-T01-004

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; mapped by NWI as wetland; view west-southwest



Point ID: P-T01-004

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; mapped by NWI as wetland; view east-northeast



Point ID: P-T01-005

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland Playette in Flagstaff Complex soil map unit; view west



Point ID: P-T01-005

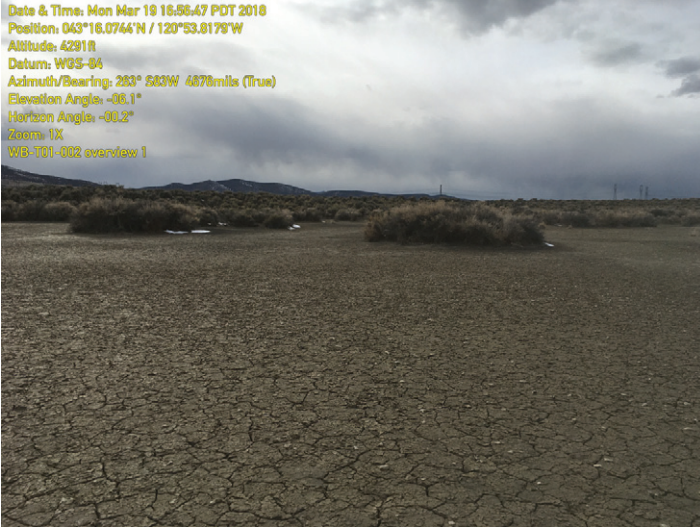
Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland Playette in Flagstaff Complex soil map unit; view north-east

Date & Time: Mon Mar 19 16:56:47 PDT 2018
 Position: 043°16.0744'N / 120°53.8179'W
 Altitude: 4291R
 Datum: WGS-84
 Azimuth/Bearing: 253° S63W 4876mils (True)
 Elevation Angle: -06.1°
 Horizon Angle: -08.2°
 Zoom: 1X
 WB-T01-002 overview 1



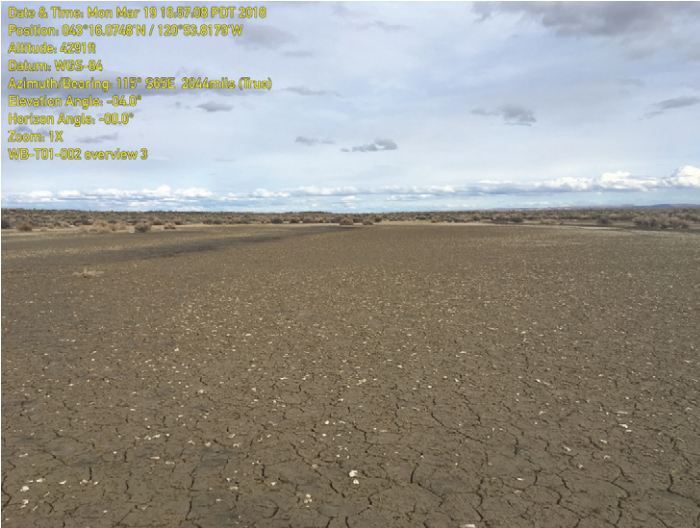
Point ID: WB-T01-002 **Date:** 3/19/2018
Playa ID: Playa-05 **Project Area:** B
Comment: Playa Barrens - interior; view west-southwest

Date & Time: Mon Mar 19 16:57:00 PDT 2018
 Position: 043°16.0744'N / 120°53.8179'W
 Altitude: 4290R
 Datum: WGS-84
 Azimuth/Bearing: 006° N36E 0622mils (True)
 Elevation Angle: -07.5°
 Horizon Angle: +01.0°
 Zoom: 1X
 WB-T01-002 overview 2



Point ID: WB-T01-002 **Date:** 3/19/2018
Playa ID: Playa-05 **Project Area:** B
Comment: Playa Barrens - interior; view northeast

Date & Time: Mon Mar 19 16:57:00 PDT 2018
 Position: 043°16.0748'N / 120°53.8179'W
 Altitude: 4291R
 Datum: WGS-84
 Azimuth/Bearing: 115° S85E 2044mils (True)
 Elevation Angle: -06.0°
 Horizon Angle: -00.0°
 Zoom: 1X
 WB-T01-002 overview 3



Point ID: WB-T01-002 **Date:** 3/19/2018
Playa ID: Playa-05 **Project Area:** B
Comment: Playa Barrens - interior; view east-southeast

Date & Time: Mon Mar 19 16:58:19 PDT 2018
 Position: 043°16.0744'N / 120°53.8179'W
 Altitude: 4290R
 Datum: WGS-84
 Azimuth/Bearing: 210° S30W 7239mils (True)
 Elevation Angle: -10.5°
 Horizon Angle: -00.0°
 Zoom: 1X
 WB-T01-002 soil profile



Point ID: WB-T01-002 **Date:** 3/19/2018
Playa ID: Playa-05 **Project Area:** B
Comment: Playa Barrens soil profile



Point ID: W-T01-002

Date: 3/19/2018

Playa ID: Playa-05

Project Area: B

Comment: Playa Mosaic; fringe complex along edge of Playa-05; view northeast



Point ID: W-T01-002

Date: 3/19/2018

Playa ID: Playa-05

Project Area: B

Comment: Playa Mosaic; fringe complex along edge of Playa-05; view south-southeast



Point ID: W-T01-002

Date: 3/19/2018

Playa ID: Playa-05

Project Area: B

Comment: Playa Mosaic; fringe complex along edge of Playa-05; mudcracks



Point ID: W-T01-002

Date: 3/19/2018

Playa ID: Playa-05

Project Area: B

Comment: Playa Mosaic soil profile

Date & Time: Mon Mar 19 17:21:03 PDT 2018
 Position: 043°16.0730'N / 120°53.8756'W
 Altitude: 4298ft
 Datum: WGS-84
 Azimuth/Bearing: 160° S20E 2944mils (True)
 Elevation Angle: -16.8°
 Horizon Angle: +00.1°
 Zoom: 1X
 U-T01-002 overview



Point ID: U-T01-002

Date: 3/19/2018

Playa ID: Playa-05

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; adjacent to Playa-05; view south-southeast

Date & Time: Mon Mar 19 17:21:45 PDT 2018
 Position: 043°16.0714'N / 120°53.8787'W
 Altitude: 4300ft
 Datum: WGS-84
 Azimuth/Bearing: 355° N00W 6309mils (True)
 Elevation Angle: -10.9°
 Horizon Angle: +01.2°
 Zoom: 1X
 U-T01-002 overview 2



Point ID: U-T01-002

Date: 3/19/2018

Playa ID: Playa-05

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; adjacent to Playa-05; view north

Date & Time: Mon Mar 19 17:38:19 PDT 2018
 Position: 043°16.0716'N / 120°53.8824'W
 Altitude: 4300ft
 Datum: WGS-84
 Azimuth/Bearing: 109° S71E 1939mils (True)
 Elevation Angle: -87.5°
 Horizon Angle: +04.4°
 Zoom: 1X
 U-T01-002 soil profile



Point ID: U-T01-002

Date: 3/19/2018

Playa ID: Playa-05

Project Area: B

Comment: Upland soil profile



Point ID: UVP-T01-002

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; dark-mottled aerial photo signature; view northwest.



Point ID: UVP-T01-002

Date: 3/19/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; dark-mottled aerial photo signature; view east.



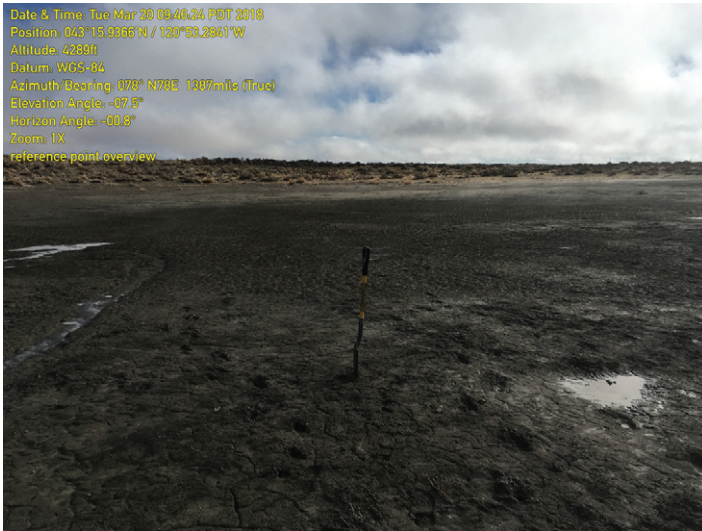
Point ID: UVP-T01-002

Date: 3/19/2018

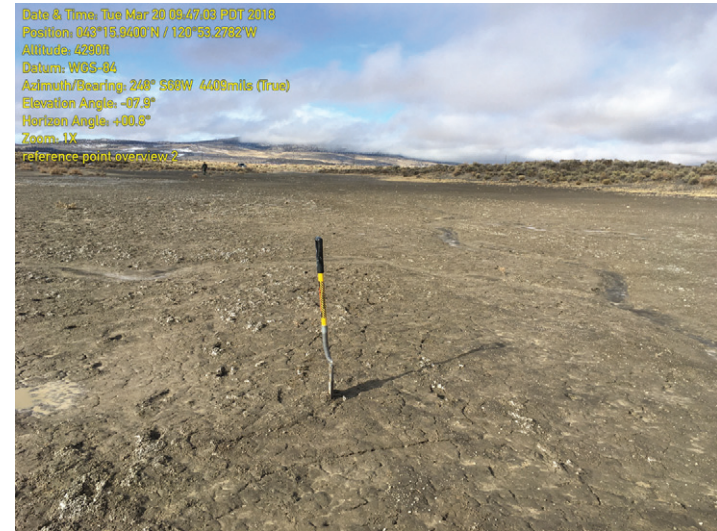
Playa ID: n/a

Project Area: B

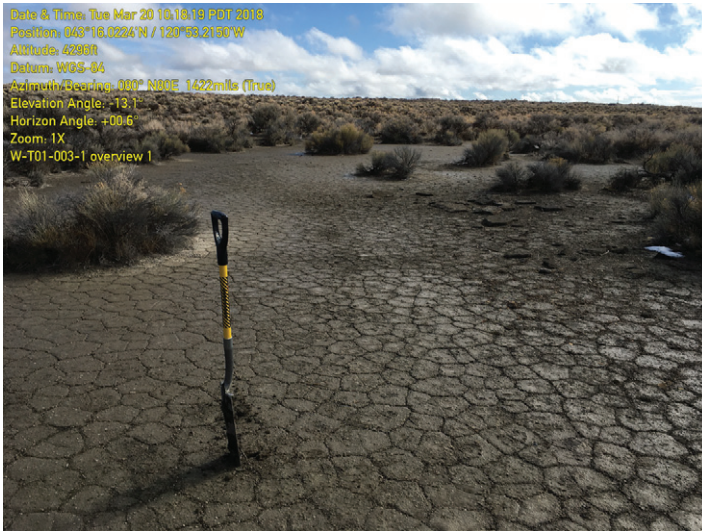
Comment: Upland soil profile



Point ID: P-T01-006 **Date:** 3/20/2018
Playa ID: Playa-06 (McCall Lake) **Project Area:** B
Comment: Playa Barrens - interior; view east-northeast



Point ID: P-T01-006 **Date:** 3/20/2018
Playa ID: Playa-06 (McCall Lake) **Project Area:** B
Comment: Playa Barrens - interior; view west-southwest



Point ID: W-T01-003 **Date:** 3/20/2018
Playa ID: Playa-19 **Project Area:** B
Comment: Playa Mosaic; view east



Point ID: W-T01-003 **Date:** 3/20/2018
Playa ID: Playa-19 **Project Area:** B
Comment: Playa Mosaic; view west-northwest

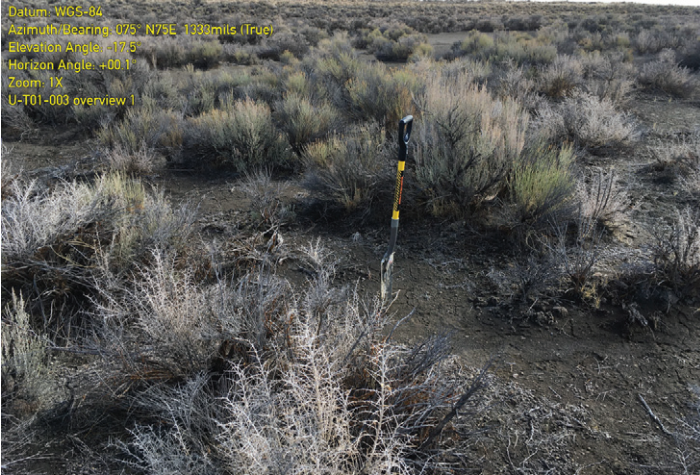


Point ID: W-T01-003 **Date:** 3/20/2018
Playa ID: Playa-19 **Project Area:** B
Comment: Playa Mosaic surface mudcracks



Point ID: W-T01-003 **Date:** 3/20/2018
Playa ID: Playa-19 **Project Area:** B
Comment: Playa Mosaic soil profile

Date & Time: Tue Mar 20 10:52:14 PDT 2018
 Position: 043°16.0123'N / 120°53.2104'W
 Altitude: 4311.9
 Datum: WGS-84
 Azimuth/Bearing: 075° N75E 1332mils (True)
 Elevation Angle: +17.5
 Horizon Angle: +00.1
 Zoom: 1X
 U-T01-003 overview 1



Point ID: U-T01-003

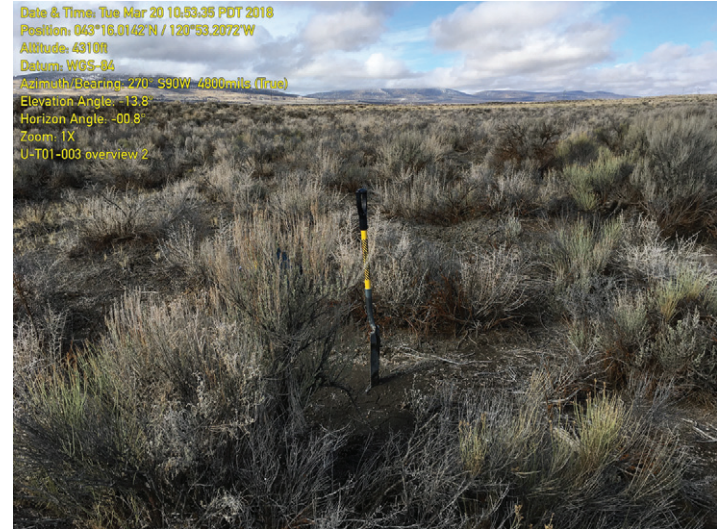
Date: 3/20/2018

Playa ID: Playa-19

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; adjacent to Playa-19; view east-northeast

Date & Time: Tue Mar 20 10:53:35 PDT 2018
 Position: 043°16.0142'N / 120°53.2072'W
 Altitude: 4310.8
 Datum: WGS-84
 Azimuth/Bearing: 270° 590W 4000mils (True)
 Elevation Angle: -13.8
 Horizon Angle: -00.8
 Zoom: 1X
 U-T01-003 overview 2



Point ID: U-T01-003

Date: 3/20/2018

Playa ID: Playa-19

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; adjacent to Playa-19; view west

Date & Time: Tue Mar 20 11:10:13 PDT 2018
 Position: 043°16.0142'N / 120°53.2072'W
 Altitude: 4309.6
 Datum: WGS-84
 Azimuth/Bearing: 337° N20W 1301mils (True)
 Elevation Angle: -85.9
 Horizon Angle: -162.8
 Zoom: 1X
 U-T01-003 soil profile



Point ID: U-T01-003-1

Date: 3/20/2018

Playa ID: Playa-19

Project Area: B

Comment: Upland soil profile



Point ID: P-T01-007 **Date:** 3/20/2018
Playa ID: Playa-7 **Project Area:** B
Comment: Playa Mosaic; view east-southeast

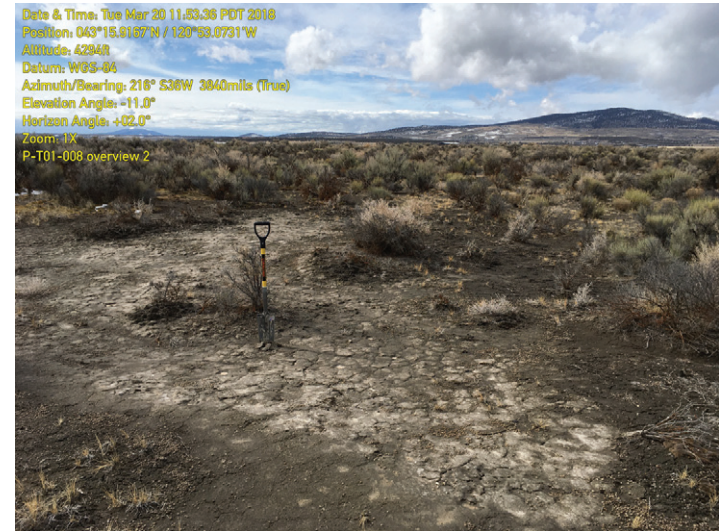


Point ID: P-T01-007 **Date:** 3/20/2018
Playa ID: Playa-7 **Project Area:** B
Comment: Playa Mosaic; view west-southwest



Date & Time: Tue Mar 20 11:53:05 PDT 2018
Position: 049°15.9123'N / 120°53.0754'W
Altitude: 4294ft
Datum: WGS-84
Azimuth/Bearing: 048° N48E 0953mils (True)
Elevation Angle: -17.8°
Horizon Angle: +00.2°
Zoom: 1X
P-T01-008 overview 1

Point ID: P-T01-008 **Date:** 3/20/2018
Playa ID: Playa-20 **Project Area:** B
Comment: Playa Mosaic; view northeast



Date & Time: Tue Mar 20 11:53:36 PDT 2018
Position: 049°15.9197'N / 120°53.0731'W
Altitude: 4294ft
Datum: WGS-84
Azimuth/Bearing: 216° S36W 3840mils (True)
Elevation Angle: -11.0°
Horizon Angle: +02.0°
Zoom: 1X
P-T01-008 overview 2

Point ID: P-T01-008 **Date:** 3/20/2018
Playa ID: Playa-20 **Project Area:** B
Comment: Playa Mosaic; view southwest



Point ID: P-T01-009

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; dark-mottled aerial photo signature; view northwest.



Point ID: P-T01-009

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; dark aerial photo signature; view southeast.



Point ID: P-T01-010

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; dark aerial photo signature; view northwest.



Point ID: P-T01-010

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; dark aerial photo signature; view east-southeast.



Point ID: UVP-T01-002

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; dark aerial photo signature; view east



Point ID: UVP-T01-002

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; dark aerial photo signature; view west-northwest.



Point ID: UVP-T01-002

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland soil profile



Point ID: P-T01-011

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; sparsely vegetated flat with sandy soil; view southeast



Point ID: P-T01-011

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; sparsely vegetated flat with sandy soil; view north



Point ID: P-T01-012

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; sparsely vegetated flat with sandy soil; view southeast



Point ID: P-T01-012

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; sparsely vegetated flat with sandy soil; view north-northwest



Point ID: P-T01-013

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; low shrub cover/high herbaceous cover flat; view southeast



Point ID: P-T01-013

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; low shrub cover/high herbaceous cover flat; view north-northwest



Point ID: P-T01-014

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; sparsely vegetated flat with sandy soil; view east-southeast



Point ID: P-T01-014

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; sparsely vegetated flat with sandy soil; view west-northwest



Point ID: P-T01-015

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; sparsely vegetated dune with sandy soil; view west-north-northwest



Point ID: P-T01-015

Date: 3/20/2018

Playa ID: n/a

Project Area: B

Comment: Upland with Vegetated with No Playa-like Features; sparsely vegetated dune with sandy soil; view west-south-southeast



Point ID: P-T01-016

Date: 3/20/2018

Playa ID: Playa-21

Project Area: B

Comment: Playa Mosaic; view northwest



Point ID: P-T01-016

Date: 3/20/2018

Playa ID: Playa-21

Project Area: B

Comment: Mud cracks and salt crust



Point ID: P-T01-016

Date: 3/20/2018

Playa ID: Playa-21

Project Area: B

Comment: Playa Mosaic; view southeast

Date & Time: Tue Mar 20 16:59:11 PDT 2018
 Position: 043°16.6905'N / 120°55.5872'W
 Altitude: 4307ft
 Datum: WGS-84
 Azimuth/Bearing: 036° N036E 1031mils (True)
 Elevation Angle: -08.8°
 Horizon Angle: -00.1°
 Zoom: 1X
 P-T01-017 overview 1



Point ID: P-T01-017

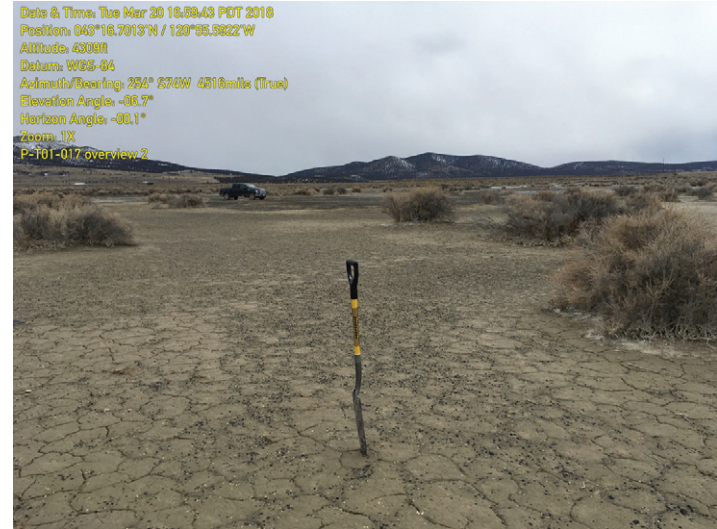
Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Playa Mosaic within Playa-01; view east-northeast

Date & Time: Tue Mar 20 16:59:43 PDT 2018
 Position: 043°16.7013'N / 120°55.5822'W
 Altitude: 4309ft
 Datum: WGS-84
 Azimuth/Bearing: 254° S74W 4810mils (True)
 Elevation Angle: -08.9°
 Horizon Angle: -00.1°
 Zoom: 1X
 P-T01-017 overview 2



Point ID: P-T01-017

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Playa Mosaic within Playa-01; view west-southwest

Date & Time: Tue Mar 20 16:59:54 PDT 2018
 Position: 043°16.7001'N / 120°55.6207'W
 Altitude: 4302ft
 Datum: WGS-84
 Azimuth/Bearing: 243° S53W 4120mils (True)
 Elevation Angle: -09.5°
 Horizon Angle: +37.0°
 Zoom: 1X
 P-T01-017 mudcracks



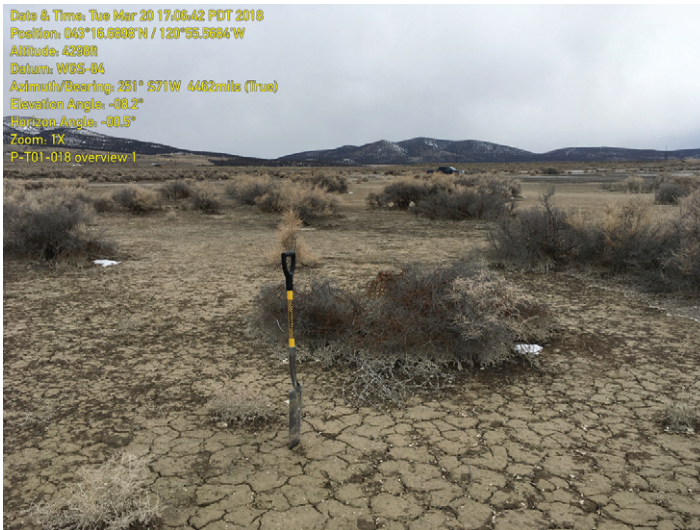
Point ID: P-T01-017

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Playa Mosaic within Playa-01; mudcracks close-up



Point ID: P-T01-018

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Southeast edge of Playa Mosaic within Playa-01; view west-southwest



Point ID: P-T01-018

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Southeast edge of Playa Mosaic within Playa-01; view northeast



Point ID: P-T01-018

Date:

Playa ID: Playa-01

Project Area:

Comment: Southeast edge of Playa Mosaic within Playa-01; mudcracks widespread



Point ID: P-T01-019

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; adjacent to southeast edge of Playa-01; view west-northwest



Point ID: P-T01-019

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; adjacent to southeast edge of Playa-01; view east-southeast



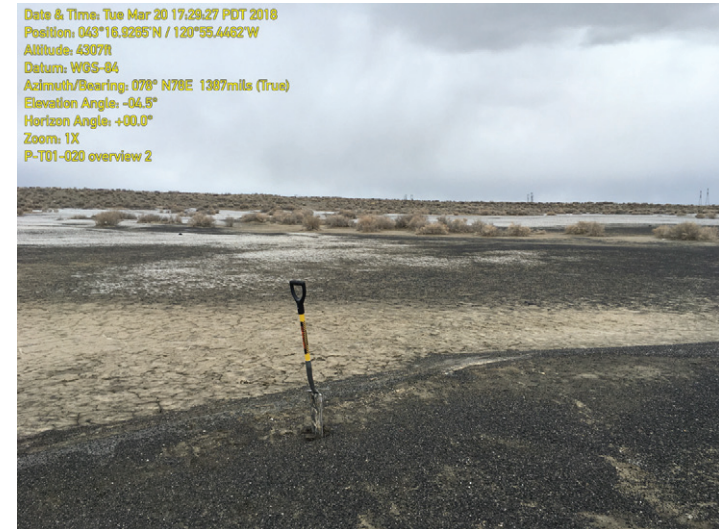
Point ID: P-T01-020

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Playa Mosaic within Playa-01; view southwest



Point ID: P-T01-020

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Playa Mosaic within Playa-01; view east-northeast



Point ID: P-T01-020

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Playa Mosaic - light salt crust scattered throughout



Point ID: P-T01-021

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Playa Mosaic - part of Playa-01; heavy salt crust; view northeast



Point ID: P-T01-021

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Groud close-up - salt crust cover



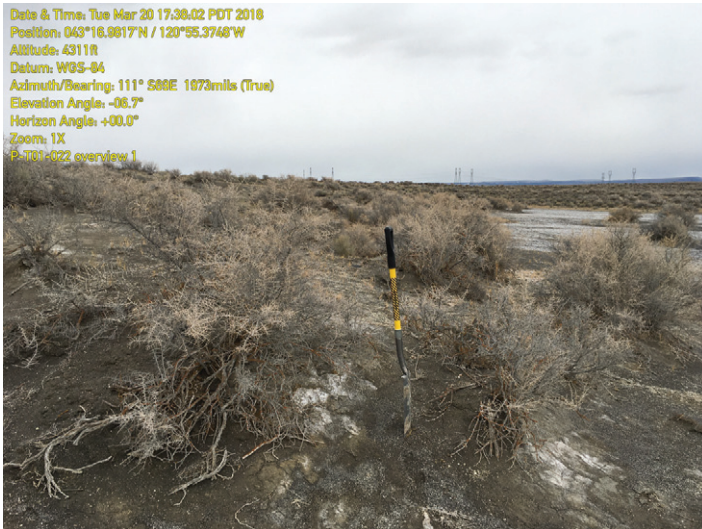
Point ID: P-T01-021

Date: 3/20/2018

Playa ID: Playa-01

Project Area:

Comment: Playa Mosaic - part of Playa-01; view south-southwest



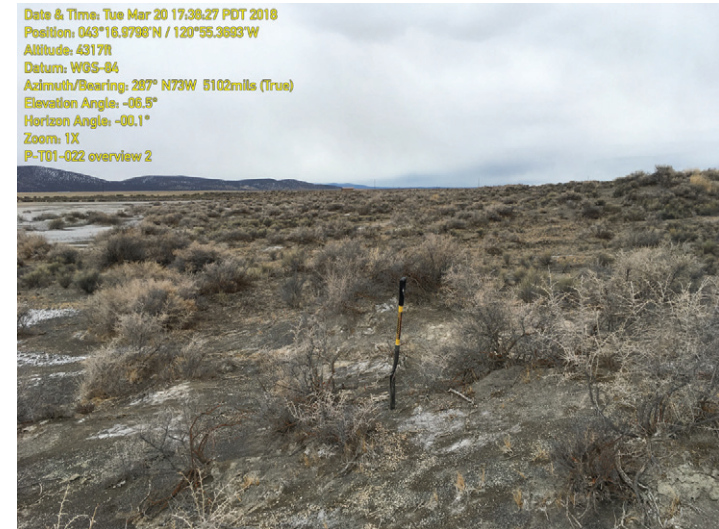
Point ID: P-T01-022

Date: 3/20/2018

Playa ID: Playa-01

Project Area: B

Comment: Upland - Vegetated with No Playa-like Features; adjacent to northeast edge of Playa-01; view east-southeast



Point ID: P-T01-022

Date: 3/20/2018

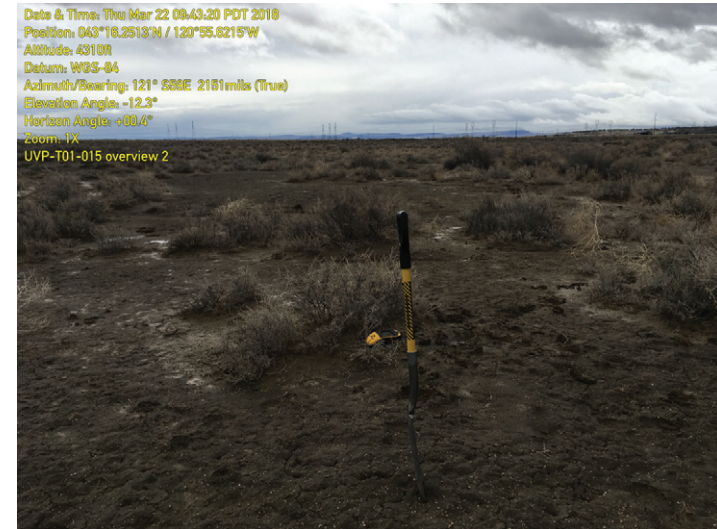
Playa ID: Playa-01

Project Area: B

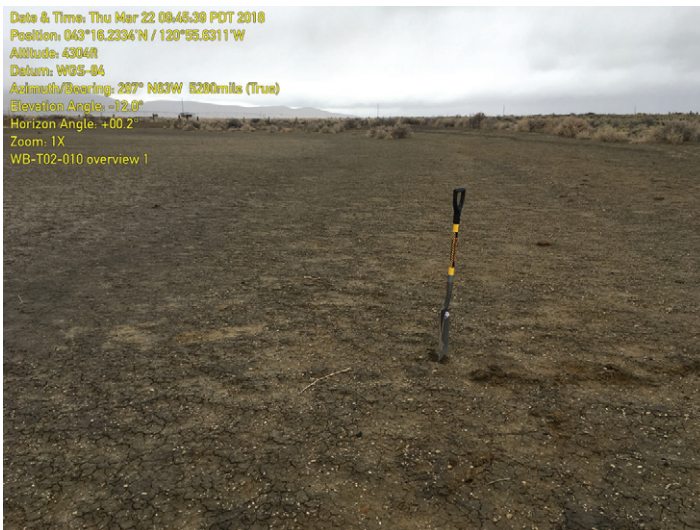
Comment: Upland - Vegetated with No Playa-like Features; adjacent to northeast edge of Playa-01; view west-northwest



Point ID: UVP-T02-015 **Date:** 3/22/2018
Playa ID: Playa-2 **Project Area:** B
Comment: Upland Playette - northwest of Playa-2; view northwest



Point ID: UVP-T02-015 **Date:** 3/22/2018
Playa ID: Playa-2 **Project Area:** B
Comment: Upland Playette - northwest of Playa-2; view east-southeast



Point ID: WB-T02-010 **Date:** 3/22/2018
Playa ID: Playa-2 **Project Area:** B
Comment: Playa Barrens - interior; view west-northwest



Point ID: WB-T02-010 **Date:** 3/22/2018
Playa ID: Playa-2 **Project Area:** B
Comment: Playa Barrens - interior; view southeast



Point ID: WB-T02-011 **Date:** 3/22/2018
Playa ID: Playa-2 **Project Area:** B
Comment: Playa Barrens - interior; view east



Point ID: WB-T02-011 **Date:** 3/22/2018
Playa ID: Playa-2 **Project Area:** B
Comment: Playa Barrens - interior; view northwest

Date & Time: Thu Mar 22 08:12:12 PDT 2018
 Position: 043°18.8013'N / 120°58.9321'W
 Altitude: 4326ft
 Datum: WGS-84
 Azimuth/Bearing: 274° N86W 4871mils (True)
 Elevation Angle: -17.6°
 Horizon Angle: -00.4°
 Zoom: 1X
 UVP-T01-012 overview 1



Point ID: UVP-T02-012

Date: 3/22/2018

Playa ID: n/a

Project Area: C

Comment: Upland - Vegetated with No Playa-like Features; light green aerial photo signature; view west

Date & Time: Thu Mar 22 08:13:03 PDT 2018
 Position: 043°18.8022'N / 120°58.9386'W
 Altitude: 4325ft
 Datum: WGS-84
 Azimuth/Bearing: 089° N89E 1582mils (True)
 Elevation Angle: -16.9°
 Horizon Angle: -00.1°
 Zoom: 1X
 UVP-T01-012 overview 2



Point ID: UVP-T02-012

Date: 3/22/2018

Playa ID: n/a

Project Area: C

Comment: Upland - Vegetated with No Playa-like Features; light green aerial photo signature; view east

Date & Time: Thu Mar 22 08:30:06 PDT 2018
 Position: 043°18.9791'N / 120°57.0861'W
 Altitude: 4330ft
 Datum: WGS-84
 Azimuth/Bearing: 089° N89E 1542mils (True)
 Elevation Angle: -16.8°
 Horizon Angle: -01.9°
 Zoom: 1X
 UVP-T01-013 overview 1



Point ID: UVP-T02-013

Date: 3/22/2018

Playa ID: n/a

Project Area: C

Comment: Upland - Vegetated with No Playa-like Features; light-mottled aerial photo signature; view east

Date & Time: Thu Mar 22 08:30:34 PDT 2018
 Position: 043°18.9790'N / 120°57.0864'W
 Altitude: 4330ft
 Datum: WGS-84
 Azimuth/Bearing: 269° S89W 4782mils (True)
 Elevation Angle: -17.6°
 Horizon Angle: -00.5°
 Zoom: 1X
 UVP-T01-013 overview 2



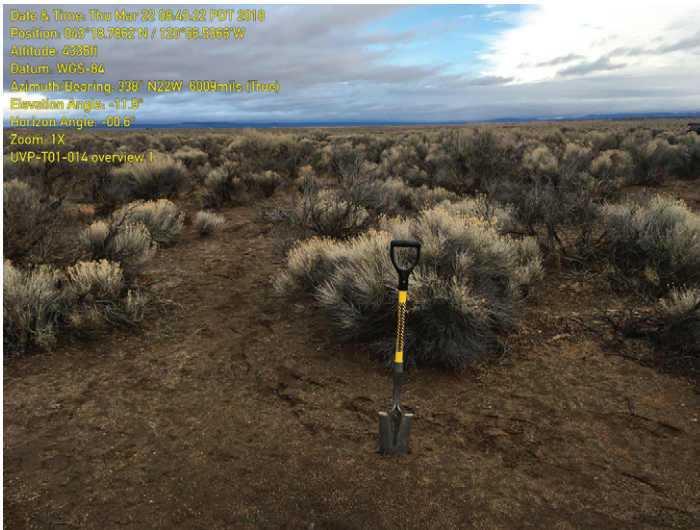
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Date: 3/22/2018

Playa ID: n/a

Project Area: C

Comment: Upland - Vegetated with No Playa-like Features; light-mottled aerial photo signature; view west



Point ID: UVP-T02-014

Date: 3/22/2018

Playa ID: n/a

Project Area: C

Comment: Upland - Vegetated with No Playa-like Features; dark-mottled aerial photo signature; view north-northwest



Point ID: UVP-T02-014

Date: 3/22/2018

Playa ID: n/a

Project Area: C

Comment: Upland - Vegetated with No Playa-like Features; dark-mottled aerial photo signature; view south-southeast



Date & Time: Thu Mar 22 10:30:56 PDT 2018
Position: 049°18.7800'N / 120°53.9108'W
Altitude: 4311R
Datum: WGS-84
Azimuth/Bearing: 187° 50'7W 332mils (True)
Elevation Angle: -12.9°
Horizon Angle: +00.1°
Zoom: 1X
UVP-T02-016 overview 1

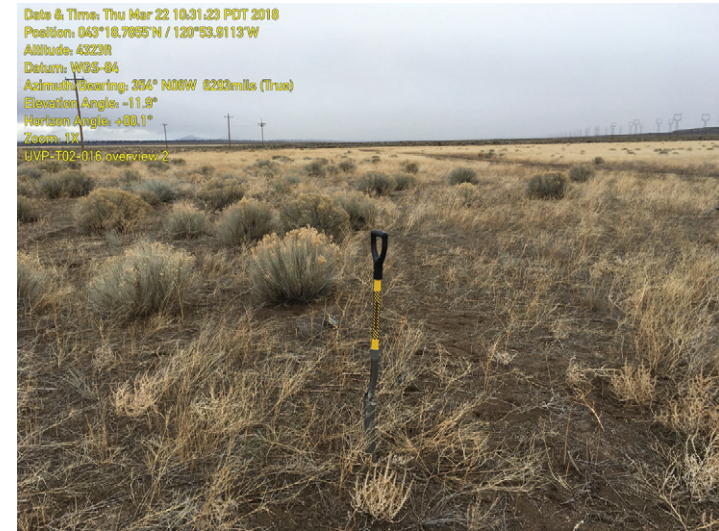
Point ID: UVP-T02-016

Date: 3/22/2018

Playa ID: n/a

Project Area: D

Comment: Upland - Vegetated with No Playa-like Features; fallow field; view south



Date & Time: Thu Mar 22 10:31:23 PDT 2018
Position: 049°18.7895'N / 120°53.9113'W
Altitude: 4323R
Datum: WGS-84
Azimuth/Bearing: 354° N06W 6263mils (True)
Elevation Angle: -11.9°
Horizon Angle: +00.1°
Zoom: 1X
UVP-T02-016 overview 2

Point ID: UVP-T02-016

Date: 3/22/2018

Playa ID: n/a

Project Area: D

Comment: Upland - Vegetated with No Playa-like Features fallow field; view north

Appendix J-2
United States Army Corps of
Engineers Approved Jurisdictional
Determination



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, PORTLAND DISTRICT
EUGENE FIELD OFFICE
211 E 7TH AVENUE, SUITE 105
EUGENE, OR 97401-2763

April 4, 2019

Regulatory Branch
Corps No. NWP-2018-00577

Michelle Slater
Obsidian Solar Center, LLC.
5 Centerpointe Drive suite 250
Lake Oswego, OR 97035
mslater@obsidianrenewables.com

Dear Ms. Slater:

The U.S. Army Corps of Engineers (Corps) received Obsidian's request for an Approved Jurisdictional Determination (AJD) of the aquatic resources within the review area as shown on the enclosed drawings (Enclosure 1). The review area is located along County Road 5-14G near Fort Rock, Lake County, Oregon at Latitude/Longitude: 43.307998°, -120.799289°. Other aquatic resources that may occur on this property or on adjacent properties outside the review area are not the subject of this determination.

The Corps has determined there are no waters of the U.S. within the review area. The enclosed drawings (Enclosure 1) identify the review area for this determination. The enclosed *Approved Jurisdictional Determination Form* (Enclosure 2) provides the basis for our determination. A copy of the AJD Form can also be found on our website at <http://www.nwp.usace.army.mil/Missions/Regulatory/Appeals/>.

If you object to the enclosed AJD, you may request an administrative appeal under 33 CFR Part 331 as described in the enclosed *Notification of Administrative Appeal Options and Process and Request for Appeal (RFA)* form (Enclosure 3). To appeal this AJD, you must submit a completed *RFA* form to the Corps Northwestern Division (NWD) office at the address listed on the form. In order for the request for appeal to be accepted, the Corps must determine that the form is complete, that the request meets the criteria for appeal under 33 CFR Part 331.5, and the form must also be received by the NWD office within 60 days from the date on the form. It is not necessary to submit the form to the NWD office if you do not object to the enclosed AJD.

This AJD is valid for a period of five years from the date of this letter unless new information warrants revisions of the determination.

If you have any questions regarding our Regulatory Program or permit requirements for work in waters of the U.S., please contact Mr. Benny A. Dean Jr. at the letterhead address, by telephone at (541) 465-6769, or E-mail: Benny.A.Dean@usace.army.mil

FOR THE COMMANDER, AARON L. DORF, COLONEL, CORPS OF ENGINEERS,
DISTRICT COMMANDER:



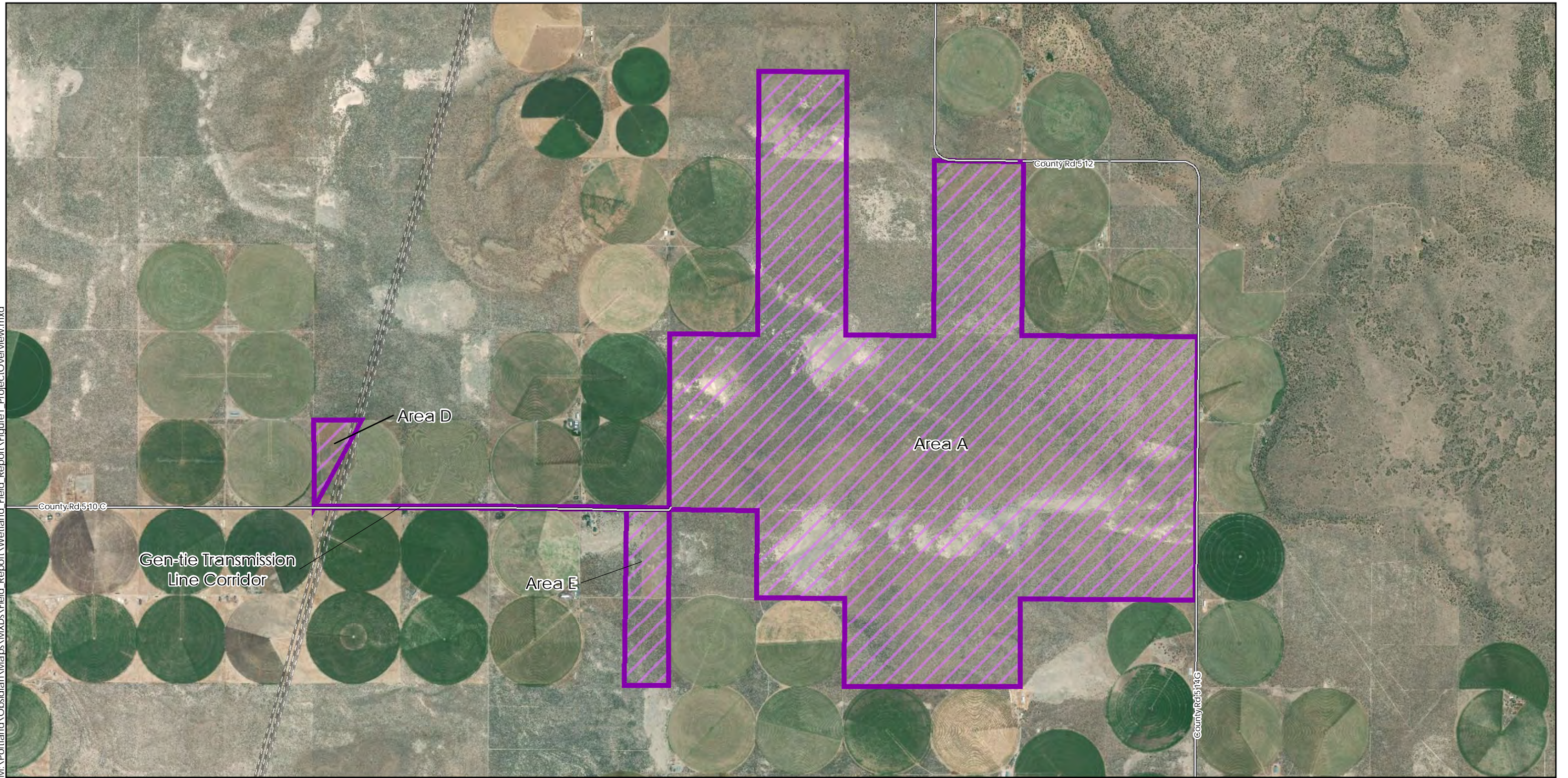
For: William D. Abadie
Chief, Regulatory Branch






Enclosures

cc with drawings:

Oregon Department of State Lands (Harrington)
Ecology and Environment, Inc. (nieuwenhuizen@ene.com)

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-  Study Area Boundary
-  Facility
-  Bonneville Power Administration Transmission Line (500kV)
-  PGE Transmission Line (500kV)
-  Highways/Roads

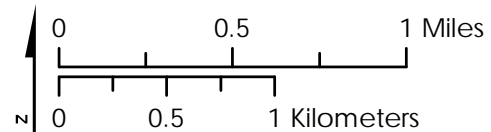
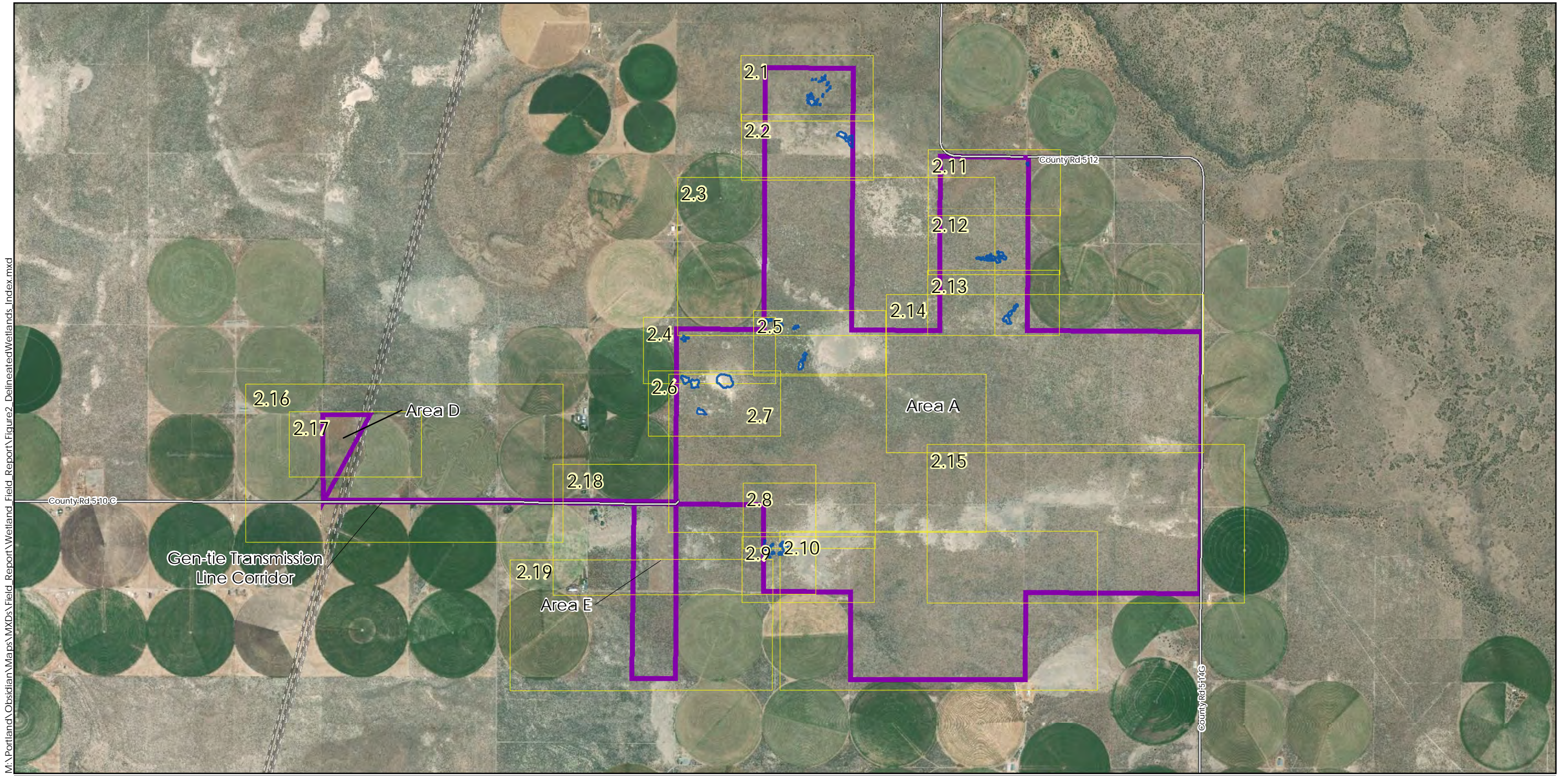


Figure 1
Facility Overview

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-  Playa
-  Tile Extent
-  Study Area Boundary
-  Bonneville Power Administration Transmission Line (500kV)
-  PGE Transmission Line (500kV)
-  Highways/Roads

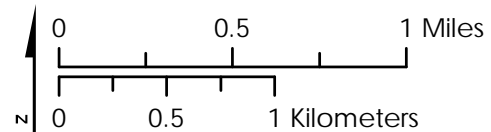


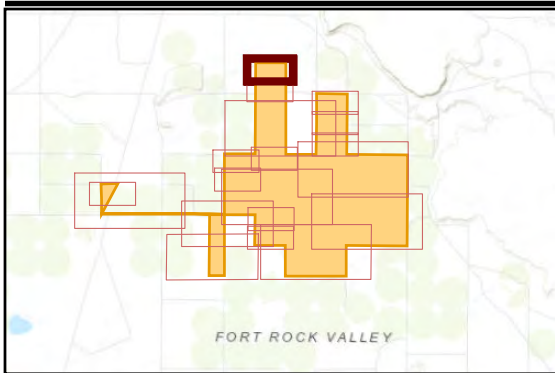
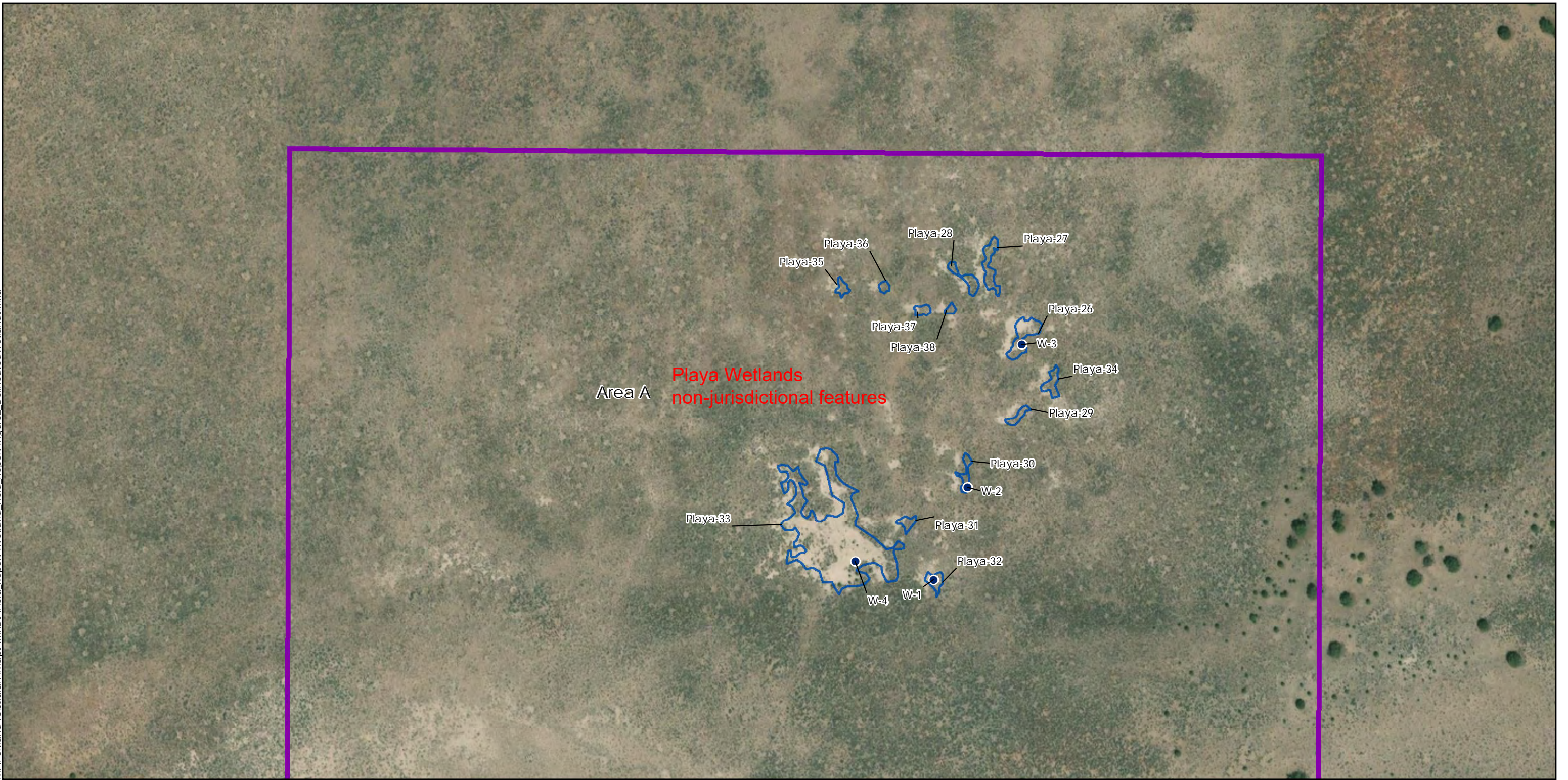
Figure 2
Delimited Waters Tile Index

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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

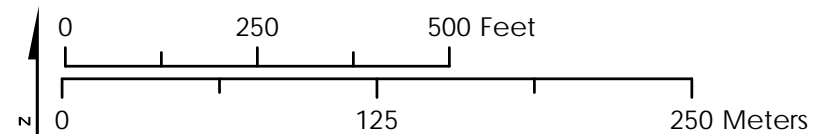


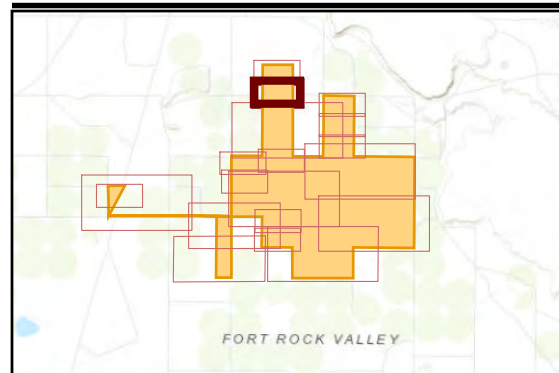
Figure 2.1
Delineated Waters

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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

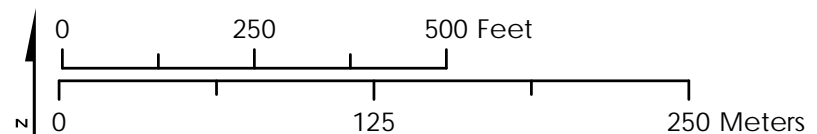
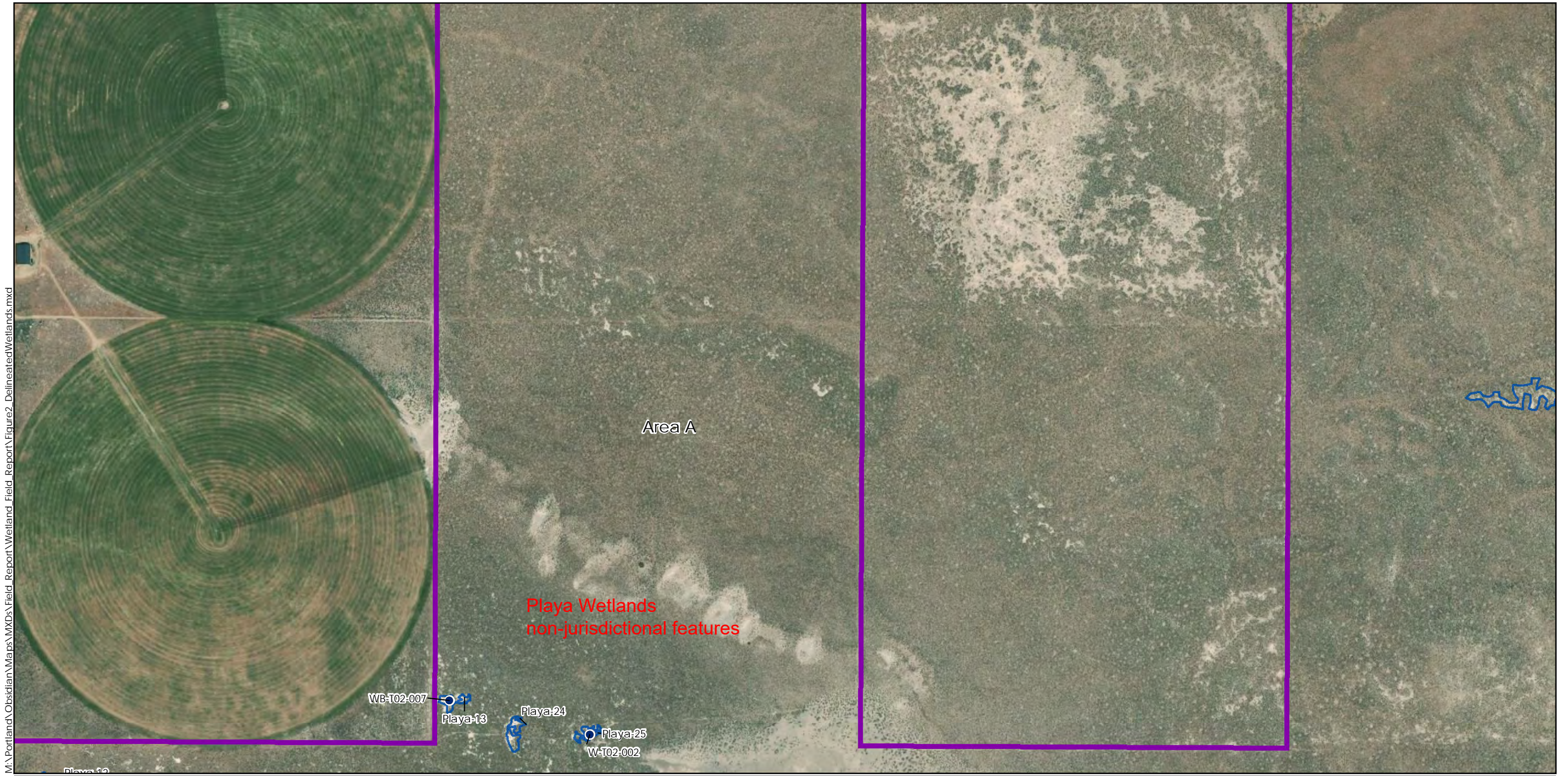


Figure 2.2
Delineated Waters

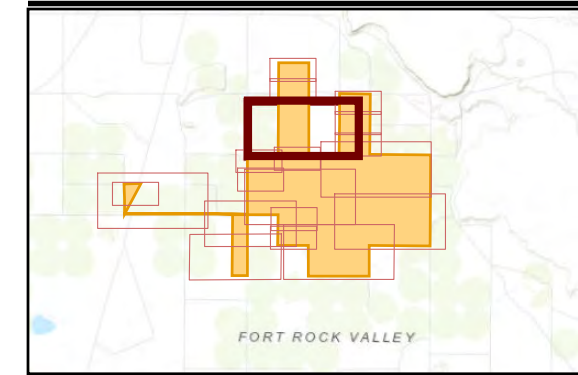
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- Data Point
- ☞ Playa
- ▭ Study Area Boundary

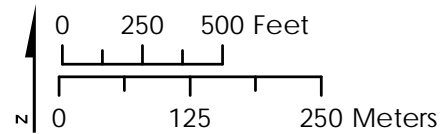


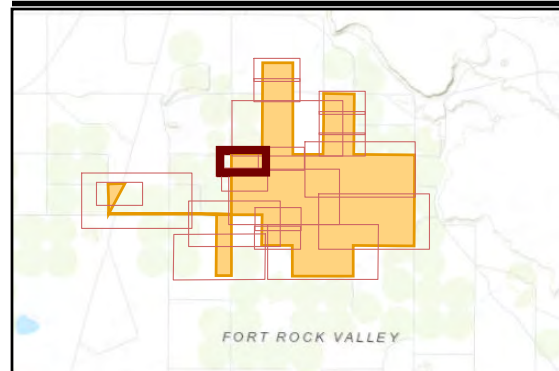
Figure 2.3
Delineated Waters

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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

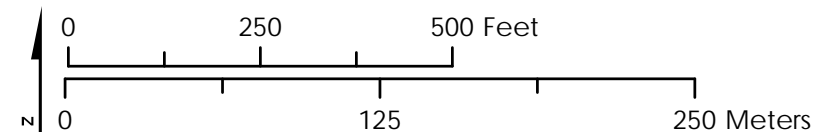
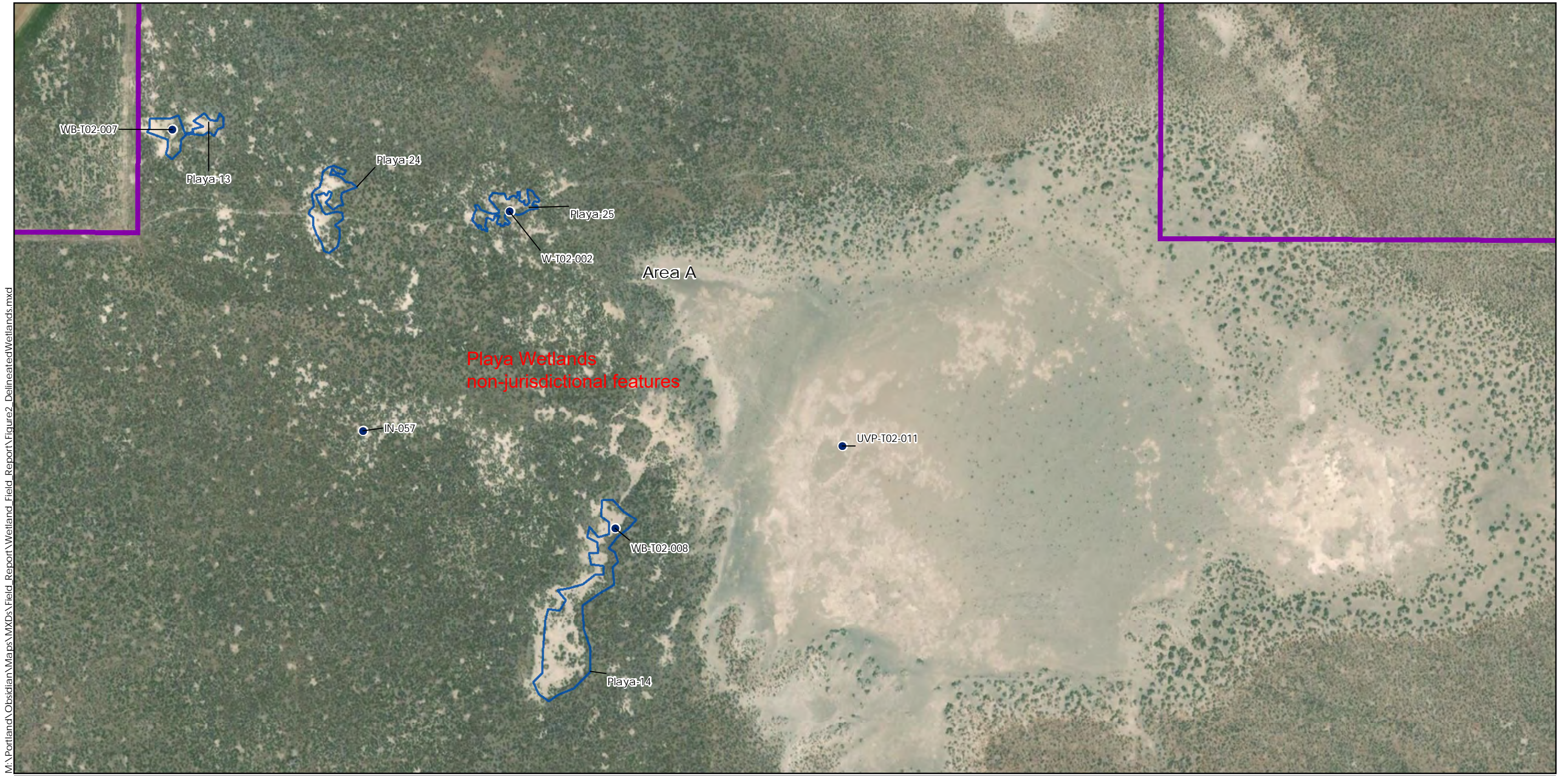


Figure 2.4
Delineated Waters

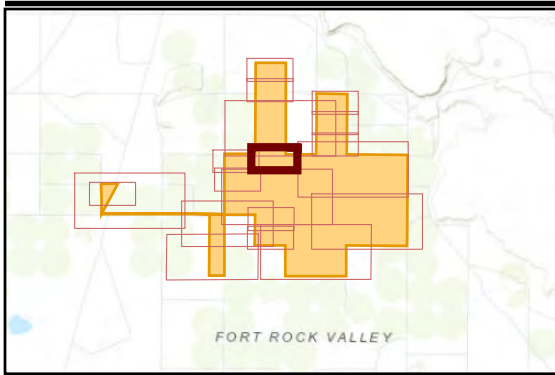
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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

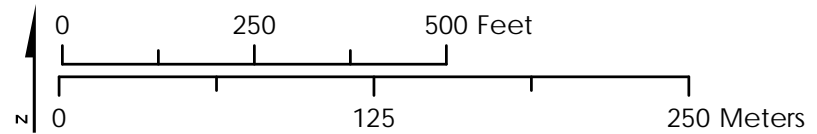


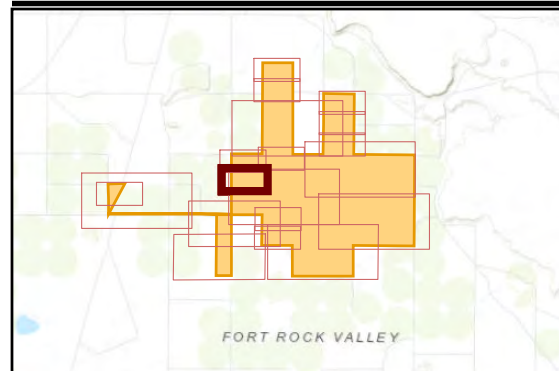
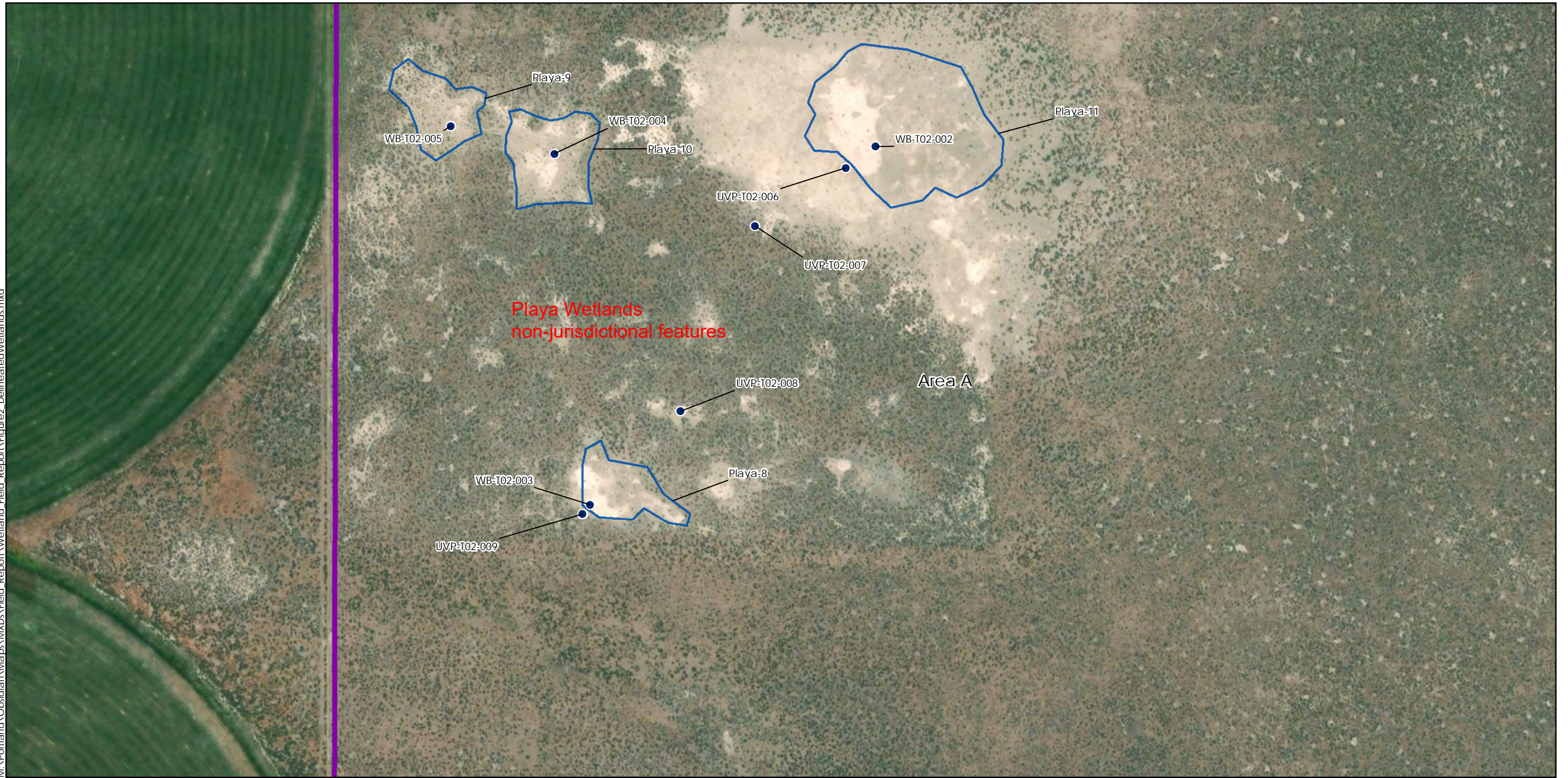
Figure 2.5
Delineated Waters

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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

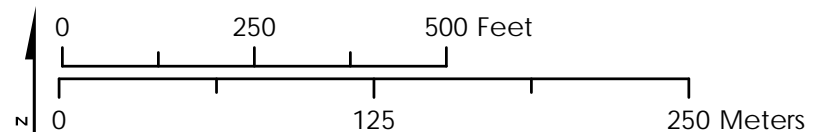
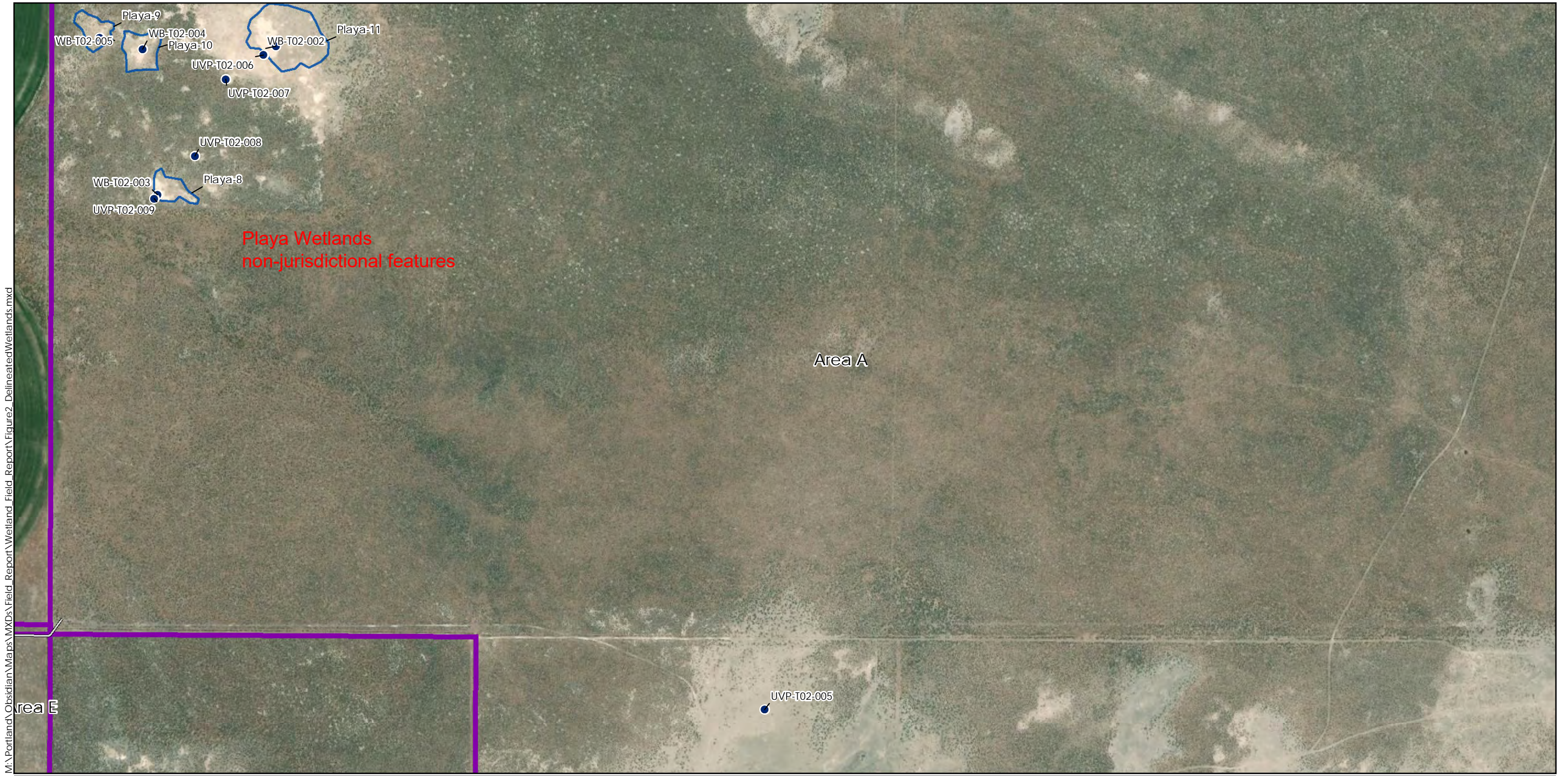


Figure 2.6
Delineated Waters

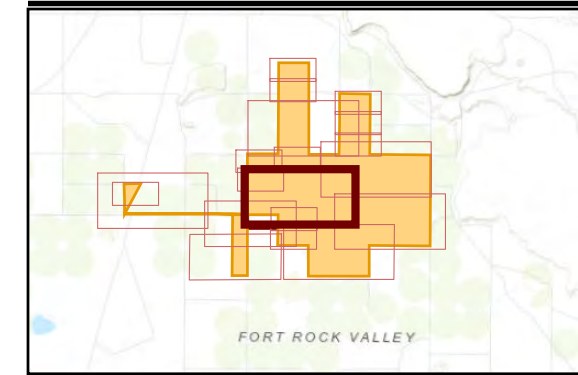
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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary



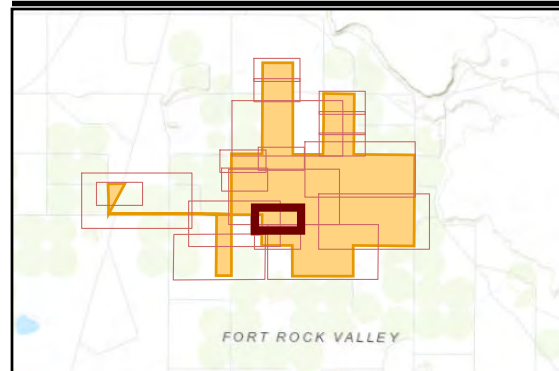
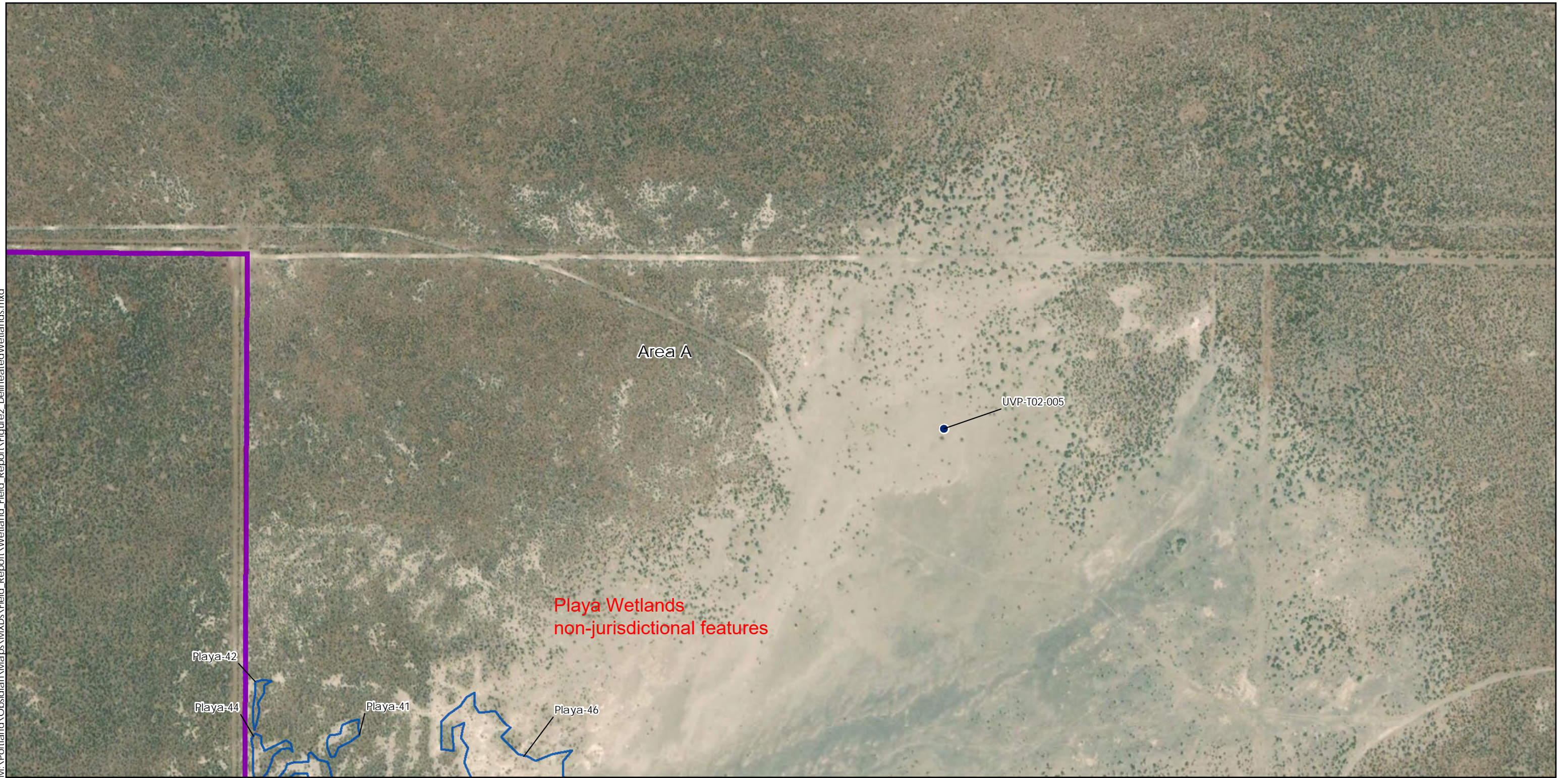
Figure 2.7
Delineated Waters

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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

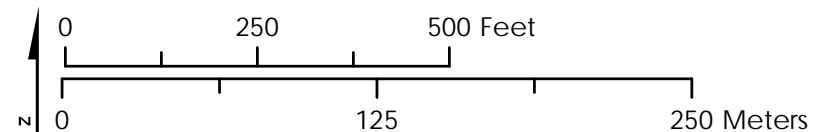


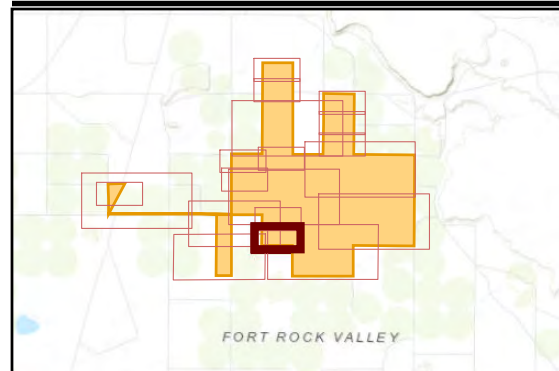
Figure 2.8
Delineated Waters

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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

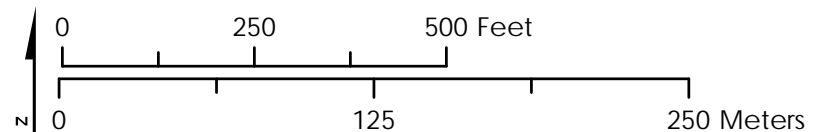


Figure 2.9
Delineated Waters

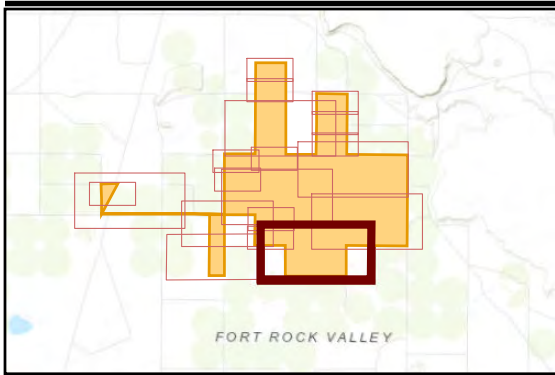
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- Data Point
- ⊞ Playa
- ▭ Study Area Boundary

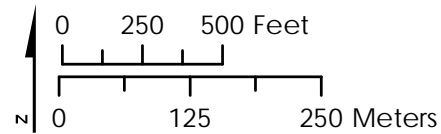
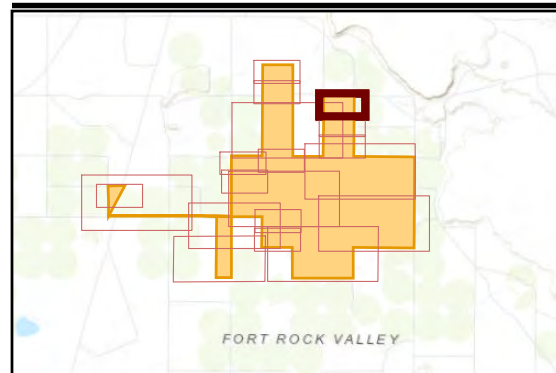
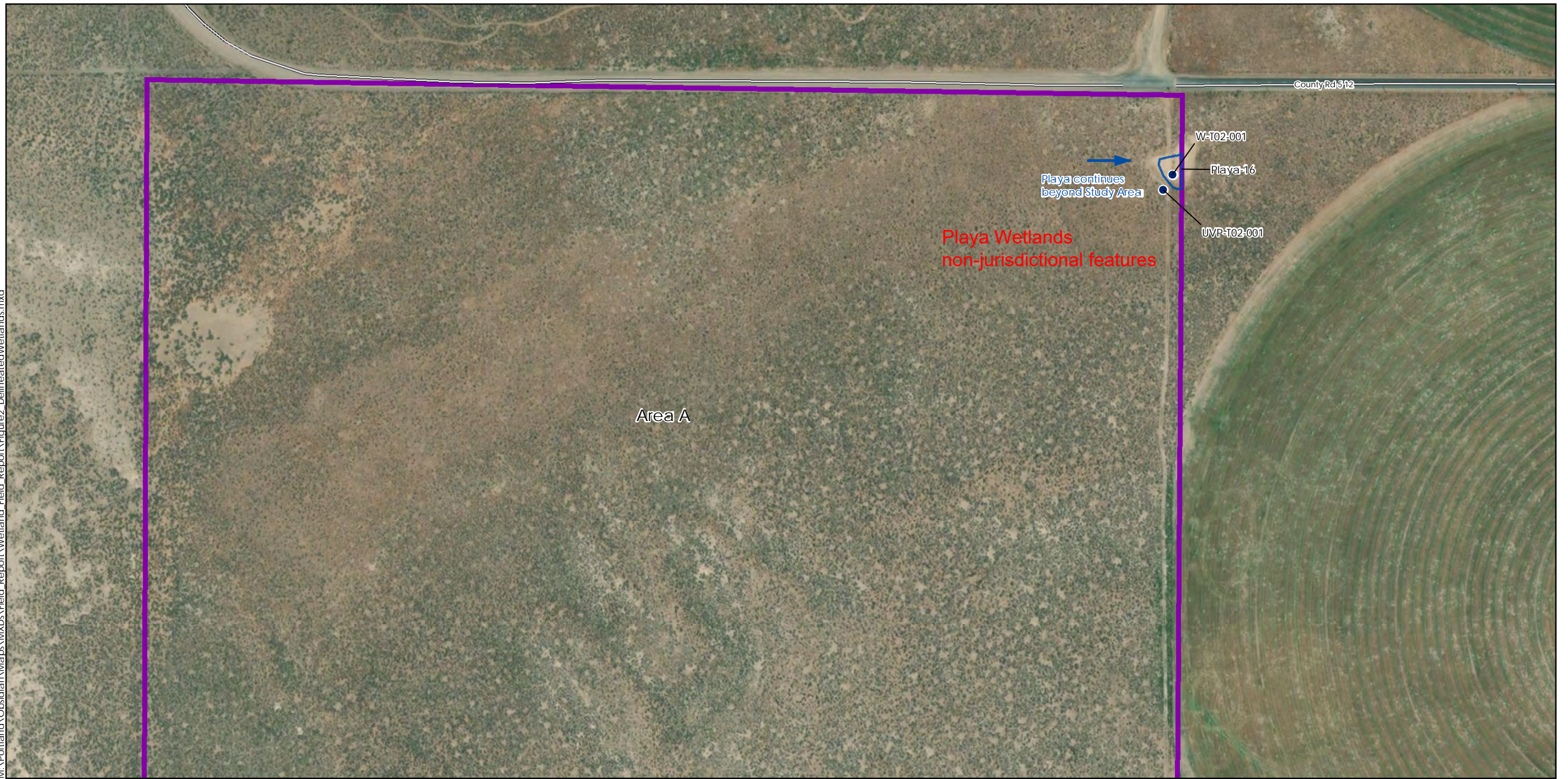


Figure 2.10
Delineated Waters
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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

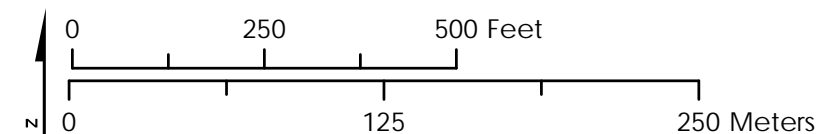


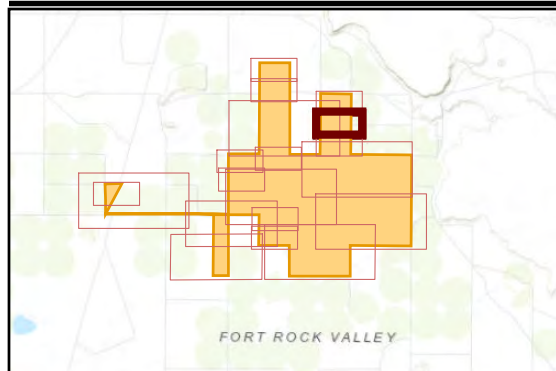
Figure 2.11
Delineated Waters

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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

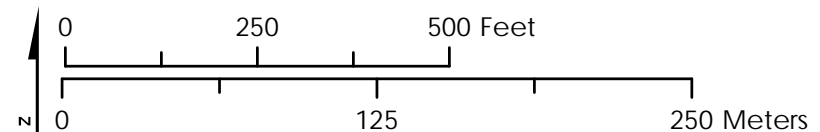


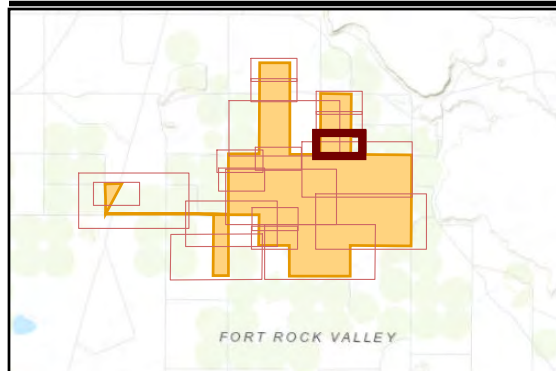
Figure 2.12
Delineated Waters

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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

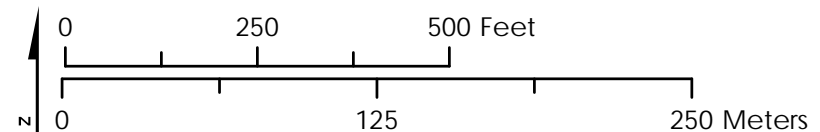


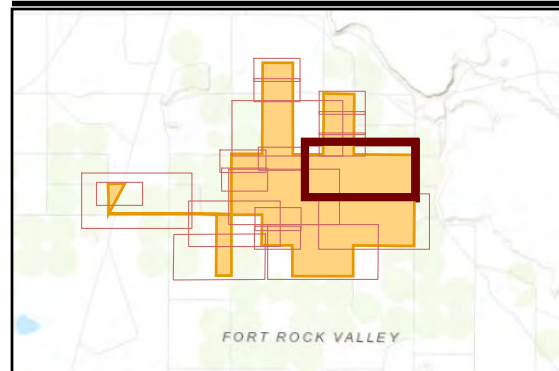
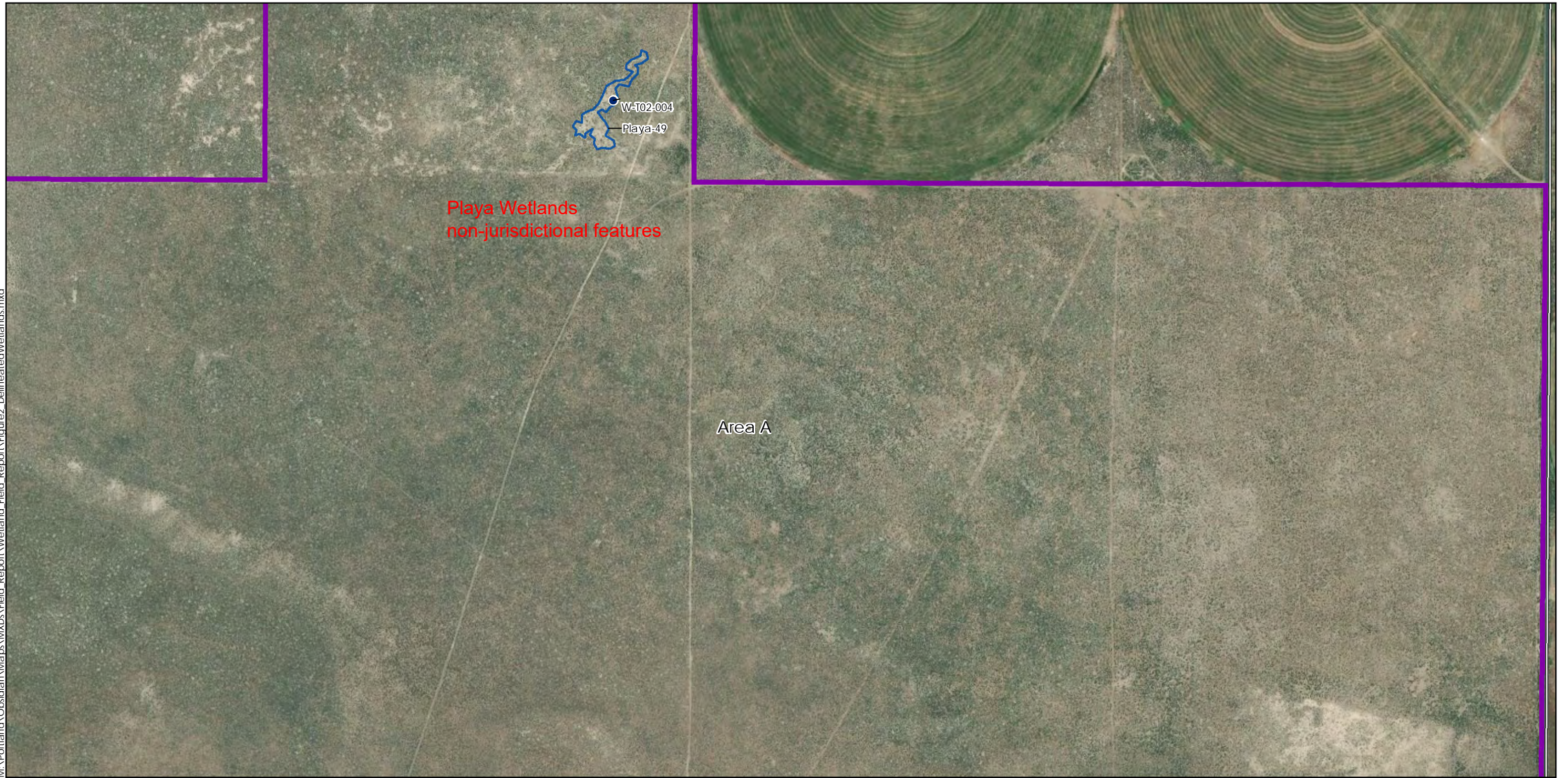
Figure 2.13
Delineated Waters

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- Data Point
- ⬭ Playa
- ▭ Study Area Boundary

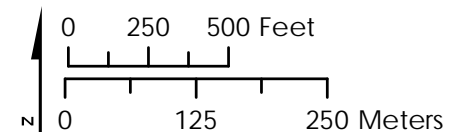


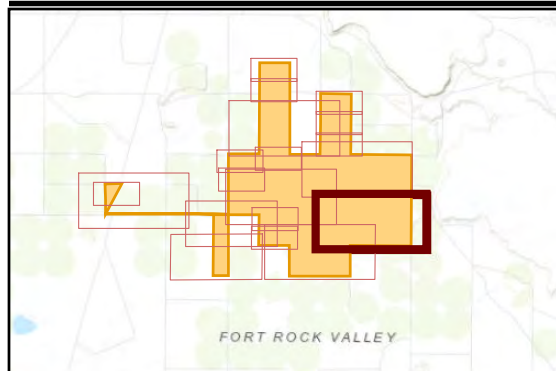
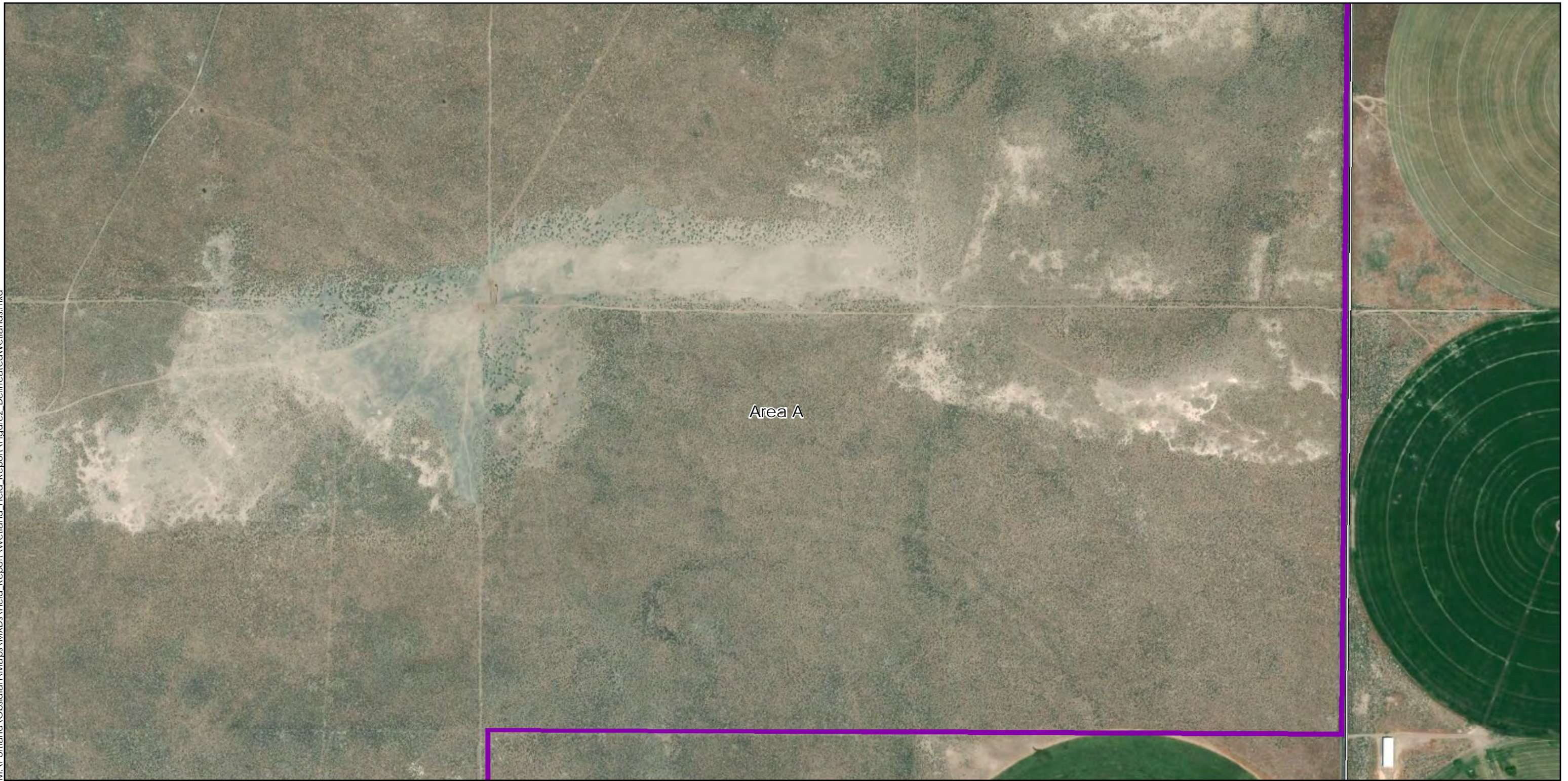
Figure 2.14
Delineated Waters

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October 2018

Obsidian Solar Center LLC

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 Study Area Boundary



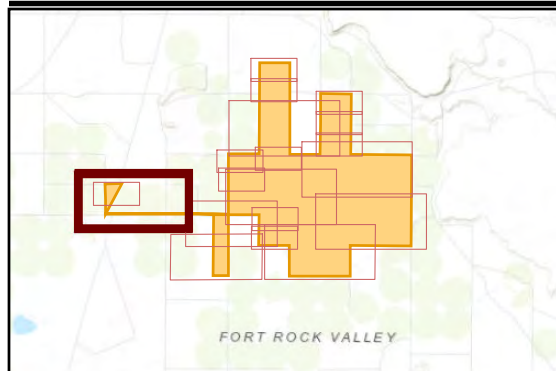
Figure 2.15
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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- Data Point
- ▭ Study Area Boundary
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)

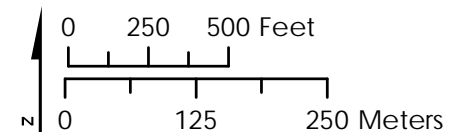
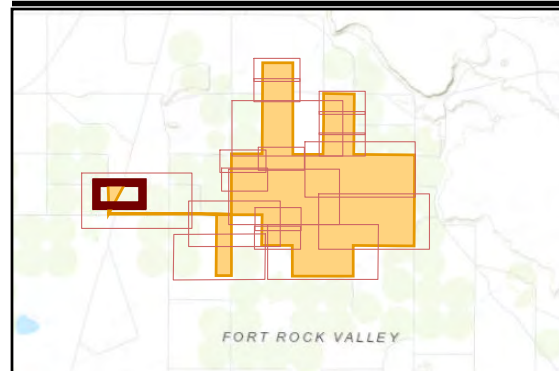
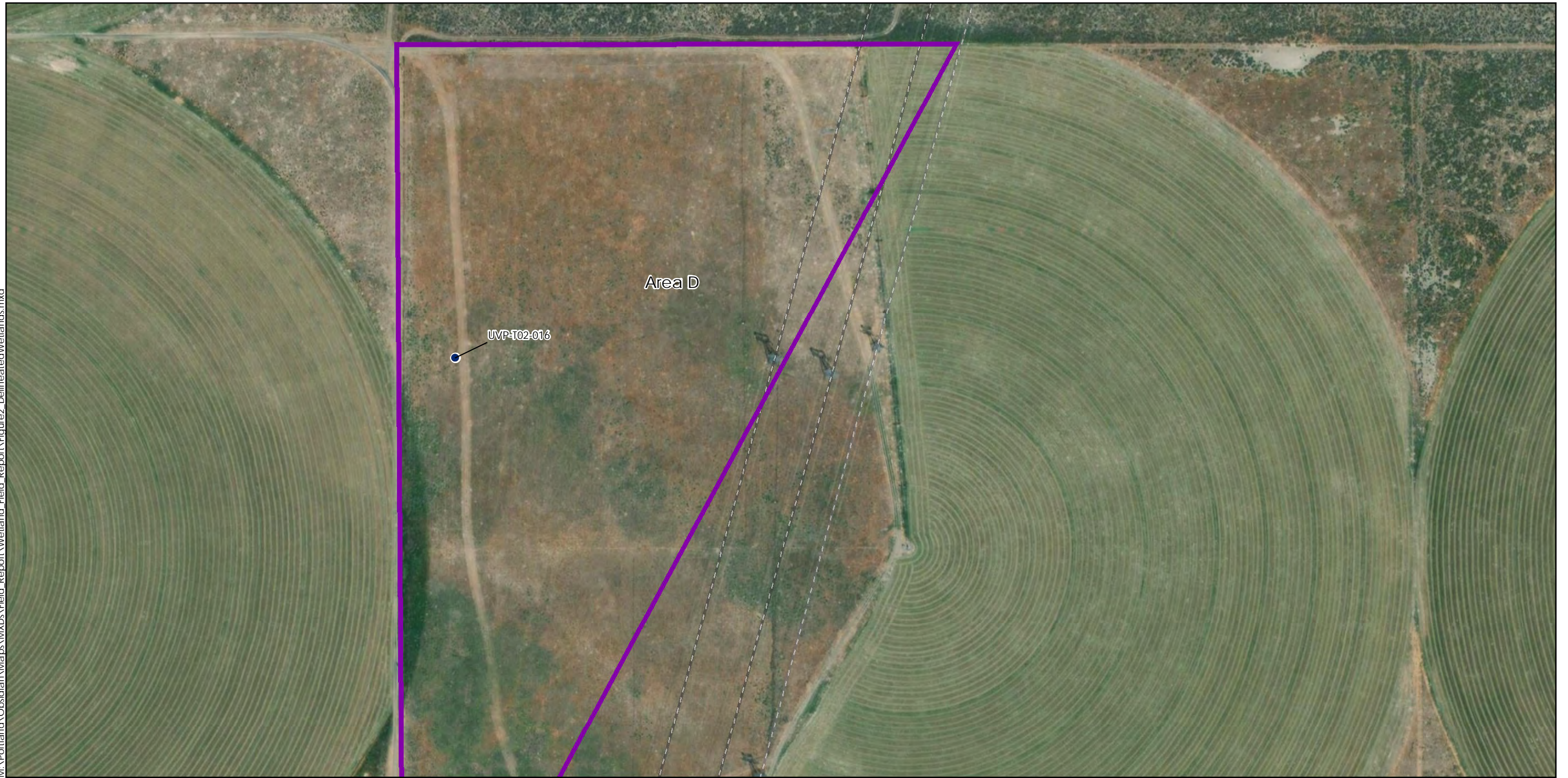


Figure 2.16
Delineated Waters
Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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- Data Point
- ▭ Study Area Boundary
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)

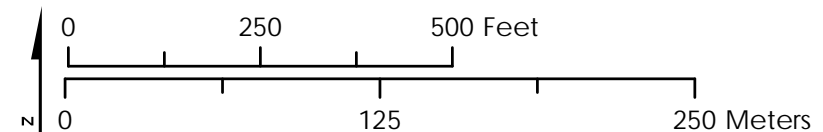
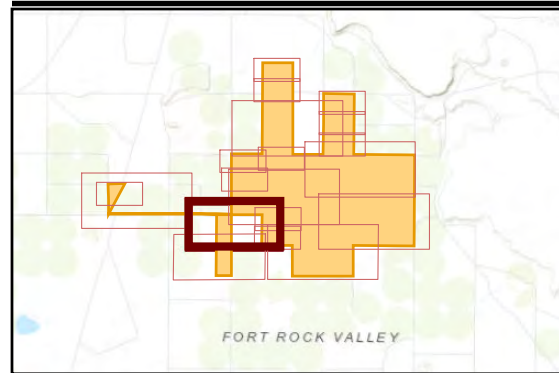
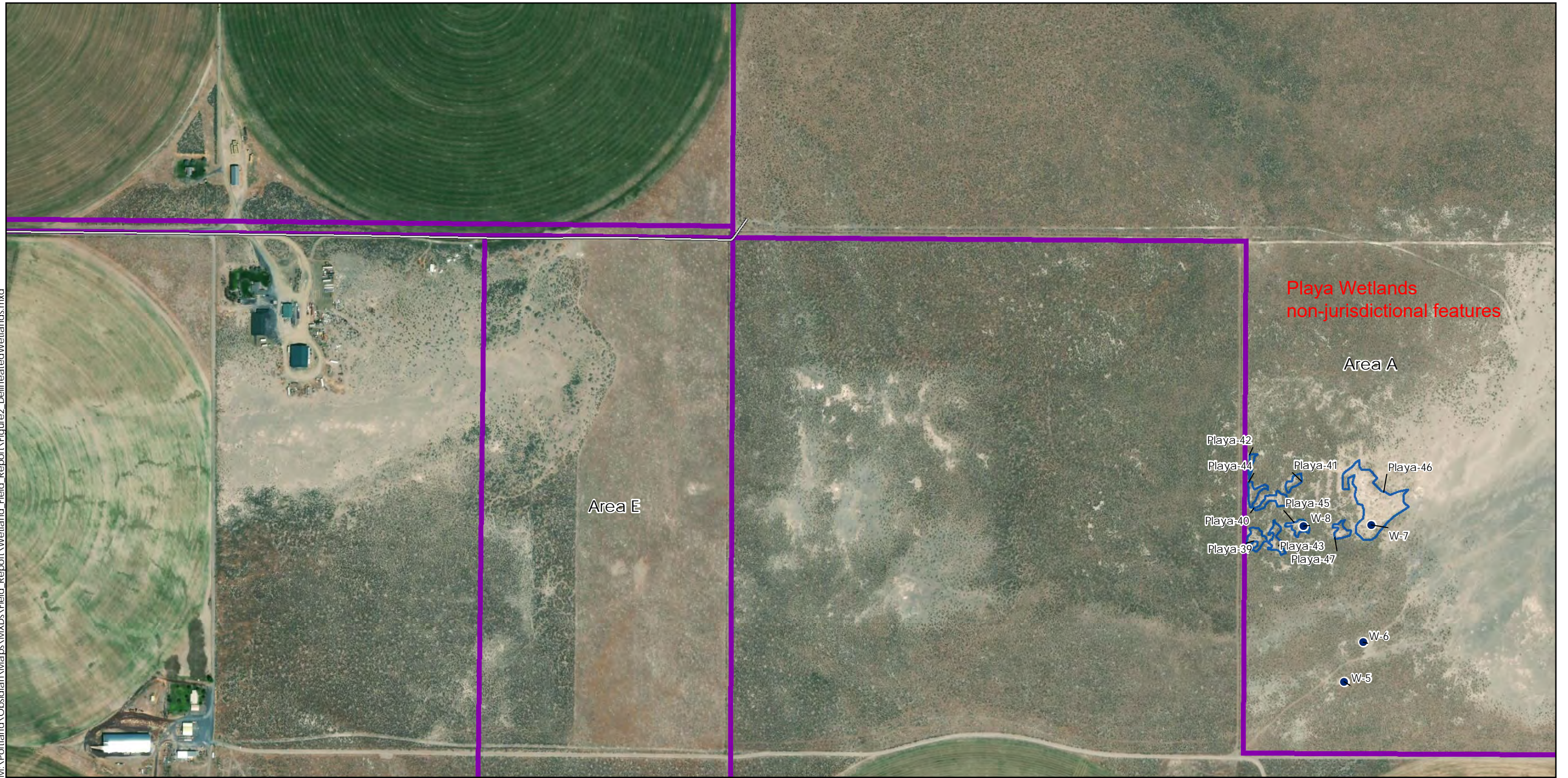


Figure 2.17
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC



- Data Point
- ⊞ Playa
- ▭ Study Area Boundary

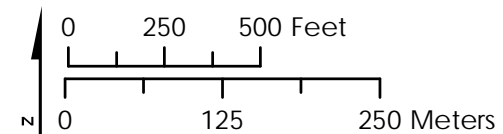


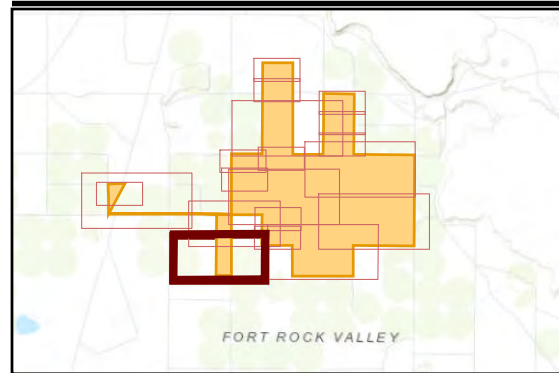
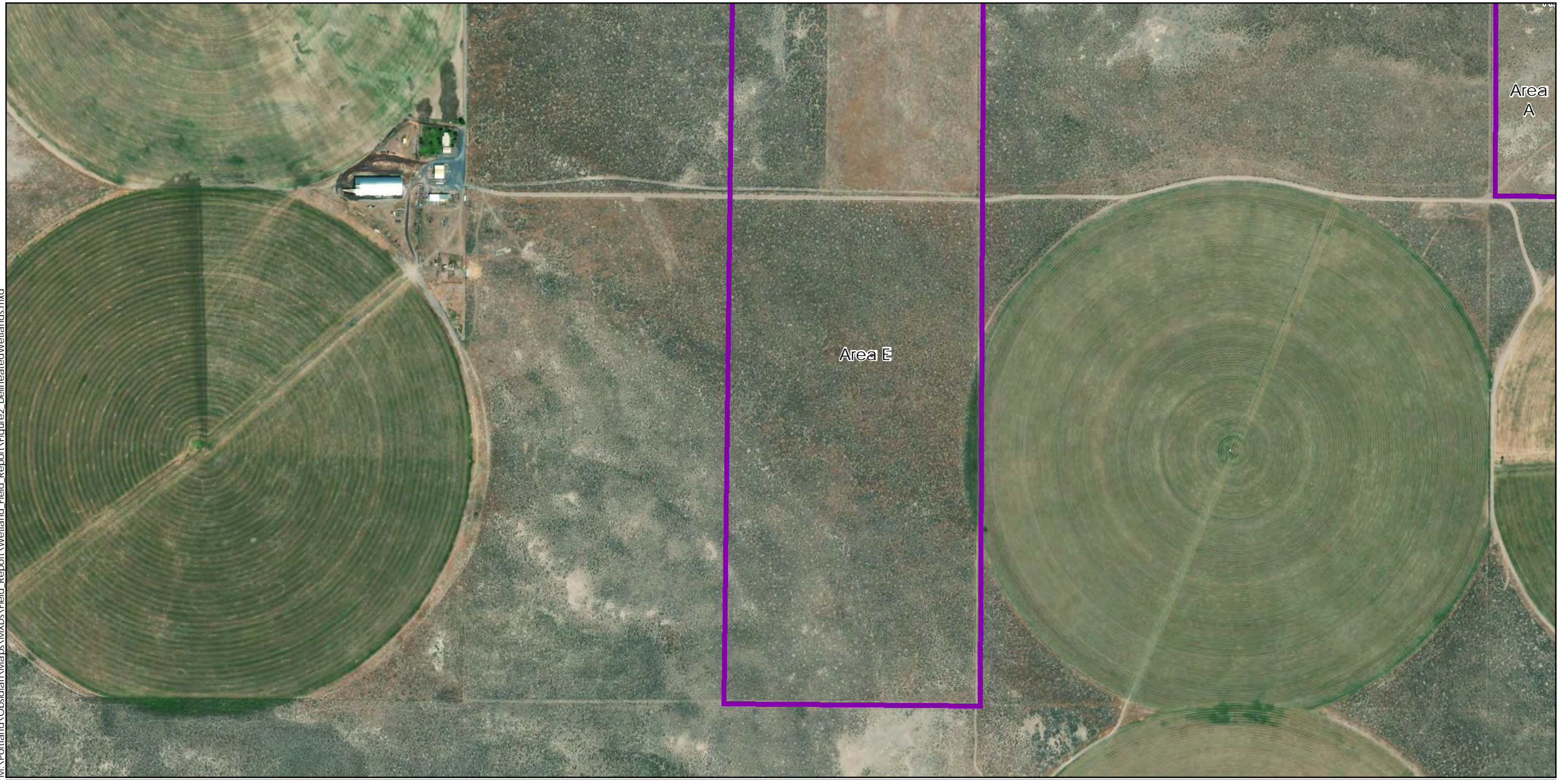
Figure 2.18
Delineated Waters

Obsidian Solar Center

October 2018

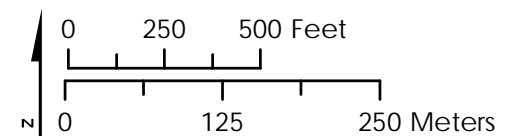
Obsidian Solar Center LLC

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 Study Area Boundary

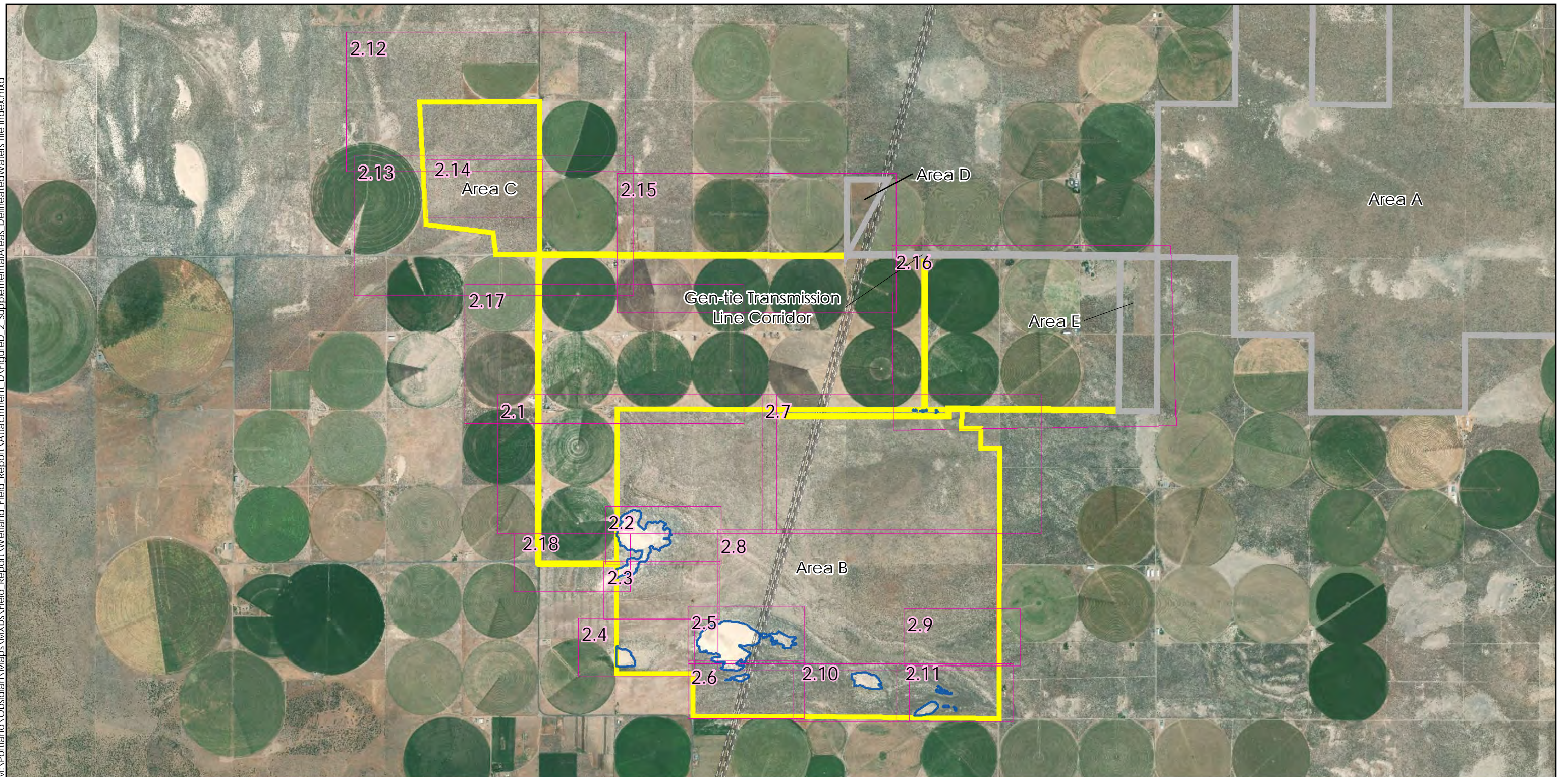
Figure 2.19
Delineated Waters
Obsidian Solar Center



October 2018

Obsidian Solar Center LLC

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- Playa
- Tile Extent
- Supplemental Study Area
- Proposed Facility Study Area
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

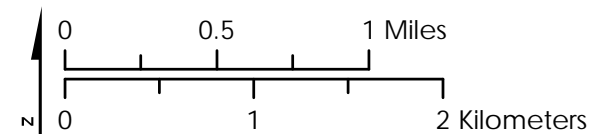
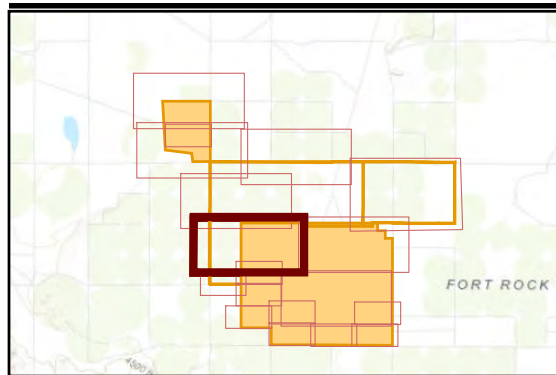
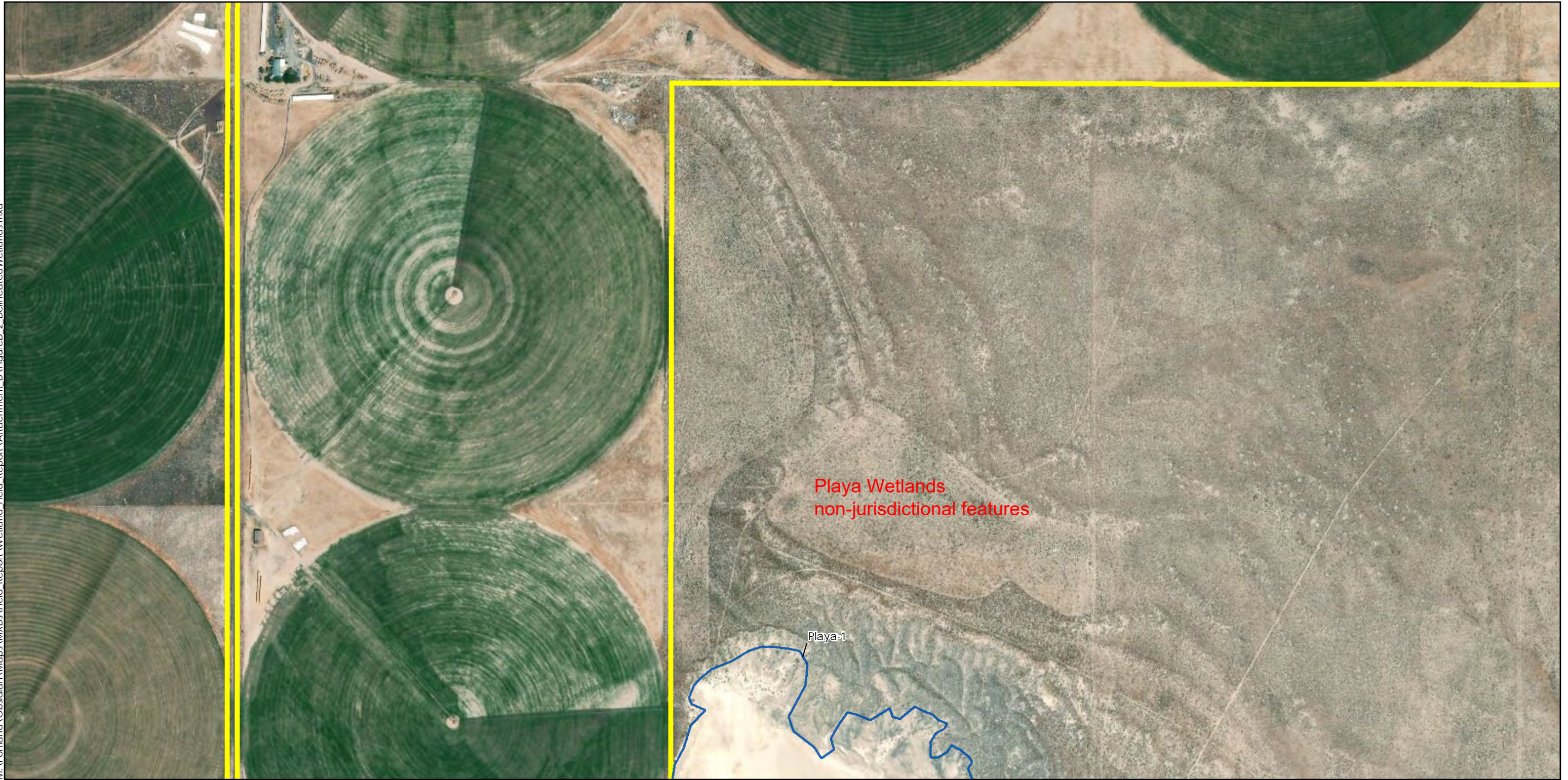




Figure D-2
Supplemental Areas
Delineated Waters Tile Index

Obsidian Solar Center
October 2018

Obsidian Solar Center LLC



-  Playa
-  Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

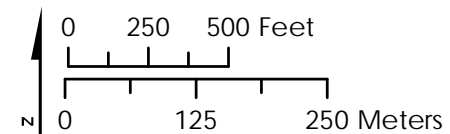


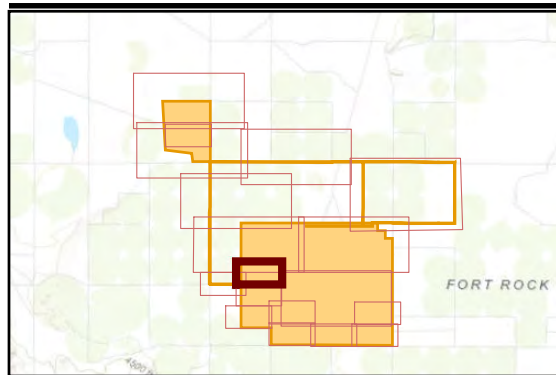
Figure D-2.1
Supplemental Areas
Delineated Waters


Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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-  Playa
-  Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

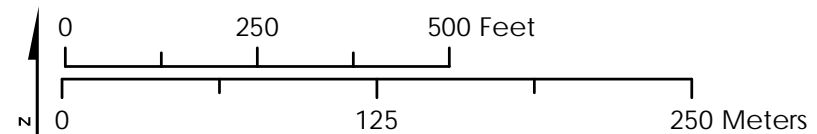


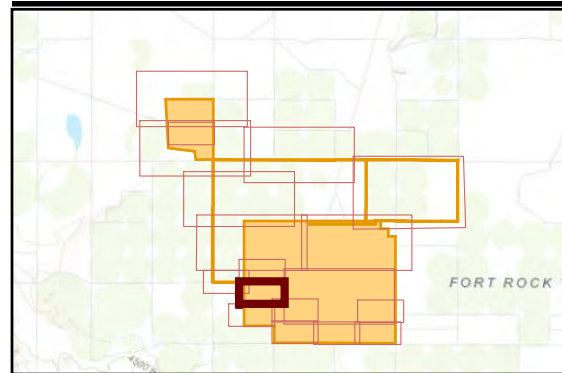
Figure D-2.2
Supplemental Areas
Delineated Waters



Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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-  Playa
-  Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

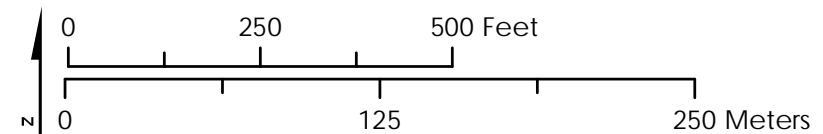
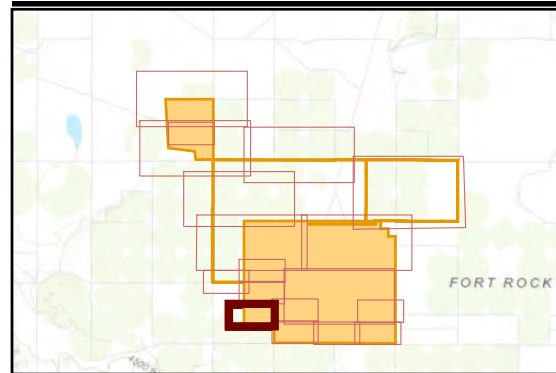


Figure D-2.3
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC



- Data Point
- ⬭ Playa
- ▭ Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

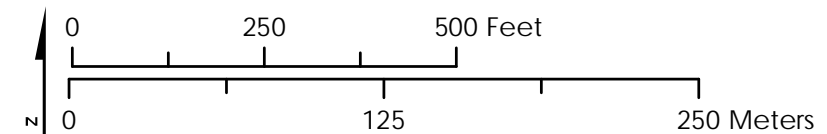
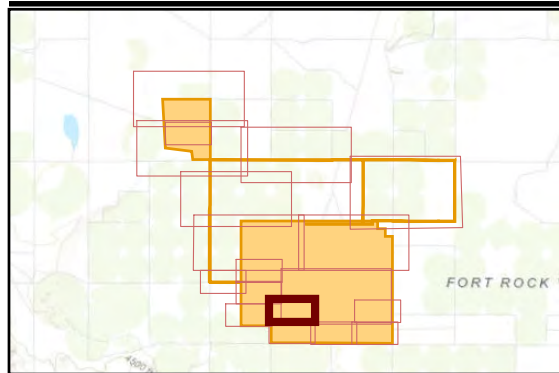


Figure D-2.4
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC



- Data Point
- ⬭ Playa
- ▭ Supplemental Study Area
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

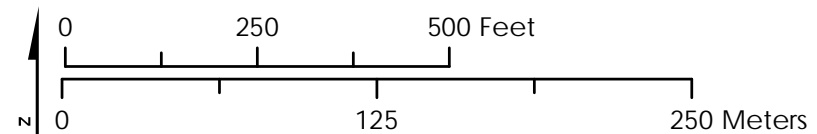


Figure D-2.5
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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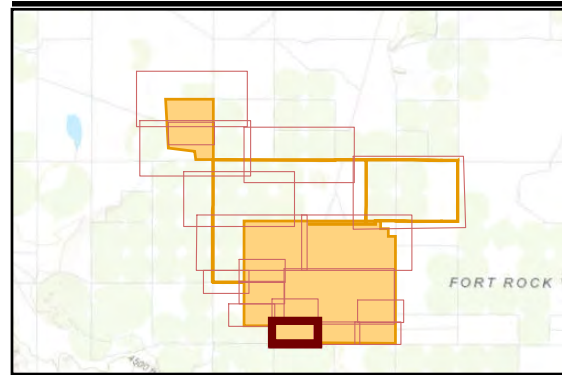


Playa Wetlands
non-jurisdictional features

IN-009

Playa-3

Playa-4



- Data Point
- ⬭ Playa
- ▭ Supplemental Study Area
- == Bonneville Power Administration Transmission Line (500kV)
- == PGE Transmission Line (500kV)

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

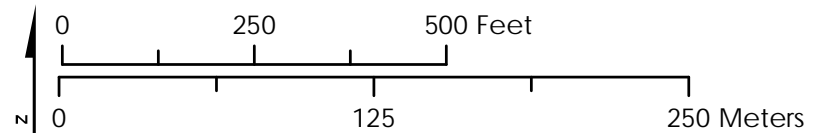


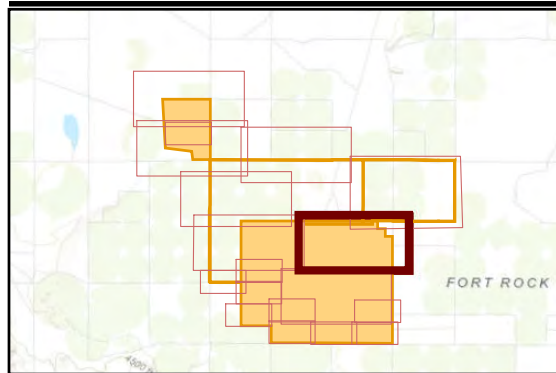
Figure D-2.6
Supplemental Areas
Delineated Waters





Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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-  Playa
-  Supplemental Study Area
-  Bonneville Power Administration Transmission Line (500kV)
-  PGE Transmission Line (500kV)

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.



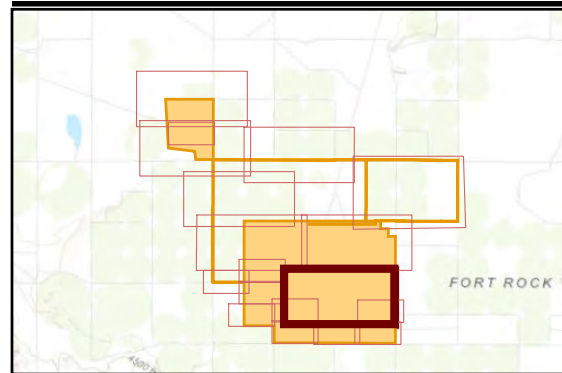
Figure D-2.7
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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- Data Point
- ⬭ Playa
- ▭ Supplemental Study Area
- == Bonneville Power Administration Transmission Line (500kV)
- == PGE Transmission Line (500kV)

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

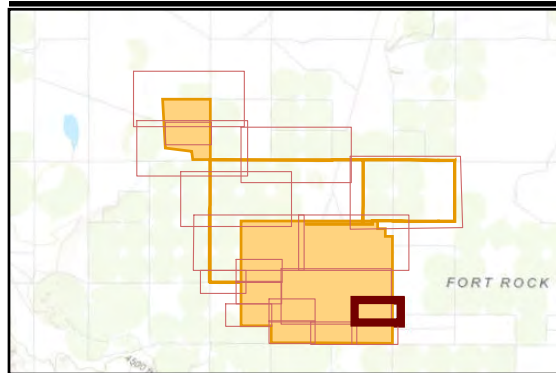


Figure D-2.8
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC



- Data Point
- Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

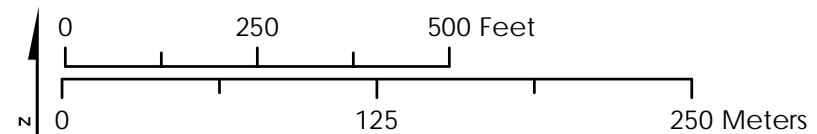
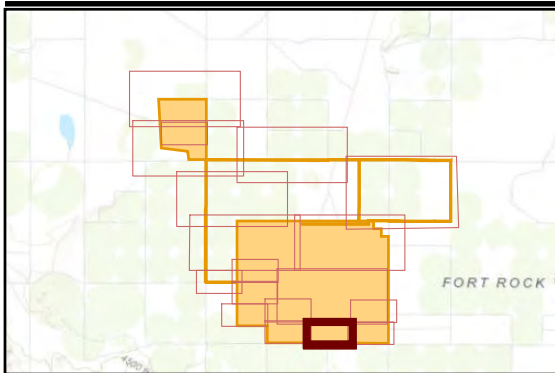


Figure D-2.9
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC



- Data Point
- ⬭ Playa
- Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

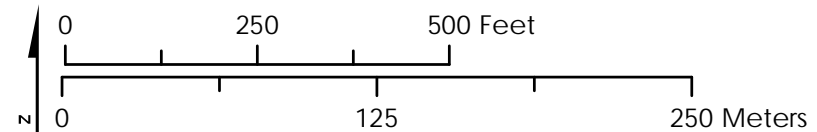
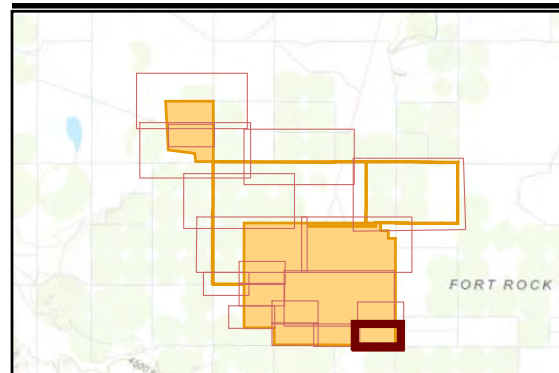
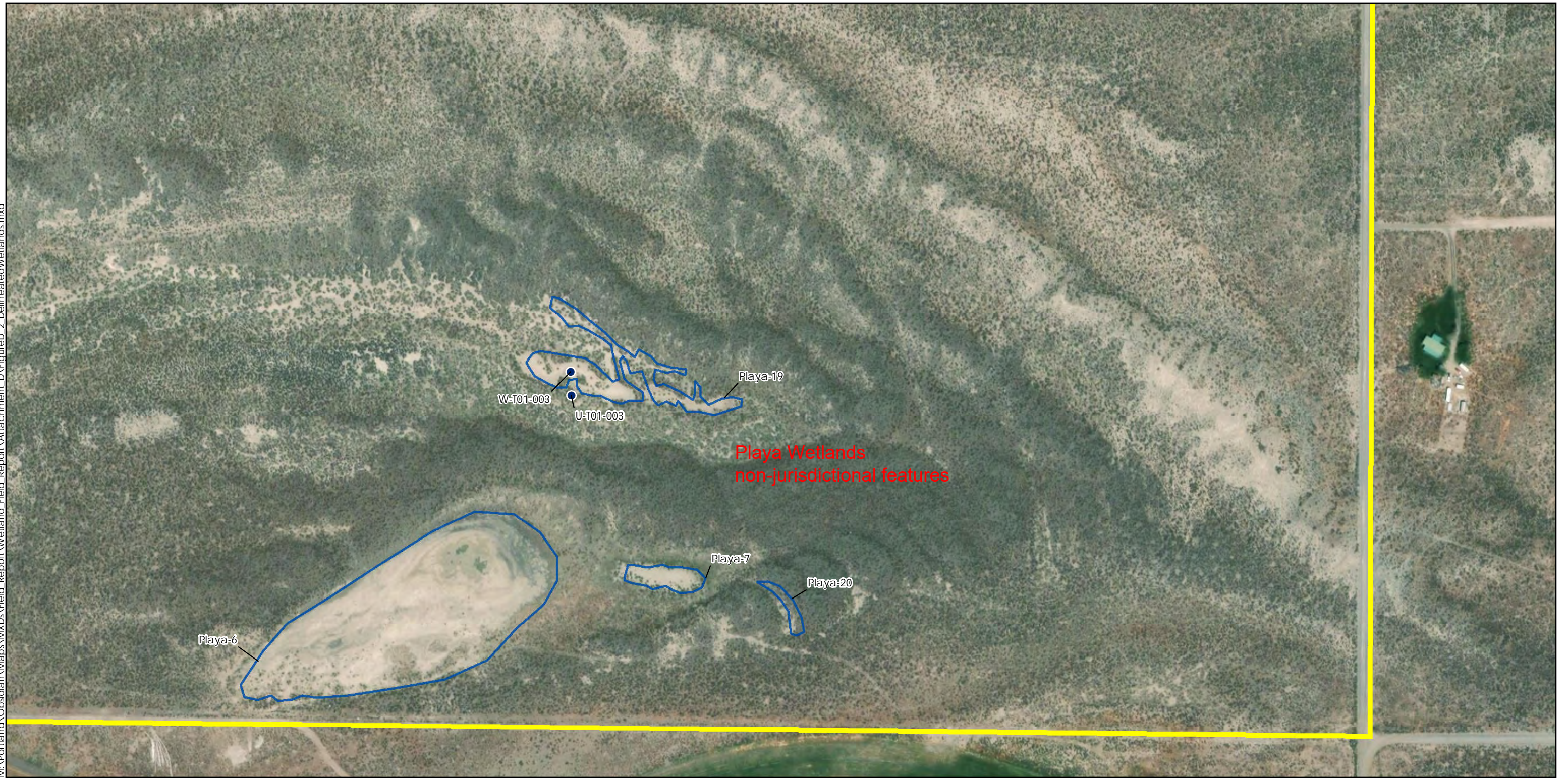


Figure D-2.10
Supplemental Areas
Delineated Waters

Obsidian Solar Center
October 2018
Obsidian Solar Center LLC



- Data Point
- ⬭ Playa
- ▭ Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

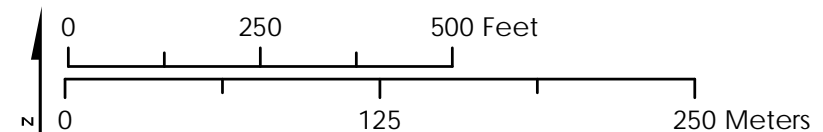
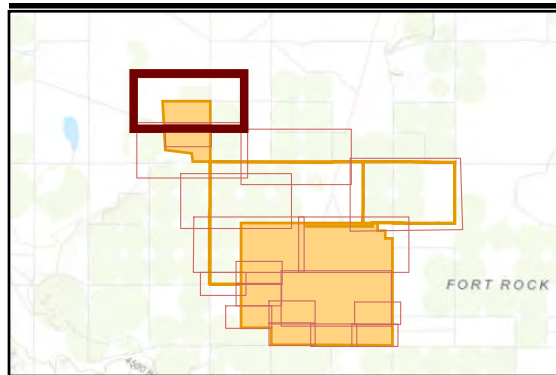
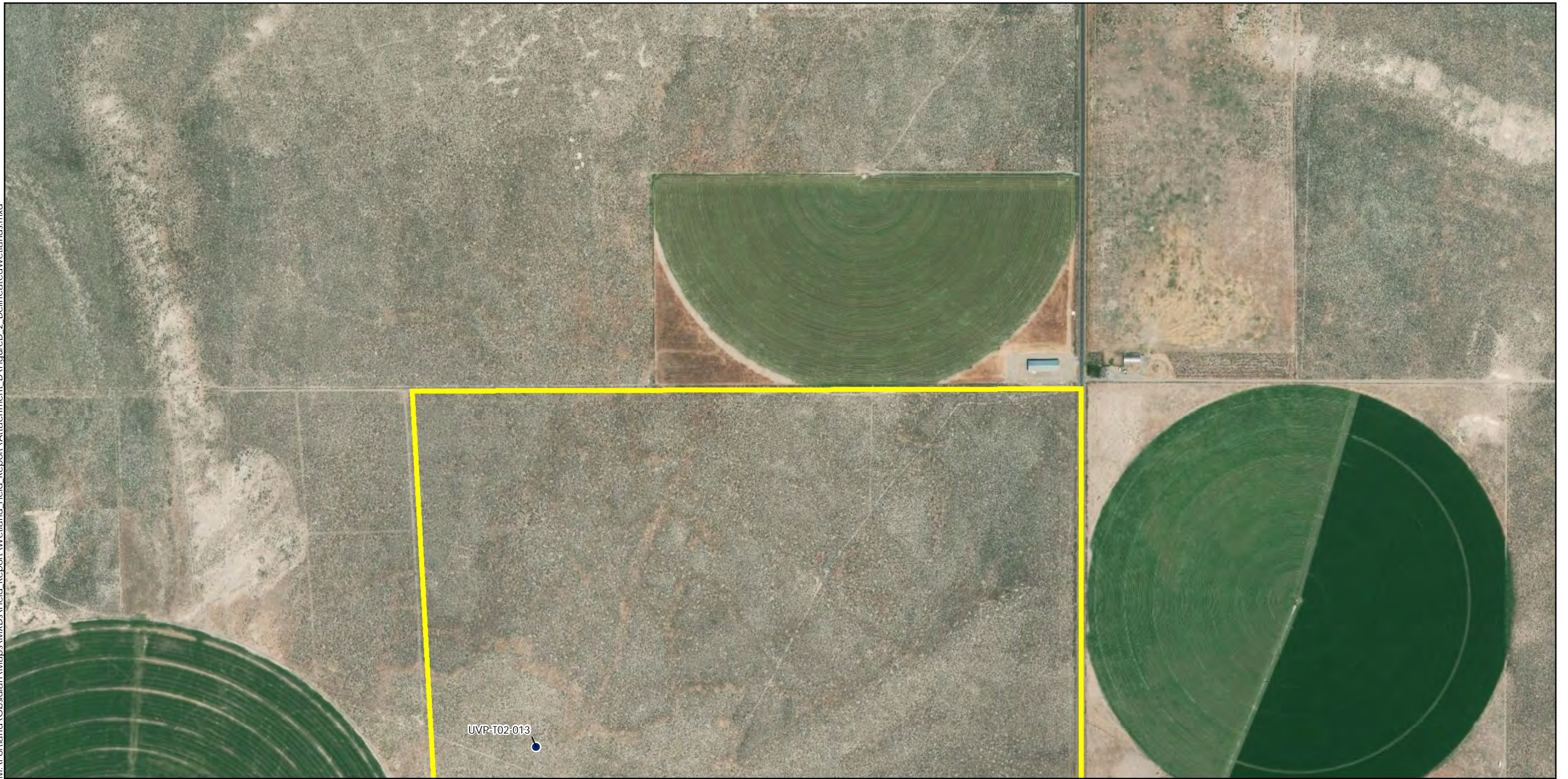


Figure D-2.11
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC



- Data Point
- Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

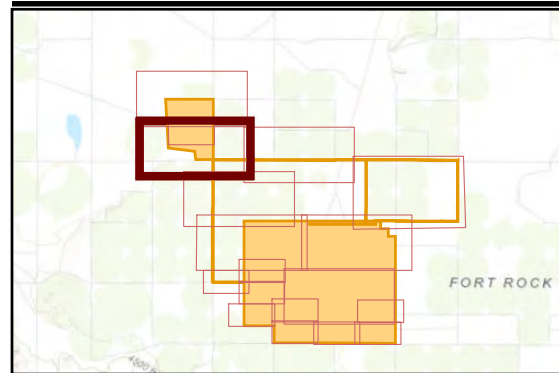


Figure D-2.12
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC



- Data Point
- Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

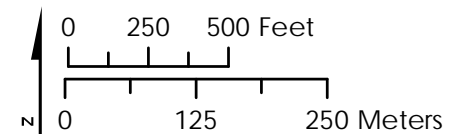


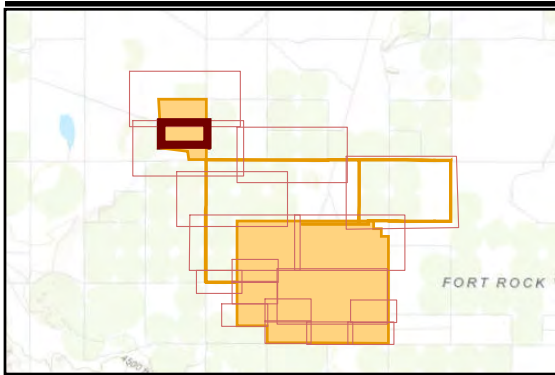
Figure D-2.13
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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- Data Point
- Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

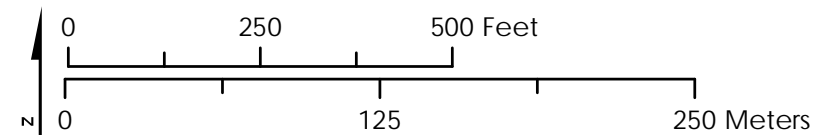
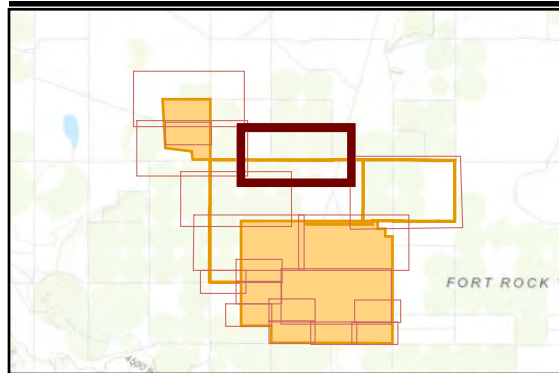


Figure D-2.14
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC



- Data Point
- Supplemental Study Area
- ▭ Study Area Boundary
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

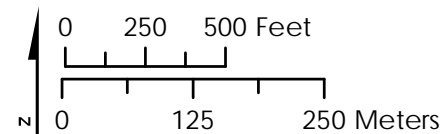


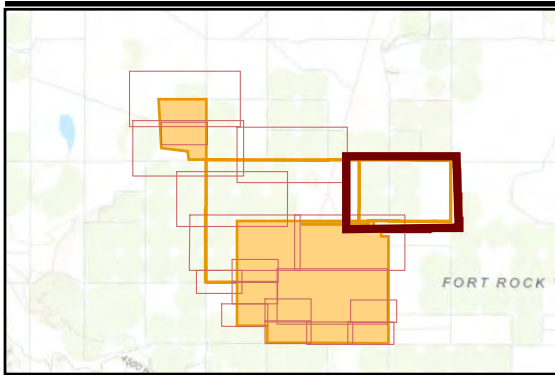
Figure D-2.15
Supplemental Areas
Delineated Waters




Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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-  Playa
-  Supplemental Study Area
-  Study Area Boundary

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

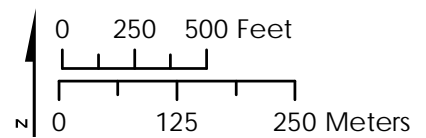


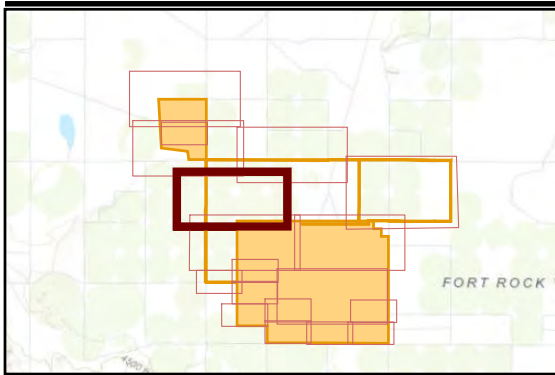
Figure D-2.16
Supplemental Areas
Delineated Waters


Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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 Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

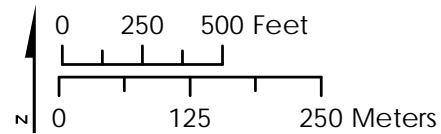
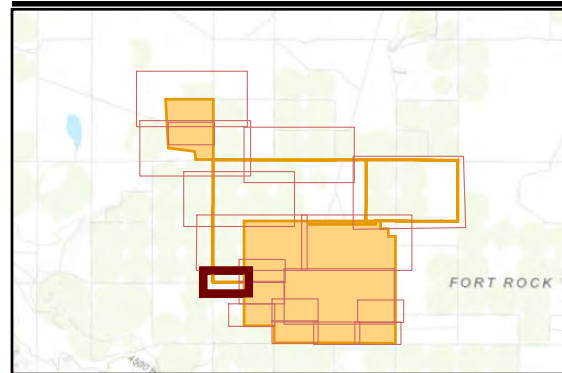



Figure D-2.17
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC



-  Playa
-  Supplemental Study Area

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

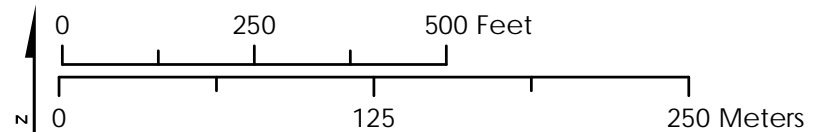


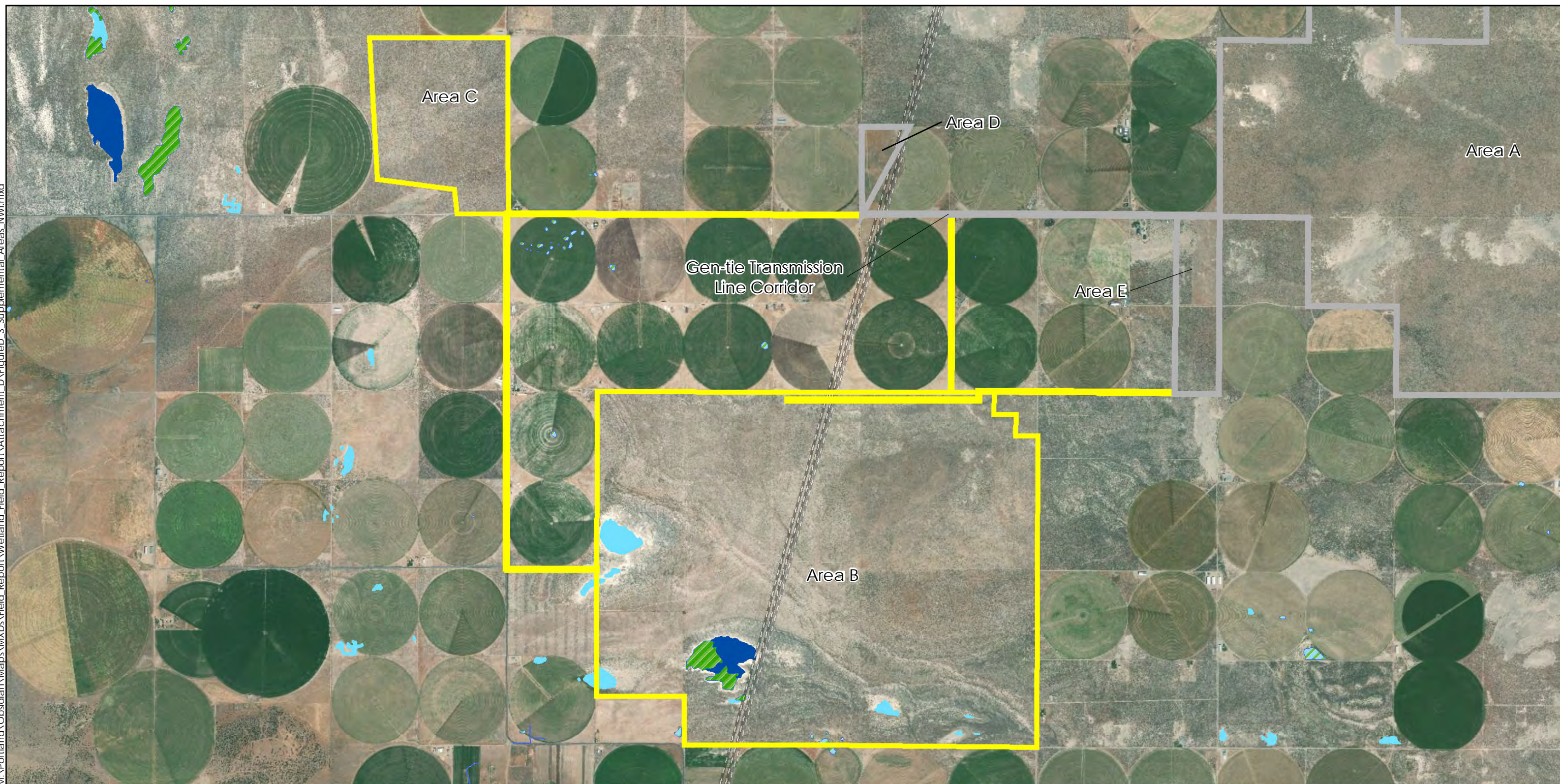
Figure D-2.18
Supplemental Areas
Delineated Waters

Obsidian Solar Center

October 2018

Obsidian Solar Center LLC

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- Supplemental Study Area
- Proposed Facility Study Area
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)
- Highways/Roads
- NWI-Mapped Wetlands and Other Waters
 - Palustrine Emergent Wetland (PEM)
 - Palustrine Forested/Shrub Wetland (PFO/SS)
 - Palustrine Unconsolidated Shore (PUS)
 - Lacustrine Littoral Unconsolidated Shore, Intermittently Flooded (L2USJ)

Note: Obsidian Solar Center is not requesting concurrence with findings in Supplemental Study Areas; data for these areas are presented for informational purposes only.

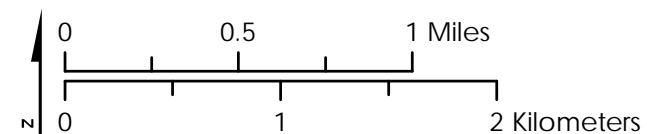


Figure D-3
Supplemental Areas National
Wetland Inventory (NWI)

Obsidian Solar Center
October 2018

Obsidian Solar Center LLC



Regulatory Program

INTERIM APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

SECTION I: BACKGROUND INFORMATION

A.COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (AJD): 3 April 2019

B.ORM NUMBER IN APPROPRIATE FORMAT (e.g., HQ-2015-00001-SMJ): NWP-2018-00577

C.PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Oregon County/parish/borough: Lake County City: Fort Rock
Center coordinates of site (lat/long in degree decimal format): Lat. 43.3097202 °, Long. -120.8450478°.
Map(s)/diagram(s) of review area (including map identifying single point of entry (SPOE) watershed and/or potential jurisdictional areas where applicable) is/are: attached in report/map titled Obsidian Solar Center 2018 Waters Delineation Report, dated October 2018 and prepared for Obsidian Solar Center, LLC.

Other sites (e.g., offsite mitigation sites, disposal sites, etc.) are associated with this action and are recorded on a different jurisdictional determination (JD) form. List JD form ID numbers (e.g., HQ-2015-00001-SMJ-1): .

D.REVIEW PERFORMED FOR SITE EVALUATION:

- Office (Desk) Determination Only. Date: 8 March 2019.
 Office (Desk) and Field Determination. Office/Desk Dates: Field Date(s): .

SECTION II: DATA SOURCES

Check all that were used to aid in the determination and attach data/maps to this AJD form and/or references/citations in the administrative record, as appropriate.

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant. Title/Date: Obsidian Solar Center 2018 Waters Delineation Report, dated October 2018 and prepared for Obsidian Solar Center, LLC .
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- Data sheets/delineation report are sufficient for purposes of AJD form. Title/Date: Obsidian Solar Center 2018 Waters Delineation Report, dated October 2018 and prepared for Obsidian Solar Center, LLC.
 - Data sheets/delineation report are not sufficient for purposes of AJD form. Summarize rationale and include information on revised data sheets/delineation report that this AJD form has relied upon: .
Revised Title/Date: .
- Data sheets prepared by the Corps. Title/Date: .
- Corps navigable waters study. Title/Date: .
- CorpsMap ORM map layers. Title/Date: .
- USGS Hydrologic Atlas. Title/Date: .
- USGS, NHD, or WBD data/maps. Title/Date: NHD Map overlay reviewed on 03/11/2019.
- USGS 8, 10 and/or 12 digit HUC maps. HUC number: HUC #171200050709.
- USGS maps. Scale & quad name and date: 1:24K Lane Lake.
- USDA NRCS Soil Survey. Citation: .
- USFWS National Wetlands Inventory maps. Citation: .
- State/Local wetland inventory maps. Citation: .

- FEMA/FIRM maps. Citation:
- Photographs: Aerial. Citation: Google Earth 2017. or Other. Citation: Wetland Delineation Photos 2018.
- LiDAR data/maps. Citation:
- Previous JDs. File no. and date of JD letter:
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify):

SECTION III: SUMMARY OF FINDINGS

A. RIVERS AND HARBORS ACT (RHA) SECTION 10 DETERMINATION OF JURISDICTION:

- "navigable waters of the U.S." within RHA jurisdiction (as defined by 33 CFR part 329) in the review area.

- **Complete Table 1 - Required**

NOTE: If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Section 10 navigable waters list, DO NOT USE THIS FORM TO MAKE THE DETERMINATION. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Section 10 RHA navigability determination.

B. CLEAN WATER ACT (CWA) SECTION 404 DETERMINATION OF JURISDICTION: "waters of the U.S." within CWA jurisdiction (as defined by 33 CFR part 328.3) in the review area. Check all that apply.

- (a)(1): All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. (Traditional Navigable Waters (TNWs))

- **Complete Table 1 - Required**

- This AJD includes a case-specific (a)(1) TNW (Section 404 navigable-in-fact) determination on a water that has not previously been designated as such. Documentation required for this case-specific (a)(1) TNW determination is attached.

- (a)(2): All interstate waters, including interstate wetlands.

- **Complete Table 2 - Required**

- (a)(3): The territorial seas.

- **Complete Table 3 - Required**

- (a)(4): All impoundments of waters otherwise identified as waters of the U.S. under 33 CFR part 328.3.

- **Complete Table 4 - Required**

- (a)(5): All tributaries, as defined in 33 CFR part 328.3, of waters identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 5 - Required**

- (a)(6): All waters adjacent to a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters.

- **Complete Table 6 - Required**

- Bordering/Contiguous.
 - Neighboring:

- (c)(2)(i): All waters located within 100 feet of the ordinary high water mark (OHWM) of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3.

- (c)(2)(ii): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 and not more than 1,500 feet of the OHWM of such water.

- (c)(2)(iii): All waters located within 1,500 feet of the high tide line of a water identified in paragraphs (a)(1) or (a)(3) of 33 CFR part 328.3, and all waters within 1,500 feet of the OHWM of the Great Lakes.

- (a)(7): All waters identified in 33 CFR 328.3(a)(7)(i)-(v) where they are determined, on a case-specific basis, to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 7 for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(7) waters identified in the similarly situated analysis. - Required**

- Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.
- (a)(8): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3 not covered by (c)(2)(ii) above and all waters located within 4,000 feet of the high tide line or OHWM of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 where they are determined on a case-specific basis to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.
 - **Complete Table 8 for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(8) waters identified in the similarly situated analysis. - Required**
- Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

C. NON-WATERS OF THE U.S. FINDINGS:

Check all that apply.

- The review area is comprised entirely of dry land.
- Potential-(a)(7) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.
 - **Complete Table 9 and attach a map delineating the SPOE watershed boundary with potential (a)(7) waters identified in the similarly situated analysis. - Required**
- Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.
- Potential-(a)(8) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.
 - **Complete Table 9 and attach a map delineating the SPOE watershed boundary with potential (a)(8) waters identified in the similarly situated analysis. - Required**
- Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.
- Excluded Waters (Non-Waters of U.S.), even where they otherwise meet the terms of paragraphs (a)(4)-(a)(8):
 - **Complete Table 10 - Required**
 - (b)(1): Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA.
 - (b)(2): Prior converted cropland.
 - (b)(3)(i): Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.
 - (b)(3)(ii): Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.
 - (b)(3)(iii): Ditches that do not flow, either directly or through another water, into a water identified in paragraphs (a)(1)-(a)(3).
 - (b)(4)(i): Artificially irrigated areas that would revert to dry land should application of water to that area cease.
 - (b)(4)(ii): Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds.
 - (b)(4)(iii): Artificial reflecting pools or swimming pools created in dry land.¹
 - (b)(4)(iv): Small ornamental waters created in dry land.
 - (b)(4)(v): Water-filled depressions created in dry land incidental to mining or construction activity, including

¹ In many cases these excluded features will not be specifically identified on the AJD form, unless specifically requested. Corps Districts may, in case-by-case instances, choose to identify some or all of these features within the review area.

pits excavated for obtaining fill, sand, or gravel that fill with water.

- (b)(4)(vi): Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways.
 - (b)(4)(vii): Puddles.
 - (b)(5): Groundwater, including groundwater drained through subsurface drainage systems.
 - (b)(6): Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.
 - (b)(7): Wastewater recycling structures created in dry land; detention and retention basins built for wastewater recycling; groundwater recharge basins; percolation ponds built for wastewater recycling; and water distributary structures built for wastewater recycling.
- Other non-jurisdictional waters/features within review area that do not meet the definitions in 33 CFR 328.3 of (a)(1)-(a)(8) waters and are not excluded waters identified in (b)(1)-(b)(7).
- **Complete Table 11 - Required.**

D.ADDITIONAL COMMENTS TO SUPPORT AJD: The wetland delineation titled Obsidian Solar Center 2018 Waters Delineation Report, dated October 2018 and prepared for Obsidian Solar Center, LLC, identified wetted features which do not provide flows to downstream waters. The region is made up of volcanic ash and materials which are porous. Aquatic features identified in the review area consists of seasonally ponded areas described as playas. The hydrology of these areas are ponded and do not provide flows to downstream areas. These features do not have a prevalence of hydrophytic vegetation nor do the features have hydric soils. These features are not located within the 100 year floodplain and they are not within 4,000 linear feet of an (a)(1)-(8) water.

Jurisdictional Waters of the U.S.

Default field entry is "N/A". Delete "N/A" and fill out all fields in the table where applicable for waters/features present in the review area.

Table 1. (a)(1) Traditional Navigable Waters

(a)(1) Waters Name	(a)(1) Criteria	Rationale to Support (a)(1) Designation Include High Tide Line or Ordinary High Water Mark indicators, when applicable.
N/A	Choose an item.	N/A

Table 2. (a)(2) Interstate Waters

(a)(2) Waters Name	Rationale to Support (a)(2) Designation
N/A	N/A

Table 3. (a)(3) Territorial Seas

(a)(3) Waters Name	Rationale to Support (a)(3) Designation
N/A	N/A

Table 4. (a)(4) Impoundments

(a)(4) Waters Name	Rationale to Support (a)(4) Designation
N/A	N/A
N/A	N/A

Table 5. (a)(5) Tributaries

(a)(5) Waters Name	Flow Regime	(a)(1)-(a)(3) Water Name to which this (a)(5) Tributary Flows	Tributary Breaks	Rationale for (a)(5) Designation and Additional Discussion. Identify flowpath to (a)(1)-(a)(3) water or attach map identifying the flowpath; explain any breaks or flow through excluded/non-jurisdictional features, etc.
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A

Table 6. (a)(6) Adjacent Waters

(a)(6) Waters Name	(a)(1)-(a)(5) Water Name to which this Water is Adjacent	Rationale for (a)(6) Designation and Additional Discussion. Identify the type of water and how the limits of jurisdiction were established (e.g., wetland, 87 Manual/Regional Supplement); explain how the 100-year floodplain and/or the distance threshold was determined; whether this water extends beyond a threshold; explain if the water is part of a mosaic, etc.
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Table 7. (a)(7) Waters

SPOE Name	(a)(7) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; discuss whether any similarly situated waters were present and aggregated for SND; discuss data, provide analysis, and summarize how the waters have more than speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Table 8. (a)(8) Waters

SPOE Name	(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to subject water and aggregated for SND; discuss data, provide analysis, and then summarize how the waters have more than speculative or insubstantial effect the on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Non-Jurisdictional Waters

Default field entry is "N/A". Delete "N/A" and fill out all fields in the table where applicable for waters/features present in the review area.

Table 9. Non-Waters/No Significant Nexus

SPOE Name	Non-(a)(7)/(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water DOES NOT have a Significant Nexus	Basis for Determination that the Functions DO NOT Contribute Significantly to the Chemical, Physical, or Biological Integrity of the (a)(1)-(a)(3) Water. Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to the subject water; discuss data, provide analysis, and summarize how the waters did not have more than a speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Table 10. Non-Waters/Excluded Waters and Features

Paragraph (b) Excluded Feature/Water Name	Rationale for Paragraph (b) Excluded Feature/Water and Additional Discussion.
N/A	N/A
N/A	N/A

Table 11. Non-Waters/Other

Other Non-Waters of U.S. Feature/Water Name	Rationale for Non-Waters of U.S. Feature/Water and Additional Discussion.
Playas (35 features total comprising of 17.42 acres)	The 35 playas with a total of 17.42 acres described in the wetland delineation located within the review area are lacustrine (ponded) water areas and do not flow into other tributaries or any (a)(1)-(a)(3) water. These features do not have hydric soils or a hydrophytic plant community to suggest any long-term storage of water for the region. The soils in the review area are a volcanic ash mixture and have a high porosity to facilitate quick drying of the site. The annual rainfall in the area is approximately 10 inches total. This ecoregion is characterized by gently sloping, internally drained basins with lake terraces, playas, beach plains, stream terraces, intermittent lakes, fan skirts, and cool springs. The NHD maps reflect there are no tributaries within the review area and the 100 year flood plain map overlay reflects the review area has a low risk for flooding.

ORM Table

Waters_Name	State	Cowardin Code	Hgm Code	Meas Type	Amount	Units	Waters_Type	Latitude	Longitude
NWP-2018-00577	OR	U-UPLANDS	Slope	AREA	4000	ACRES	DRYLAND	43.3095° N	-120.846° W

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant:	File Number:	Date:
Attached is:		See Section below
INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
PROFFERED PERMIT (Standard Permit or Letter of permission)		B
PERMIT DENIAL		C
APPROVED JURISDICTIONAL DETERMINATION		D
PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found in Corps regulations at 33 CFR Part 331 or at <http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/FederalRegulation.aspx>

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

<p>If you have questions regarding this decision and/or the appeal process you may contact:</p> <p>Mr. William D. Abadie U.S. Army Corps of Engineers Portland District Office P.O. Box 2946 Portland, OR 97208-2946 Telephone: (503)808-4373</p>	<p>For questions about the appeal process, you may also contact:</p> <p>U.S. Army Corps of Engineers, Northwestern Division ATTN: Melinda Larsen, Regulatory Appeals Review Officer 1201 NE Lloyd Blvd., Suite 400 Portland, OR 97232 Telephone: (503) 808-3888 Email: Melinda.M.Larsen@usace.army.mil</p>
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RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

<p>_____ Signature of appellant or agent.</p>	<p>Date:</p>	<p>Telephone number:</p>
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