ATTACHMENT O: JOINT AQUATIC RESOURCES PERMIT APPLICATION

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) Form[1,2] [help]

US Army Corps of Engineers ®
Seattle District

USE BLACK OR BLUE INK TO ENTER ANSWERS IN THE WHITE SPACES BELOW.

AGENCY USE ONLY

Date received:

Agency reference #: _____

Tax Parcel #(s): _____

_____

Part 1–Project Identification

1. Project Name (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) [help]
Hop Hill Solar and Storage Project

Part 2–Applicant

The person and/or organization responsible for the project. [help]

2a. Name (Last, First, Middle)			
Hesch, Lindsey			
2b. Organization (If applicable)			
HOHI bn, LLC, a subsidiary of BNC DEVCO, LLC			
2c. Mailing Address (Street or PO Box)			
13123 E Emerald Coast Parkway, Suite B#158			
2d. City, State, Zip			
Inlet Beach, Florida 32461			
2e. Phone (1)	**2f.** Phone (2)	**2g.** Fax	**2h.** E-mail
850-842-8264			lindsey@brightnightpower.com

[1]Additional forms may be required for the following permits:
- If your project may qualify for Department of the Army authorization through a Regional General Permit (RGP), contact the U.S. Army Corps of Engineers for application information (206) 764-3495.
- Not all cities and counties accept the JARPA for their local Shoreline permits. If you need a Shoreline permit, contact the appropriate city or county government to make sure they accept the JARPA.

[2]To access an online JARPA form with [help] screens, go to http://www.epermitting.wa.gov/site/alias__resourcecenter/jarpa_jarpa_form/9984/jarpa_form.aspx.

For other help, contact the Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.

Part 3–Authorized Agent or Contact

Person authorized to represent the applicant about the project. (Note: Authorized agent(s) must sign 11b of this application.) [help]

3a. Name (Last, First, Middle)			
Hicks, Paul			
3b. Organization (If applicable)			
Tetra Tech, Inc.			
3c. Mailing Address (Street or PO Box)			
1750 S Harbor Way, Suite 400			
3d. City, State, Zip			
Portland, Oregon, 97201			
3e. Phone (1)	**3f.** Phone (2)	**3g.** Fax	**3h.** E-mail
916-764-8382			paul.hicks@tetratech.com

Part 4–Property Owner(s)

Contact information for people or organizations owning the property(ies) where the project will occur. Consider both **upland and aquatic** ownership because the upland owners may not own the adjacent aquatic land. [help]

☐ Same as applicant. (Skip to Part 5.)

☐ Repair or maintenance activities on existing rights-of-way or easements. (Skip to Part 5.)

☒ There are multiple upland property owners. Complete the section below and fill out JARPA Attachment A for each additional property owner.

☐ Your project is on Department of Natural Resources (DNR)-managed aquatic lands. If you don't know, contact the DNR at (360) 902-1100 to determine aquatic land ownership. If yes, complete JARPA Attachment E to apply for the Aquatic Use Authorization.

4a. Name (Last, First, Middle)			
Anderson, Elmer, C.			
4b. Organization (If applicable)			
Elmer C Anderson, Inc			
4c. Mailing Address (Street or PO Box)			
PO Box 469			
4d. City, State, Zip			
Prosser, WA, 99350			
4e. Phone (1)	**4f.** Phone (2)	**4g.** Fax	**4h.** E-mail
See JARPA Attachment A			See JARPA Attachment A

Part 5–Project Location(s)

Identifying information about the property or properties where the project will occur. [help]

☒ There are multiple project locations (e.g. linear projects). Complete the section below and use JARPA Attachment B for each additional project location.

5a. Indicate the type of ownership of the property. (Check all that apply.) [help]

☒ Private

☐ Federal

☐ Publicly owned (state, county, city, special districts like schools, ports, etc.)

☐ Tribal

☐ Department of Natural Resources (DNR) – managed aquatic lands (Complete JARPA Attachment E)

5b. Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5p.) [help]

The Project crosses multiple properties. See information in response to 5p. Figure 1, attached, shows the location of the Project relative to the nearest town of Prosser.

5c. City, State, Zip (If the project is not in a city or town, provide the name of the nearest city or town.) [help]

Prosser, WA 99350

5d. County [help]

Benton

5e. Provide the section, township, and range for the project location. [help]

¼ Section	Section	Township	Range
-	7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 19, 21, 22, 23, 26, 27, 28, 33, 34, and 35	T10N	R24E

5f. Provide the latitude and longitude of the project location. [help]

- Example: 47.03922 N lat. / -122.89142 W long. (Use decimal degrees - NAD 83)

46.342703 N lat./ -119.824321 W long. (at the center of Solar Array Siting Area)

5g. List the tax parcel number(s) for the project location. [help]

- The local county assessor's office can provide this information.

Assessor Parcel Number[1/]					
115143000000000	115040000000000	134141000001000	103140000000000	134341000001000	133341000001000
115141000000000	117040000000000	135041000001000	110140000000000	134342000001000	122241000001000
128043000002000	118041000000000	108042000000000	134241000000000	103241000000001	134041000000000
119040000000000	121040000000000	110343000001001	134243000000000	134344000002000	114040000000000
122141000000000	122040000000000	115341000000000	110343000002000	121241000001000	128344000000000
103040000000000	123040000000000	122341000000000	127341000001000	134342000002000	127341000002000
107040000000000	126040000000000	122242000000000	127341000003000	134344000001000	133041000000000
108041000000000	127040000000000	127240000000000	127343000000000	110241000000001	111040000000000
109040000000000	127140000000000	122244000000000	127344000000000	110243000000001	115240000000000
110040000000000	128041000000000	134341000002000	128343000000000		

[1/] Assessor parcel information is based on current Benton County assessment records last updated by the County on March 2, 2022, and prior to submittal of this JARPA.

5h. Contact information for all adjoining property owners. (If you need more space, use JARPA Attachment C.) [help]

Name	Mailing Address	Tax Parcel # (if known)
Elmer C. Anderson	PO Box 469 Prosser, WA 99350	102042000000000 104040000000000 105040000000000 106042000000000 120040000000000 125040000000000 129040000000000 130041000002000 132041000001000
Elmer C. Anderson and Anderson Rattlesnake Farms General Partnership	PO Box 469 Prosser, WA 99350	106041000000000
H & I Operating Co.	PO Box 428 Prosser, WA 99350-0428	128043000001000
Terry & Nancy Hollenbeck	23509 N McDonald Rd Prosser, WA 99350	124042000000000

5i. List all wetlands on or adjacent to the project location. [help]

There are three palustrine emergent (PEM) wetlands within the Solar Array Siting Area (Wetlands A, B, and C in the attached delineation report). All three are inside of ephemeral drainages that have been avoided in the proposed project layout.

The Transmission Line Corridor Siting Area has not yet been delineated in the field. In addition, one section of solar array area that also has not yet been delineated totaling approximately 90 acres will be delineated in conjunction with the transmission line. When the supplemental delineation report is available, an addendum will be prepared for this JARPA for that area.

5j. List all waterbodies (other than wetlands) on or adjacent to the project location. [help]

Seventeen ephemeral waterways and one irrigation canal have been delineated within the Solar Array Siting Area. Only Spring Creek has an official name; the others are named by the delineators and listed in the attached wetland delineation report.

The Transmission Line Corridor Siting Area has not yet been delineated in the field. In addition, one section of solar array area that also has not yet been delineated totaling approximately 90 acres will be delineated in conjunction with the transmission line. When the supplemental delineation report is available, an addendum will be prepared for this JARPA for that area.

5k. Is any part of the project area within a 100-year floodplain? [help]

☐ Yes ☒ No ☐ Don't know

5l. Briefly describe the vegetation and habitat conditions on the property. [help]

The entire Solar Array Siting Area and the land surrounding has a mix of weedy sagebrush steppe and eastern grassland habitats. Dominant species include big sagebrush (*Artemisia tridentata*), downy cheatgrass (*Bromus tectorum*), and filaree (*Erodium cicutarium*).

5m. Describe how the property is currently used. [help]

Lands in the Solar Array Siting Area have historically been used for agricultural activities (primarily grazing with some crop cultivation), although the areas used for these activities have varied over time. The Project is located entirely on land within the Benton County Growth Management Act Agricultural District (GMAAD). Existing land uses in the Solar Array Siting Area include crop cultivation, rangeland, undeveloped areas, local roads, a rural residence, and agricultural structures (e.g., agricultural storage).

5n. Describe how the adjacent properties are currently used. [help]

Adjacent land uses surrounding the Solar Array Siting Area are similar and also include scattered rural residences, agricultural land (crop cultivation and rangelands), state highways, and the Hanford Reach National Monument.

5o. Describe the structures (above and below ground) on the property, including their purpose(s) and current condition. [help]

Structures within the Solar Array Siting Area include a rural residence, and agricultural structures (e.g., agricultural storage).

5p. Provide driving directions from the closest highway to the project location, and attach a map. [help]

Take Exit 75 off of HWY 82 East towards Grandview/Country Line Road. Turn right on McCreadie Rd and then continue on Olmstead Rd. The Solar Array Siting Area is to the northeast of this location on two-track roads. Figure 1, attached, shows the location of the Project relative to the nearest town of Prosser.

Part 6–Project Description

6a. Briefly summarize the overall project. You can provide more detail in 6b. [help]

HOHI bn LLC (HOHI or Applicant), a subsidiary of BNC DEVCO, LLC, which is a joint venture between BrightNight LLC and Cordelio Power, is proposing to develop the Hop Hill Solar and Storage Project (Project), a utility-scale photovoltaic (PV) solar power plant in Benton County, Washington. The Project would be located on land zoned for agricultural use (GMAAD) just north of Highway 121 near Rattlesnake Ridge. The Project Area includes the Solar Array Siting Area (approximately 11,179 acres) and the Transmission Line Corridor Siting Area (approximately 10,841 acres).

This JARPA includes details of jurisdictional impacts within the Solar Array Siting Area only (Figure 1). An addendum to this JARPA will be submitted at a later date, after the remaining wetlands delineation is complete, for any jurisdictional impacts within the Transmission Line Corridor Siting Area in addition to the 90-acre portion of the Solar Array Siting Area that also requires delineation due to a change in design following other constraint identification.

6b. Describe the purpose of the project and why you want or need to perform it. [help]

The Project is an up to 500-megawatt (MW) solar PV generation facility coupled with an up to 500-MW battery energy storage system (BESS), as well as related interconnection and ancillary support infrastructure. The Project is composed of two main components: a PV generation site and electrical interconnection infrastructure as more fully described below.

The Project's solar PV generation system will convert energy from the sun into electric power. The solar PV generation system consists of a series of solar PV panels mounted on a solar tracker racking system, posts, and related electrical equipment such as collector lines and power conversion systems (PCS) which consist of the BESS, inverters, and transformers. The BESS can either store electricity for future use or, as required based on grid demand, convert direct current (DC) electricity to alternating current (AC) electricity and send the AC electricity to the step-up transformer.

The Project also includes the following supporting components: Project substation, overhead 230-kilovolt (kV) / 500-kV generation-tie transmission line (gen-tie line), operations and maintenance (O&M) building, associated Project access roads, and perimeter fencing. The Project is still in the process of determining the type and location of fencing in coordination with stakeholders; however, maximum impacts would include chain-link fencing installation around the entirety of the perimeter of the solar PV array, Project substation, and O&M building area. The Project's proposed point of interconnection (POI) with the regional electrical grid is the Bonneville Power Administration transmission system at the Midway Substation on federal land. An overhead 230-kV/500-kV gen-tie line will extend from the Project substation to the proposed POI at the Midway Substation.

In 2019, Washington passed Senate Bill 5116: the Clean Energy Transformation Act (CETA) which requires state utilities to meet 100 percent of their load with carbon-free resources by 2045. Clean electricity will allow Washington residents and businesses to power their buildings and homes, vehicles, and appliances with carbon free resources, such as wind and solar. Reductions in fossil fuel will improve health of communities, grow the economy, create family-sustaining jobs, and enable the state to achieve its long-term climate goals. Advancement in solar photovoltaic technology over the last ten years has led to significant decreases in solar equipment pricing. As a result, new facilities such as the Hop Hill Solar and Storage Project, represent an effective option to meeting Washington state's clean energy goals.

In addition to the environmental benefits, the Project will make significant economic direct and indirect contributions to the local community. Landowners participating in the Project will receive direct compensation in the form of long-term land lease payments. Furthermore, the Project will also pay property tax to Benton County, which will increase the county's tax base revenues, benefitting county residents for the life of the Project.

6c. Indicate the project category. (Check all that apply) [help]

☒ Commercial ☐ Residential ☐ Institutional ☐ Transportation ☐ Recreational
☐ Maintenance ☐ Environmental Enhancement

6d. Indicate the major elements of your project. (Check all that apply) [help]

☐ Aquaculture	☐ Culvert	☐ Float	☐ Retaining Wall (upland)
☐ Bank Stabilization	☐ Dam / Weir	☐ Floating Home	☐ Road
☐ Boat House	☐ Dike / Levee / Jetty	☐ Geotechnical Survey	☐ Scientific Measurement Device
☐ Boat Launch	☐ Ditch	☐ Land Clearing	☐ Stairs
☐ Boat Lift	☐ Dock / Pier	☐ Marina / Moorage	☐ Stormwater facility
☐ Bridge	☐ Dredging	☐ Mining	☐ Swimming Pool
☐ Bulkhead	☐ Fence	☐ Outfall Structure	☒ Utility Line
☐ Buoy	☐ Ferry Terminal	☐ Piling/Dolphin	
☐ Channel Modification	☐ Fishway	☐ Raft	

☒ Other: Solar array with accompanying access roads, O&M facility, transmission line, battery energy storage system, and other project components.

6e. Describe how you plan to construct each project element checked in 6d. Include specific construction methods and equipment to be used. [help]

- Identify where each element will occur in relation to the nearest waterbody.
- Indicate which activities are within the 100-year floodplain.

There are no 100-year floodplains in the Solar Array Siting Area. The Project components include the solar array, collector lines, perimeter fencing, service roads, an O&M facility, battery energy storage system, and the Project substation. These are shown in the attached Figure 2.

6f. What are the anticipated start and end dates for project construction? (Month/Year) [help]

- If the project will be constructed in phases or stages, use JARPA Attachment D to list the start and end dates of each phase or stage.

Start Date: Spring 2024 End Date: December 2025 ☐ See JARPA Attachment D

6g. Fair market value of the project, including materials, labor, machine rentals, etc. [help]

A 500-MW solar PV facility coupled with battery energy storage system (BESS) sized to the maximum capacity of the Project is estimated to cost about $553 million for the 500 MW PV only project and an incremental $666 million for the 500 MW x 4-hour BESS.

6h. Will any portion of the project receive federal funding? [help]

- **If yes**, list each agency providing funds.

☐ Yes ☒ No ☐ Don't know

Part 7–Wetlands: Impacts and Mitigation

☒ Check here if there are wetlands or wetland buffers on or adjacent to the project area.
(If there are none, skip to Part 8.) [help]

7a. Describe how the project has been designed to avoid and minimize adverse impacts to wetlands. [help]

☐ Not applicable

The Project has been designed to avoid wetlands, and no wetland or wetland buffers impacts (temporary or permanent) are proposed in the Solar Array Siting Area. Additional safeguards will be put in place during construction to prevent any stormwater runoff from entering the wetlands or their associated buffers. Mitigation actions and best management practices will be implemented during construction, such as revegetating disturbed soils to minimize erosion/runoff and implementing an ESCP, SWPPP, and Vegetation and Weed Management Plan.

7b. Will the project impact wetlands? [help]

☐ Yes ☒ No ☐ Don't know

7c. Will the project impact wetland buffers? [help]

☐ Yes ☒ No ☐ Don't know

7d. Has a wetland delineation report been prepared? [help]

- **If Yes**, submit the report, including data sheets, with the JARPA package.

☒ Yes ☐ No

7e. Have the wetlands been rated using the Western Washington or Eastern Washington Wetland Rating System? [help]

- **If Yes**, submit the wetland rating forms and figures with the JARPA package.

☒ Yes ☐ No ☐ Don't know

7f. Have you prepared a mitigation plan to compensate for any adverse impacts to wetlands? [help]

- **If Yes**, submit the plan with the JARPA package and answer 7g.
- **If No, or Not applicable**, explain below why a mitigation plan should not be required.

☐ Yes ☒ No ☐ Don't know

Wetlands and their buffers will not be impacted by the Project.

7g. Summarize what the mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan. [help]

N/A

7h. Use the table below to list the type and rating of each wetland impacted, the extent and duration of the impact, and the type and amount of mitigation proposed. Or if you are submitting a mitigation plan with a similar table, you can state (below) where we can find this information in the plan. [help]

Activity (fill, drain, excavate, flood, etc.)	Wetland Name[1]	Wetland type and rating category[2]	Impact area (sq. ft. or Acres)	Duration of impact[3]	Proposed mitigation type[4]	Wetland mitigation area (sq. ft. or acres)
N/A	N/A	N/A	N/A	N/A	N/A	N/A

[1] If no official name for the wetland exists, create a unique name (such as "Wetland 1"). The name should be consistent with other project documents, such as a wetland delineation report.
[2] Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package.
[3] Indicate the days, months or years the wetland will be measurably impacted by the activity. Enter "permanent" if applicable.
[4] Creation (C), Re-establishment/Rehabilitation (R), Enhancement (E), Preservation (P), Mitigation Bank/In-lieu fee (B)

Page number(s) for similar information in the mitigation plan, if available: _____

7i. For all filling activities identified in 7h, describe the source and nature of the fill material, the amount in cubic yards that will be used, and how and where it will be placed into the wetland. [help]

N/A

7j. For all excavating activities identified in 7h, describe the excavation method, type and amount of material in cubic yards you will remove, and where the material will be disposed. [help]

N/A

Part 8–Waterbodies (other than wetlands): Impacts and Mitigation

In Part 8, "waterbodies" refers to non-wetland waterbodies. (See Part 7 for information related to wetlands.) [help]

☐ Check here if there are waterbodies on or adjacent to the project area. (If there are none, skip to Part 9.)

8a. Describe how the project is designed to avoid and minimize adverse impacts to the aquatic environment. [help]

☐ Not applicable

The Project was designed to avoid the majority of the delineated ephemeral drainages and their buffers. However, a small number of crossings of delineated ephemeral drainages by roads and collector lines will occur. These crossings were designed to include the minimum number and size of crossings possible with the design.

The attached Figure 3 shows where the proposed stream crossings will occur. The crossings include low water crossings and culverts as shown in the figures. Trenched collector lines will be installed in the same footprint as the low water crossings and culverts but adjacent to the permanent roadways.

In addition to minimizing the number of crossing locations, adverse impacts will be avoided through the use of best management practices including staging of materials and equipment to prevent contamination of waters of the state, installation and maintenance of erosion and sediment control measures, and following of all requirements in the Project's ESCP, Construction SWPPP, Permanent Stormwater Control Plan, and Vegetation and Weed Management Plan. Areas of temporary impacts will be restored to the natural, pre-project channel dimensions and re-vegetated appropriately in compliance with the Vegetation and Weed Management Plan.

Low water crossings and culverts will be designed to maintain natural drainage patterns and allow unimpeded flows of water and sediment, without creation of upstream ponding. Culverts will be sized for the 10-year, 24-hour storm event. Streams in the Transmission Line Corridor Siting Area will be fully-spanned, with no transmission line structures placed within the streams or their buffers.

8b. Will your project impact a waterbody or the area around a waterbody? [help]

☒ Yes ☐ No

8c. Have you prepared a mitigation plan to compensate for the project's adverse impacts to non-wetland waterbodies? [help]

- **If Yes**, submit the plan with the JARPA package and answer 8d.
- **If No, or Not applicable,** explain below why a mitigation plan should not be required.

☐ Yes ☒ No ☐ Don't know

If a mitigation plan is required, it will be prepared as part of the addendum to this JARPA that will be developed to document any potential jurisdictional impacts that may occur in the Transmission Line Corridor Siting Area and the remainder of the proposed area for impact within the Solar Array Siting Area requiring field delineation verification.

8d. Summarize what the mitigation plan is meant to accomplish. Describe how a watershed approach was used to design the plan.

- If you already completed 7g you do not need to restate your answer here. [help]

See response to 8c.

8e. Summarize impact(s) to each waterbody in the table below. [help]

Activity (clear, dredge, fill, pile drive, etc.)	Waterbody name[1]	Impact location[2]	Duration of impact[3]	Amount of material (cubic yards) to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
Road and collector crossing	Stream E Tributary 1 (upper)	Within ordinary high water marks	Permanent	9 yd^3	60 ft^2
Road and collector crossing	Stream G	Within ordinary high water marks	Permanent	15 yd^3	102 ft^2
Road and collector crossing	Stream E Tributary 2	Within ordinary high water marks	Permanent	15 yd^3	102 ft^2
Road and collector crossing	Stream E (upper)	Within ordinary high water marks	Permanent	151 yd^3	1,020 ft^2
Road and collector crossing	Stream G	Within ordinary high water marks	Permanent	9 yd^3	60 ft^2
Road and collector crossing	Spring Creek (upper)	Within ordinary high water marks	Permanent	151 yd^3	1,020 ft^2
Road and collector crossing	Spring Creek (lower)	Within ordinary high water marks	Permanent	151 yd^3	1,020 ft^2
Road and collector crossing	Spring Creek Tributary 1	Within ordinary high water marks	Permanent	15 yd^3	102 ft^2
Road and collector crossing	Spring Creek Tributary 3	Within ordinary high water marks	Permanent	15 yd^3	102 ft^2
Road and collector crossing	Stream E (lower)	Within ordinary high water marks	Permanent	151 yd^3	1,020 ft^2

[1] If no official name for the waterbody exists, create a unique name (such as “Stream 1”) The name should be consistent with other documents provided.
[2] Indicate whether the impact will occur in or adjacent to the waterbody. If adjacent, provide the distance between the impact and the waterbody and indicate whether the impact will occur within the 100-year flood plain.
[3] Indicate the days, months or years the waterbody will be measurably impacted by the work. Enter “permanent” if applicable.

8f. For all activities identified in 8e, describe the source and nature of the fill material, amount (in cubic yards) you will use, and how and where it will be placed into the waterbody. [help]

Fill material will include general subgrade fill, road base material, road surface material, coarse aggregate, corrugated metal pipe culverts, and cable-connected concrete armoring for armored low water crossings. All rock and soil fill will come from an approved on- or off-site quarry location. Material will be placed to maintain natural drainage pathways using typical heavy equipment such as tracked excavators, front-end loaders, and on- or off-road haul trucks.

8g. For all excavating or dredging activities identified in 8e, describe the method for excavating or dredging, type and amount of material you will remove, and where the material will be disposed. [help]

Excavation will include trench excavation for the collector lines and, where necessary, subgrade excavation for the road crossings. All material excavated will be utilized (e.g., refilling the trenches) or, if there is excess fill, it will be hauled to an approved upland location and utilized as part of the overall site grading and filling. Excavation will be completed using typical heavy equipment such as tracked excavators, front-end loaders, and on- or off-road haul trucks.

Part 9–Additional Information

Any additional information you can provide helps the reviewer(s) understand your project. Complete as much of this section as you can. It is ok if you cannot answer a question.

9a. If you have already worked with any government agencies on this project, list them below. [help]

Agency Name	Contact Name	Phone	Most Recent Date of Contact
EFSEC	Amí Hafkemeyer	360-664-1305	October 21, 2022
WDFW	Michael Ritter	509-380-3028	October 7, 2022
Ecology	Gary Graff	509-575-2616	October 25, 2022

9b. Are any of the wetlands or waterbodies identified in Part 7 or Part 8 of this JARPA on the Washington Department of Ecology's 303(d) List? [help]

- **If Yes,** list the parameter(s) below.
- If you don't know, use Washington Department of Ecology's Water Quality Assessment tools at: https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d.

☐ Yes ☒ No

N/A

9c. What U.S. Geological Survey Hydrological Unit Code (HUC) is the project in? [help]

- Go to http://cfpub.epa.gov/surf/locate/index.cfm to help identify the HUC.

170300030904 and 170300031005

9d. What Water Resource Inventory Area Number (WRIA #) is the project in? [help]

- Go to https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up to find the WRIA #.

The project is in WRIA 37, Lower Yakima

9e. Will the in-water construction work comply with the State of Washington water quality standards for turbidity? [help]

- Go to https://ecology.wa.gov/Water-Shorelines/Water-quality/Freshwater/Surface-water-quality-standards/Criteria for the standards.

☒ Yes ☐ No ☐ Not applicable

9f. If the project is within the jurisdiction of the Shoreline Management Act, what is the local shoreline environment designation? [help]

- If you don't know, contact the local planning department.
- For more information, go to: https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Shoreline-laws-rules-and-cases.

☐ Urban ☐ Natural ☐ Aquatic ☐ Conservancy ☒ Other: : N/A not in SMA

9g. What is the Washington Department of Natural Resources Water Type? [help]

- Go to http://www.dnr.wa.gov/forest-practices-water-typing for the Forest Practices Water Typing System.

☐ Shoreline ☐ Fish ☐ Non-Fish Perennial ☒ Non-Fish Seasonal

The waterways in the Project Area are listed as "unclassified" on the DNR website. The attached wetland and water delineation report describes the waterways onsite.

9h. Will this project be designed to meet the Washington Department of Ecology's most current stormwater manual? [help]

- **If No**, provide the name of the manual your project is designed to meet.

☒ Yes ☐ No

Name of manual: Stormwater Management Manual for Eastern Washington, 2019 version

9i. Does the project site have known contaminated sediment? [help]

- **If Yes**, please describe below.

☐ Yes ☒ No

N/A

9j. If you know what the property was used for in the past, describe below. [help]

Lands in the Solar Array Siting Project Area have historically been used for agricultural activities (primarily grazing with some crop cultivation), although the areas used for these activities have varied over time.

9k. Has a cultural resource (archaeological) survey been performed on the project area? [help]

- **If Yes**, attach it to your JARPA package.

☒ Yes ☐ No

9l. Name each species listed under the federal Endangered Species Act that occurs in the vicinity of the project area or might be affected by the proposed work. [help]

The U.S. Fish and Wildlife Service lists the following species as having the potential to be impacted by activities within the Project Area:

- Gray wolf (*Canis lupus*); endangered
- Yellow-billed cuckoo (*Coccyzus americanus*); threatened
- Bull trout (*Salvelinus confluentus*), threatened
- Monarch butterfly (*Danaus plexippus*); candidate
- Bald eagle (*Haliaeetus leucocephalus*); bird of conservation concern
- California gull (*Larus californicus*); bird of conservation concern
- Sage thrasher (*Oreoscoptes montanus*); bird of conservation concern
- Western grebe (*Aechmophorus occidentalis*); bird of conservation concern

9m. Name each species or habitat on the Washington Department of Fish and Wildlife's Priority Habitats and Species List that might be affected by the proposed work. [help]

The following habitats and species are listed in the PHS database as being within the Project Area:

- Burrowing owl (*Athene cunicularia*)
- Elk (*Cervus elaphus*)
- Ferruginous hawk (*Buteo regalis*)
- Riverine
- Shrubsteppe

Part 10–SEPA Compliance and Permits

Use the resources and checklist below to identify the permits you are applying for.

- Online Project Questionnaire at http://apps.oria.wa.gov/opas/.
- Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.
- For a list of addresses to send your JARPA to, click on agency addresses for completed JARPA.

10a. Compliance with the State Environmental Policy Act (SEPA). (Check all that apply.) [help]

- For more information about SEPA, go to https://ecology.wa.gov/regulations-permits/SEPA-environmental-review.

☐ A copy of the SEPA determination or letter of exemption is included with this application.

☒ A SEPA determination is pending with EFSEC (lead agency). The expected decision date is to be determined by EFSEC.

☐ I am applying for a Fish Habitat Enhancement Exemption. (Check the box below in 10b.) [help]

☐ This project is exempt (choose type of exemption below).

☐ Categorical Exemption. Under what section of the SEPA administrative code (WAC) is it exempt? _____

☐ Other: _____

☐ SEPA is pre-empted by federal law.

10b. Indicate the permits you are applying for. (Check all that apply.) [help]

LOCAL GOVERNMENT

Local Government Shoreline permits:

☐ Substantial Development ☐ Conditional Use ☐ Variance

☒ Shoreline Exemption Type (explain): Does not impact shorelines in Benton County, no permit needed.

Other City/County permits:

☐ Floodplain Development Permit ☒ Critical Areas Ordinance

STATE GOVERNMENT

Washington Department of Fish and Wildlife:

☒ Hydraulic Project Approval (HPA) ☐ Fish Habitat Enhancement Exemption – Attach Exemption Form

Washington Department of Natural Resources:

☐ Aquatic Use Authorization

Complete JARPA Attachment E and submit a check for $25 payable to the Washington Department of Natural Resources. **Do not send cash.**

Washington Department of Ecology:

☐ Section 401 Water Quality Certification

☒ Authorization to impact waters of the state, including wetlands (Check this box if the proposed impacts are to waters not subject to the federal Clean Water Act)

FEDERAL AND TRIBAL GOVERNMENT

United States Department of the Army (U.S. Army Corps of Engineers):

☐ Section 404 (discharges into waters of the U.S.) ☐ Section 10 (work in navigable waters)

United States Coast Guard:

For projects or bridges over waters of the United States, contact the U.S. Coast Guard at:

☐ Bridge Permit: D13-SMB-D13-BRIDGES@uscg.mil

☐ Private Aids to Navigation (or other non-bridge permits): D13-SMB-D13-PATON@uscg.mil

United States Environmental Protection Agency:

☐ Section 401 Water Quality Certification (discharges into waters of the U.S.) on tribal lands where tribes do not have treatment as a state (TAS)

Tribal Permits: (Check with the tribe to see if there are other tribal permits, e.g., Tribal Environmental Protection Act, Shoreline Permits, Hydraulic Project Permits, or other in addition to CWA Section 401 WQC)

☐ Section 401 Water Quality Certification (discharges into waters of the U.S.) where the tribe has treatment as a state (TAS).

Part 11–Authorizing Signatures

Signatures are required before submitting the JARPA package. The JARPA package includes the JARPA form, project plans, photos, etc. [help]

11a. Applicant Signature (required) [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities, and I agree to start work only after I have received all necessary permits.

I hereby authorize the agent named in Part 3 of this application to act on my behalf in matters related to this application. _____ (initial)

By initialing here, I state that I have the authority to grant access to the property. I also give my consent to the permitting agencies entering the property where the project is located to inspect the project site or any work related to the project. _____ (initial)

Lindsey Hesch		12/21/22
Applicant Printed Name	Applicant Signature	Date

Director, Permitting

11b. Authorized Agent Signature [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities and I agree to start work only after all necessary permits have been issued.

Paul Hicks, Senior Project Manager, Tetra Tech		12/21/2022
Authorized Agent Printed Name	Authorized Agent Signature	Date

11c. Property Owner Signature (if not applicant) [help]

Not required if project is on existing rights-of-way or easements (provide copy of easement with JARPA).

I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.

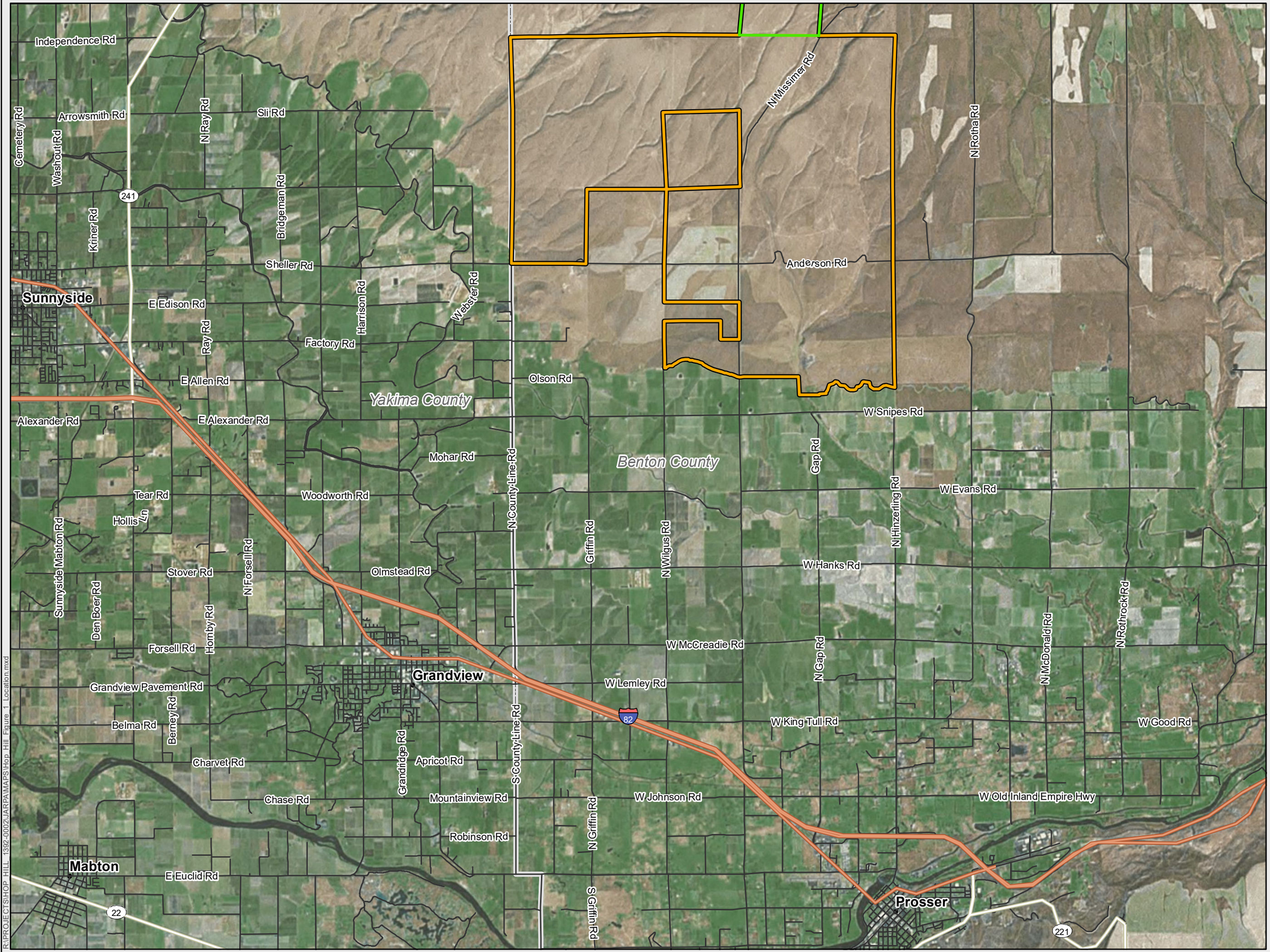
See JARPA Attachment A		
Property Owner Printed Name	Property Owner Signature	Date

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.

Hop Hill Solar and Storage Project

Figure 1
Project Location

Benton County, Washington



Siting Area
Solar Array Siting Area
Transmission Line Corridor Siting Area
County Boundary
Highway
Major Road
Local Road

N

0 0.5 1 2
Miles

NOT FOR CONSTRUCTION

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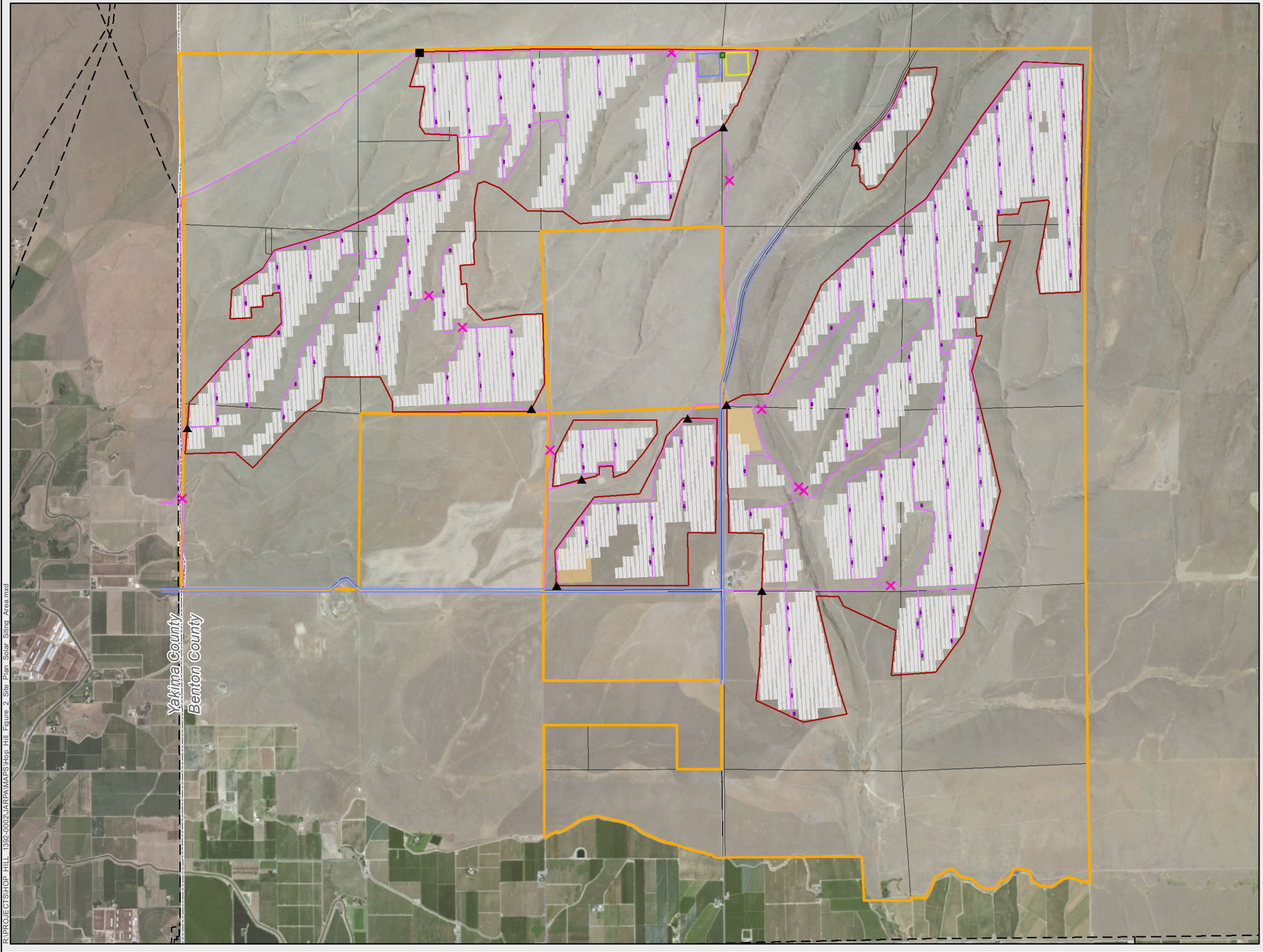
Hop Hill Solar and Storage Project

Figure 2
Preliminary Site Plan

Benton County, Washington



- Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate
- Road and Collector Crossing

Basemap Features

- Existing Transmission
- Project Parcels
- County Boundary

N

0 2,000 4,000

Feet

NOT FOR CONSTRUCTION

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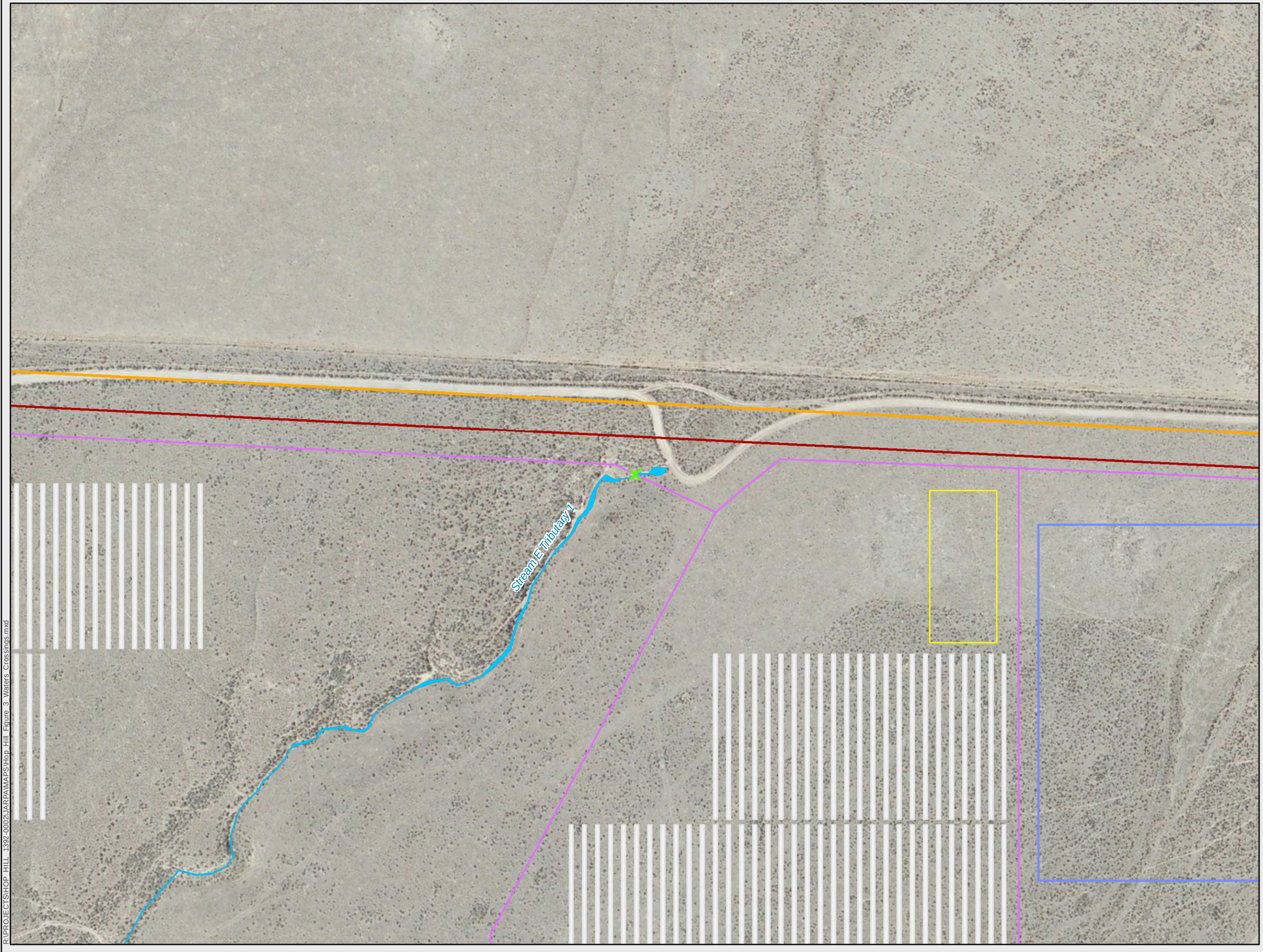


Hop Hill Solar and Storage Project

Figure 3
Crossings
Sheet 1 of 9

Benton County, Washington

Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate

Road and Collector Crossing

- Culvert
- LWC

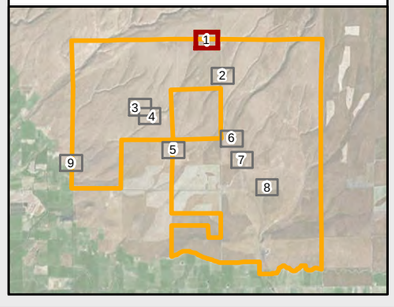
Delineated Waters

N

0 100 200

Feet

NOT FOR CONSTRUCTION



R:\PROJECTS\HOP HILL 1392-0002\JARPA\MAPS\Hop Hill Figure 3 Waters Crossings.mxd

Hop Hill Solar and Storage Project

Figure 3
Crossings
Sheet 2 of 9

Benton County, Washington

Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate

Road and Collector Crossing

- Culvert
- LWC

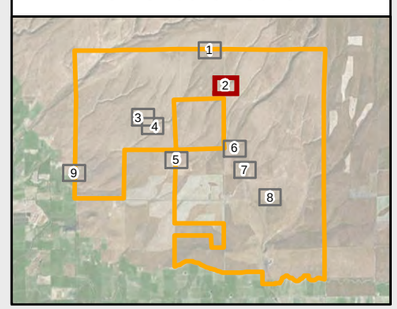
Delineated Waters

N

0 100 200

Feet

NOT FOR CONSTRUCTION



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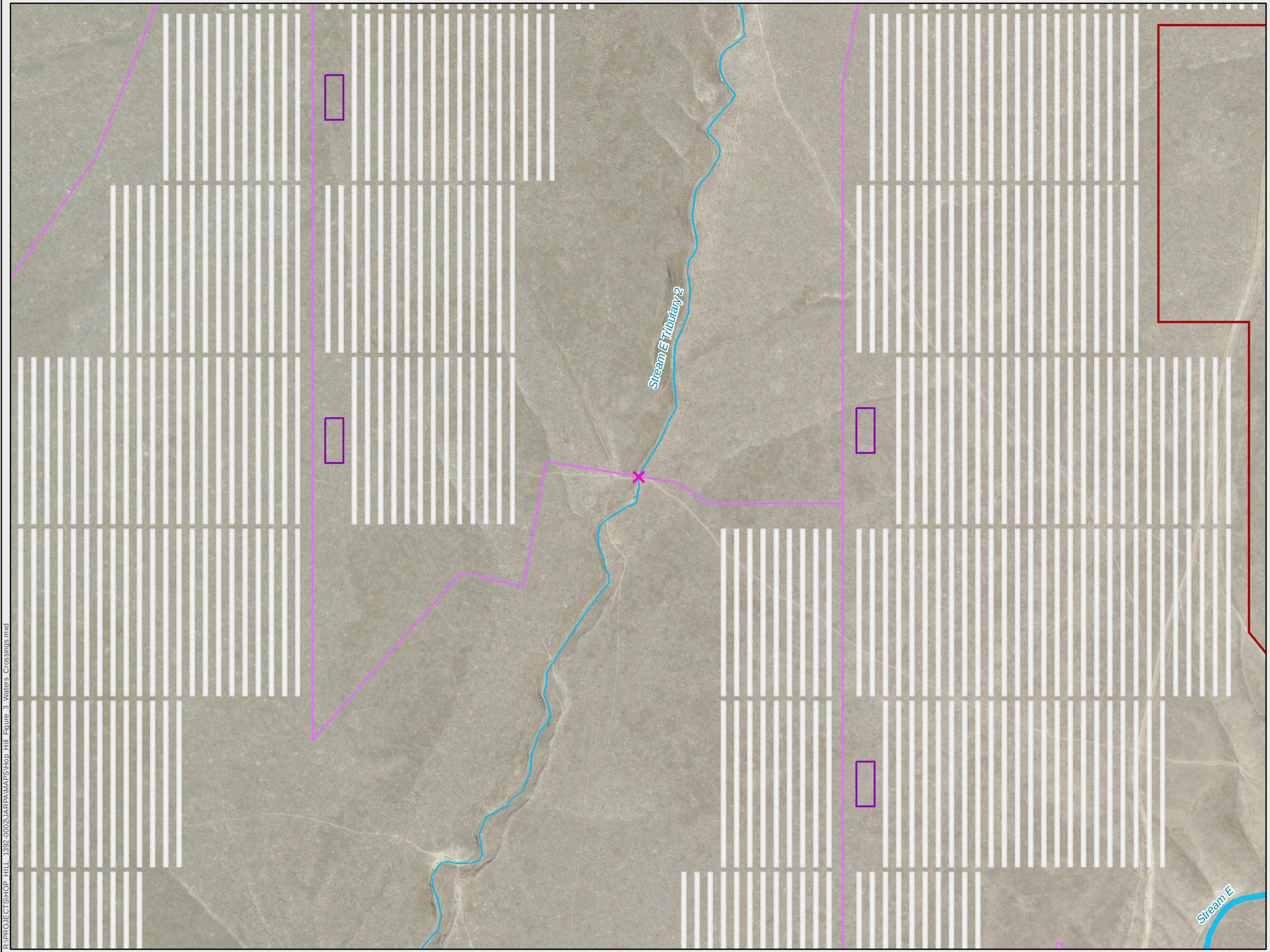


Hop Hill Solar and Storage Project

Figure 3
Crossings
Sheet 3 of 9

Benton County, Washington

- Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate

Road and Collector Crossing

- Culvert
- LWC

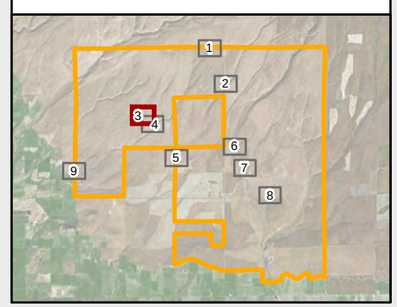
- Delineated Waters

N

0 100 200

Feet

NOT FOR CONSTRUCTION



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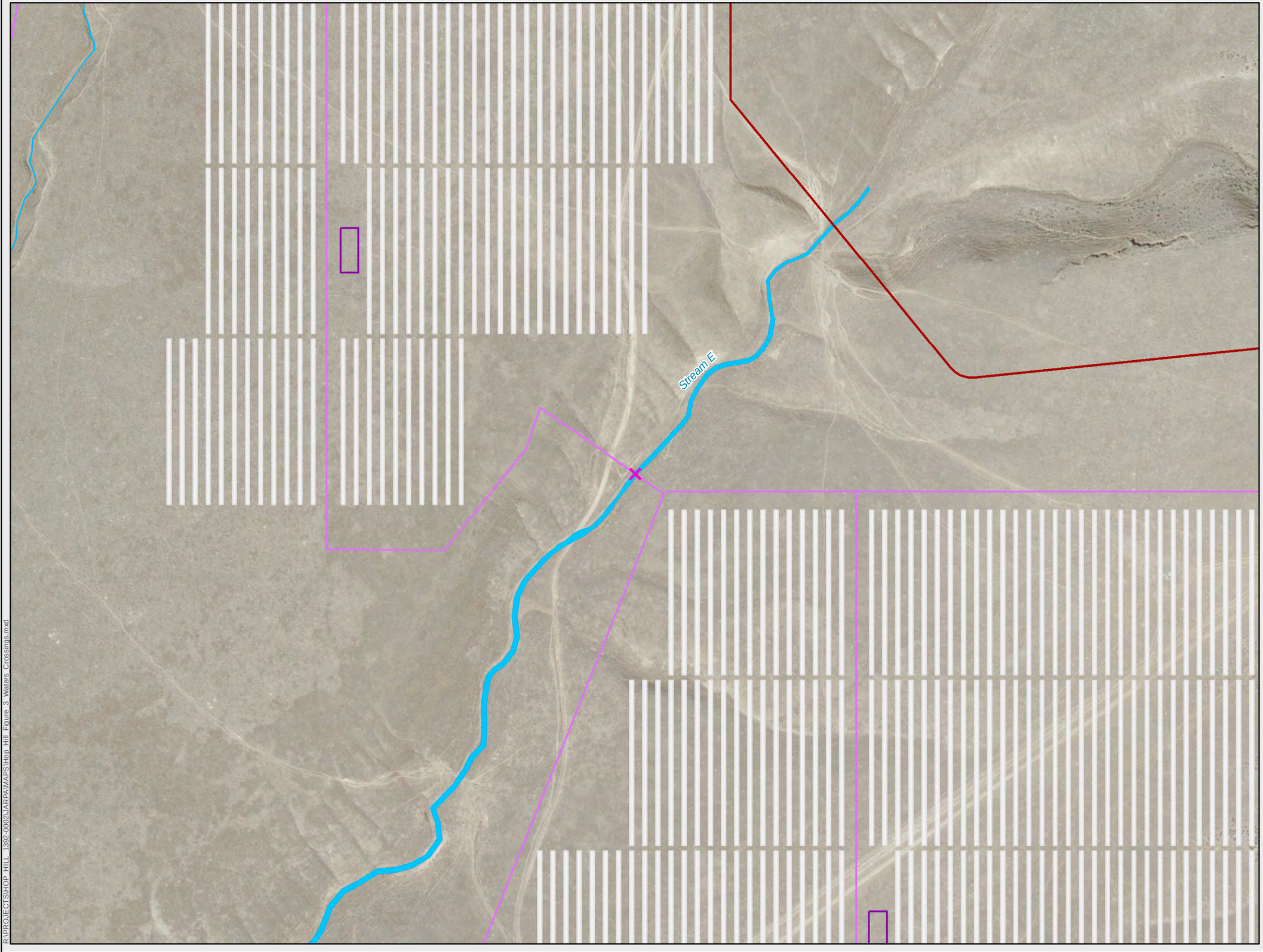
Hop Hill Solar and Storage Project

Figure 3
Crossings
Sheet 4 of 9

Benton County, Washington



- Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate

Road and Collector Crossing

- Culvert
- LWC

- Delineated Waters

N

0 100 200

Feet

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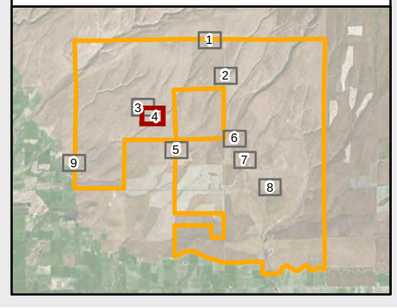

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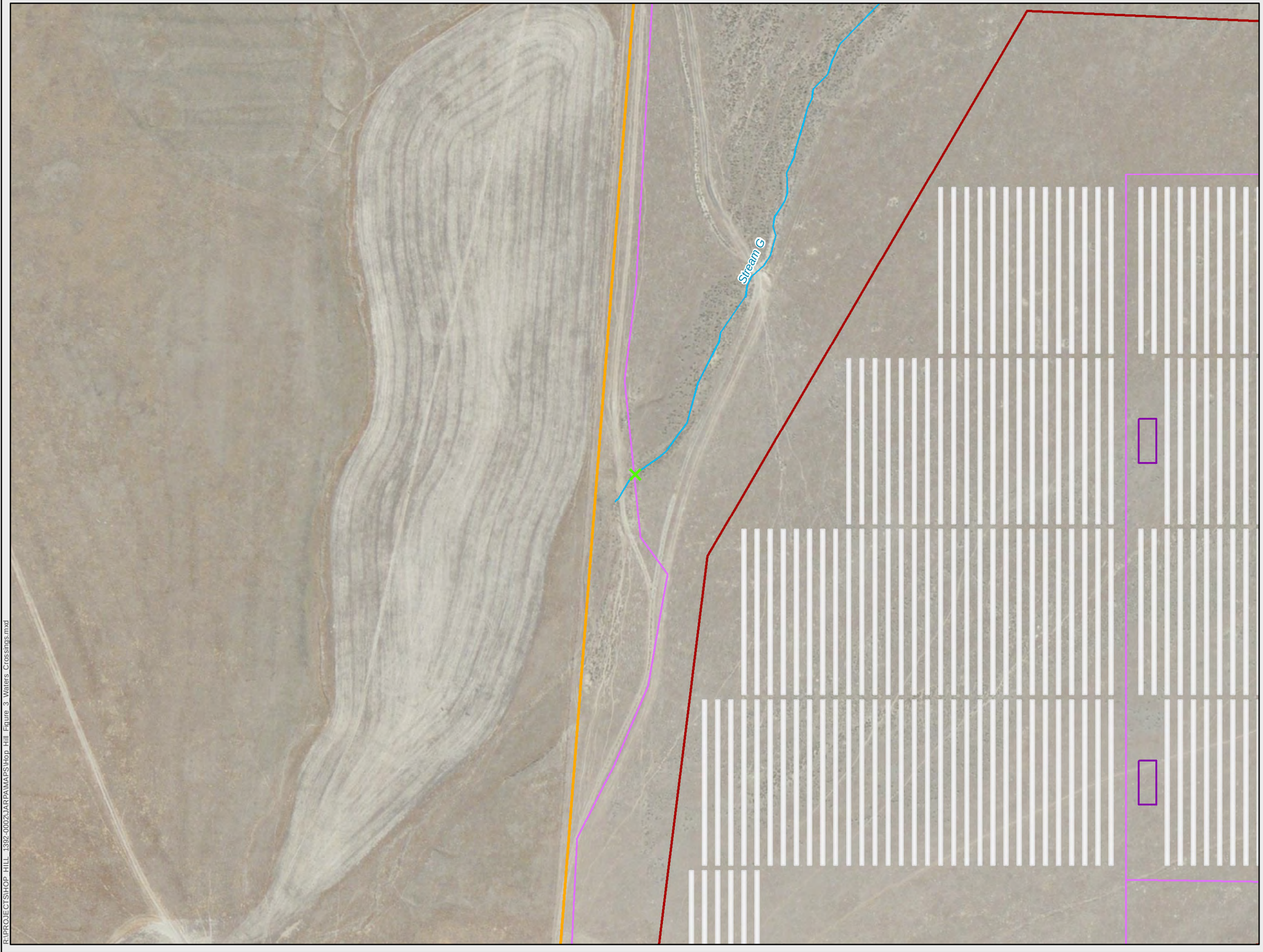

Hop Hill Solar and Storage Project

Figure 3
Crossings
Sheet 5 of 9

Benton County, Washington

Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate

Road and Collector Crossing

- Culvert
- LWC

Delineated Waters

N

0 100 200

Feet

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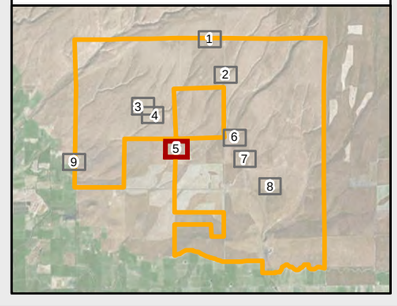

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Hop Hill Solar and Storage Project

Figure 3
Crossings
Sheet 6 of 9

Benton County, Washington

Spring Creek

- Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate

Road and Collector Crossing

- Culvert
- LWC

- Delineated Waters

N

0 100 200

Feet

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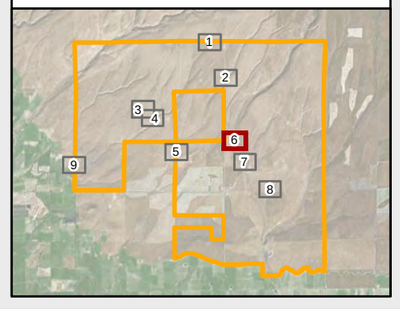

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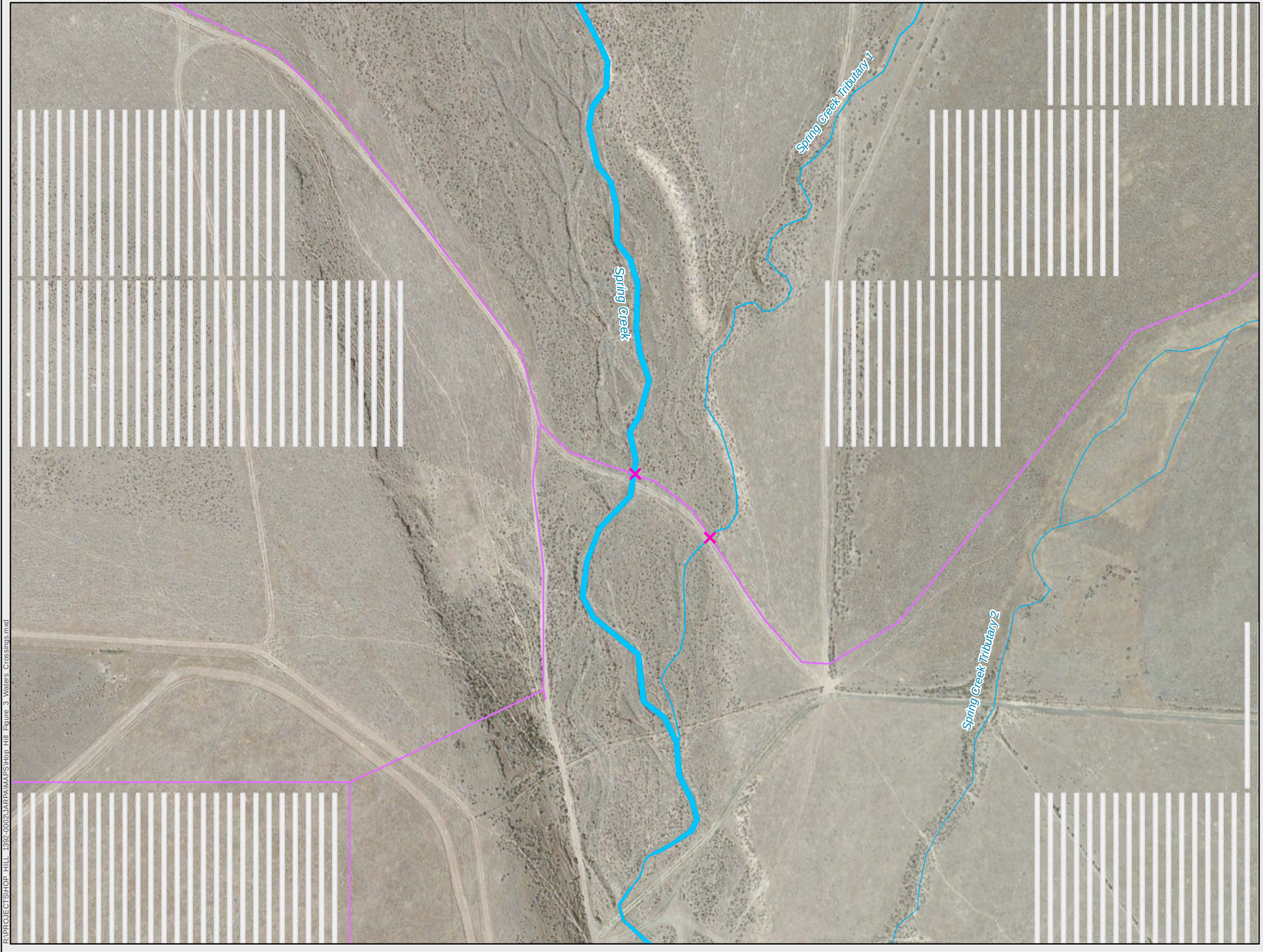

Hop Hill Solar and Storage Project

Figure 3
Crossings
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Benton County, Washington

- Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate

Road and Collector Crossing

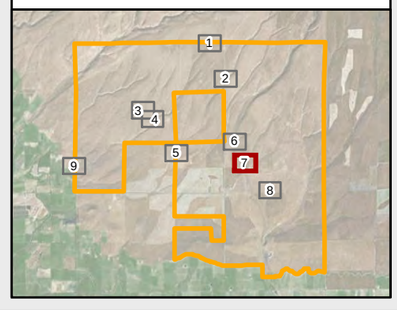
- Culvert
- LWC

- Delineated Waters

N

0 100 200
Feet

NOT FOR CONSTRUCTION



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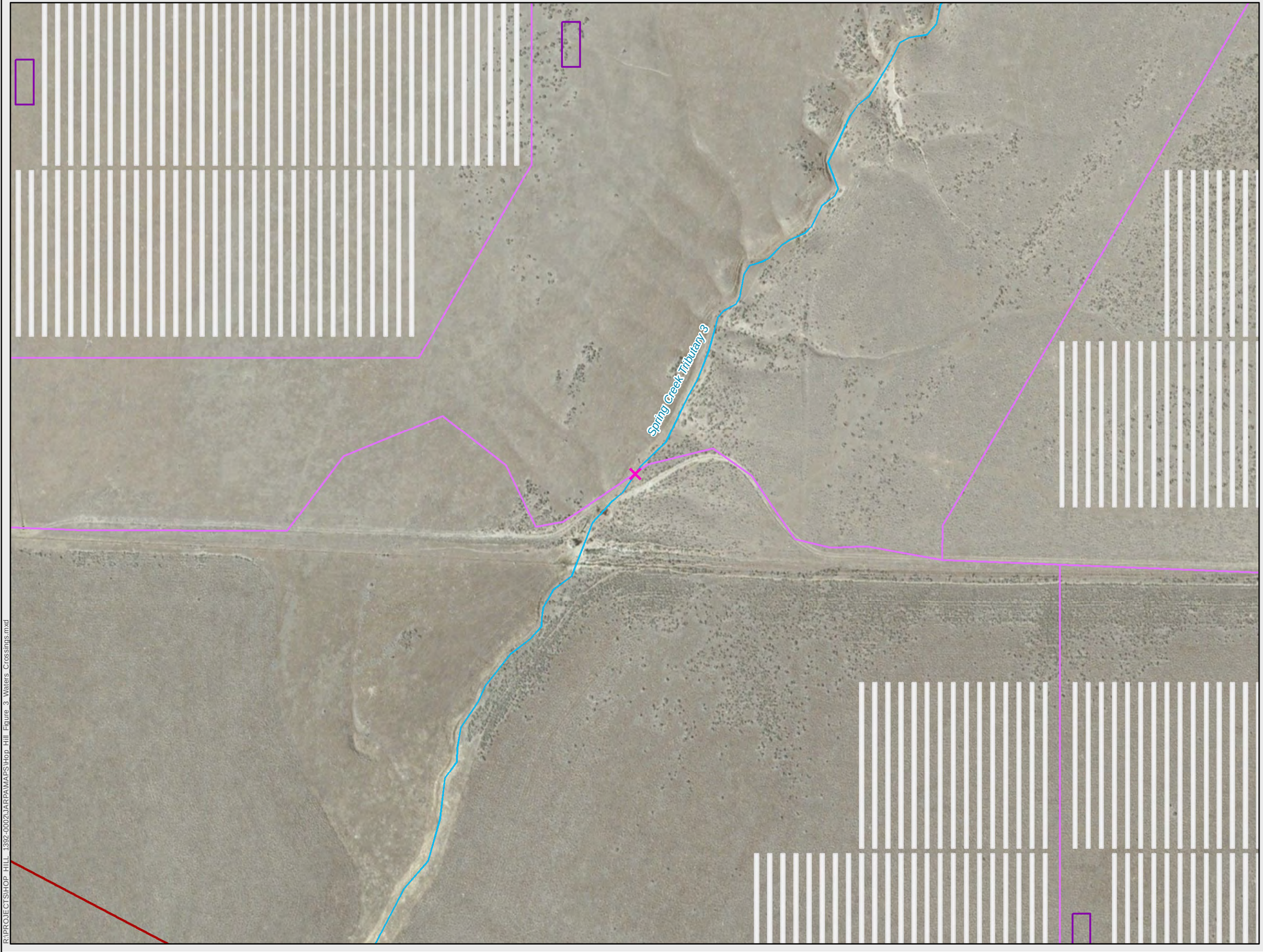

Hop Hill Solar and Storage Project

Figure 3
Crossings
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Benton County, Washington

Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate

Road and Collector Crossing

- Culvert
- LWC

Delineated Waters

N

0 100 200

Feet

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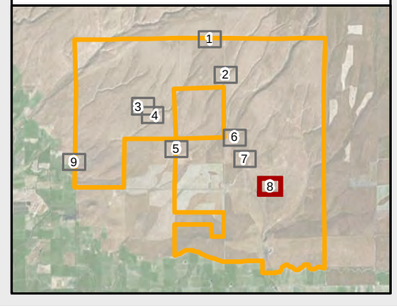

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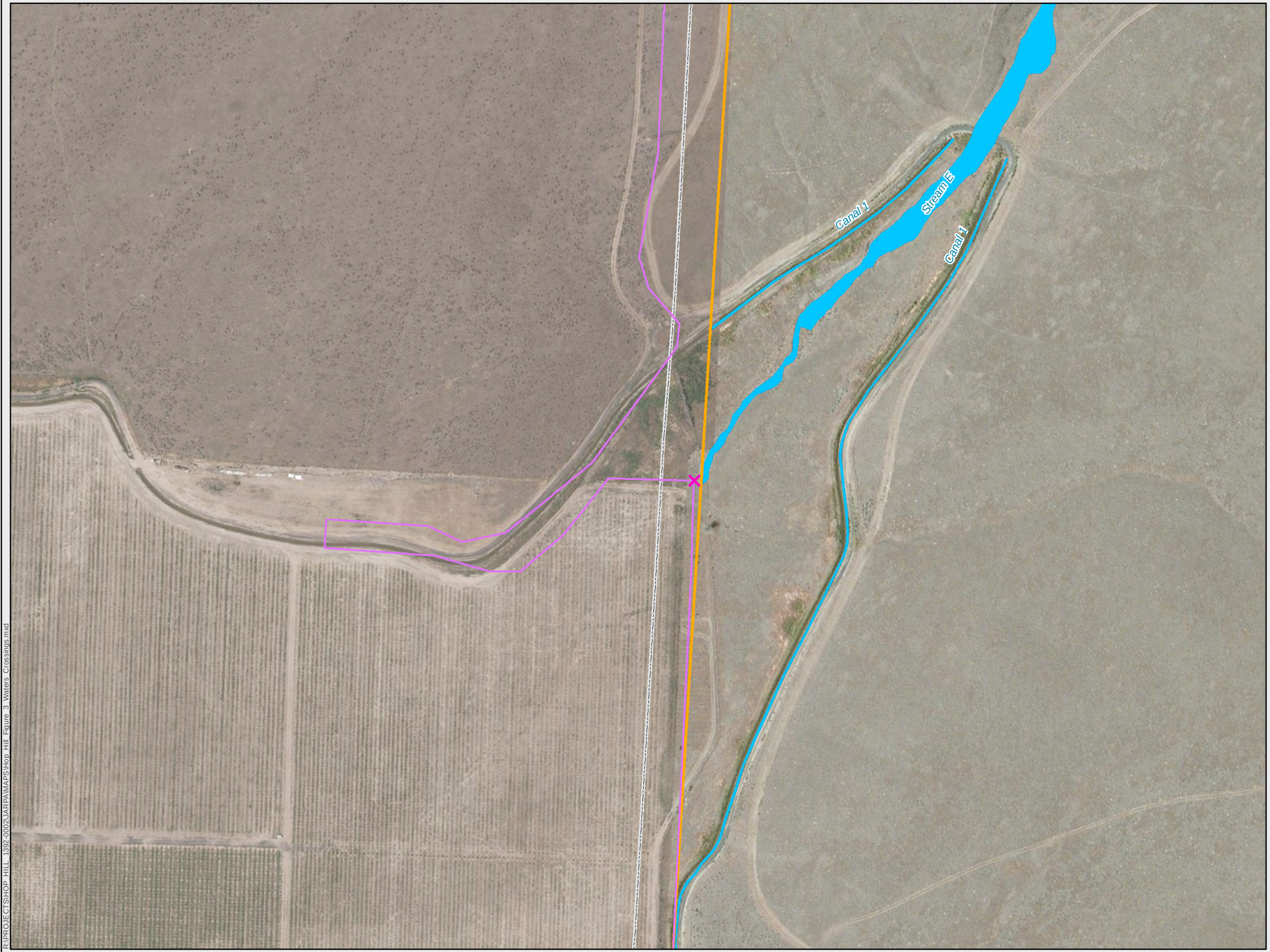


Hop Hill Solar and Storage Project

Figure 3
Crossings
Sheet 9 of 9

Benton County, Washington

- Solar Array Siting Area

Proposed Project Components

- Solar Array
- Power Conversion Systems
- Perimeter Fence
- Project Service Road
- Road Improvement
- O&M Structure
- Collector Substation
- Battery Energy Storage System
- Gravel Parking Area
- Temporary Laydown Area
- Site Entrance Gate
- Access Gate

Road and Collector Crossing

- Culvert
- LWC

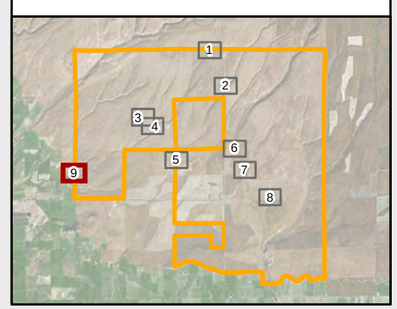
- Delineated Waters

N

0 100 200

Feet

NOT FOR CONSTRUCTION



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ATTACHMENT P: WETLAND AND NON-WETLAND WATERS DELINEATION REPORT

Hop Hill
Wetland and Non-Wetland Waters Delineation Report

SEPTEMBER 2022

PREPARED FOR

HOHI bn LLC

PREPARED BY

SWCA Environmental Consultants

HOP HILL WETLAND AND NON-WETLAND WATERS DELINEATION REPORT
TOWNSHIP 10 NORTH, RANGE 24 EAST, MULTIPLE SECTIONS AND PARCELS, BENTON COUNTY, WASHINGTON

Prepared for

HOHI bn LCC
13123 E Emerald Coast Parkway, Suite B#158
Inlet Beach, Florida 32461
Attn: Chris Wissel-Tyson

Prepared by

SWCA Environmental Consultants
1800 NW Upshur Street, Suite 100
Portland, Oregon 97209
(503) 224-0333
www.swca.com

SWCA Project No. 69535

September 2022

CONTENTS

Appendices

Figures

Tables

INTRODUCTION

SWCA Environmental Consultants (SWCA) conducted an on-site wetland and non-wetland waters delineation for HOHI, bn LLC (HOHI or Applicant), a subsidiary of BrightNight LLC. The project is located in in Benton County, Washington, approximately 11 miles north of the city of Prosser (Figure 1). The proposed solar array siting area covers approximately 11,180 acres and includes the parcels shown on Figure 2 and listed in Table 1. . The solar array siting area is in Sections 7 to 11, 14, 15, 17 to 23, 26 to 28, and 33 to 35, Township 10 North, Range 24 East, Willamette Meridian. The site is west of N Crosby Road and north of W Snipes Road. The centroid latitude and longitude of the site are 46.345761 and -119.813279. Fieldwork was conducted on June 28 to July 1, 2022, by Jessalynn Spears, Wetland Scientist.

The solar array siting area is characterized by rural rangeland and agricultural lands with limited residential or commercial development. The Applicant is considering various design layouts for the solar arrays within the solar array siting area and is in the process of narrowing down the final project area (approximately 5,000 acres within the siting area), which will be based on the results of geotechnical investigations; avoidance of wetlands, waters, and other sensitive natural and cultural resources; and the overall slope and aspect of the project.

The purpose of this report is to summarize all wetlands and non-wetland waters delineated within the solar array siting area that could constrain development or require additional approvals, including all critical areas designated under Benton County's Critical Areas Ordinance (CAO) (Benton County Code [BCC] Chapter 15).

Table 1. Solar Array Siting Area Parcel Lot Summary

Township	Range	Section	Parcel	Acres
10 North	24 East	07	107040000000000	617
		08	108041000000000	498
		09	109040000000000	656
		10	110040000000000 (partial)	648
		11	110040000000000 (partial)	634
		14	113040000000000	663
		15	114040000000000	574
			115040000000000	72
		17	116041000002000	673
		18	117040000000000	628
			118041000000000	3
		19	119040000000000	633
		21	121040000000000	627
		22	122040000000000	645
		23	123040000000000	661
		26	125040000000000	665
		27	126040000000000	632
		28	127040000000000	315

Township	Range	Section	Parcel	Acres
			128043000001000	79
			128041000000000	39
		33	133041000000000	230
		34	134041000000000	354
		35	135041000001000	419
		multiple	Road ROW	215
			Total	**11,180**

METHODS

The methodology used for determining the presence of wetlands and delineating wetland boundaries followed the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008), used by both the Washington Department of Ecology (Ecology) and USACE. *The National Wetland Plant List* (USACE 2020) was used to assign wetland indicator status for the appropriate region. Each stream was visited at one to three sections to confirm presence, width, and features, and delineate a portion of the ordinary high water lines (OHMLs; minimum of 50 feet delineated). The OHWLs of the streams were spot delineated based on the *Corps' Regulatory Guidance Letter 05-05: Ordinary High Water Mark Identification* (USACE 2005). Stream mapping within the solar array siting area , once confirmed with site visits and initial delineation, was completed with digitized mapping of stream centerline and field verified widths using Google Earth imagery and ArcGIS software. Features outside the solar array siting area and within a 250-foot buffer were visually surveyed to ensure no wetland and water features were missed and ensure avoidance. Features outside the 250-foot buffer were not recorded, as they are outside the potentially buildable area and beyond all Benton County Code buffers.

Soils, vegetation, and any indicators of hydrology were recorded at six sample plot locations within the solar array siting area on standardized wetland determination data forms (Appendix A) to document site conditions. Soil colors were identified using a Munsell Soil Color Chart (X-Rite 2000). Sample plot locations and photograph locations were collected using a Juniper Geode Global Navigation Satellite System (GNSS) receiver paired with a Samsung computer tablet using Collector for ArcGIS software capable of submeter accuracy. These data were imported into geographic information system (GIS) software to produce the report maps. Ground-level site photographs are provided in Appendix B.

Per Washington Administrative Code 463-60-333 and Benton County Code (BCC) 15.04.101b, SWCA rated the delineated wetlands using the *Washington State Wetland Rating System for Eastern Washington, 2014 Update* (Hruby 2014) and determined their scores for habitat, water quality, and hydrologic functions. Wetland rating forms and figures are provided in Appendix C. Wetland categories are used to identify the wetland buffer width required to protect the functionality of each wetland (BCC 15.04.040).

Data Sources

The information presented in this report was obtained through desktop review of the following publicly available data sources, followed by a field visit to confirm wetlands and waters within the solar array siting area.

- Google Earth aerial imagery (Google Earth 2022)
- Benton County Code (Benton County 2022)
- Natural Resources Conservation Service (NRCS) soils data (NRCS 2022a)
- National Oceanic and Atmospheric Administration (NOAA) WETS and precipitation data. (NOAA 2022)
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) online mapping tool (USFWS 2022a)
- USFWS Critical Habitat for Threatened and Endangered Species online mapping tool (USFWS 2022b)
- USFWS National Wetlands Inventory (NWI) data (USFWS 2022c)
- Washington State Parcel data (Washington State Geospatial Portal 2022)
- Washington Department of Fish and Wildlife (WDFW), Priority Habitats and Species Maps (WDFW 2022)
- Washington Department of Natural Resources (WADNR) Forest Practices Application Review System (FPARS) mapper (WADNR 2022)
- U.S. Environmental Protection Agency (EPA) Ecoregions (EPA or Thorson et al. 2003)
- U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map

SITE DESCRIPTION

Topography and Plant Community

The topography of the solar array siting area consists of is rolling hillslopes generally facing southwest with elevations highest in the northeastern portion of the solar array siting area (2,300 feet above mean sea level [amsl]) and lowest (1,200 amsl) in the southwestern portion. The solar array siting area encompasses many undeveloped parcels, all which have been used as cattle pasture and rangeland. Three single-family dwellings and outbuildings and facilities associated with the cattle ranch are situated at the intersection of four parcels.

The EPA Level III ecoregion encompassing the solar array siting area is the Columbia Plateau, which is typically dominated by arid sagebrush steppe and grassland (Thorson et al. 2003). The USGS National Landcover Dataset (NLCD) (USGS 2019), and field observations from previous habitat surveys (ERM 2021; SWCA 2022) confirmed the entire solar array siting area and the land surrounding is dominated by weedy sagebrush steppe and grassland. Dominant species include big sagebrush (*Artemisia tridentata*), downy cheatgrass (*Bromus tectorum*), and filaree (*Erodium cicutarium*).

Precipitation

The closest WETS climate station is the Prosser, Washington, station (NOAA 2022). Observed precipitation for the water year starting October 1, 2021, compared to normal from 1991 to 2022 (Appendix D), were slightly above normal (Table 2). Although the precipitation for the 3 months prior to the field visit was well above normal, the precipitation for June was 0.54 inch above normal and the preceding 2 weeks was 0.16 inch below normal. Given the near normal precipitation in general and slightly below normal precipitation just before the field visit, the earlier unusual precipitation patterns likely did not affect the SWCA scientist's ability to observe hydrology during the field visit.

Table 2. Observed and Normal Monthly Precipitation for Water Year Preceding July 1, 2022

Month	Average (inches)	30% Chance Will Have (inches)		Observed Precipitation (inches)	Within Normal Range?
		Less Than	More Than		
October	0.77	0.37	0.95	0.81	105%
November	0.86	0.53	1.07	1.57	183%
December	1.33	0.72	1.56	0.87	65%
January	1.24	0.68	1.32	0.48	39%
February	0.90	0.46	1.01	0.07	8%
March	0.69	0.39	0.77	0.63	91%
April	0.74	0.27	0.76	1.40	189%
May	0.88	0.40	0.89	1.70	193%
June	0.68	0.29	1.22	1.22	179%
Water Year through June 30, 2022	**8.09**	**4.11**	**9.04**	**8.75**	**108%**

Note: Monthly averages based on the climate period 1991–2020.
Source: NOAA (2022).

Existing Wetland Mapping

There are no mapped wetlands and several mapped streams within the solar array siting area according to the USFWS (2022c) NWI (Figure 3). Stream presence for a majority of mapped streams was confirmed by field survey. A couple of mapped stream features in the south-central portion of the site did not to meet the definition of stream (Appendix B). The three wetlands identified in this report were not mapped by publicly available sources.

Soils

According to the NRCS Benton County, Washington, area soil survey map (NRCS 2022a), there are 26 soil units within the solar array siting area (Table 3; Figure 4). None are hydric, but one has hydric inclusions: Scooteney silt loam has 2% Wamba hydric inclusions, is a well-drained soil, and is not conducive to supporting wetlands. Two soils are mapped where wetlands were identified: Finley stony fine sandy loam and Shano silt loam. They both have 0% hydric inclusions, are well-drained soils, and are not known to form wetlands (NRCS 2022b).

Table 3. Soil Map Units

Map Unit Symbol	Map Unit Name	Hydric	Hydric Inclusion
BmAB	Burke silt loam, 0 to 5 percent slopes	No	No
BmB	Burke silt loam, 2 to 5 percent slopes	No	No
BmC	Burke silt loam, 5 to 8 percent slopes	No	No
BmE3	Burke silt loam, 15 to 30 percent slopes, severely eroded	No	No
BnB	Burke silt loam, shallow, 0 to 5 percent slopes	No	No
BoD2	Burke very fine sandy loam, 0 to 15 percent slopes, eroded	No	No
FfE	Finley stony fine sandy loam, 0 to 30 percent slopes	No	No
KnE	Kiona very stony silt loam, 0 to 30 percent slopes	No	No
KnF	Kiona very stony silt loam, 30 to 65 percent slopes	No	No
ReB	Ritzville silt loam, 0 to 5 percent slopes	No	No
ReE3	Ritzville silt loam, 15 to 30 percent slopes, severely eroded	No	No
ReF	Ritzville silt loam, 30 to 65 percent slopes	No	No
RfD2	Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded	No	No
ScAB	Scooteney silt loam, 0 to 5 percent slopes	No	Wamba
ShAB	Shano silt loam, 0 to 5 percent slopes	No	No
ShB	Shano silt loam, 2 to 5 percent slopes	No	No
ShD	Shano silt loam, 8 to 15 percent slopes	No	No
SmB	Shano silt loam, deep, 2 to 5 percent slopes	No	No
SmC	Shano silt loam, deep, 5 to 8 percent slopes	No	No
SnD2	Shano very fine sandy loam, 0 to 15 percent slopes, eroded	No	No
SnE2	Shano very fine sandy loam, 15 to 30 percent slopes, eroded	No	No
SsE	Starbuck rocky silt loam, 5 to 45 percent slopes	No	No
WsB	Willis silt loam, 0 to 5 percent slopes	No	No
WsE3	Willis silt loam, 15 to 30 percent slopes, severely eroded	No	No
WsF	Willis silt loam, 30 to 65 percent slopes	No	No
WtD	Willis silt loam, shallow, 0 to 15 percent slopes	No	No

Source: NRCS (2022a, 2022b).

RESULTS

Uplands

Upland areas were dominated by shrubsteppe and grassland. Dominant plant species observed in upland areas included big sagebrush, downy cheatgrass, filaree, wall barley (*Hordeum murinum*), Great Basin lyme grass (*Leymus cinereus*), tall hedge-mustard (*Sisymbrium altissimum*), and western tansymustard (*Descurainia pinnata*), with some scattered lupine (*Lupinus* sp.), phlox (*Phlox* spp.), desert-parsley (*Lomatium* sp.), and goosefoot (*Chenopodium* sp). Soils were dark brown silt loam with no redoximorphic features and very rocky, with rock refusal around 6 inches below ground surface. Soils were dry and displayed no primary or secondary indicators of hydrology.

Wetlands

Three wetlands were observed within the solar array siting area (Figures 5 to 13).

Wetland A (0.01 acre / 556.59 square feet)

Wetland A (Figure 14) is classified as a palustrine emergent wetland (PEM) using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979), and Riverine/Category III using the *Washington State Wetland Rating System for Eastern Washington* (Hruby 2014). Wetland A's hydrology is artificial, provided by cattle water troughs that are fed by a pipe that exits the ground and continuously drips into the northwesternmost trough, flows through the subsequent troughs, and slowly drips into the wetland from an exit pipe. The wetland extends from the troughs along a stream bed depression until water saturation dries and can no longer support wetland vegetation.

Wetland A vegetation was dominated by American-brooklime (*Veronica americana*) and spotted lady's-thumb (*Persicaria maculosa*). Soils in the wetland displayed the Redox Dark Surface (F6) hydric soil indicator. Wetland hydrology indicators included Surface Water (A1) and Saturation (A3) to the surface. Two small (less than 1-foot-diameter) surface water pools were identified under emergent vegetation cover with lesser duckweed (*Lemna minor*) in the water; the remainder of the wetland was saturated to the surface. The wetland boundary is defined by a distinct change in slope, elevation, and plant community, as well as a change in soils and hydrology.

Wetland B (0.03 acre / 1,499.51 square feet)

Wetland B (Figure 15) is classified as PEM (Cowardin et al. 1979), and Riverine/Category III (Hruby 2014). Wetland B's hydrology is artificial, provided by cattle water troughs that are fed by a pipe that exits the ground and continuously drips into the northernmost trough, flows through the subsequent troughs, and slowly drips into the wetland from an exit pipe. The wetland extends from the troughs along a stream bed depression until water saturation dries and can no longer support wetland vegetation.

Wetland B vegetation was dominated by American-brooklime and spotted lady's-thumb. Soils in the wetland were problematic, with almost 90% angular gravels with silt in between, and rock refusal at 2 inches. Therefore, the procedure for problematic soils was followed: 1) hydrophytic vegetation community presence was recorded, 2) primary indicators of hydrology were recorded, and 3) landscape setting in the stream bed that was appropriate for wetland formation was confirmed. Due to finding both angular and rounded gravels and evidence nearby of gravel reinforcement of stream banks it is presumed that additional gravels intended for bank reinforcement have disturbed the wetland soil, obscuring scientists' ability to observe the soil profile. This soil also likely qualifies as 4.b.3 Vegetated Sand and Gravel Bars within Floodplains, due to the wetland's location in the very rocky stream bed of an ephemeral portion of Spring Creek. This, in addition to the similarity to Wetland A, which did have hydric soil indicators, qualifies the soil to be considered hydric. Wetland hydrology indicators included Surface Water (A1), High Water Table (A2), and Saturation (A3) to the surface. Three small (less than 1-foot-diameter) surface water pools were identified under emergent vegetation cover with lesser duckweed in the water; the remainder of the wetland was saturated to the surface. The wetland boundary is defined by a distinct change in slope, elevation, and plant community, as well as a change in soils and hydrology.

Wetland C (0.03 acre / 1,144.57 square feet)

Wetland C (Figure 16) is classified as PEM (Cowardin et al. 1979), and Riverine/Category IV (Hruby 2014). Hydrology appears to be provided subsurface from a canal pipe that runs underground to connect

open water canals to the north and south of the wetland, parallel to the gravel road. Wetland C lies entirely within the OHWL of Stream E, which flows from the northeast to the southwest when water is present.

Wetland C vegetation was dominated by reed canary grass (*Phalaris arundinacea*) and tall scouring-rush (*Equisetum hyemale*). Soils in the wetland displayed the Redox Dark Surface (F6) hydric soil indicator. Wetland hydrology indicators included High Water Table (A2) and Saturation (A3) to the surface, with surface water visible 6 inches to the south of the wetland sample plot.

Waters

Seventeen streams and tributaries were delineated within the solar array siting area (Table 4) including one named stream, Spring Creek (see Figures 5 to 13).

Table 4. Waters with Ordinary High Water Line Indicators Observed in the Solar Array Siting Area

Stream ID	Length (linear feet / miles)
Canal 1	2,853.67 / 0.54
Spring Creek	18,222.82 / 3.45
Spring Creek Tributary 1	7,490.30 / 1.42
Spring Creek Tributary 2	7,775.12 / 1.47
Spring Creek Tributary 3	5,357.14 / 1.01
Spring Creek Tributary 4	1,515.64 / 0.29
Stream A	442.35 / 0.08
Stream B	784.14 / 0.15
Stream C	477.67 / 0.09
Stream D	4,230.47 / 0.80
Stream E	14,994.92 / 2.84
Stream E Tributary 1	6,895.69 / 1.31
Stream E Tributary 2	9,344.50 / 1.77
Stream E Tributary 3	5,661.03 / 1.07
Stream E Tributary 4	7,153.89 / 1.35
Stream F	3,921.57 / 0.74
Stream F Tributary 1	789.29 / 0.15
Stream G	2,397.60 / 0.45

Waters on site generally had the same width of 1 to 3 feet, with the exception of Spring Creek and Stream E, which had wider stream beds, between 10 and 30 feet wide, and braided channels below the OHWL. Streams flowed from the north-northeast to the south-southwest and were all dry at the time of survey. The streams were all classified as ephemeral based on the lack of submerged aquatic vegetation, obligate (OBL) wetland vegetation, or facultative wetland (FACW) vegetation within the stream channel. Substrate within the stream beds are silt and rounded cobbles. Each OHWL was delineated based on the bed and bank topography, natural scour line impressed on the bank, sediment sorting, and changes in plant community. Vegetation in the stream beds was downy cheatgrass and filaree, and a clear difference

in density was seen between the stream beds and riparian areas surrounding the streams and the big sagebrush–dominated stream banks.

Two sections of one canal exist in the far west edge of the solar array siting area. The canal enters the site from two points in the west, flowing east and then toward Wetland C, and is not seen resurfacing in the solar array siting area. The canal is approximately 4 feet wide, with silt substrate and dense reed canary grass, lamp rush (*Juncus effusus*), and blue grass (*Poa* sp.) lining the banks.

No fish-bearing streams are present in the solar array siting area. Waters buffers are 50 feet for streams with adjacent slopes of less than 10%, and 100 feet on parcels with streams with adjacent slopes of 10% or greater (BCC 15.15.40-2).

Wetland Rating and Buffer

Wetland rating forms and figures are provided in Appendix C. Wetlands A and B are rated as emergent riverine Category III wetlands and Wetland C is rated as emergent riverine Category IV wetland. Overall, the functionality of the wetlands is limited by the potential of the solar array siting area and landscape to provide functions due to the highly disturbed setting, simple structure, and low plant diversity of the wetlands. The site potentials of Wetlands A and B are rated as low for improving water quality and habitat, and moderate for hydrologic function; landscape potential is moderate for improving water quality and hydrologic, and low for habitat. The total habitat score of Wetlands A and B is 4. Wetland C's site potential and landscape potential are both rated as moderate for improving water quality and hydrologic function and low for habitat. Wetland C's total habitat score is 4. None of the wetlands have special characteristics. The buffer for Wetlands A and B is 60 feet and for Wetland C is 40 feet (BCC 15.04.040-1).

CONCLUSION

Three wetlands and 19 miles of ephemeral stream, including the named Spring Creek, were identified within the solar array siting area. Jurisdictional determination is the responsibility of the regulatory agencies.

All impacts are proposed to be avoided and would be well outside existing buffers. Any impacts to jurisdictional wetlands and/or buffers will require review by USACE, Ecology, and/or Benton County.

REQUIRED DISCLAIMER

This report documents the investigation, best professional judgment, and conclusions of the investigators. It is correct and complete to the best of our 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 Ecology.

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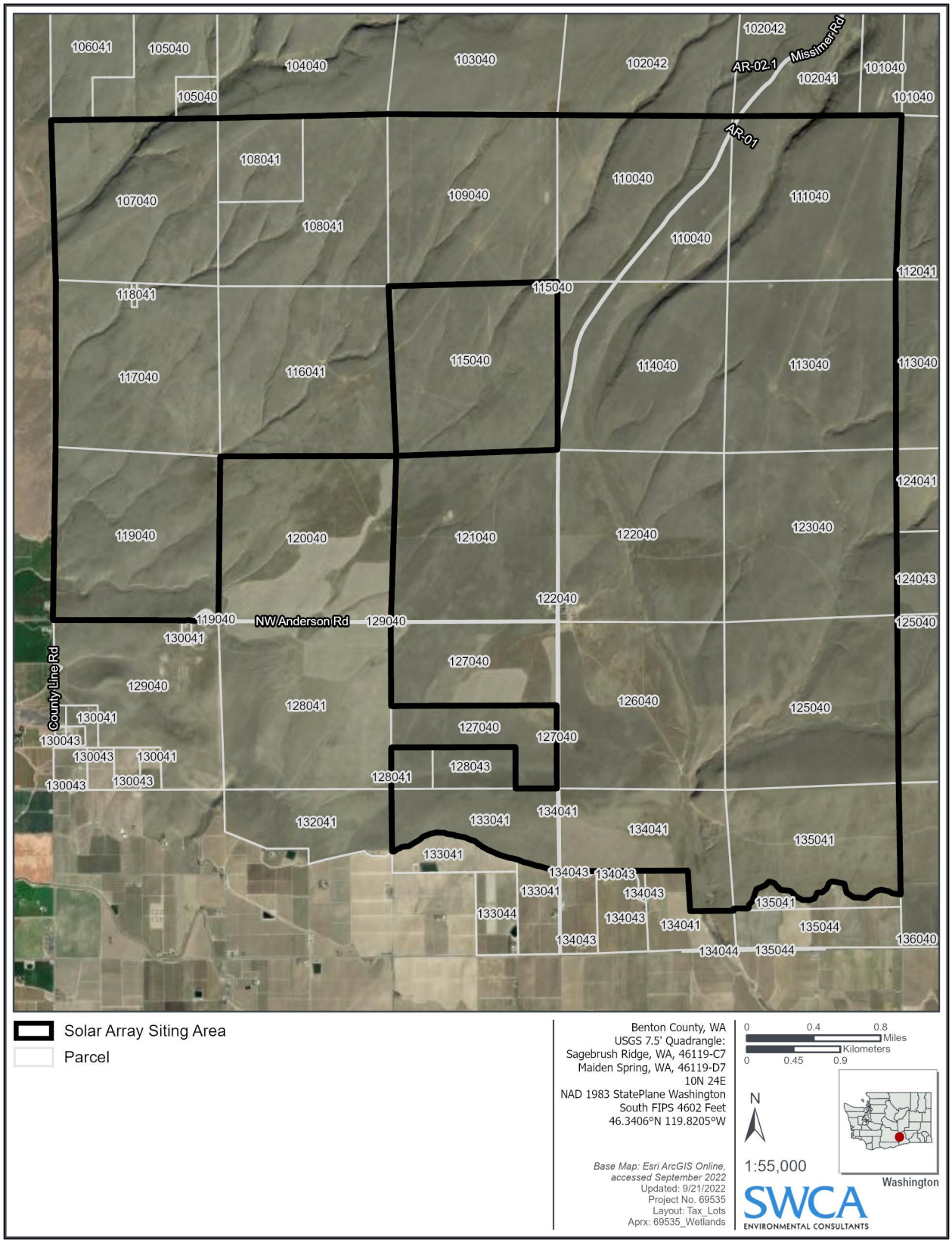

Figure 1. Parcel map (aerial base).

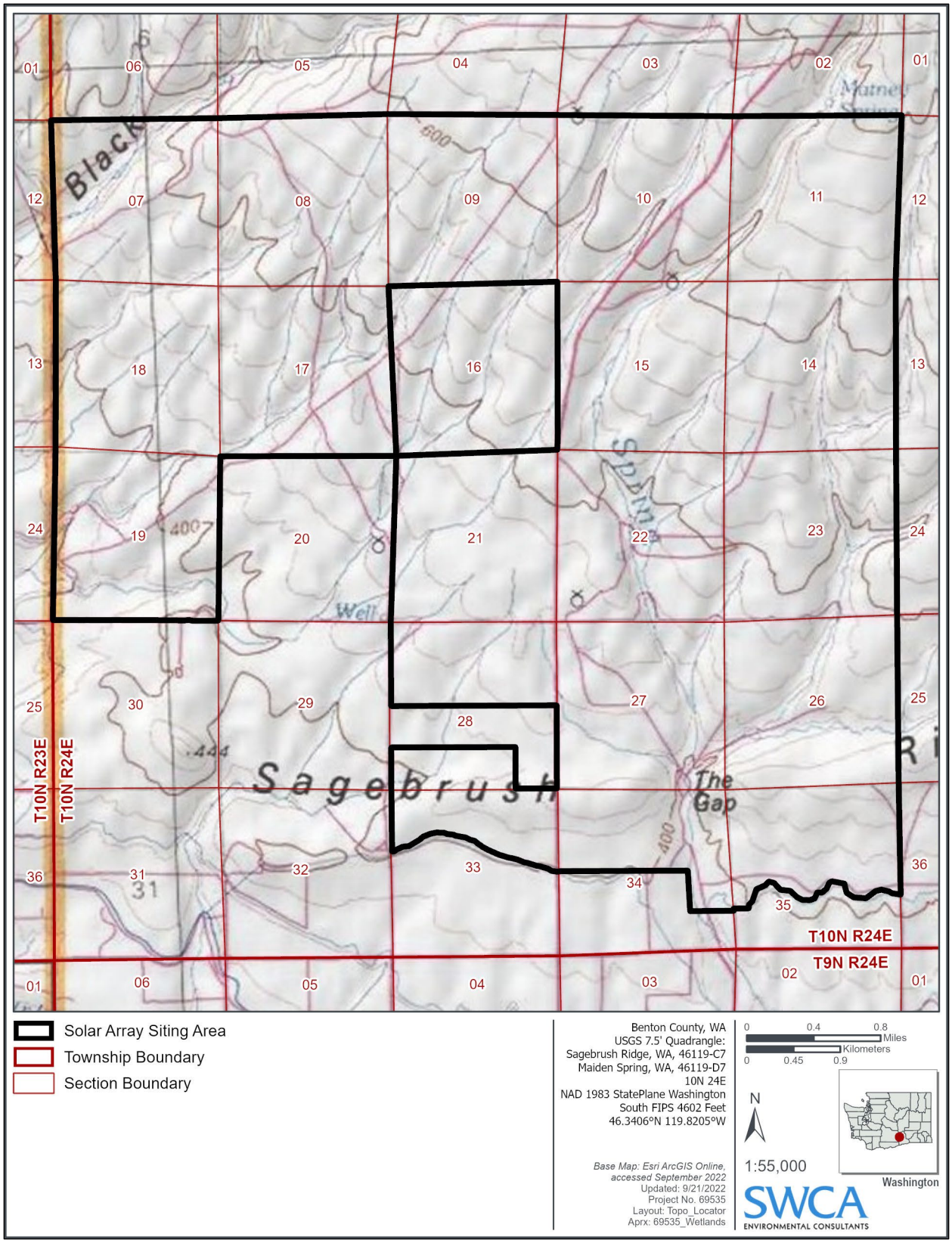

Figure 2. Parcel map (paper base).

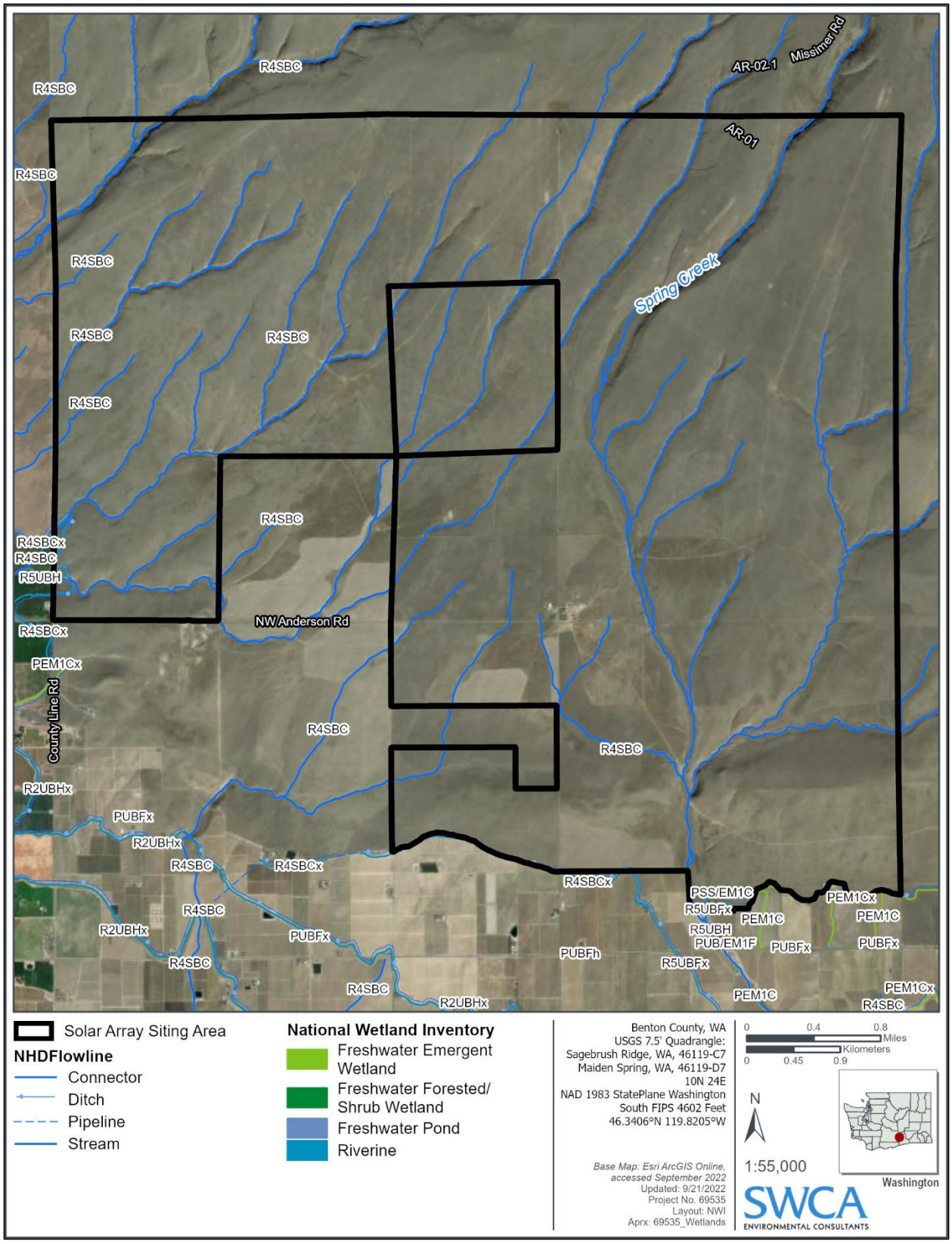

Figure 3. National Wetlands Inventory map.

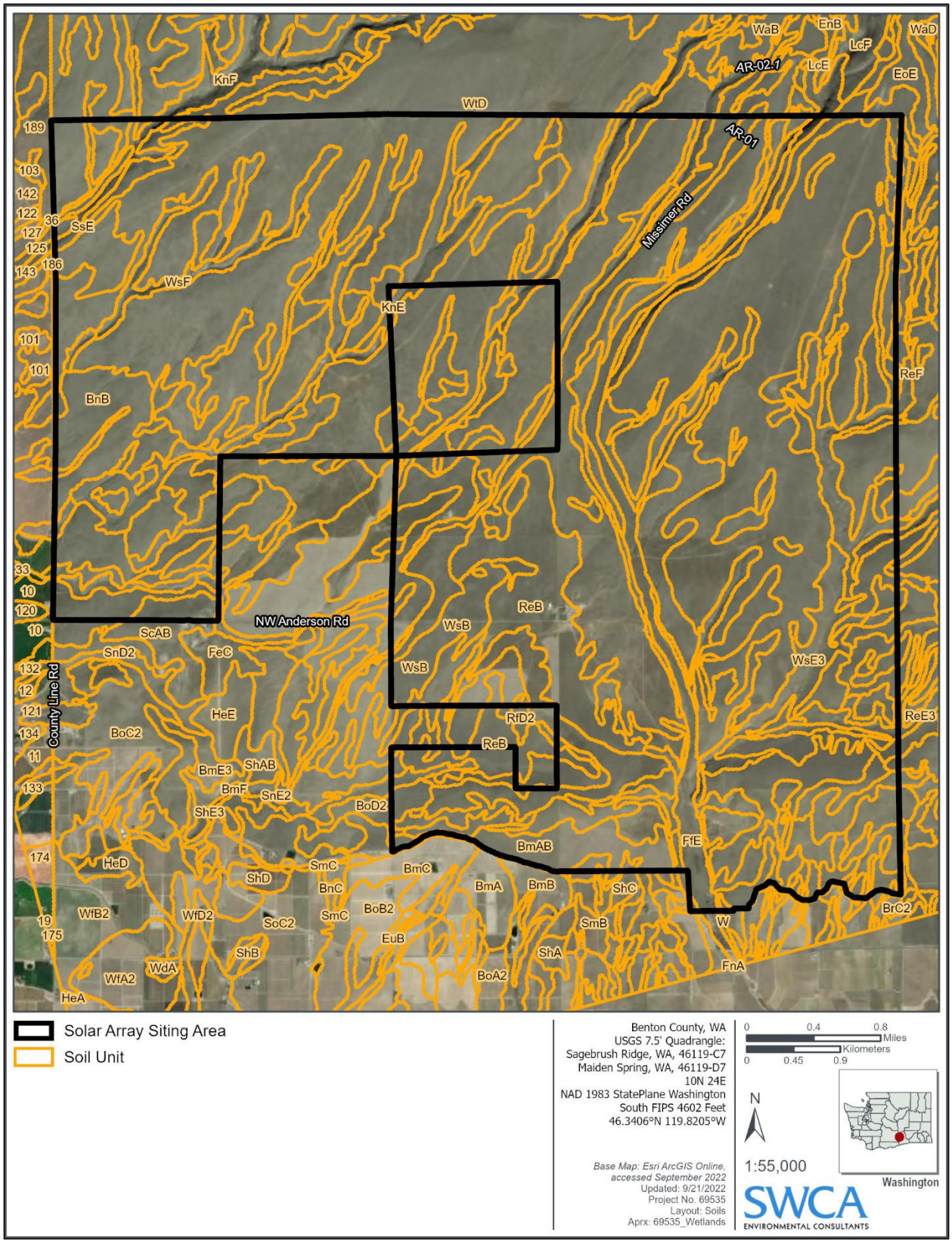

Figure 4. Soils map.

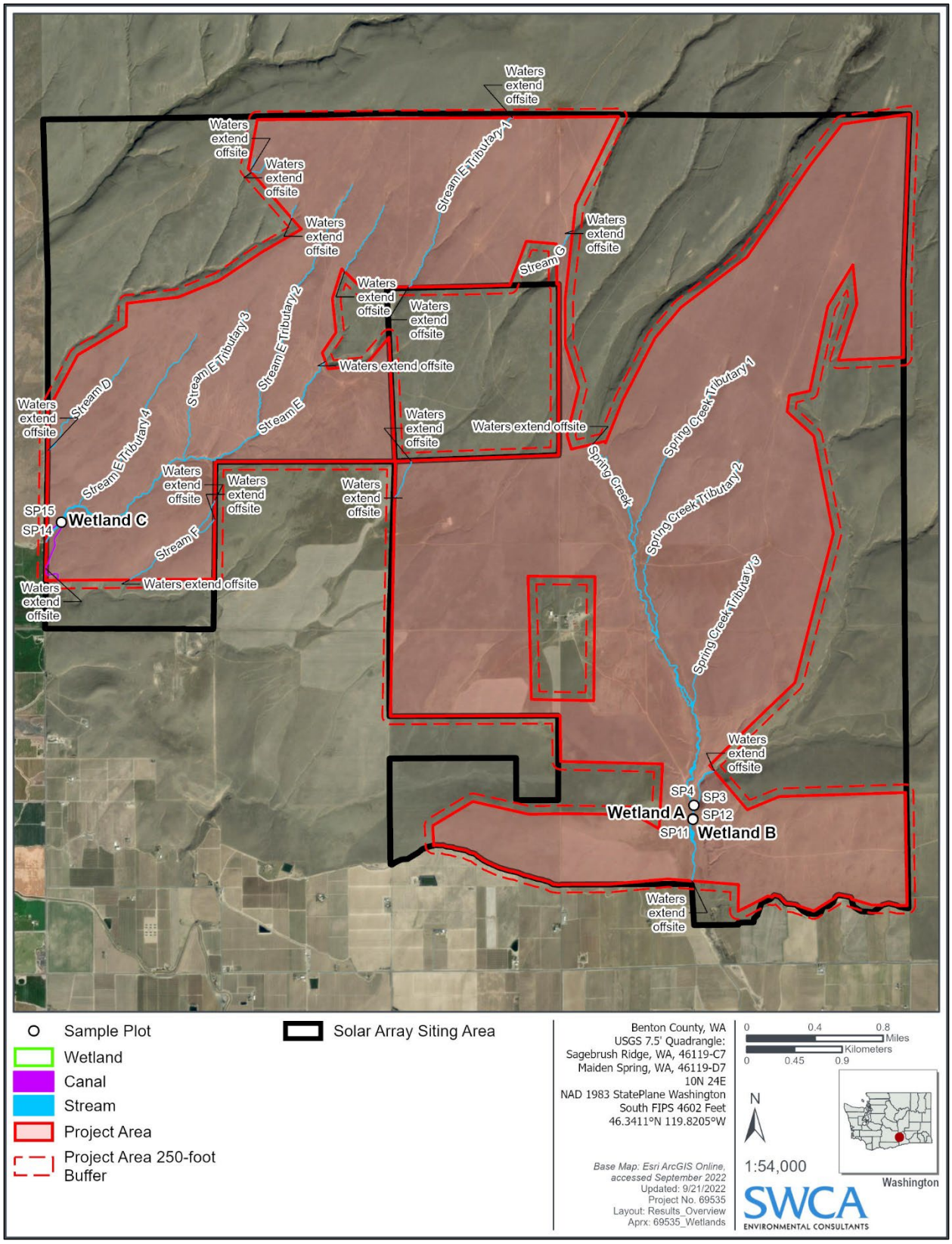

Figure 5. Wetland and other waters delineation overview map.

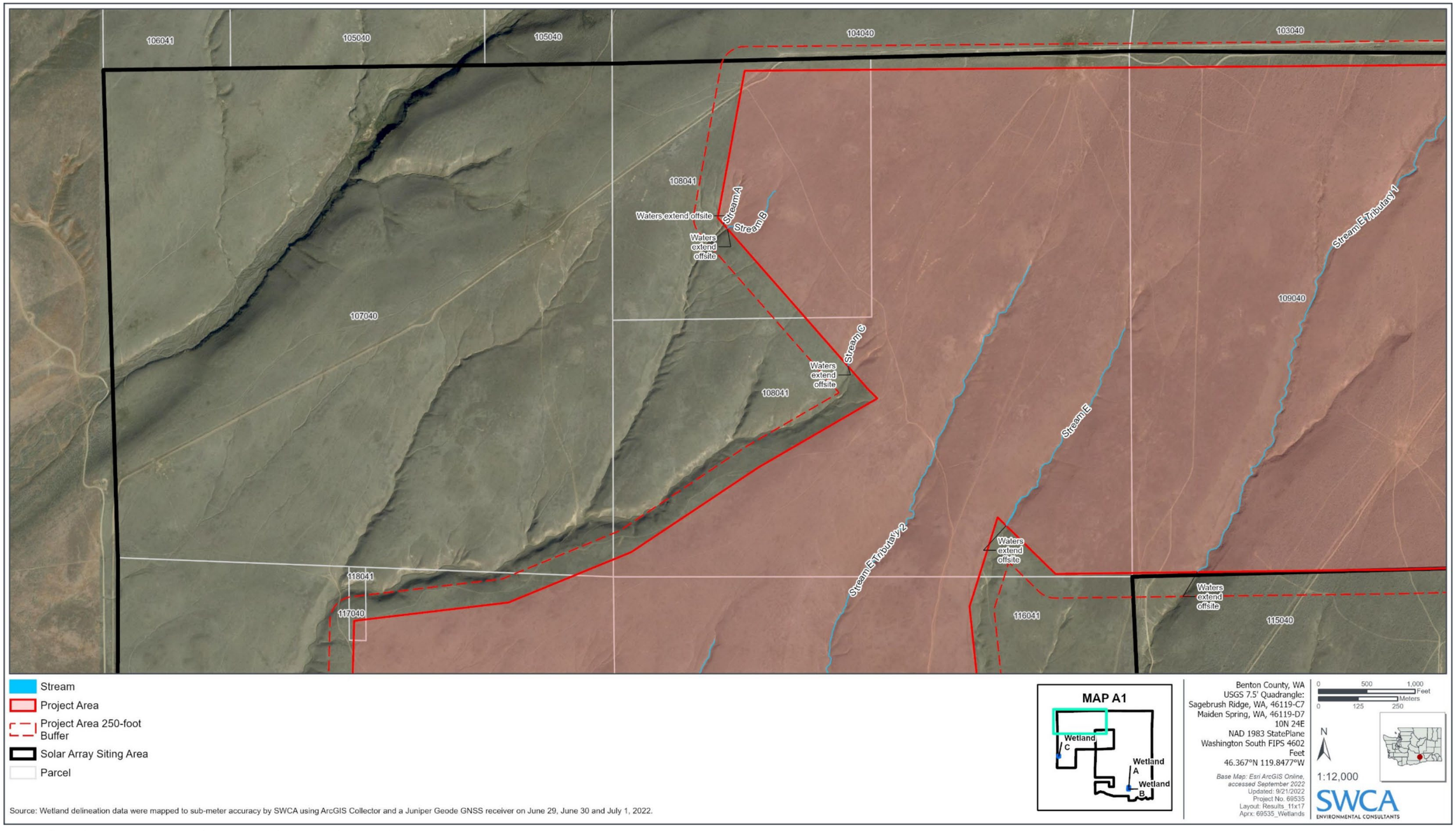

Figure 6. Wetland and other waters delineation results map A1.

Figure 7. Wetland and other waters delineation results map A2.

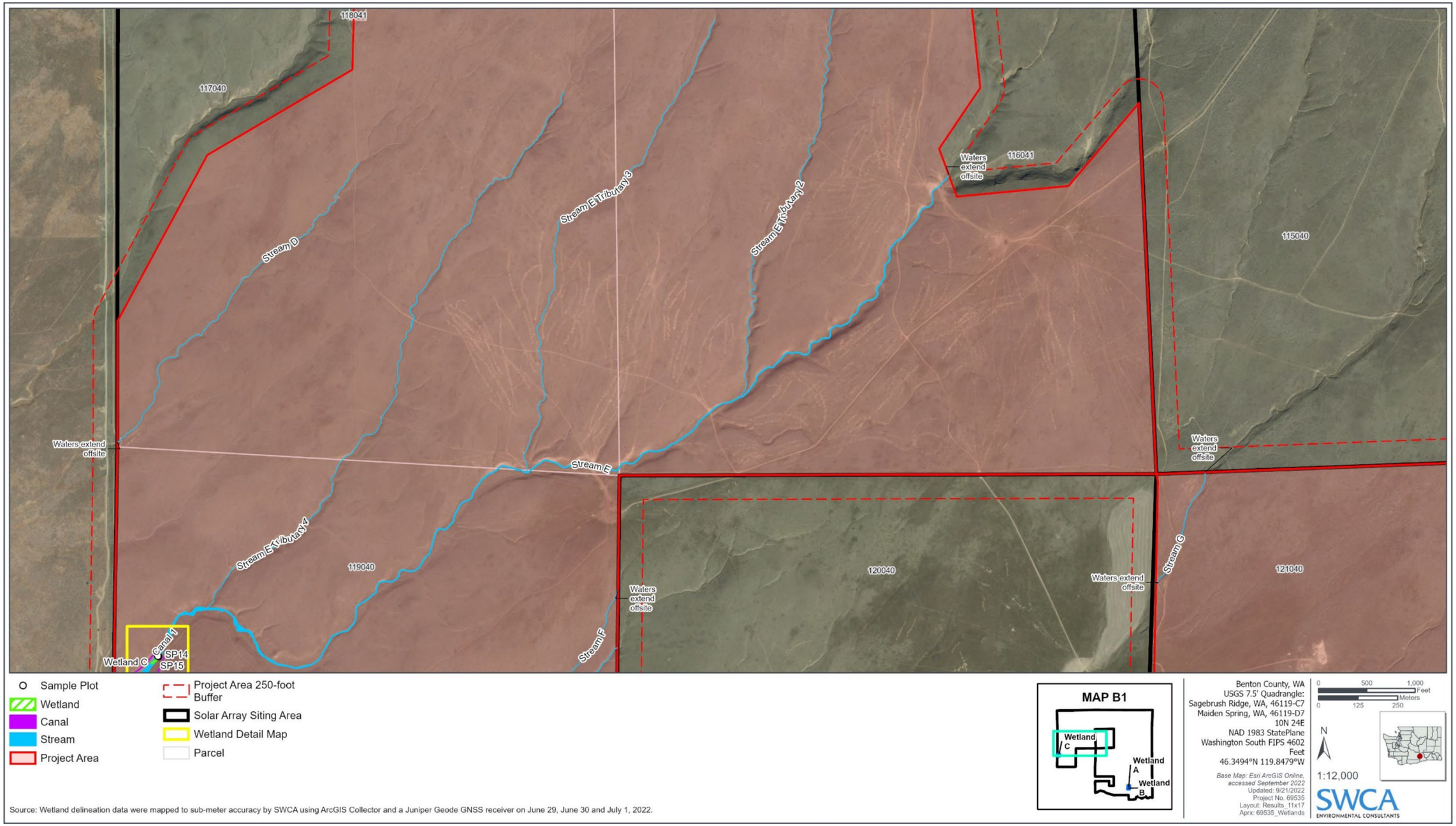

Figure 8. Wetland and other waters delineation results map B1.

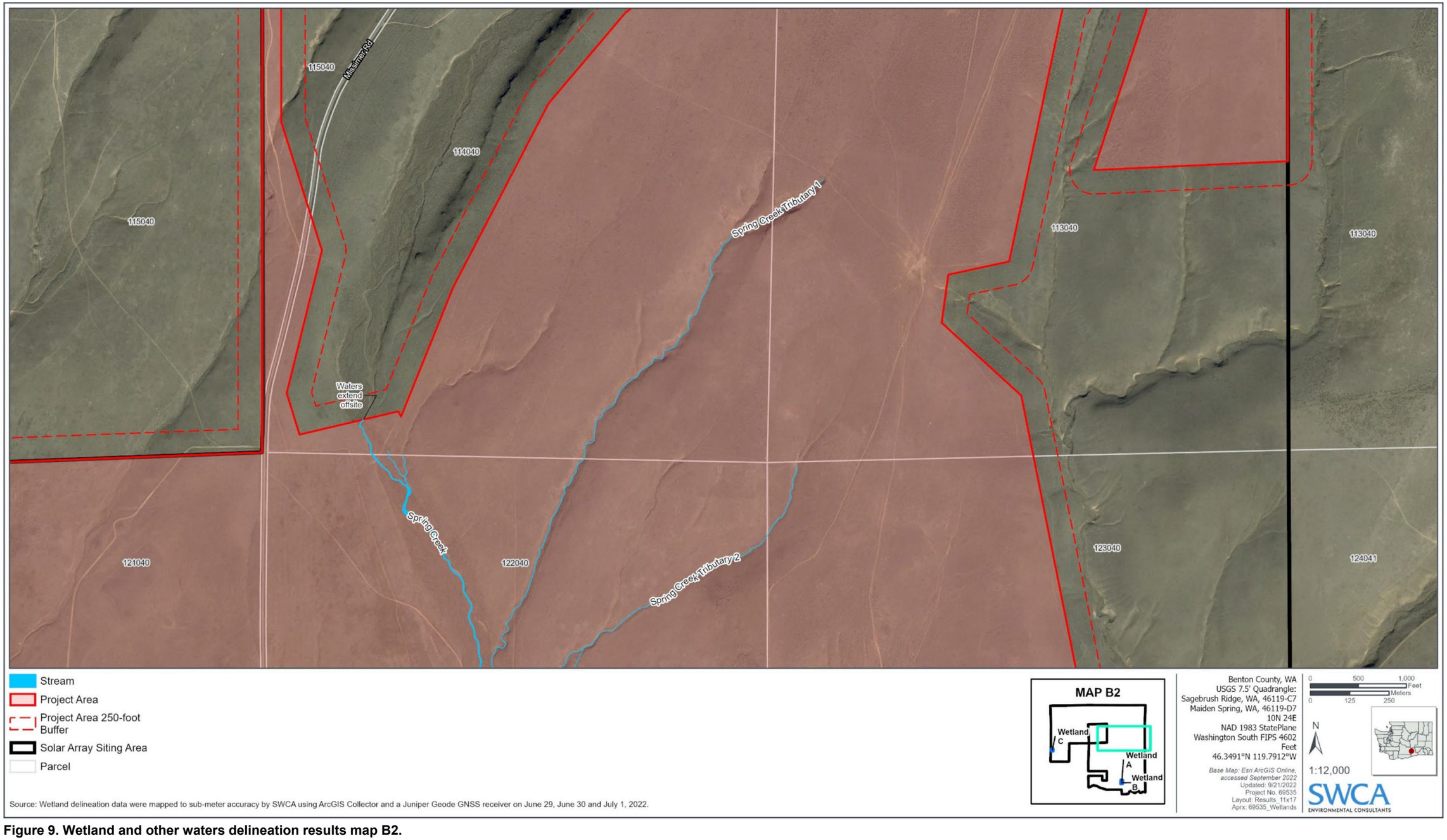

Figure 9. Wetland and other waters delineation results map B2.

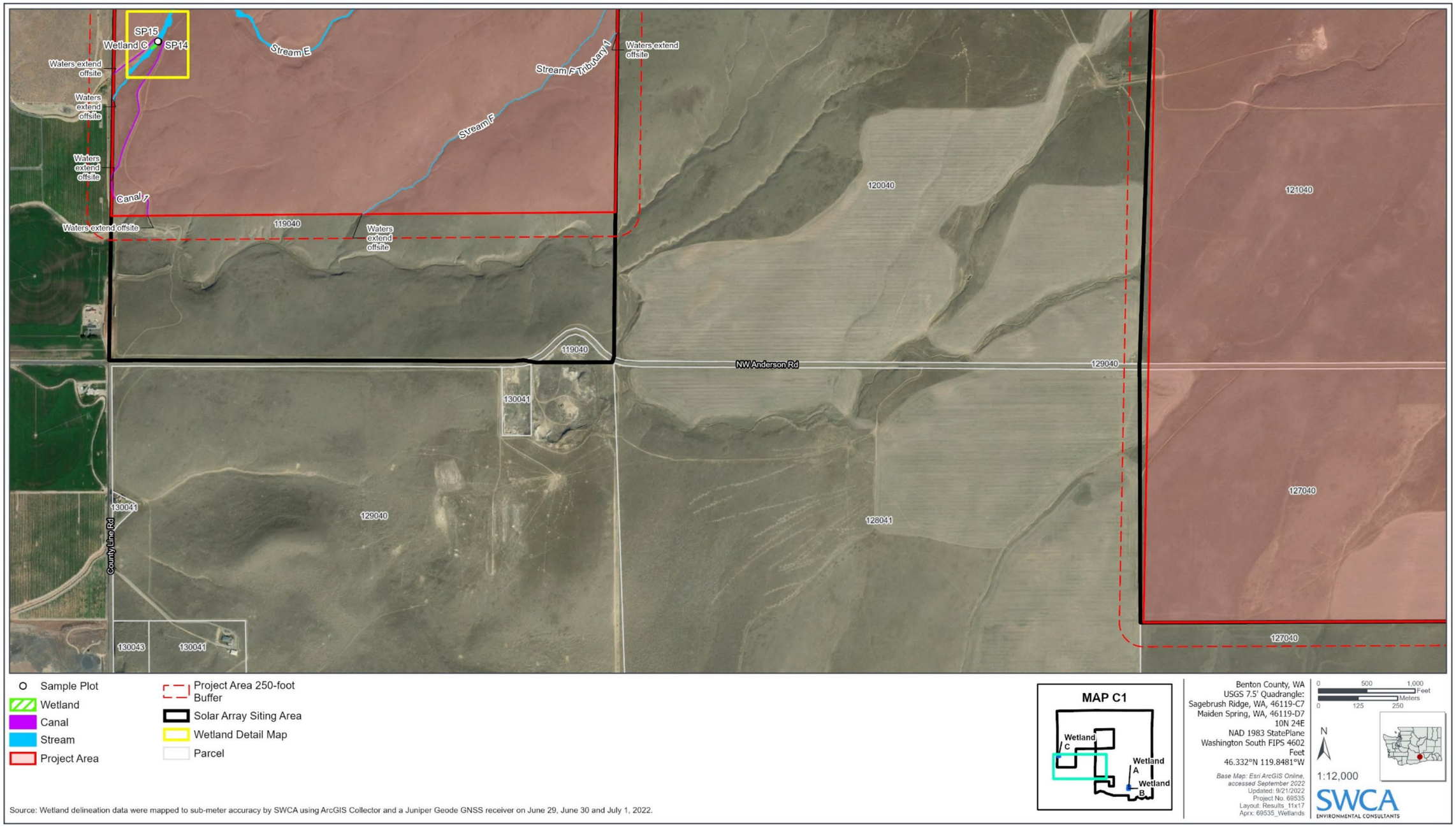

Figure 10. Wetland and other waters delineation results map C1.

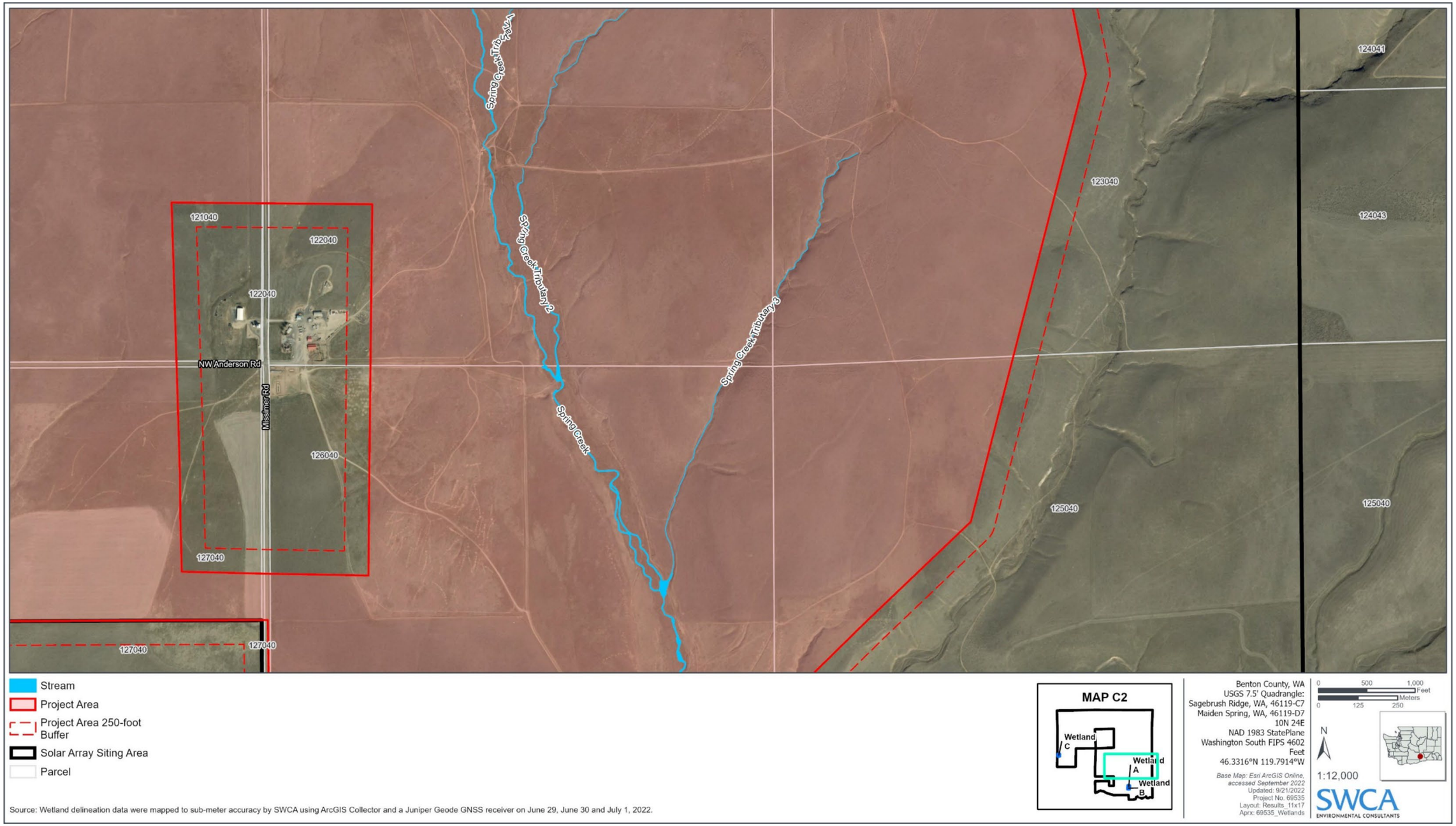

Figure 11. Wetland and other waters delineation results map C2.

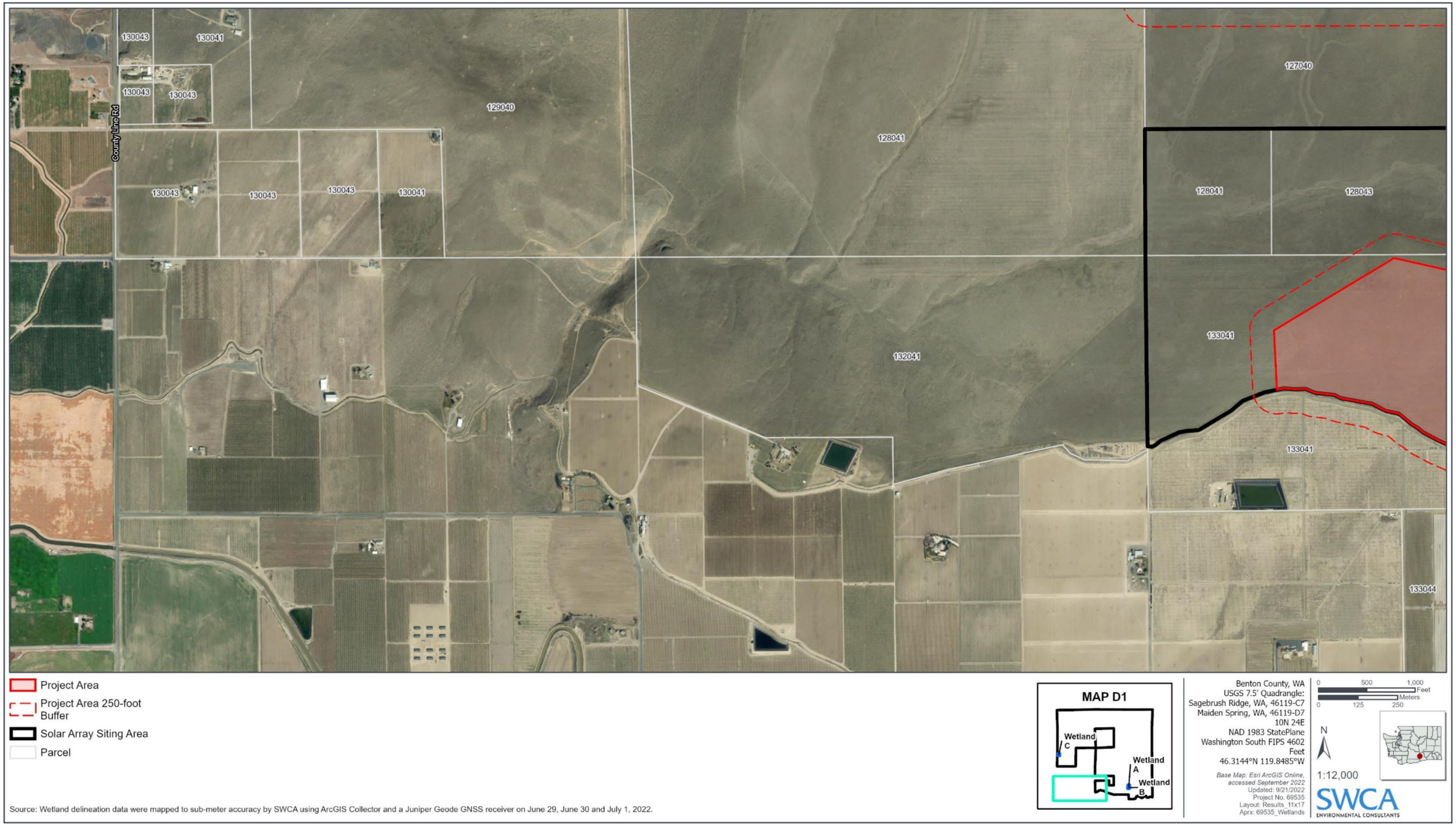

Figure 12. Wetland and other waters delineation results map D1.

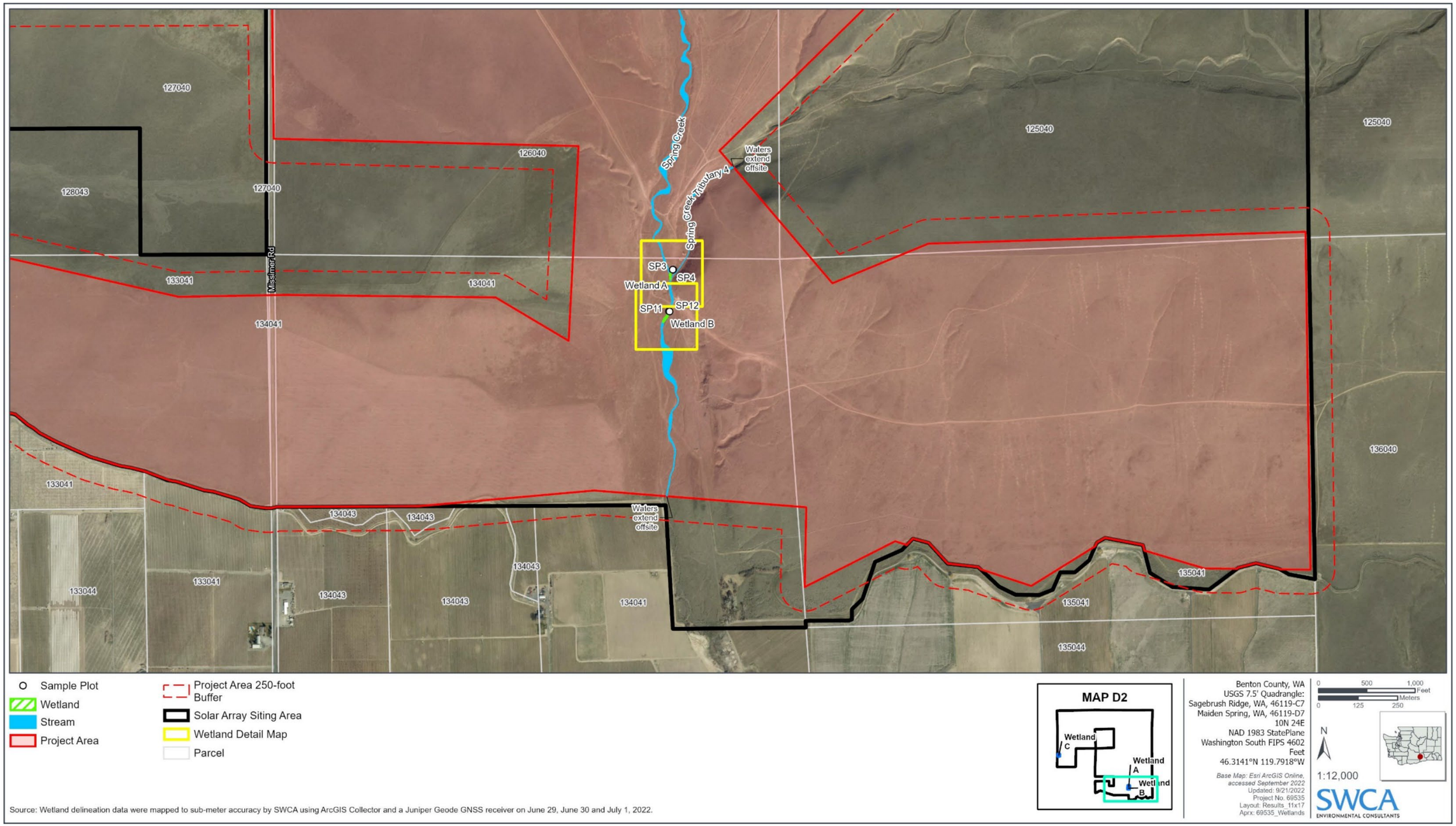

Figure 13. Wetland and other waters delineation results map D2.

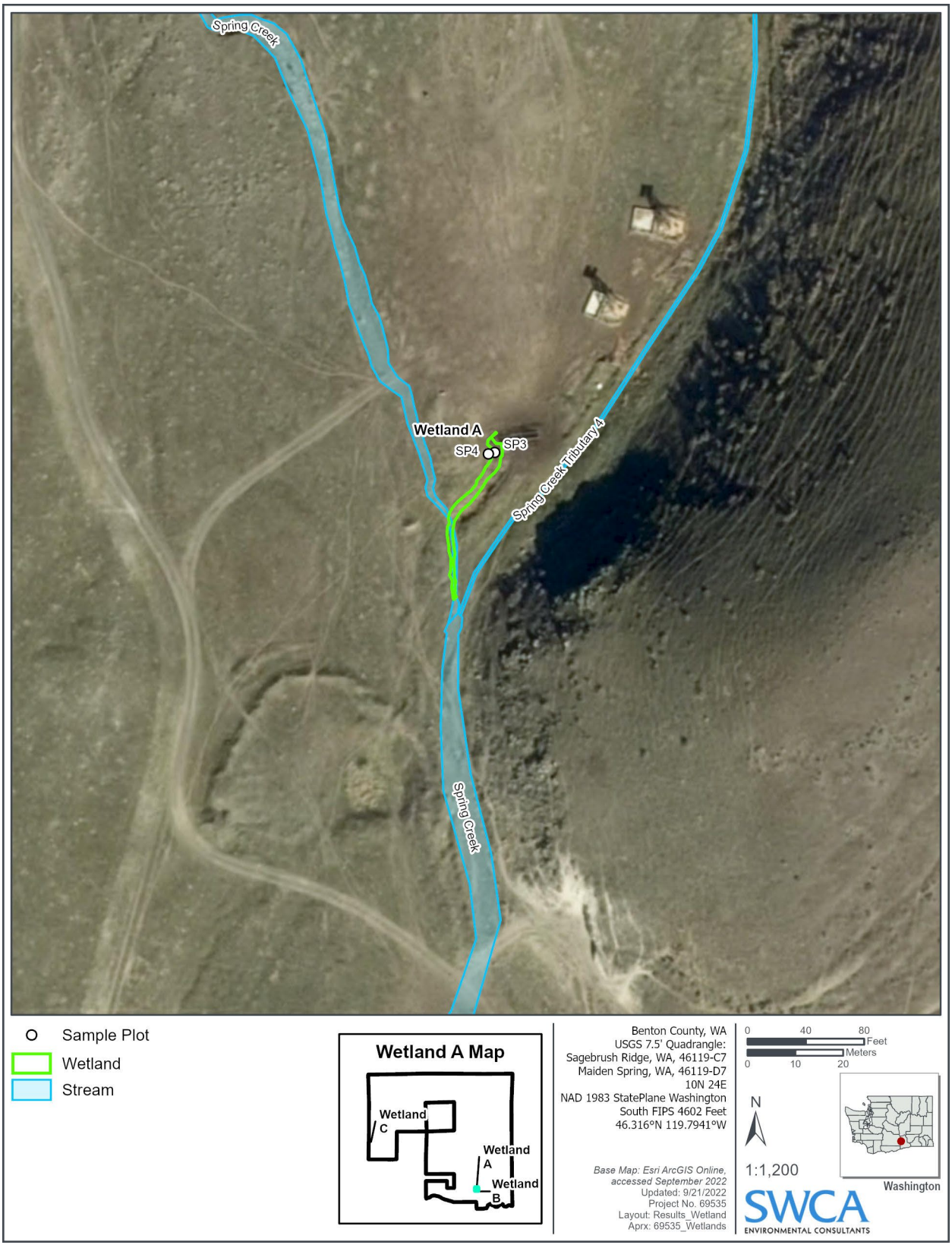

Figure 14. Wetland A results map.

Figure 15. Wetland B results map.

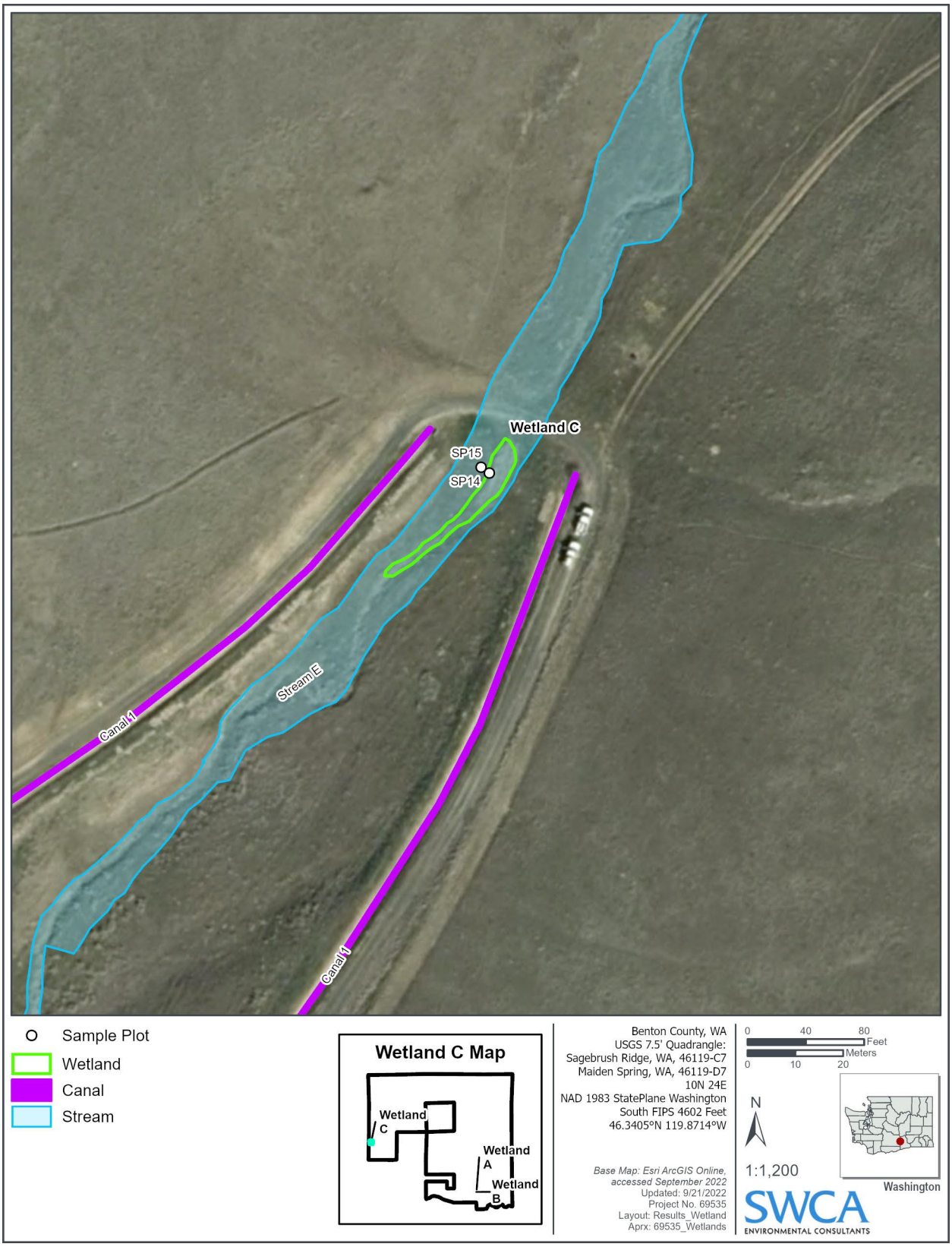

Figure 16. Wetland C results map.

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Appendix A

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Hop Hill Wetland Delineation City/County: Benton County Sampling Date: 6/29/2022

Applicant/Owner: HOHI State: OR Sampling Point: **SP3**

Investigator(s): Jessalynn Spears Section, Township, Range: T10NR24E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): B, Columbia/Snake River Plateau Lat: 46.316099 Long: -119.794077 Datum: NAD 1983

Soil Map Unit Name: Finley stony fine sandy loam, 0 to 30 percent slopes NWI classification:

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

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

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

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

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

Precipitation prior to fieldwork: 0.1 inch in prior two weeks

Remarks:
Depression, low spot where water outflows continuously from pipe fed troughs.

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Veronica americana*	50%	Yes	OBL
2. *Persicaria maculosa*	50%	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 50	x 1 =	50
FACW species 50	x 2 =	100
FAC species 0	x 3 =	0
FACU species 0	x 4 =	0
UPL species 0	x 5 =	0
Column Totals: 100 (A)		150 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0[1]

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

5 - Wetland Non-Vascular Plants[1]

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks:
Plot adjusted to wetland topographic area.

Entered by: KS QC by: JS

SOIL

Sampling Point: **SP3**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	95	7.5YR 2.5/3	5	C	M	SaCL	Saturated
8-10.5	2.5Y 2.5/1	100					LS	Saturated
								Rocky

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks: S = sand; Si = silt; C = clay; L = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Rock refusal @ 10.5, soil very high in organics.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	X	No	Depth (inches):	0.25
Water Table Present?	Yes		No	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	X	No	Depth (inches):	surface

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

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

Remarks:

Entered by: KS QC by: JS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Hop Hill Wetland Delineation City/County: Benton County Sampling Date: 6/29/2022

Applicant/Owner: HOHI State: OR Sampling Point: **SP4**

Investigator(s): Jessalynn Spears Section, Township, Range: T10NR24E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 15

Subregion (LRR): B, Columbia/Snake River Plateau Lat: 46.316096 Long: -119.794093 Datum: NAD 1983

Soil Map Unit Name: Finley stony fine sandy loam, 0 to 30 percent slopes NWI classification:

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

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

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

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

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

Precipitation prior to fieldwork: 0.1 inch in prior two weeks

Remarks:

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Descurainia pinnata*	60%	Yes	NOL
2. *Cynoglossum officinale*	30%	Yes	FACU
3. *Hordeum murinum*	5%	No	FAC
4. *Chenopodium album*	5%	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

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 5	x 3 =	15
FACU species 35	x 4 =	140
UPL species 60	x 5 =	300
Column Totals: 100 (A)		455 (B)

Prevalence Index = B/A = 4.55

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** **No X**

Remarks:
Plot adjusted along wet/upl lines.

Entered by: KS QC by: JS

SOIL

Sampling Point: **SP4**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2	100					SiL	Dry

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** **X**

Remarks: S = sand; Si = silt; C = clay; L = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Rock refusal @ 7.

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):	_____
Water Table Present?	Yes _____	No X	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):	_____

Wetland Hydrology Present? **Yes** _____ **No** **X**

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

Remarks:

Entered by: KS QC by: JS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Hop Hill Wetland Delineation City/County: Benton County Sampling Date: 6/29/2022

Applicant/Owner: HOHI State: OR Sampling Point: **SP11**

Investigator(s): Jessalynn Spears Section, Township, Range: T10NR24E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): B, Columbia/Snake River Plateau Lat: 46.314921 Long: -119.794255 Datum: NAD 1983

Soil Map Unit Name: Finley stony fine sandy loam, 0 to 30 percent slopes NWI classification:

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

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

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

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

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

Precipitation prior to fieldwork: 0.1 inch in prior two weeks

Remarks:

Pipe fed wetland after 3 10' diameter water troughs, artificial source.

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Veronica americana*	80%	Yes	OBL
2. *Persicaria maculosa*	20%	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 80	x 1 =	80
FACW species 20	x 2 =	40
FAC species 0	x 3 =	0
FACU species 0	x 4 =	0
UPL species 0	x 5 =	0
Column Totals: 100 (A)		120 (B)

Prevalence Index = B/A = 1.20

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0[1]

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

5 - Wetland Non-Vascular Plants[1]

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No**

Remarks: Entered by: KS QC by: JS

SOIL

Sampling Point: **SP11**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					SiL	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: S = sand; Si = silt; C = clay; L = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Problematic soil w/ almost 90% angular gravels w/ silt in between, rock refusal. Problematic soil situation followed, assumed hydric soil due to stream bed substrate and similarity to Wetland A.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	X	No	Depth (inches):	1-Jan
Water Table Present?	Yes	X	No	Depth (inches):	Surface
Saturation Present? (includes capillary fringe)	Yes	X	No	Depth (inches):	Surface

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

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

Remarks:
Surface water.

Entered by: KS QC by: JS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Hop Hill Wetland Delineation City/County: Benton County Sampling Date: 6/29/2022

Applicant/Owner: HOHI State: OR Sampling Point: **SP12**

Investigator(s): Jessalynn Spears Section, Township, Range: T10NR24E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): B, Columbia/Snake River Plateau Lat: 46.314912 Long: -119.794231 Datum: NAD 1983

Soil Map Unit Name: Finley stony fine sandy loam, 0 to 30 percent slopes NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

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

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

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

Precipitation prior to fieldwork: 0.1 inch in prior two weeks

Remarks:

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Sisymbrium altissimum*	50%	Yes	FACU
2. *Hordeum murinum*	20%	Yes	FAC
3. *Leymus cinereus*	5%	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 25%

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	75 (A)		275 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Bare ground is soil and boulders.

Entered by: KS QC by: JS

SOIL

Sampling Point: **SP12**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					SiL	Dry

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks: S = sand; Si = silt; C = clay; L = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Rock refusal @ 4".

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	___
Water Table Present?	Yes ___	No X	Depth (inches):	___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	___

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

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

Remarks:

Entered by: KS QC by: JS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Hop Hill Wetland Delineation City/County: Benton Sampling Date: 6/30/2022

Applicant/Owner: HOHI State: OR Sampling Point: **SP13**

Investigator(s): Jessalynn Spears Section, Township, Range: T10NR24E

Landform (hillslope, terrace, etc.): stream bank Local relief (concave, convex, none): convex Slope (%): 3

Subregion (LRR): A, Northwest Forests and Coast Lat: 46.340605 Long: -119.871419 Datum: NAD 1983

Soil Map Unit Name: Shano silt loam, 8 to 15 percent slopes NWI classification:

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

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

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

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

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

Precipitation prior to fieldwork: 0.1 inch in prior two weeks

Remarks:
Bank below OHW next to wetland.

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Geranium dissectum*	70%	Yes	NOL
2. *Bromus tectorum*	15%	No	NOL
3. *Sisymbrium altissimum*	5%	No	FACU
4. *Lolium perenne*	3%	No	FAC
5. *Bromus hordeaceus*	2%	No	FACU
6. *unknown grass*	1%	No	FAC ?
7.			
8.			
9.			
10.			
11.			
	96% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 4%

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	4	x 3 =	12
FACU species	7	x 4 =	28
UPL species	85	x 5 =	425
Column Totals:	96 (A)		465 (B)

Prevalence Index = B/A = 4.84

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** **No X**

Remarks: Entered by: KS QC by: JS

SOIL

Sampling Point: **SP13**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10YR 3/2	100					SiL	dry

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** **X**

Remarks: S = sand; Si = silt; C = clay; L = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Rock refusal @ 6".

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)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches):	_____
Water Table Present?	Yes _____	No X	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches):	_____

Wetland Hydrology Present? **Yes** _____ **No** **X**

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

Remarks:

Entered by: KS QC by: JS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Hop Hill Wetland Delineation City/County: Benton Sampling Date: 6/30/2022

Applicant/Owner: HOHI State: OR Sampling Point: **SP14**

Investigator(s): Jessalynn Spears Section, Township, Range: T10NR24E

Landform (hillslope, terrace, etc.): stream bed Local relief (concave, convex, none): concave Slope (%): 10

Subregion (LRR): A, Northwest Forests and Coast Lat: 46.340587 Long: -119.871420 Datum: NAD 1983

Soil Map Unit Name: Shano silt loam, 8 to 15 percent slopes NWI classification:

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

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

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

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

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

Precipitation prior to fieldwork: 0.1 inch in prior two weeks

Remarks:

VEGETATION

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: 10' r)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 5' r)			
1. *Phalaris arundinacea*	80%	Yes	FACW
2. *Equisetum hyemale*	20%	No	FACW
3. *Lolium perenne*	1%	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	101% = Total Cover		
Woody Vine Stratum (Plot size: 10' r)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 100	x 2 =	200
FAC species 1	x 3 =	3
FACU species 0	x 4 =	0
UPL species 0	x 5 =	0
Column Totals: 101 (A)		203 (B)

Prevalence Index = B/A = 2.01

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X** **No**

Remarks: Entered by: KS QC by: JS

SOIL

Sampling Point: **SP14**

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	95	7.5YR 4/4	5	C	M	SiL	Saturated

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 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) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks: S = sand; Si = silt; C = clay; L = loam or loamy; co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)
Rock refusal @ 10".

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ 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)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	
Water Table Present?	Yes X	No ___	Depth (inches):	2"
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	Surface

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

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

Remarks:
Surface water 6" south.

Entered by: KS QC by: JS

Appendix B

Ground-Level Site Photographs

APPENDIX B

Ground-Level Site Photographs.

Photos taken June 28 – July 1, 2022.

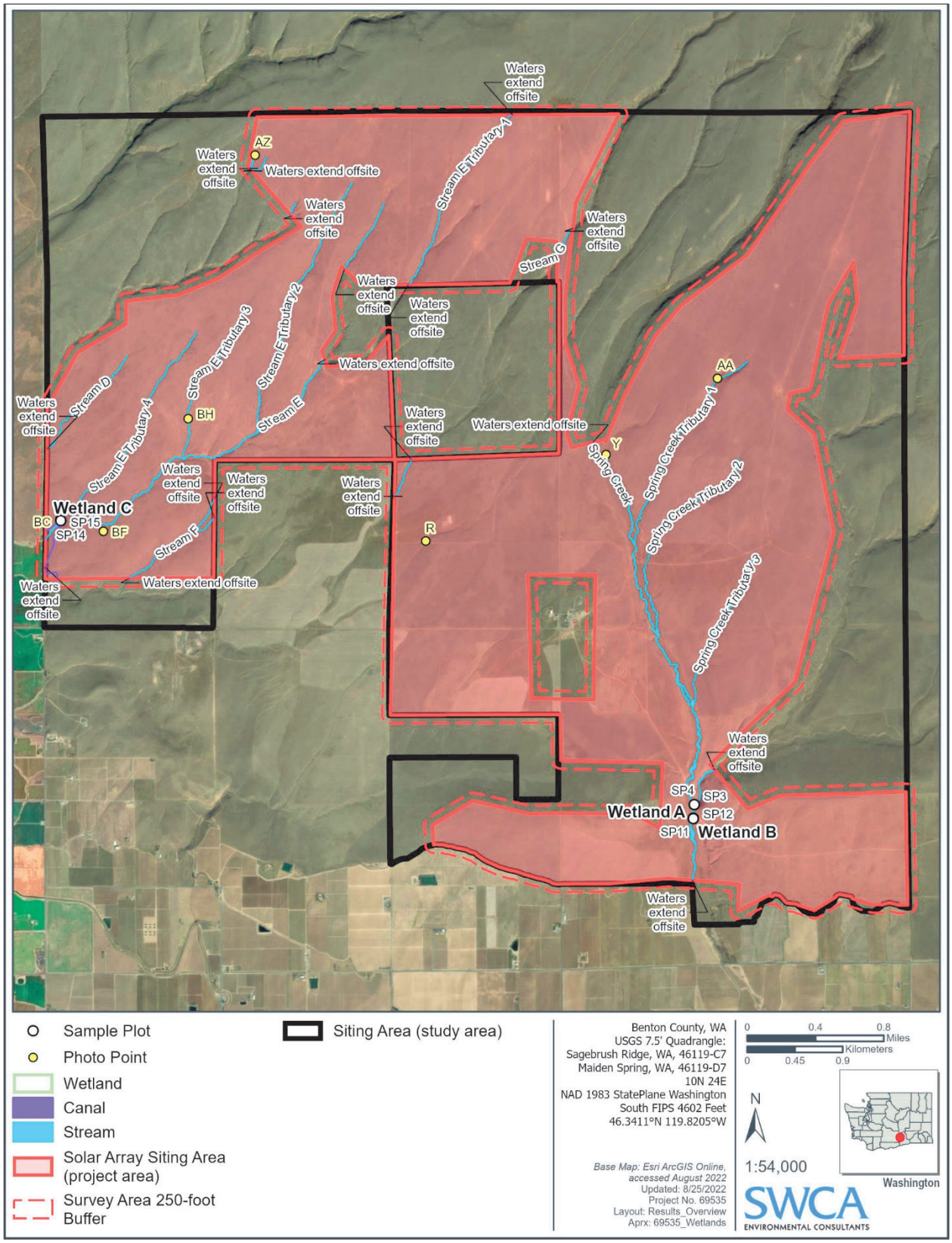


Photo point location map.

Photo 1. Wetland A overview , view to the south.

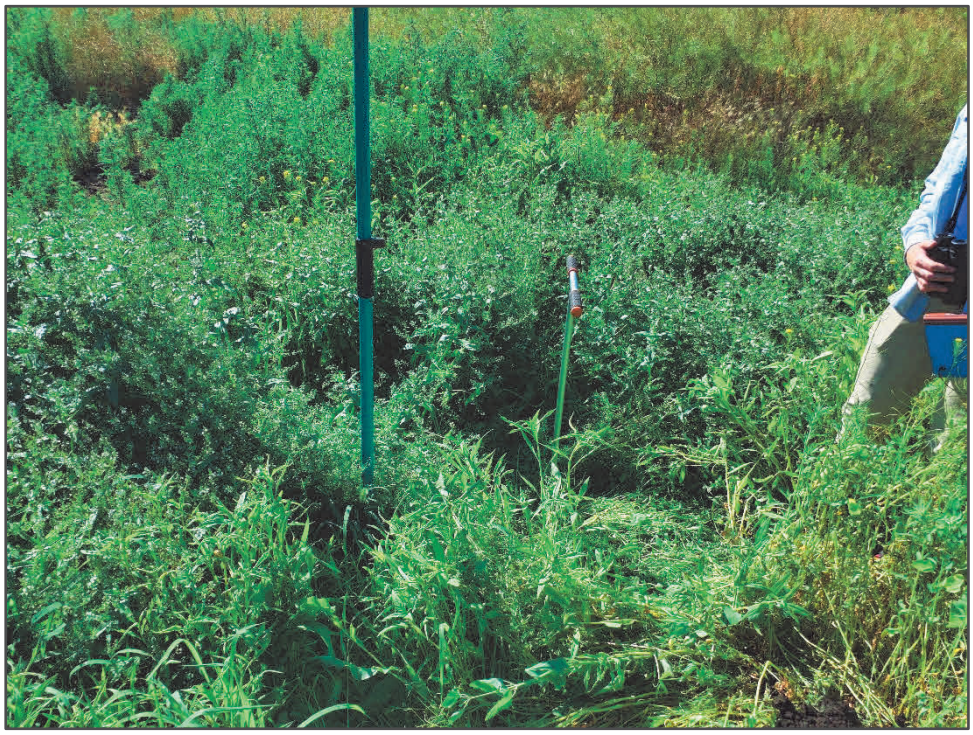


Photo 2. Wetland A, auger in wetland plot, view to the south.

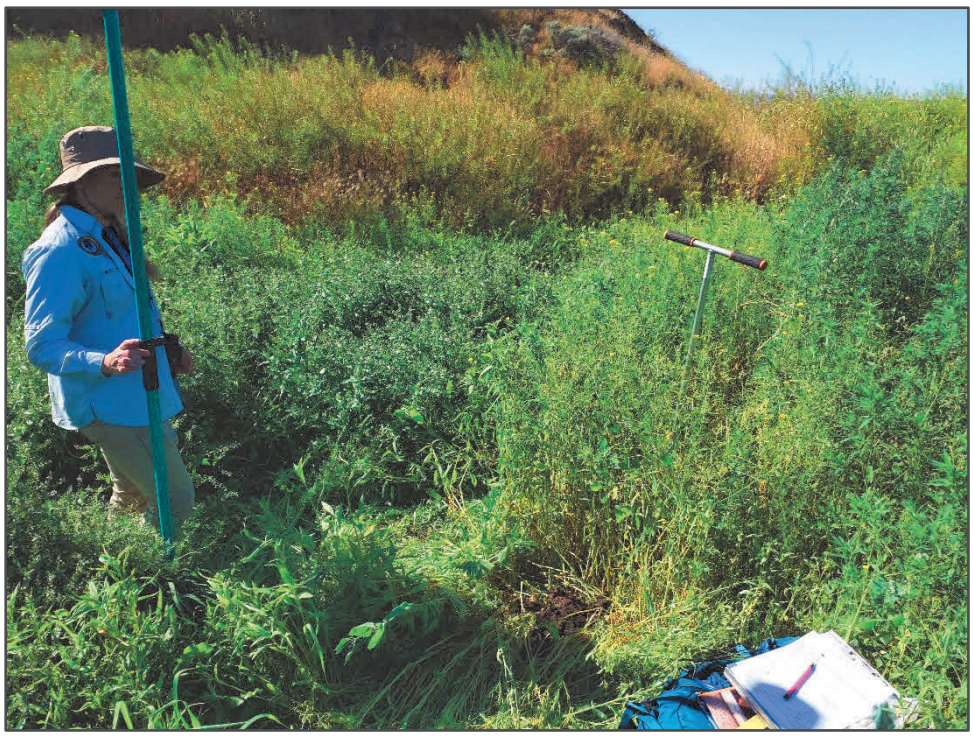


Photo 3. Wetland A, auger in upland plot, view to the south.

Photo 4. Wetland A, trough outlet to wetland.

Photo 5. Wetland A overview, view to the north.

Photo 6. Wetland B overview, view to the south.

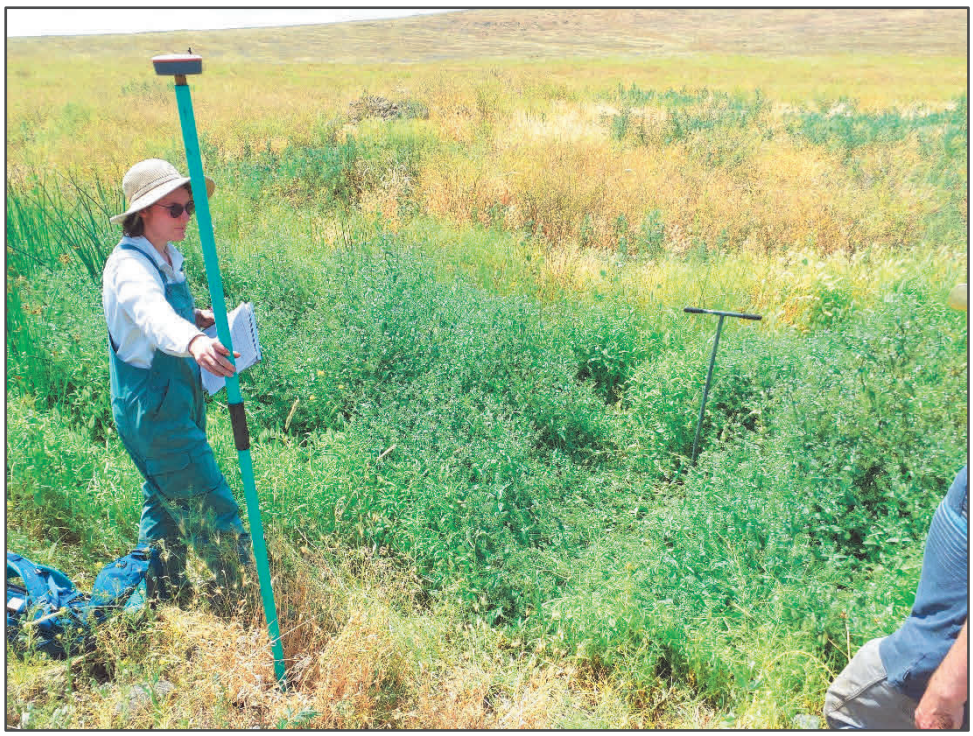


Photo 7. Wetland B, auger in wetland plot, upland plot in the foreground, view to the west.

Photo 8. Wetland B, trough outlet to the wetland.

Photo 9. Wetland C, view to the south.

Photo 10. Wetland C, view of wetland plot.

Photo 11. Photo point R, no stream at mapped NWI water, view north.

Photo 12. Photo point R, no stream at mapped NWI water, view south.

Photo 13. Photo point Y, Spring Creek, view to the south, braid enters at turn.

Photo 14. Photo point AA, typical 1-3 foot stream, view to the northeast.

Photo 15. Photo point AZ, typical 1-3 foot stream, view to the south.

Photo 16. Photo point BC, canal, view to the west.

Photo 17. Photo point BH, typical 1-3 foot eroded stream, view to the south.

Photo 18. BF, Stream E, example of braided channel, view to the north.

Appendix C

Wetland Rating Forms and Maps

Wetland name or number A

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): Wetland A Date of site visit: 6/29/2022

Rated by Jessalynn Spears & Chris Moller Trained by Ecology? X Yes ___ No Date of training 10/09/18

HGM Class used for rating Riverine Wetland has multiple HGM classes? ____Y X N

NOTE: **Form is not complete without the figures requested** (*figures can be combined*).
Source of base aerial photo/map ESRI/Google Earth

OVERALL WETLAND CATEGORY ____ (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 22-27

_____**Category II** – Total score = 19-21

__X__ **Category III** – Total score = 16-18

_____**Category IV** – Total score = 9-15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H **M** L	**H** M L	H M **L**	
Landscape Potential	H **M** L	H **M** L	H M **L**	
Value	**H** M L	H M **L**	H **M** L	**TOTAL**
Score Based on Ratings	7	6	4	17

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY *Circle the appropriate category*
Vernal Pools	**II** **III**
Alkali	**I**
Wetland of High Conservation Value	**I**
Bog and Calcareous Fens	**I**
Old Growth or Mature Forest – slow growing	**I**
Aspen Forest	**I**
Old Growth or Mature Forest – fast growing	**II**
Floodplain forest	**II**
None of the above	

Wetland name or number__A_____

Maps and figures required to answer questions correctly for Eastern Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	A
Hydroperiods	H 1.2, H 1.3	A
Ponded depressions	R 1.1	A
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	A
Map of the contributing basin	R 2.2, R 2.3, R 5.2	C
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	A
Width of wetland vs. width of stream *(can be added to another figure)*	R 4.1	A
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	B
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	C
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	D

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	

Wetland name or number___A_____

HGM Classification of Wetland in Eastern Washington

For questions 1-4, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
   ___At least 30% of the open water area is deeper than 10 ft (3 m)

   NO – go to 2 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks;
   ___The water leaves the wetland **without being impounded**.

   NO - go to 3 YES – The wetland class is **Slope**
   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

3. Does the entire wetland unit **meet all** of the following criteria?
   ___ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river;
   ___ The overbank flooding occurs at least once every 10 years.

   NO - go to 4 YES – The wetland class is **Riverine**
   NOTE: The Riverine wetland can contain depressions that are filled with water when the river is not flooding.

4. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

   NO – go to 5 YES – The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-4 APPLY TO DIFFERENT AREAS IN THE WETLAND UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the wetland unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM Class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number A

RIVERINE WETLANDS **Water Quality Functions** - Indicators that the site functions to improve water quality	Points (only 1 score per box)
R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event: Depressions cover > 1/3 area of wetland — points = 6 Depressions cover > 1/10 area of wetland — points = 3 Depressions present but cover < 1/10 area of wetland — points = 1 No depressions present — points = 0	1
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height; **not** Cowardin classes): Forest or shrub > 2/3 the area of the wetland — points = 10 Forest or shrub 1/3 – 2/3 area of the wetland — points = 5 Ungrazed, herbaceous plants > 2/3 area of wetland — points = 5 Ungrazed herbaceous plants 1/3 – 2/3 area of wetland — points = 2 Forest, shrub, and ungrazed herbaceous < 1/3 area of wetland — points = 0	5
Total for R 1 — Add the points in the boxes above	6

Rating of Site Potential If score is: ___**12-16 = H** ___**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	
R 2.2. Does the contributing basin include a UGA or incorporated area? Yes = 1 No = 0	
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	1
R 2.4. Is > 10% of the area within 150 ft of wetland in land uses that generate pollutants Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4? Source_____ Yes = 1 No = 0	
Total for R 2 — Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___**3-6 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	1
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	1
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the drainage in which wetland is found.* Yes = 2 No = 0	2
Total for R 3 — Add the points in the boxes above	4

Rating of Value If score is: ___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number A

RIVERINE WETLANDS **Hydrologic Functions** - Indicators that site functions to reduce flooding and stream erosion	Points (only 1 score per box)
R 4.0. Does the site have the potential to reduce flooding and erosion?	
R 4.1. Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 2 points = 10 If the ratio is 1-2 points = 8 If the ratio is ½-<1 points = 4 If the ratio is ¼-< ½ points = 2 If the ratio is < ¼ points = 1	8
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes).* Forest or shrub for more than $^2/_3$ the area of the wetland points = 6 Forest or shrub for >$^1/_3$ area OR emergent plants > $^2/_3$ area points = 4 Forest or shrub for > $^1/_{10}$ area OR emergent plants > $^1/_3$ area points = 2 Plants do not meet above criteria points = 0	4
Total for R 5 Add the points in the boxes above	12

Rating of Site Potential If score is: **12-16 = H** **6-11 = M** **0-5 = L** *Record the rating on the first page*

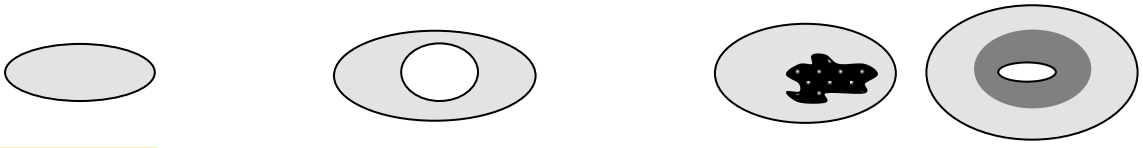
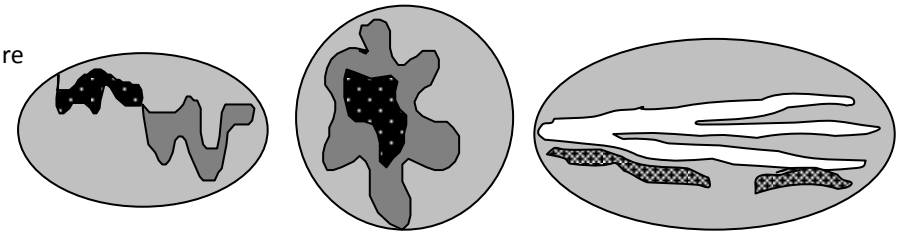
R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5	Add the points in the boxes above	1

Rating of Landscape Potential If score is: **3 = H** **1 or 2 = M** **0 = L** *Record the rating on the first page*

R 6.0. Are the hydrologic functions provided by the site valuable to society?		
R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site.* The sub-basin immediately down-gradient of site has surface flooding problems that result in damage to human or natural resources points = 2 Surface flooding problems are in a basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0		0
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	0
Total for R 6	Add the points in the boxes above	0

Rating of Value If score is: **2-4 = H** **1 = M** **0 = L** *Record the rating on the first page*

Wetland name or number A

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	(only 1 score per box)
H 1.0. Does the wetland have the potential to provide habitat for many species?	
H 1.1. Structure of the plant community: *Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ¼ ac or >= 10% of the wetland if wetland is < 2.5 ac.* ____Aquatic bed ____Emergent plants 0-12 in (0-30 cm) high are the highest layer and have > 30% cover ____Emergent plants >12-40 in (>30-100 cm) high are the highest layer with >30% cover ____Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% cover ____Scrub-shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) 4 or more checks: points = 3 3 checks: points = 2 2 checks: points = 1 1 check: points = 0	0
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0	0
H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac **OR** 10% of its area during the March to early June **OR** in August to the end of September? ***A**nswer YES for Lake Fringe wetlands*. Yes = 3 points & go to H 1.4 No = go to H 1.3.2 H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least ¼ ac or 10% of its area? *Answer yes only if H 1.3.1 is No*. Yes = 3 No = 0	0
H 1.4. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. D*ifferent patches of the same species can be combined to meet the size threshold. You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)* # of species ____ Scoring: > 9 species: points = 2 4-9 species: points = 1 < 4 species: points = 0	0
H 1.5. Interspersion of habitats Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. *Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **High** = 3 points  Riparian braided channels with 2 classes	Figure__ 0

Wetland name or number A

H 1.6. Special habitat features *Check the habitat features that are present in the wetland. The number of checks is the number of points.* ____Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ____Cattails or bulrushes are present within the wetland. ____Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge. _X__ Emergent or shrub vegetation in areas that are permanently inundated/ponded. ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity _X__ Invasive species cover less than 20% in each stratum of vegetation *(canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)*	2
Total for H 1 Add the points in the boxes above	2

Rating of Site Potential If score is: ___**15-18 = H** ___**7-14 = M** ___**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: *Calculate:* % undisturbed habitat _0___ **+** [(% moderate and low intensity land uses)/2] _0__ **=**_0___% > $^1/_3$ (33.3%) of 1 km Polygon points = 3 20-33% of 1km Polygon points = 2 10-19% of 1km Polygon points = 1 <10% of 1km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. *Calculate:* % undisturbed habitat _____ **+** [(% moderate and low intensity land uses)/2] ____ **=**_____% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of Polygon points = 0	0
H 2.3. Land use intensity in 1 km Polygon: > 50% of Polygon is high intensity land use points = (- 2) Does not meet criterion above points = 0	-2
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. *Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs* Yes = 3 No = 0	0
Total for H 2 Add the points in the boxes above	-2

Rating of Landscape Potential If score is: ___**4-9 = H** ___**1-3 = M** ___**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose the highest score that applies to the wetland being rated* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see Appendix B) — It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) — It is mapped as a location for an individual WDFW species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1 Site does not meet any of the criteria above points = 0	1

Rating of Value If score is: ___**2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Vernal pools Is the wetland **less than 4000 ft²**, and does it meet at least **two** of the following criteria? — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool*. — The soil in the wetland is shallow [< 1 ft (30 cm)deep] and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the wet season. Yes **–** Go to **SC 1.1** No = **Not a vernal pool** SC 1.1. Is the vernal pool relatively undisturbed in February and March? Yes **–** Go to **SC 1.2** No = **Not a vernal pool with special characteristics**	
SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? Yes = **Category II** No = **Category III**	**Cat. II** **Cat. III**
SC 2.0. Alkali wetlands Does the wetland meet **one** of the following criteria? — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 4 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meet two of the following three sub-criteria? — Salt encrustations around more than 75% of the edge of the wetland — More than ¾ of the plant cover consists of species listed on Table 4 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. Yes = **Category I** No= **Not an alkali wetland**	**Cat. I**
SC 3.0. Wetlands of High Conservation Value (WHCV) SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 3.2** No – Go to **SC 3.3** SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 3.4** No = **Not a WHCV** SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and it is listed on their website? Yes = **Category I** No =**Not a WHCV**	**Cat. I**

Wetland name or number A

SC 4.0 Bogs and Calcareous Fens Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? *Use the key below to identify if the wetland is a bog or calcareous fen.* ***If you answer yes you will still need to rate the wetland based on its functions.*** SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? *See Appendix C for a field key to identify organic soils*. Yes – Go to **SC 4.3** No – Go to **SC 4.2** SC 4.2. Does an area within the wetland have organic soils, either peats or mucks, that are less than 16 in deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 4.3** No = **Is not a bog for rating** SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? Yes = **Category I bog** No – Go to **SC 4.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 5 are present, the wetland is a bog. SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No – Go to **SC 4.5** SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? Yes = **Is a Calcareous Fen for purpose of rating** No – Go to **SC 4.6** SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: — Marl deposits [calcium carbonate ($CaCO_3$) precipitate] occur on the soil surface or plant stems — The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland Yes = **Is a Category I calcareous fen** No = **Is not a calcareous fen**	**Cat. I** **Cat. I**

SC 5.0. Forested Wetlands Does the wetland have an area of forest rooted within its boundary that meets **at least one** of the following three criteria? (*Continue only if you have identified that a forested class is present in question H 1.1*) — The wetland is within the 100 year floodplain of a river or stream — Aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species — There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see definitions in question H3.1)* Yes – Go to **SC 5.1** No = **Not a forested wetland with special characteristics**	
SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (*see Table 7*)? Yes = **Category I** No – Go to **SC 5.2** SC 5.2. Does the wetland have areas where aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species? Yes = **Category I** No – Go to **SC 5.3** SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (*see Table 7*)? Yes = **Category II** No – Go to **SC 5.4** SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? Yes = **Category II** No = **Not a forested wetland with special characteristics**	**Cat. I** **Cat. I** **Cat. II** **Cat. II**
Category of wetland based on Special Characteristics *Choose the highest rating if wetland falls into several categories* If you answered No for all types, enter "Not Applicable" on Summary Form	

Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: ***NOTE:*** *This question is independent of the land use between the wetland and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 12 in (30 cm)in eastern Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

— **Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).

— **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).

— **Juniper Savannah:** All juniper woodlands.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

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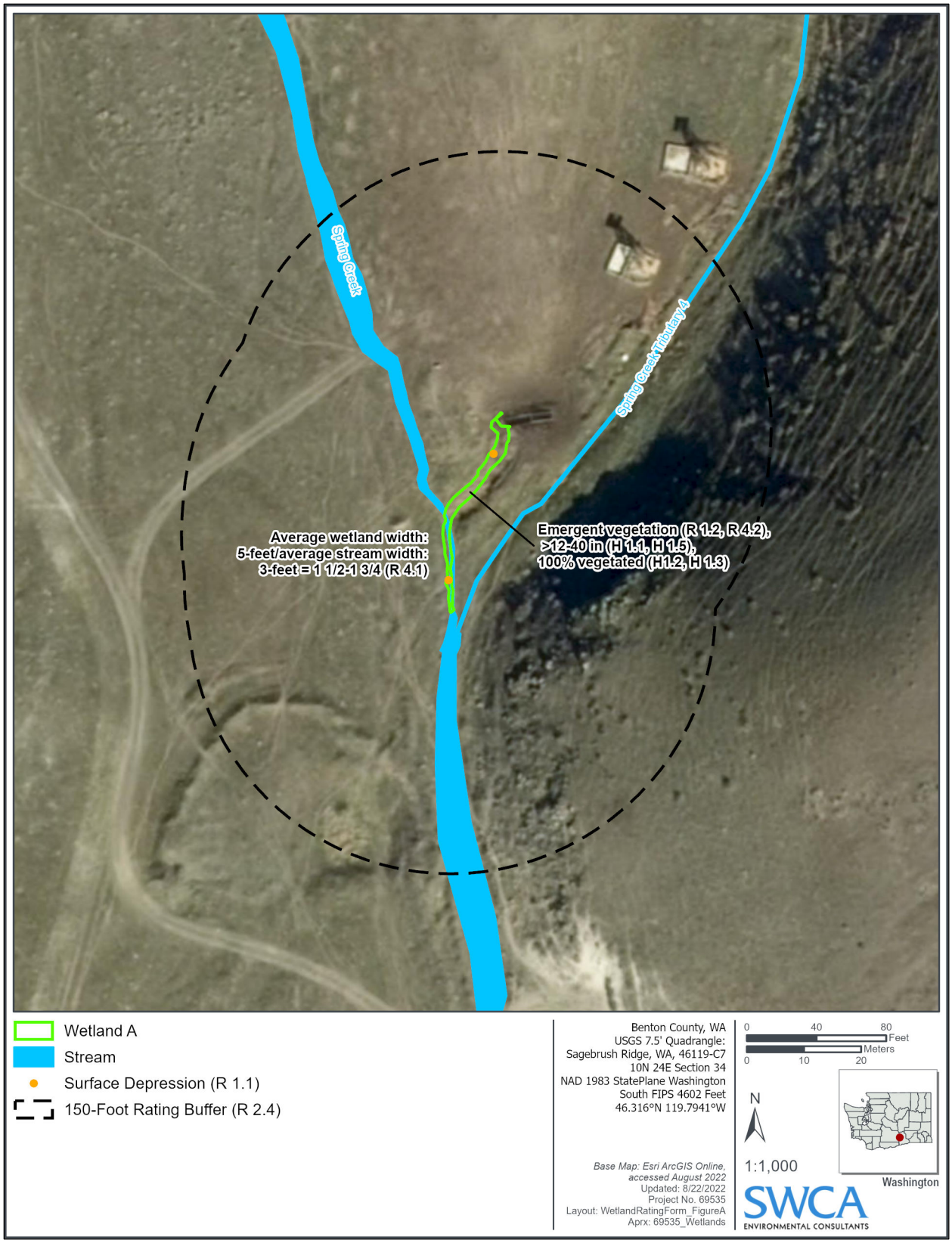


Figure A: Wetland A

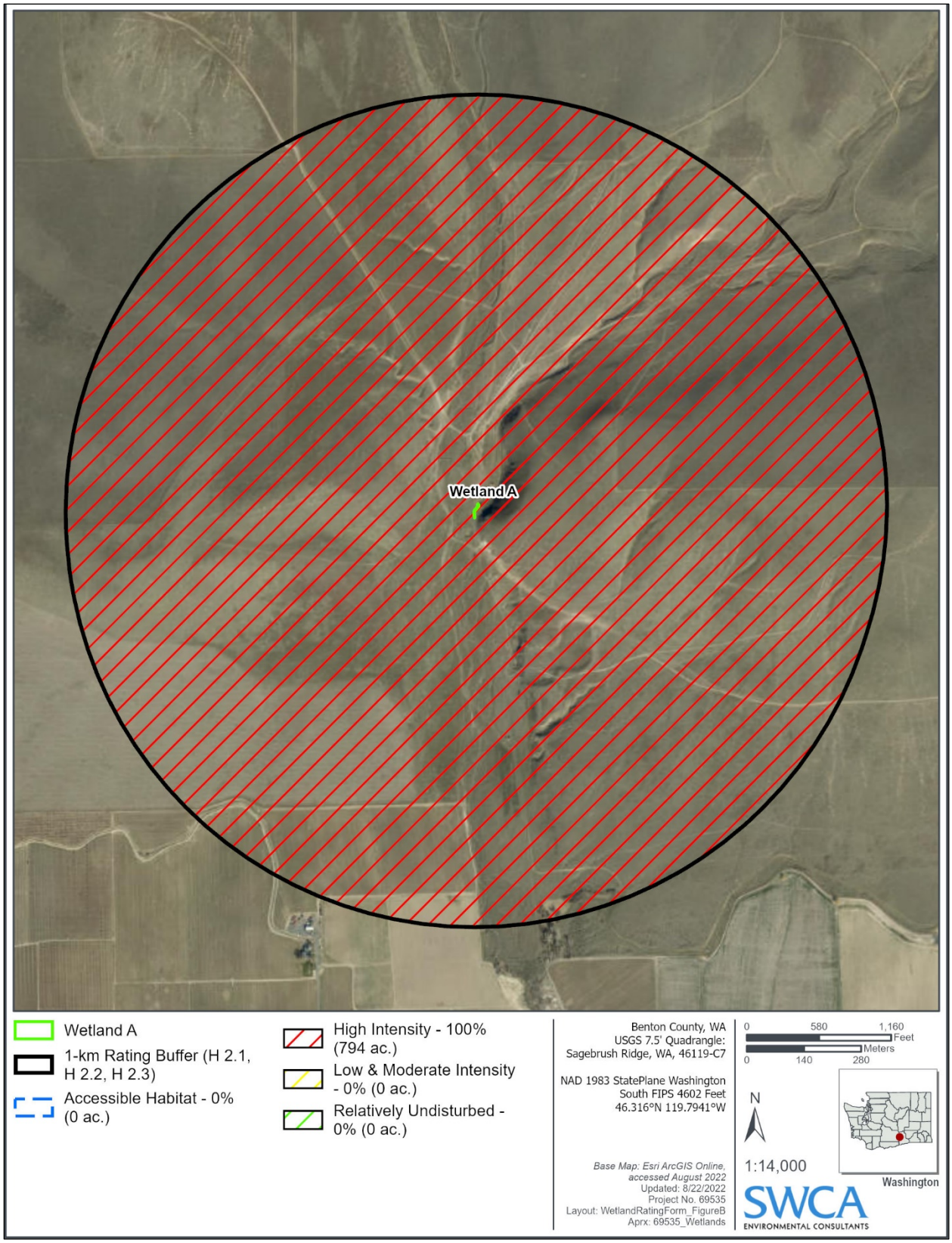


Figure B: Wetland A

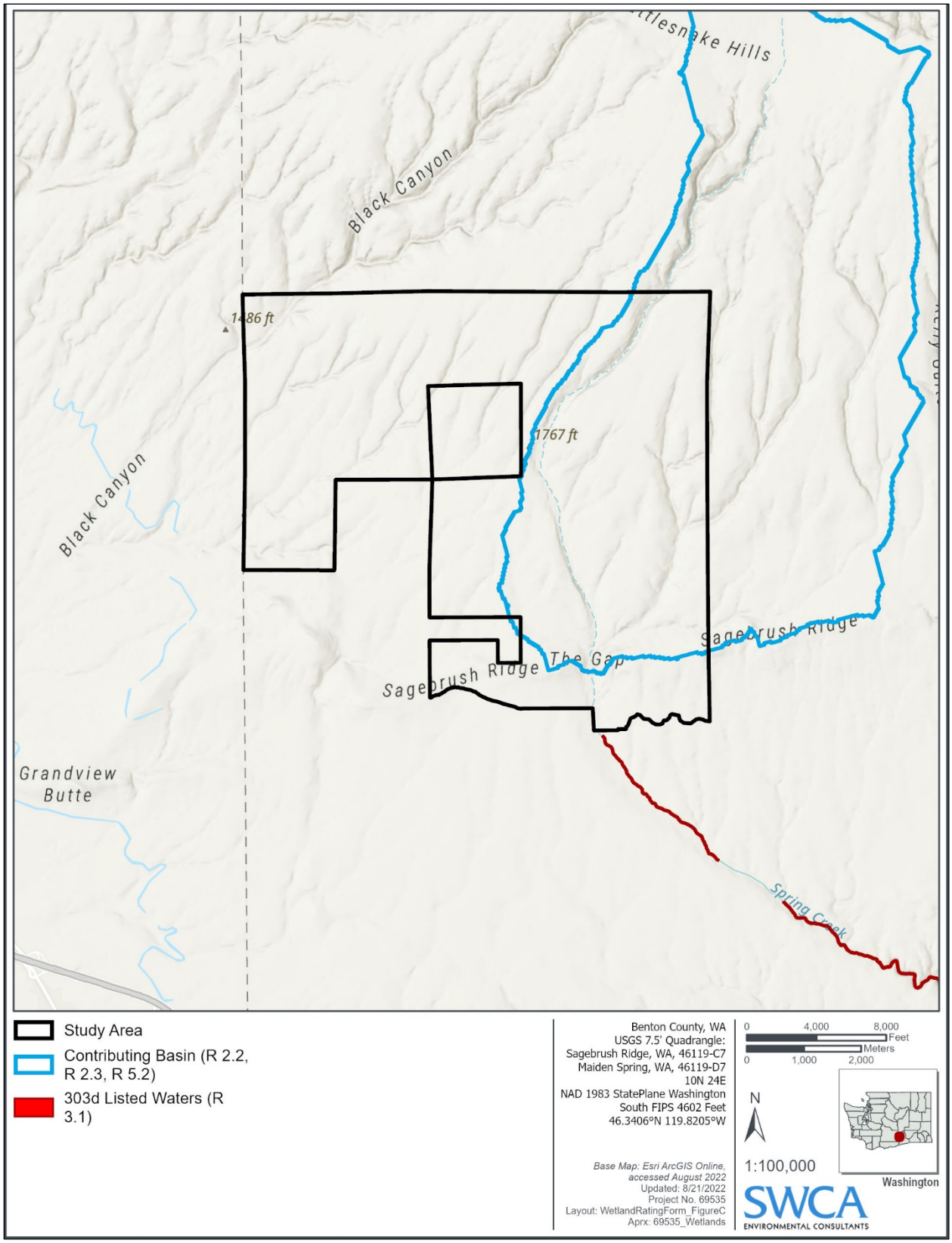


Figure C: Wetland A

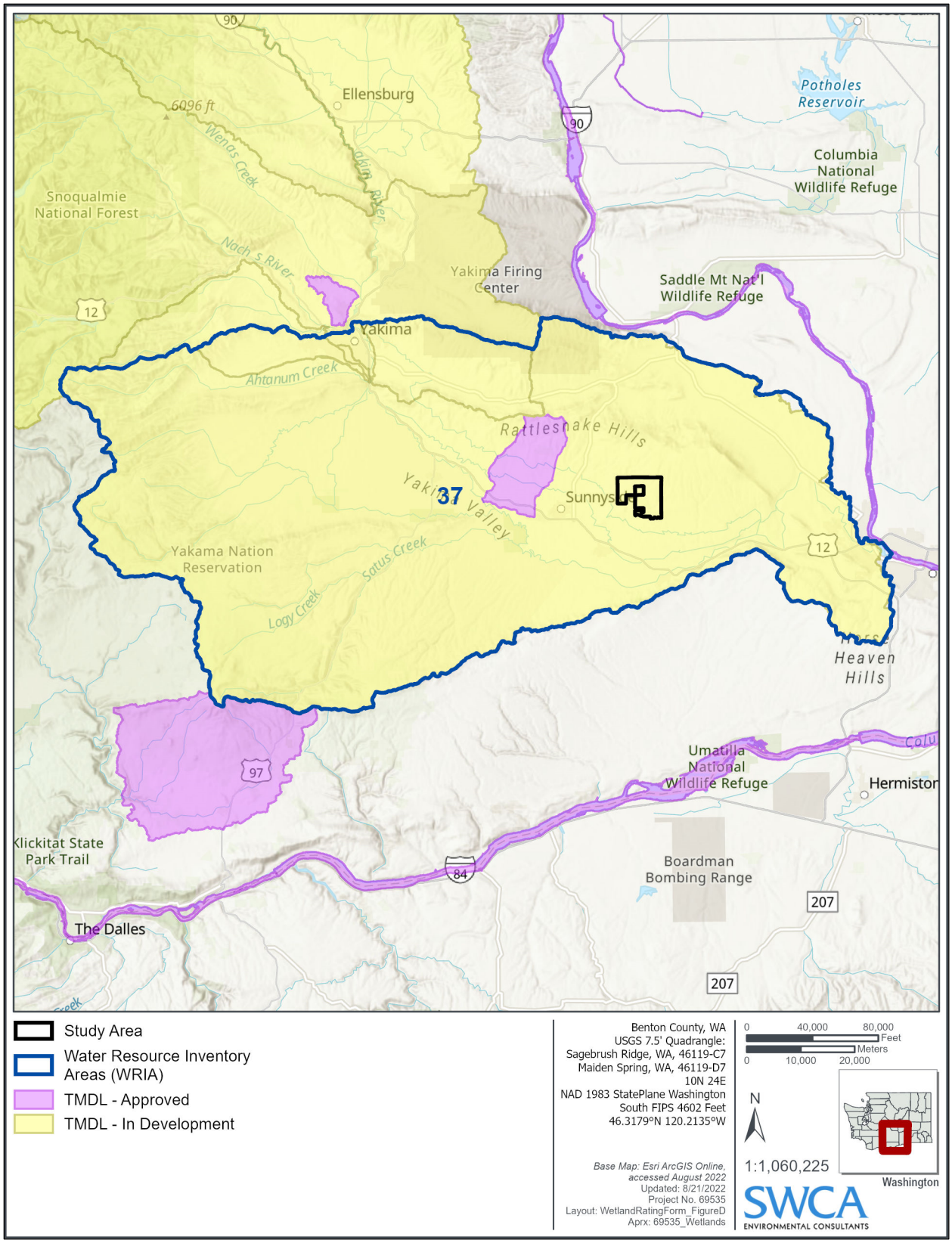


Figure D: Wetland A

Wetland name or number B

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): Wetland B Date of site visit: 6/29/2022

Rated by Jessalynn Spears & Chris Moller Trained by Ecology? X Yes ___ No Date of training 10/09/18

HGM Class used for rating Riverine Wetland has multiple HGM classes? ____Y X___N

NOTE: **Form is not complete without the figures requested** (*figures can be combined*).
Source of base aerial photo/map ESRI/Google Earth

OVERALL WETLAND CATEGORY ____ (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 22-27

_____**Category II** – Total score = 19-21

__X____ **Category III** – Total score = 16-18

_____**Category IV** – Total score = 9-15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H **M** L	H **M** L	H M **L**	
Landscape Potential	H **M** L	H **M** L	H M **L**	
Value	**H** M L	H M **L**	H **M** L	**TOTAL**
Score Based on Ratings	T	p	4	M6

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY *Circle the appropriate category*
Vernal Pools	**II** **III**
Alkali	**I**
Wetland of High Conservation Value	**I**
Bog and Calcareous Fens	**I**
Old Growth or Mature Forest – slow growing	**I**
Aspen Forest	**I**
Old Growth or Mature Forest – fast growing	**II**
Floodplain forest	**II**
None of the above	

Wetland name or number B

Maps and figures required to answer questions correctly for Eastern Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	A
Hydroperiods	H 1.2, H 1.3	A
Ponded depressions	R 1.1	A
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	A
Map of the contributing basin	R 2.2, R 2.3, R 5.2	C
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	A
Width of wetland vs. width of stream *(can be added to another figure)*	R 4.1	A
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	B
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	C
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	D

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	

Wetland name or number___B_____

HGM Classification of Wetland in Eastern Washington

For questions 1-4, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
   ___At least 30% of the open water area is deeper than 10 ft (3 m)

   NO – go to 2 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks;
   ___The water leaves the wetland **without being impounded**.

   NO - go to 3 YES – The wetland class is **Slope**
   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

3. Does the entire wetland unit **meet all** of the following criteria?
   ___ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river;
   ___ The overbank flooding occurs at least once every 10 years.

   NO - go to 4 YES – The wetland class is **Riverine**
   NOTE: The Riverine wetland can contain depressions that are filled with water when the river is not flooding.

4. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

   NO – go to 5 YES – The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-4 APPLY TO DIFFERENT AREAS IN THE WETLAND UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the wetland unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM Class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number B

RIVERINE WETLANDS **Water Quality Functions** - Indicators that the site functions to improve water quality	Points (only 1 score per box)
R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event: Depressions cover > 1/3 area of wetland — points = 6 Depressions cover > 1/10 area of wetland — points = 3 Depressions present but cover < 1/10 area of wetland — points = 1 No depressions present — points = 0	1
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height; **not** Cowardin classes): Forest or shrub > 2/3 the area of the wetland — points = 10 Forest or shrub 1/3 – 2/3 area of the wetland — points = 5 Ungrazed, herbaceous plants > 2/3 area of wetland — points = 5 Ungrazed herbaceous plants 1/3 – 2/3 area of wetland — points = 2 Forest, shrub, and ungrazed herbaceous < 1/3 area of wetland — points = 0	5
Total for R 1 — Add the points in the boxes above	6

Rating of Site Potential If score is: ___**12-16 = H** X **6-11 = M** ___**0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	
R 2.2. Does the contributing basin include a UGA or incorporated area? Yes = 1 No = 0	
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	1
R 2.4. Is > 10% of the area within 150 ft of wetland in land uses that generate pollutants Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4? Source_____ Yes = 1 No = 0	
Total for R 2 — Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___**3-6 = H** X **1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	1
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	1
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the drainage in which wetland is found.* Yes = 2 No = 0	2
Total for R 3 — Add the points in the boxes above	4

Rating of Value If score is: X **2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number B

RIVERINE WETLANDS **Hydrologic Functions** - Indicators that site functions to reduce flooding and stream erosion	Points (only 1 score per box)
R 4.0. Does the site have the potential to reduce flooding and erosion?	
R 4.1. Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 2 — points = 10 If the ratio is 1-2 — points = 8 If the ratio is ½-<1 — points = 4 If the ratio is ¼-< ½ — points = 2 If the ratio is < ¼ — points = 1	4
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes).* Forest or shrub for more than $^{2}/_{3}$ the area of the wetland — points = 6 Forest or shrub for >$^{1}/_{3}$ area OR emergent plants > $^{2}/_{3}$ area — points = 4 Forest or shrub for > $^{1}/_{10}$ area OR emergent plants > $^{1}/_{3}$ area — points = 2 Plants do not meet above criteria — points = 0	4
Total for R 5 — Add the points in the boxes above	8

Rating of Site Potential If score is: ___**12-16 = H** X **6-11 = M** ___**0-5 = L** *Record the rating on the first page*

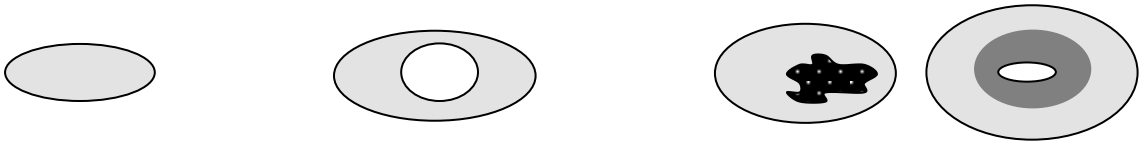
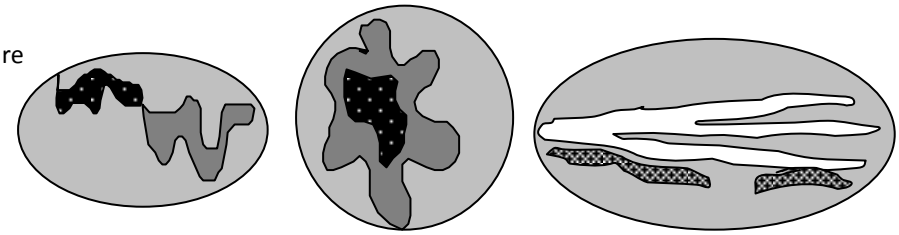
R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5	Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___**3 = H** X **1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 6.0. Are the hydrologic functions provided by the site valuable to society?	
R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site.* The sub-basin immediately down-gradient of site has surface flooding problems that result in damage to human or natural resources — points = 2 Surface flooding problems are in a basin farther down-gradient — points = 1 No flooding problems anywhere downstream — points = 0	0
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for R 6 — Add the points in the boxes above	0

Rating of Value If score is: ___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number B

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	(only 1 score per box)
H 1.0. Does the wetland have the potential to provide habitat for many species?	
H 1.1. Structure of the plant community: *Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ¼ ac or >= 10% of the wetland if wetland is < 2.5 ac.* ____Aquatic bed ____Emergent plants 0-12 in (0-30 cm) high are the highest layer and have > 30% cover ____Emergent plants >12-40 in (>30-100 cm) high are the highest layer with >30% cover ____Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% cover ____Scrub-shrub (areas where shrubs have >30% cover) 4 or more checks: points = 3 ____Forested (areas where trees have >30% cover) 3 checks: points = 2 2 checks: points = 1 1 check: points = 0	0
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0	0
H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac **OR** 10% of its area during the March to early June **OR** in August to the end of September? ***A**nswer YES for Lake Fringe wetlands*. Yes = 3 points & go to H 1.4 No = go to H 1.3.2 H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least ¼ ac or 10% of its area? *Answer yes only if H 1.3.1 is No*. Yes = 3 No = 0	0
H 1.4. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. D*ifferent patches of the same species can be combined to meet the size threshold. You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)* # of species ____ Scoring: > 9 species: points = 2 4-9 species: points = 1 < 4 species: points = 0	0
H 1.5. Interspersion of habitats Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. *Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **High** = 3 points  Riparian braided channels with 2 classes	Figure__ 0

Wetland name or number B

H 1.6. Special habitat features *Check the habitat features that are present in the wetland. The number of checks is the number of points.* ____Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ____Cattails or bulrushes are present within the wetland. ____Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge. ____Emergent or shrub vegetation in areas that are permanently inundated/ponded. ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity ____ Invasive species cover less than 20% in each stratum of vegetation *(canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)*	2
Total for H 1 Add the points in the boxes above	2

Rating of Site Potential If score is: ___**15-18 = H** ___**7-14 = M** ___**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: *Calculate:* % undisturbed habitat __0__ **+** [(% moderate and low intensity land uses)/2] __0__ **=** __0__ % > $^1/_3$ (33.3%) of 1 km Polygon points = 3 20-33% of 1km Polygon points = 2 10-19% of 1km Polygon points = 1 <10% of 1km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. *Calculate:* % undisturbed habitat __0__ **+** [(% moderate and low intensity land uses)/2] __0__ **=** __0__ % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of Polygon points = 0	0
H 2.3. Land use intensity in 1 km Polygon: > 50% of Polygon is high intensity land use points = (- 2) Does not meet criterion above points = 0	-2
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. *Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs* Yes = 3 No = 0	0
Total for H 2 Add the points in the boxes above	-2

Rating of Landscape Potential If score is: ___**4-9 = H** ___**1-3 = M** ___**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose the highest score that applies to the wetland being rated* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see Appendix B) — It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) — It is mapped as a location for an individual WDFW species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1 Site does not meet any of the criteria above points = 0	1

Rating of Value If score is: ___**2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number B

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Vernal pools Is the wetland **less than 4000 ft²**, and does it meet at least **two** of the following criteria? — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool*. — The soil in the wetland is shallow [< 1 ft (30 cm)deep] and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the wet season. Yes **–** Go to **SC 1.1** No = **Not a vernal pool** SC 1.1. Is the vernal pool relatively undisturbed in February and March? Yes **–** Go to **SC 1.2** No = **Not a vernal pool with special characteristics**	
SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? Yes = **Category II** No = **Category III**	**Cat. II** **Cat. III**
SC 2.0. Alkali wetlands Does the wetland meet **one** of the following criteria? — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 4 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meet two of the following three sub-criteria? — Salt encrustations around more than 75% of the edge of the wetland — More than ¾ of the plant cover consists of species listed on Table 4 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. Yes = **Category I** No= **Not an alkali wetland**	**Cat. I**
SC 3.0. Wetlands of High Conservation Value (WHCV) SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 3.2** No – Go to **SC 3.3** SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 3.4** No = **Not a WHCV** SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and it is listed on their website? Yes = **Category I** No =**Not a WHCV**	**Cat. I**

Wetland name or number B

SC 4.0 Bogs and Calcareous Fens Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? *Use the key below to identify if the wetland is a bog or calcareous fen.* ***If you answer yes you will still need to rate the wetland based on its functions.*** SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? *See Appendix C for a field key to identify organic soils*. Yes – Go to **SC 4.3** No – Go to **SC 4.2** SC 4.2. Does an area within the wetland have organic soils, either peats or mucks, that are less than 16 in deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 4.3** No = **Is not a bog for rating** SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? Yes = **Category I bog** No – Go to **SC 4.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 5 are present, the wetland is a bog. SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No – Go to **SC 4.5** SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? Yes = **Is a Calcareous Fen for purpose of rating** No – Go to **SC 4.6** SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: — Marl deposits [calcium carbonate ($CaCO_3$) precipitate] occur on the soil surface or plant stems — The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland Yes = **Is a Category I calcareous fen** No = **Is not a calcareous fen**	**Cat. I** **Cat. I**

SC 5.0. Forested Wetlands Does the wetland have an area of forest rooted within its boundary that meets **at least one** of the following three criteria? (*Continue only if you have identified that a forested class is present in question H 1.1*) — The wetland is within the 100 year floodplain of a river or stream — Aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species — There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see definitions in question H3.1)* Yes – Go to **SC 5.1** No = **Not a forested wetland with special characteristics**	
SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (*see Table 7*)? Yes = **Category I** No – Go to **SC 5.2**	**Cat. I**
SC 5.2. Does the wetland have areas where aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species? Yes = **Category I** No – Go to **SC 5.3**	**Cat. I**
SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (*see Table 7*)? Yes = **Category II** No – Go to **SC 5.4**	**Cat. II**
SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? Yes = **Category II** No = **Not a forested wetland with special characteristics**	**Cat. II**
Category of wetland based on Special Characteristics *Choose the highest rating if wetland falls into several categories* If you answered No for all types, enter "Not Applicable" on Summary Form	

Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: ***NOTE:*** *This question is independent of the land use between the wetland and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 12 in (30 cm)in eastern Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

— **Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).

— **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).

— **Juniper Savannah:** All juniper woodlands.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

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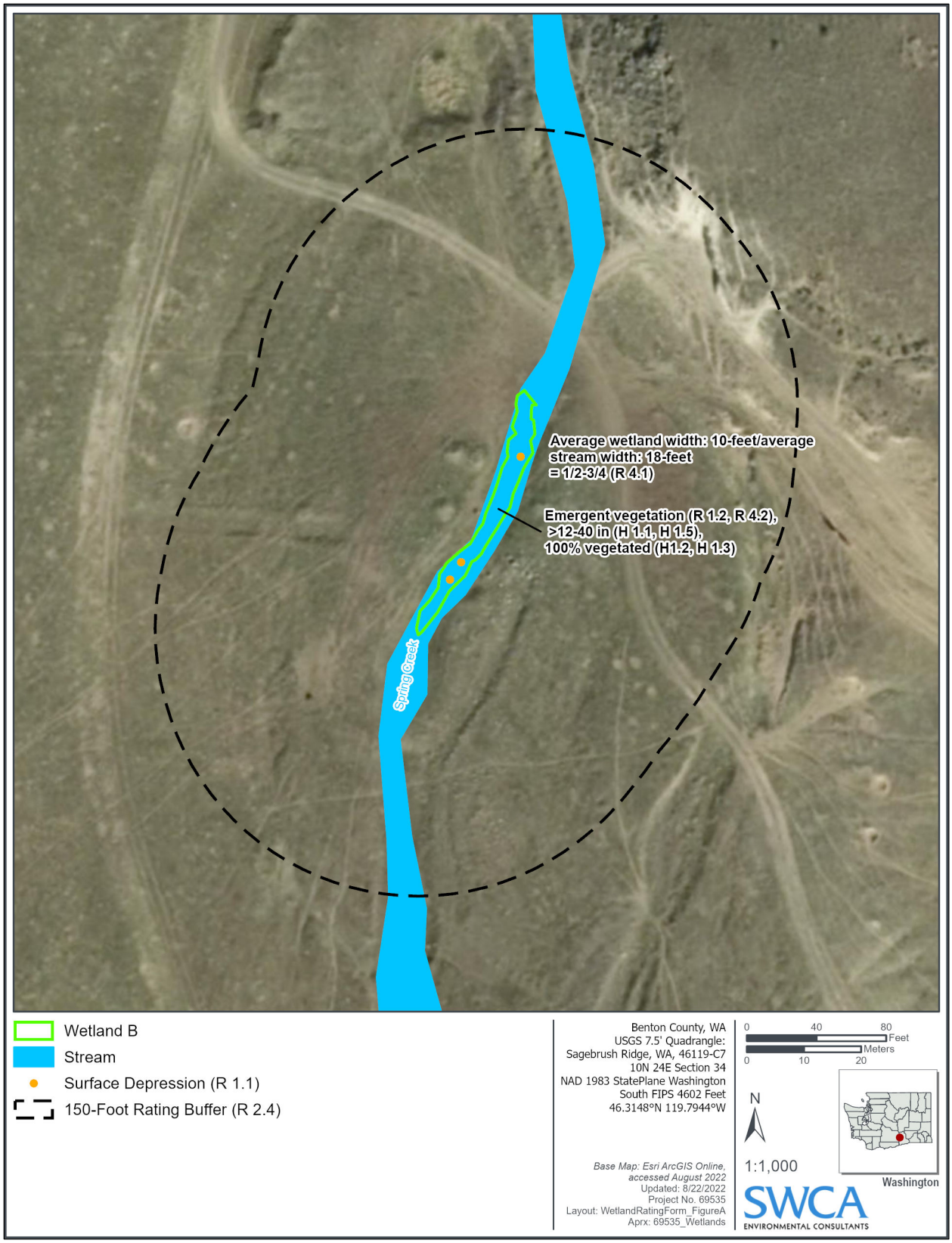


Figure A: Wetland B

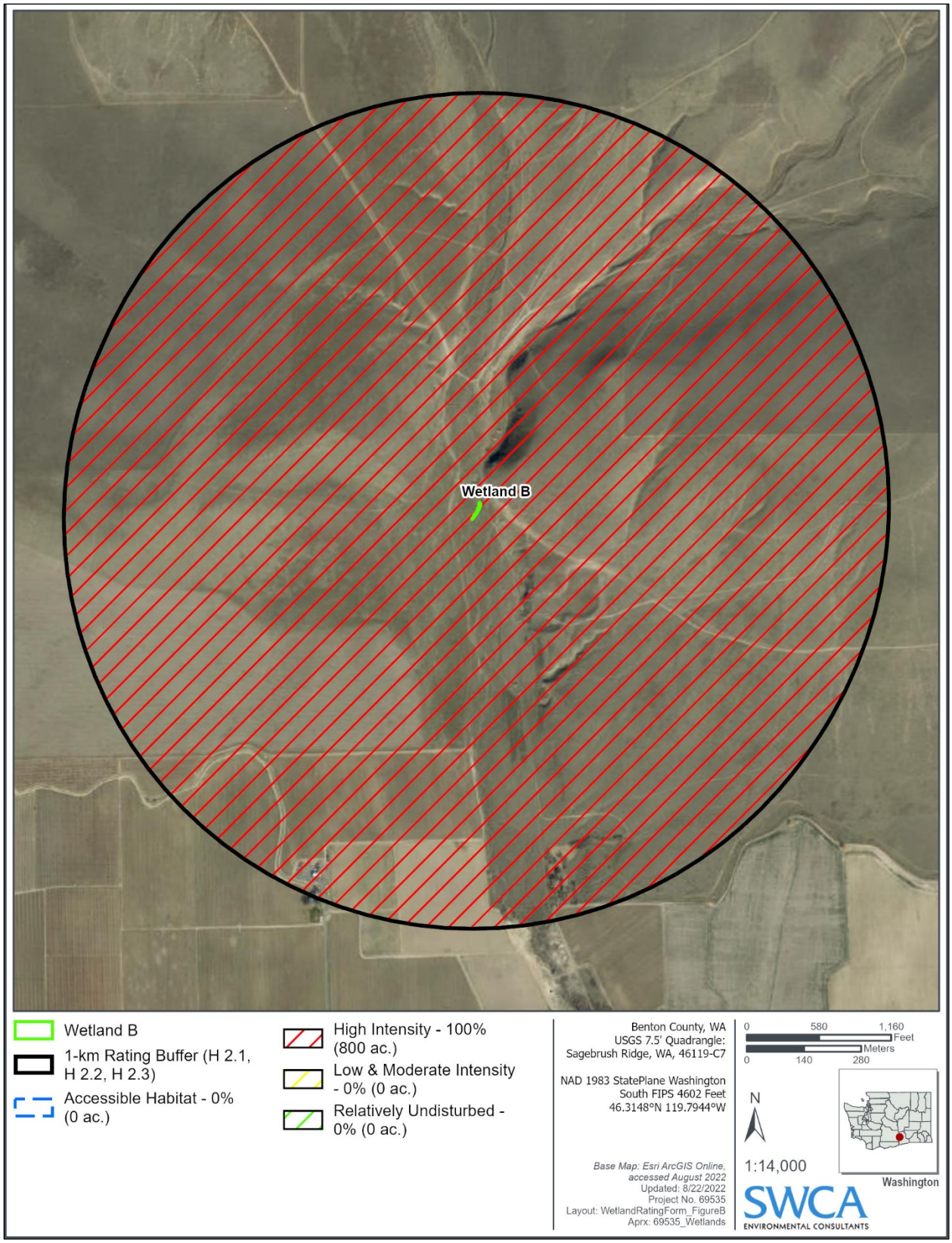


Figure B: Wetland B

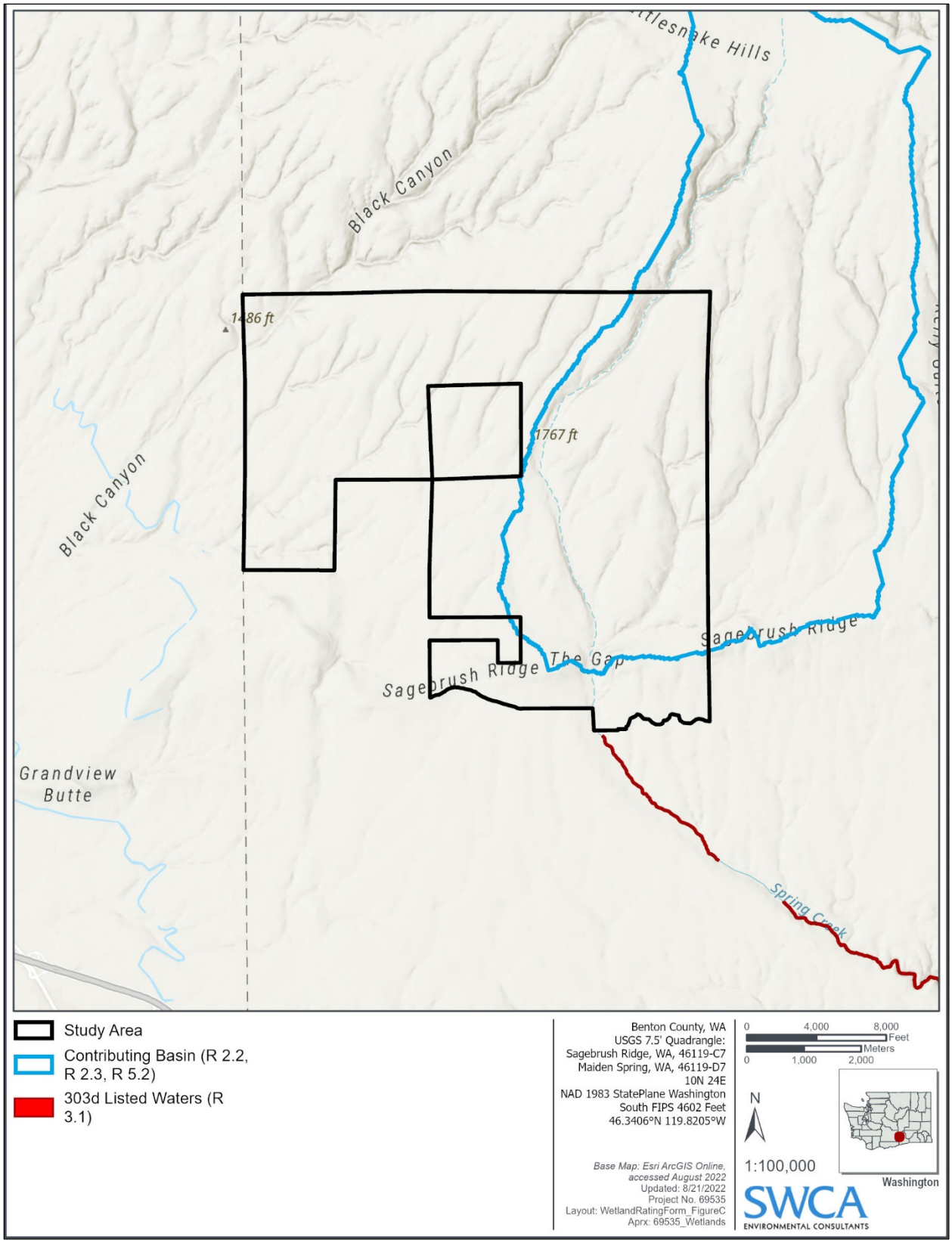


Figure C: Wetland B

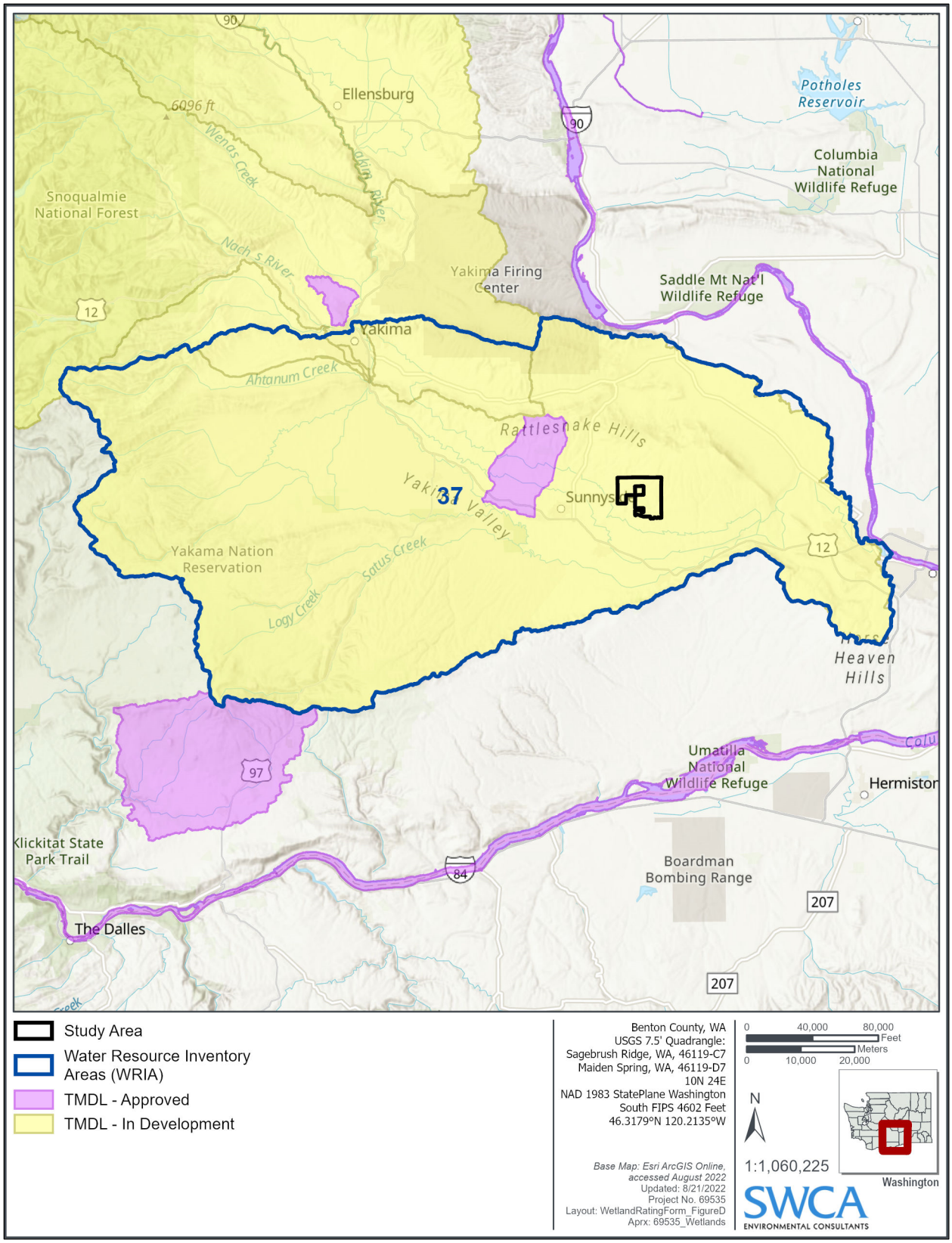


Figure D: Wetland B

Wetland name or number C

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): Wetland C Date of site visit: 6/30/2022

Rated by Jessalynn Spears & Chris Moller Trained by Ecology? X Yes ___ No Date of training 10/09/18

HGM Class used for rating Riverine Wetland has multiple HGM classes? ____Y X___N

NOTE: **Form is not complete without the figures requested** (*figures can be combined*).
Source of base aerial photo/map ESRI/Google Earth

OVERALL WETLAND CATEGORY ____ (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 22-27

_____**Category II** – Total score = 19-21

_____**Category III** – Total score = 16-18

X **Category IV** – Total score = 9-15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H M **L**	H **M** L	H M **L**	
Landscape Potential	H **M** L	H **M** L	H M **L**	
Value	**H** M L	H M **L**	H **M** L	**TOTAL**
Score Based on Ratings	6	5	4	15

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY *Circle the appropriate category*
Vernal Pools	**II** **III**
Alkali	**I**
Wetland of High Conservation Value	**I**
Bog and Calcareous Fens	**I**
Old Growth or Mature Forest – slow growing	**I**
Aspen Forest	**I**
Old Growth or Mature Forest – fast growing	**II**
Floodplain forest	**II**
None of the above	

Wetland name or number__C_____

Maps and figures required to answer questions correctly for Eastern Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	A
Hydroperiods	H 1.2, H 1.3	A
Ponded depressions	R 1.1	A
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	A
Map of the contributing basin	R 2.2, R 2.3, R 5.2	C
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	A
Width of wetland vs. width of stream *(can be added to another figure)*	R 4.1	A
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	B
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	C
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	D

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	

Wetland name or number___C_____

HGM Classification of Wetland in Eastern Washington

For questions 1-4, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
   ___At least 30% of the open water area is deeper than 10 ft (3 m)

   NO – go to 2 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks;
   ___The water leaves the wetland **without being impounded**.

   NO - go to 3 YES – The wetland class is **Slope**
   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

3. Does the entire wetland unit **meet all** of the following criteria?
   ___ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river;
   ___ The overbank flooding occurs at least once every 10 years.

   NO - go to 4 YES – The wetland class is **Riverine**
   NOTE: The Riverine wetland can contain depressions that are filled with water when the river is not flooding.

4. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

   NO – go to 5 YES – The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-4 APPLY TO DIFFERENT AREAS IN THE WETLAND UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

Wetland name or number C

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the wetland unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM Class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine (the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number__C_____

RIVERINE WETLANDS **Water Quality Functions** - Indicators that the site functions to improve water quality	Points (only 1 score per box)
R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event: Depressions cover >1/3 area of wetland points = 6 Depressions cover > 1/10 area of wetland points = 3 Depressions present but cover < 1/10 area of wetland points = 1 No depressions present points = 0	0
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height; **not** Cowardin classes): Forest or shrub > 2/3 the area of the wetland points = 10 Forest or shrub 1/3 – 2/3 area of the wetland points = 5 Ungrazed, herbaceous plants > 2/3 area of wetland points = 5 Ungrazed herbaceous plants 1/3 – 2/3 area of wetland points = 2 Forest, shrub, and ungrazed herbaceous < 1/3 area of wetland points = 0	5
Total for R 1 Add the points in the boxes above	5

Rating of Site Potential If score is:___**12-16 = H** ___**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	0
R 2.2. Does the contributing basin include a UGA or incorporated area? Yes = 1 No = 0	0
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	1
R 2.4. Is > 10% of the area within 150 ft of wetland in land uses that generate pollutants Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4? Source_____ Yes = 1 No = 0	0
Total for R 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is:___**3-6 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	0
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	1
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the drainage in which wetland is found*. Yes = 2 No = 0	2
Total for R 3 Add the points in the boxes above	3

Rating of Value If score is:___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number__C_____

RIVERINE WETLANDS **Hydrologic Functions** - Indicators that site functions to reduce flooding and stream erosion	Points (only 1 score per box)
R 4.0. Does the site have the potential to reduce flooding and erosion?	
R 4.1. Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 2 points = 10 If the ratio is 1-2 points = 8 If the ratio is ½-<1 points = 4 If the ratio is ¼-< ½ points = 2 If the ratio is < ¼ points = 1	2
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes).* Forest or shrub for more than $^2/_3$ the area of the wetland points = 6 Forest or shrub for >$^1/_3$ area OR emergent plants > $^2/_3$ area points = 4 Forest or shrub for > $^1/_{10}$ area OR emergent plants > $^1/_3$ area points = 2 Plants do not meet above criteria points = 0	4
Total for R 5 Add the points in the boxes above	6

Rating of Site Potential If score is:___**12-16 = H** ___**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

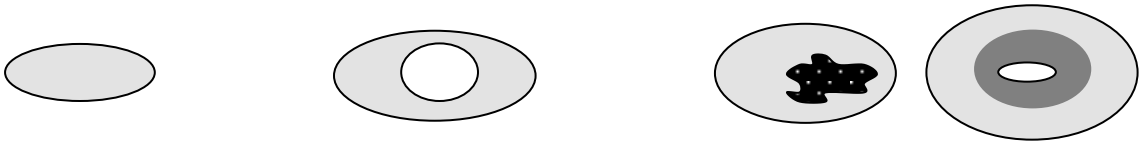
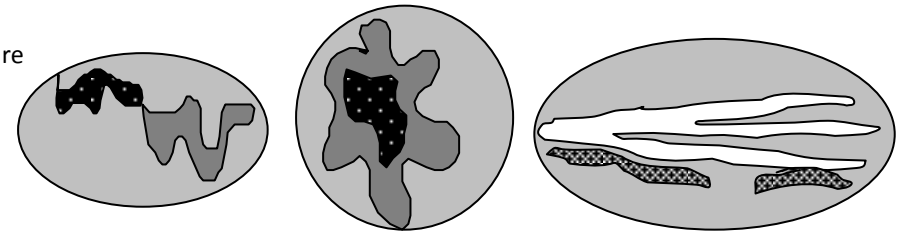
R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5	Add the points in the boxes above	1

Rating of Landscape Potential If score is:___**3 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 6.0. Are the hydrologic functions provided by the site valuable to society?	
R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site.* The sub-basin immediately down-gradient of site has surface flooding problems that result in damage to human or natural resources points = 2 Surface flooding problems are in a basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	0
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for R 6 Add the points in the boxes above	0

Rating of Value If score is:___**2-4 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number C

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	(only 1 score per box)
H 1.0. Does the wetland have the potential to provide habitat for many species?	
H 1.1. Structure of the plant community: *Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ¼ ac or >= 10% of the wetland if wetland is < 2.5 ac.* ____Aquatic bed ____Emergent plants 0-12 in (0-30 cm) high are the highest layer and have > 30% cover ____Emergent plants >12-40 in (>30-100 cm) high are the highest layer with >30% cover ____Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% cover ____Scrub-shrub (areas where shrubs have >30% cover) 4 or more checks: points = 3 ____Forested (areas where trees have >30% cover) 3 checks: points = 2 2 checks: points = 1 1 check: points = 0	0
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0	0
H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac **OR** 10% of its area during the March to early June **OR** in August to the end of September? ***A**nswer YES for Lake Fringe wetlands*. Yes = 3 points & go to H 1.4 No = go to H 1.3.2 H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least ¼ ac or 10% of its area? *Answer yes only if H 1.3.1 is No*. Yes = 3 No = 0	0
H 1.4. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. D*ifferent patches of the same species can be combined to meet the size threshold. You do not have to name the species.* *Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)* # of species ____ Scoring: > 9 species: points = 2 4-9 species: points = 1 < 4 species: points = 0	0
H 1.5. Interspersion of habitats Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. *Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **High** = 3 points  Riparian braided channels with 2 classes	Figure__ 0

Wetland name or number C

H 1.6. Special habitat features *Check the habitat features that are present in the wetland. The number of checks is the number of points.* ____Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. ____Cattails or bulrushes are present within the wetland. ____Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge. ____Emergent or shrub vegetation in areas that are permanently inundated/ponded. ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity ____ Invasive species cover less than 20% in each stratum of vegetation *(canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)*	0
Total for H 1 Add the points in the boxes above	0

Rating of Site Potential If score is: ___**15-18 = H** ___**7-14 = M** ___**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: *Calculate:* % undisturbed habitat 0 **+** [(% moderate and low intensity land uses)/2] 0 **=** 0 % > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1km Polygon points = 2 10-19% of 1km Polygon points = 1 <10% of 1km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. *Calculate:* % undisturbed habitat 0 **+** [(% moderate and low intensity land uses)/2] 45 **=** 45 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of Polygon points = 0	0
H 2.3. Land use intensity in 1 km Polygon: > 50% of Polygon is high intensity land use points = (- 2) Does not meet criterion above points = 0	-2
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. *Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs* Yes = 3 No = 0	0
Total for H 2 Add the points in the boxes above	-2

Rating of Landscape Potential If score is: ___**4-9 = H** ___**1-3 = M** ___**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose the highest score that applies to the wetland being rated* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see Appendix B) — It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) — It is mapped as a location for an individual WDFW species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1 Site does not meet any of the criteria above points = 0	1

Rating of Value If score is: ___**2 = H** ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number C

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Vernal pools Is the wetland **less than 4000 ft^2**, and does it meet at least **two** of the following criteria? — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool*. — The soil in the wetland is shallow [< 1 ft (30 cm)deep] and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the wet season. Yes **–** Go to **SC 1.1** No = **Not a vernal pool** SC 1.1. Is the vernal pool relatively undisturbed in February and March? Yes **–** Go to **SC 1.2** No = **Not a vernal pool with special characteristics**	
SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? Yes = **Category II** No = **Category III**	**Cat. II** **Cat. III**
SC 2.0. Alkali wetlands Does the wetland meet **one** of the following criteria? — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 4 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meet two of the following three sub-criteria? — Salt encrustations around more than 75% of the edge of the wetland — More than ¾ of the plant cover consists of species listed on Table 4 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. Yes = **Category I** No= **Not an alkali wetland**	**Cat. I**
SC 3.0. Wetlands of High Conservation Value (WHCV) SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 3.2** No – Go to **SC 3.3** SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 3.4** No = **Not a WHCV** SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and it is listed on their website? Yes = **Category I** No =**Not a WHCV**	**Cat. I**

Wetland name or number__C_____

SC 4.0 Bogs and Calcareous Fens Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? *Use the key below to identify if the wetland is a bog or calcareous fen.* ***If you answer yes you will still need to rate the wetland based on its functions.*** SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? *See Appendix C for a field key to identify organic soils*. Yes – Go to **SC 4.3** No – Go to **SC 4.2** SC 4.2. Does an area within the wetland have organic soils, either peats or mucks, that are less than 16 in deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 4.3** No = **Is not a bog for rating** SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? Yes = **Category I bog** No – Go to **SC 4.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 5 are present, the wetland is a bog. SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No – Go to **SC 4.5** SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? Yes = **Is a Calcareous Fen for purpose of rating** No – Go to **SC 4.6** SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: — Marl deposits [calcium carbonate ($CaCO_3$) precipitate] occur on the soil surface or plant stems — The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland Yes = **Is a Category I calcareous fen** No = **Is not a calcareous fen**	**Cat. I** **Cat. I**

SC 5.0. Forested Wetlands Does the wetland have an area of forest rooted within its boundary that meets **at least one** of the following three criteria? (*Continue only if you have identified that a forested class is present in question H 1.1*) — The wetland is within the 100 year floodplain of a river or stream — Aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species — There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see definitions in question H3.1)* Yes – Go to **SC 5.1** No = **Not a forested wetland with special characteristics**	
SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (*see Table 7*)? Yes = **Category I** No – Go to **SC 5.2** SC 5.2. Does the wetland have areas where aspen (*Populus tremuloides*) represents at least 20% of the total cover of woody species? Yes = **Category I** No – Go to **SC 5.3** SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (*see Table 7*)? Yes = **Category II** No – Go to **SC 5.4** SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? Yes = **Category II** No = **Not a forested wetland with special characteristics**	**Cat. I** **Cat. I** **Cat. II** **Cat. II**
Category of wetland based on Special Characteristics *Choose the highest rating if wetland falls into several categories* If you answered No for all types, enter "Not Applicable" on Summary Form	

Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: ***NOTE:*** *This question is independent of the land use between the wetland and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 12 in (30 cm)in eastern Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

— **Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).

— **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).

— **Juniper Savannah:** All juniper woodlands.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

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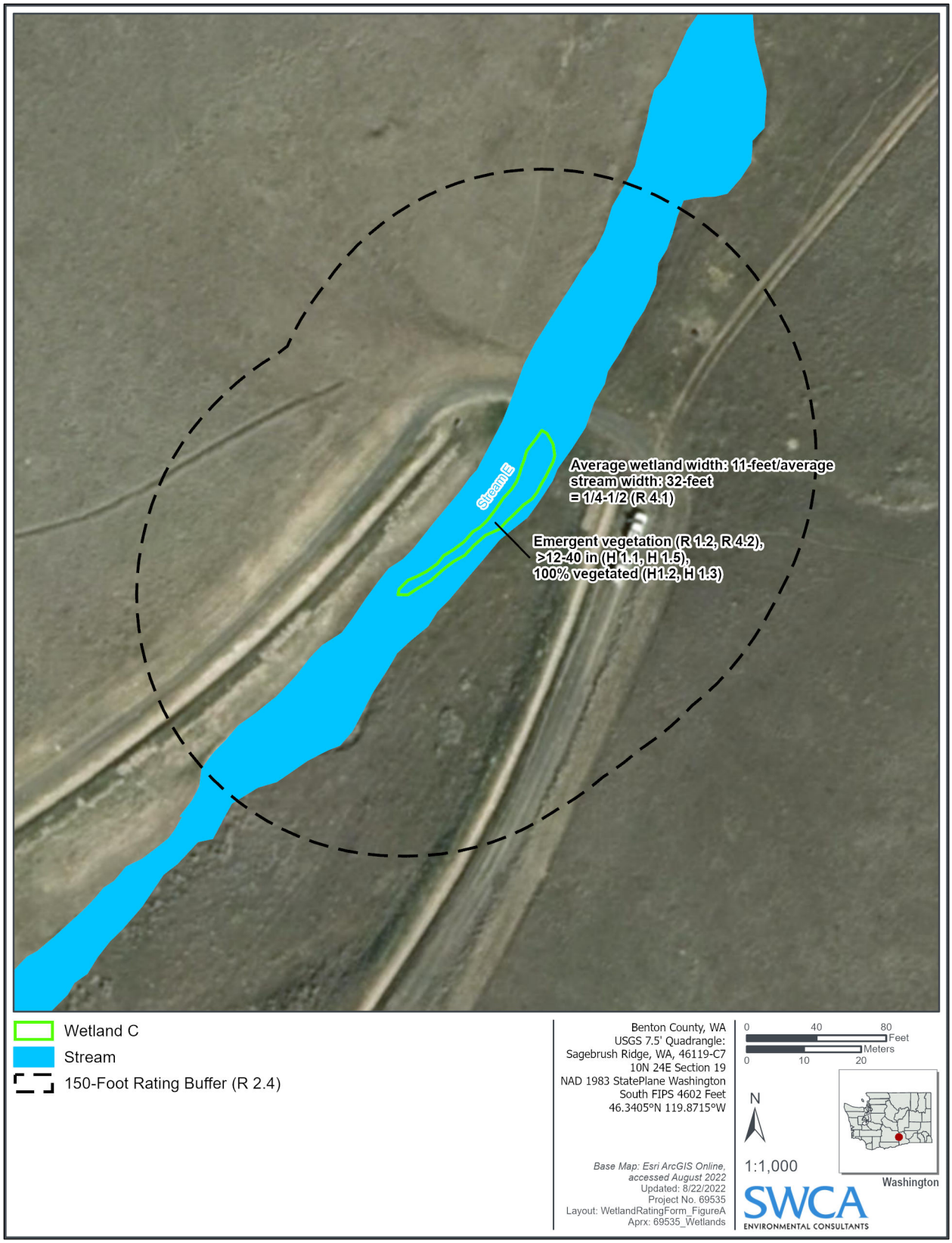


Figure A: Wetland C

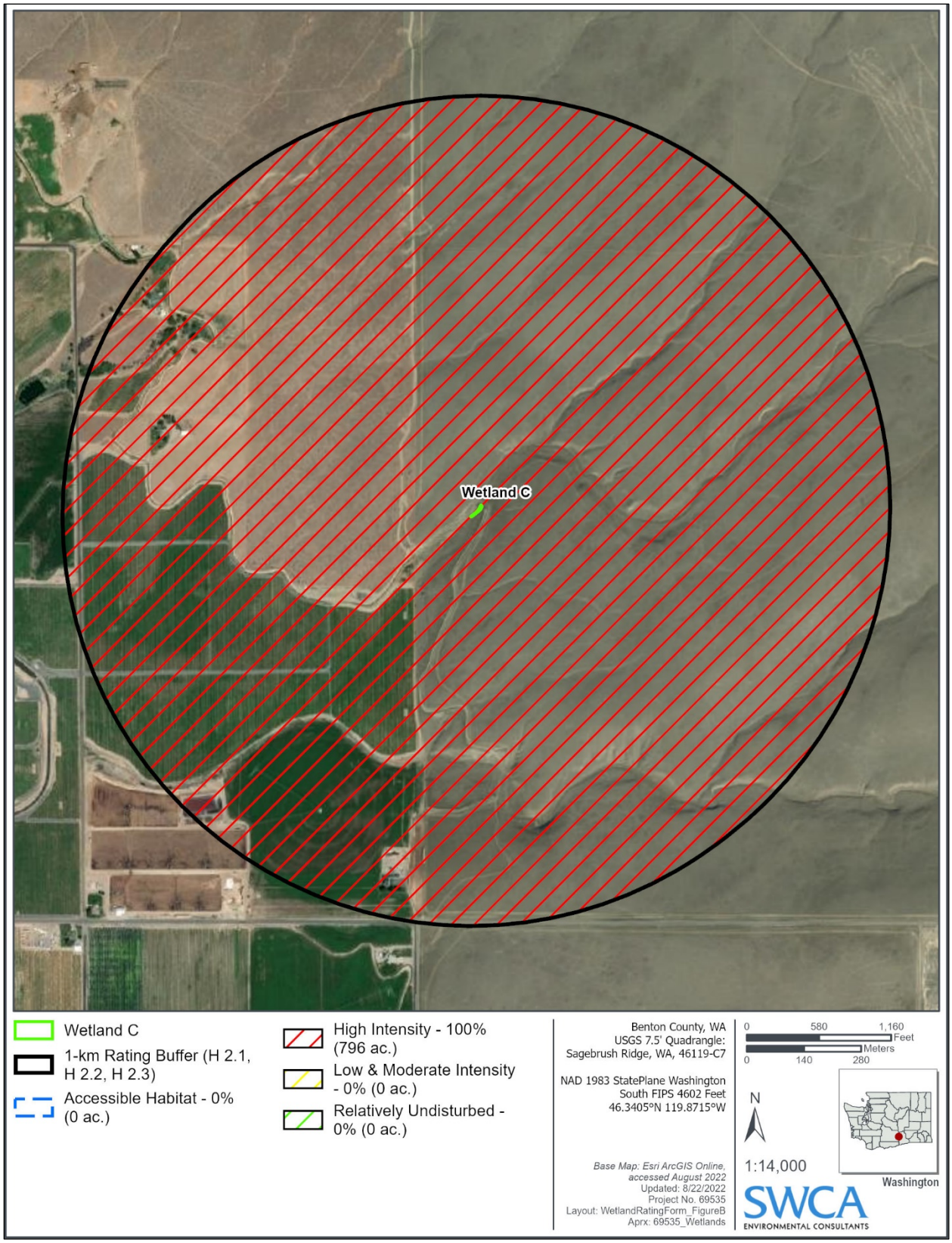


Figure B: Wetland C

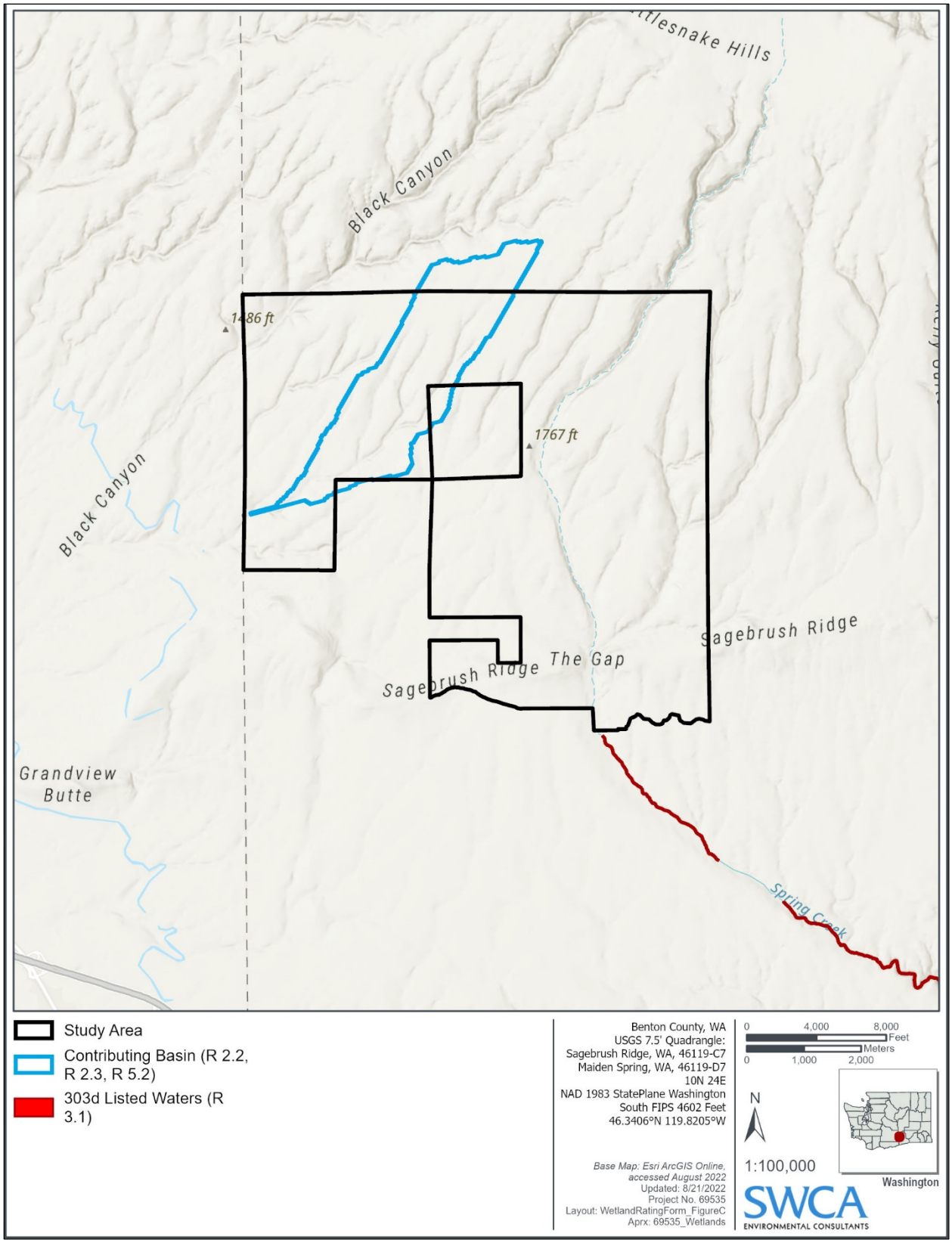


Figure C: Wetland C

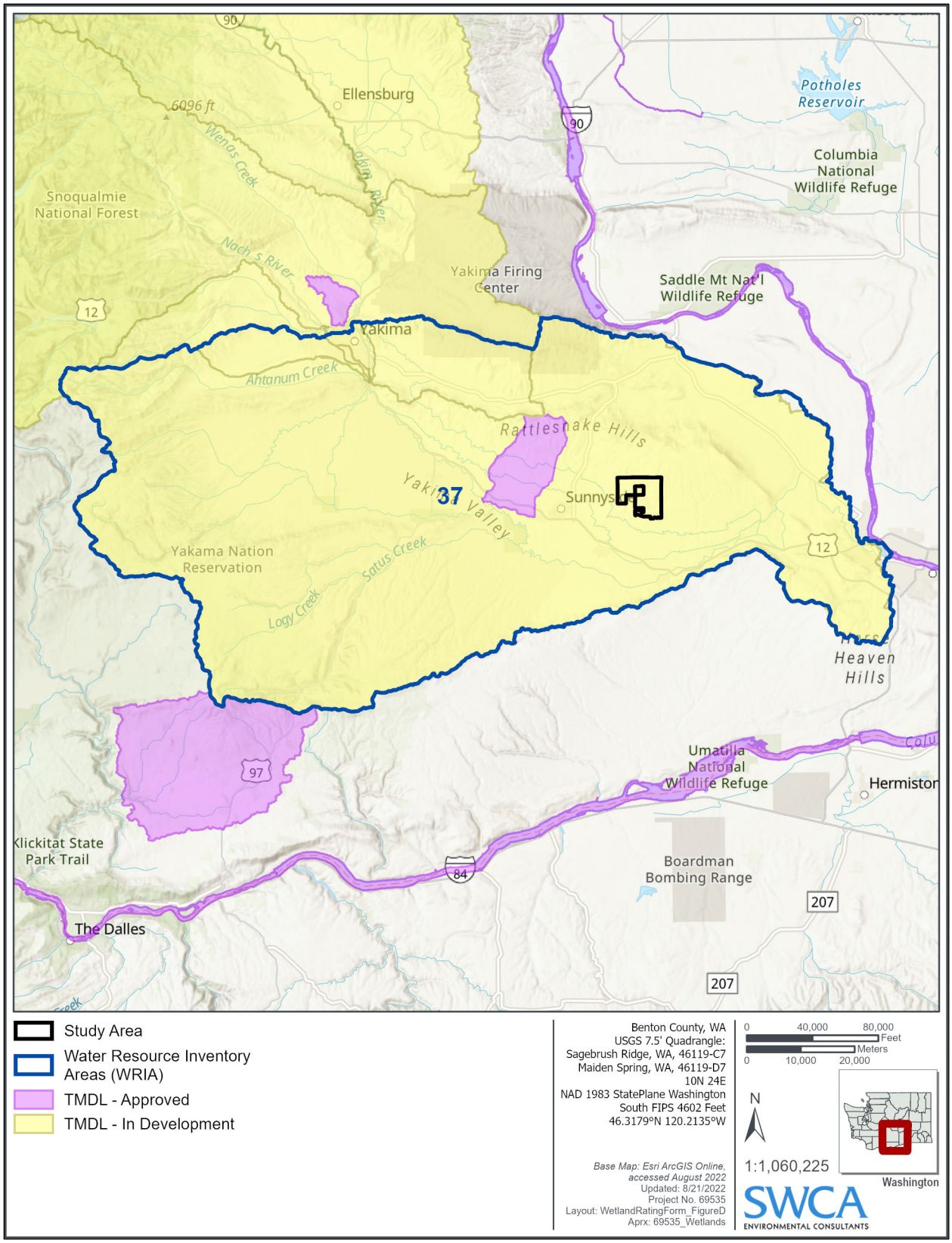


Figure D: Wetland C

Appendix D

Precipitation Data

Assessing Rainfall for the Preceding 3-Month Period (Antecedent Rainfall)
WETS Station: PROSSER WA 1991-2020
Measured Rainfall: Prosser WA 2021-2022 Water Year

Prior Month Most Recent First		WETS Rainfall Percentile 30th (inches)	WETS Rainfall Percentile 70th (inches)	Measured Rainfall inches	Condition Dry, Wet, Normal	Condition Value (1=dry, 2=normal, 3=wet)	Month Weight	Multiply previous 2 columns
1st	June	0.29	0.71	1.22	Wet	3	3	9
2nd	May	0.40	0.89	1.70	Wet	3	2	6
3rd	April	0.27	0.76	1.40	Wet	3	1	3
				4.32				
					Normals			
	Jan-22	0.68	1.32	0.48	*1.24*			
	Feb-22	0.46	1.01	0.07	*0.90*			
	Mar-22	0.39	0.77	0.63	*0.69*			
	Apr-22	0.27	0.76	1.40	*0.74*			
	May-22	0.40	0.89	1.70	*0.88*			
	Jun-22	0.29	0.71	1.22	*0.68*			
	Jul-21	0.00	0.23	0.00	*0.21*			
	Aug-21	0.08	0.20	0.04	*0.16*			
	Sep-21	0.12	0.29	0.76	*0.27*			
	Oct-21	0.37	0.95	0.81	*0.77*			
	Nov-21	0.53	1.07	1.57	*0.86*			
	Dec-21	0.72	1.56	0.87	*1.33*			
	Totals:	4.31	9.76	9.55	*8.73*		**Sum**	**18**

Rainfall of prior period was: **drier** than normal (sum is 6-9), **normal** (sum is 10-14), **wetter** than normal (sum is 15-18) — **Wetter than Normal**

Climate Period 1991-2020

Since Oct. 1st	Since Jan. 1st
Departure from Normal* 0.66	**Departure from Normal* 0.37**
WYTD*	CYTD*
8.75	5.50
Normal	*Normal*
8.09	*5.13*
*As of Date:	7/1/2022

WETS Table (based on climate period 1991-2020) and Measured Rainfall source: http://agacis.rcc-acis.org/
Normals are calculated based on climate period 1991-2020.

WETS Table

WETS Station: PROSSER, WA								
Requested years: 1991 - 2020								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	40.1	26.8	33.5	1.24	0.68	1.32	4	-
Feb	46.7	28.6	37.7	0.90	0.46	1.01	3	-
Mar	55.9	34.9	45.4	0.69	0.39	0.77	3	-
Apr	64.6	39.9	52.3	0.74	0.27	0.76	2	-
May	74.1	47.9	61.0	0.88	0.40	0.89	2	-
Jun	80.9	53.6	67.3	0.68	0.29	0.71	2	-
Jul	90.4	59.5	75.0	0.21	0.00	0.23	1	-
Aug	89.2	57.7	73.5	0.16	0.08	0.20	1	-
Sep	79.7	50.1	64.9	0.27	0.12	0.29	1	-
Oct	64.7	40.8	52.8	0.77	0.37	0.95	2	-
Nov	49.3	31.7	40.5	0.86	0.53	1.07	3	-
Dec	39.5	26.3	32.9	1.33	0.72	1.56	4	-
Annual:					-	-		
Average	64.6	41.5	53.0	-	-	-	-	-
Total	-	-	-	8.73			28	-

GROWING SEASON DATES

Years with missing data:	24 deg = 12	28 deg = 12	32 deg = 8
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 18	28 deg = 18	32 deg = 22
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	Insufficient data	Insufficient data	4/19 to 10/21: 185 days
70 percent *	Insufficient data	Insufficient data	4/8 to 11/1: 207 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1925							0.00						0.00
1926		M0.60	0.10	0.22	0.75	0.86		0.10	0.38	M0.88	M3.64	1.50	9.03
1927	M1.08	1.07	0.60	0.05	0.69	0.23	0.01	0.35	1.54	1.08	1.51	0.23	8.44
1928		0.10	0.87	M0.81	0.05	0.58			M0.27	0.36	M1.10	1.73	5.87
1929	1.10	M0.10	0.11		0.21	M0.67	0.00	0.01	M0.04	M0.17	0.03	1.74	4.18
1930	0.83	0.96	0.20	0.22	0.36	0.00	0.00	0.04	M0.03	0.10	0.35	0.21	3.30
1931	0.50	0.20	1.17	0.43	0.01	0.80	0.00	0.00	M0.17	0.51	1.51	3.02	8.32
1932	M0.48	0.37	0.75	0.39	0.62	0.00	0.05	0.10	0.00	0.94	1.00	0.43	5.13
1933	0.60	0.62	0.97	0.35	1.15	0.42	0.07	0.17	0.	0.	0.32	1.	7.36

									98	47		24	
1934	0.64	0.28	0.75	0.43	0.44	0.21	0.00	0.61	0.52	1.17	1.02	0.57	6.64
1935	0.14	0.53	0.02	0.38	0.07	0.28	0.34	T	0.05	0.90	0.40	1.13	4.24
1936	1.73	0.68	0.16	0.31	0.32	0.78	0.06	0.00	0.10	0.03	0.02	1.08	5.27
1937	0.88	0.90	M0.63	0.99	0.04	1.46	0.39	0.21	0.34	0.82	2.09	2.03	10.78
1938	0.80	0.73	1.05	0.30	0.22	1.64	0.00	0.02	0.03	0.92	0.46	0.39	6.56
1939	0.88	0.65	0.56	0.04	0.08	0.17	M0.16	0.00	0.66	0.31	T	1.14	4.65
1940	1.20	3.18	0.59	0.52	0.15	0.19	0.61	0.00	0.69	2.12	1.58	1.53	12.36
1941	1.61	0.87	0.28	0.38	1.11	1.74	0.30	0.78	0.66	0.80	0.95	0.60	10.08
1942	1.11	0.85	0.09	0.33	1.65	1.37	0.02	0.06	T	0.75	1.80	1.62	9.65
1943	0.41	0.73	0.50	1.08	0.25	0.22	0.00	0.25	0.00	1.58	0.31	0.41	5.74
1944	0.30	0.40	0.39	1.70	0.27	0.58	0.00	T	0.26	0.19	1.62	1.03	6.74
1945	0.98	1.24	0.79	0.48	1.74	0.06	0.03	0.05	0.48	0.70	0.82	1.55	8.92
1946	0.20	0.44	1.33	0.34	0.55	1.01	0.25	0.32	0.51	0.92	0.98	0.06	6.91
1947	M0.06	0.64	0.32	0.84	0.07	1.36	0.57	0.95	0.62	2.50	0.77	0.65	9.35
1948	1.44	0.76	0.07	0.89	1.41	1.54	0.32	0.25	0.21	0.77	0.95	1.07	9.68
1949	0.15	0.90	1.18	0.10	0.27	0.01	MT	0.06	0.70	0.30	1.39	0.05	5.11
1950	1.66	1.24	1.16	0.47	0.13	2.73	M0.02	0.03	0.10	2.73	0.81	1.17	12.25
1951	0.96	0.60	0.13	M0.36	0.57	1.19	0.16	0.31	0.56	1.29	M1.12	0.61	7.86
1952	0.66	0.51	0.41	0.42	0.52	0.91	T	0.07	0.16	0.03	0.23	M1.00	4.92
1953	2.35	0.25	0.23	0.83	M0.63	0.28	0.00	M0.48	0.00	0.74	1.48	0.83	8.10
1954	0.95	0.20	0.72	0.26	M0.39	0.14	0.43	0.04	0.48	0.58	0.99	0.29	5.47
1955	0.31	0.17	0.24	0.81	0.23	0.21	M0.65	0.00	0.77	0.72	1.75	2.41	8.27
1956	2.08	0.86	0.13	0.00	0.53	0.55	0.02	0.33	0.06	1.48	0.20	0.69	6.93
1957	0.38	M0.40	1.89	0.54	1.03	1.90	0.10	0.02	0.83	2.57	0.62	0.81	11.09
1958	2.10	M1.63	0.72	1.45	0.75	0.28	0.38	0.07	0.04	0.25	1.06	1.27	10.00
1959	2.00	0.60	0.31	0.30	0.16	0.53	0.18	0.03	0.90	0.24	0.30	0.36	5.91
1960	0.61	0.99	0.68	0.87	1.14	0.24	0.02	0.22	0.32	0.40	1.60	0.69	7.78
1961	0.70	3.08	1.18	1.42	1.90	0.47	0.17	0.69	0.19	0.11	0.97	0.91	11.79
1962	0.16	0.79	0.55	0.47	2.06	M0.25	0.00	0.55	0.46	1.39	1.10	0.96	8.74
1963	0.29	0.77	0.74	1.55	0.87	0.36	0.44	0.03	0.08	0.41	0.92	1.32	7.78
1964		0.05	0.16	0.10	T	1.54	0.07	0.25	0.03	0.37	1.16	3.46	7.19
1965	1.04	0.01	0.10	0.41	0.28	0.57	0.06	0.25	0.09	0.06	1.35	0.54	4.76
1966	0.56	0.06	0.45	0.06	0.12	0.70	1.16	0.02	0.23	0.42	2.16	1.10	7.04
1967	0.73	T	0.29	1.07	0.31	0.79	0.00	0.00	0.	0.	0.51	0.	4.37

									14	29		24	
1968	0.93	0.75	0.05	0.09	0.20	0.45	0.03	0.74	0.40	1.41	1.73	0.91	7.69
1969	1.57	0.68	0.25	0.95	0.94	0.23	T	0.00	0.57	0.14	0.32	1.59	7.24
1970	2.94	1.16	0.21	0.36	0.26	0.15	0.09	0.00	0.15	0.48	1.03	0.65	7.48
1971	0.94	0.12	1.35	0.27	0.36	1.32	0.20	0.20	1.19	0.29	0.72	1.25	8.21
1972	0.11	0.08	1.07	0.12	2.29	1.52	0.27	0.16	0.24	0.21	0.45	1.46	7.98
1973	0.84	0.32	0.23	0.06	0.45	0.13	0.00	0.02	0.56	1.59	2.74	2.75	9.69
1974	0.66	0.54	0.62	1.44	0.42	0.20	0.75	0.00	0.01	0.22	1.03	1.20	7.09
1975	1.44	1.04	0.36	0.93	0.20	0.06	0.40	1.13	0.00	1.15	0.70	1.13	8.54
1976	0.65	0.13	0.18	0.63	0.29	0.01	0.43	0.79	0.04	0.16	T	0.17	3.48
1977	0.11	0.64	0.48	0.02	0.69	0.27	0.11	1.53	0.74	0.11	0.62	2.37	7.69
1978	2.25	0.80	0.33	0.88	0.63	0.14	0.71	1.10	0.22	0.00	0.54	0.23	7.83
1979	0.95	0.23	0.40	0.55	0.16	T	0.27	0.68	0.26	1.71	1.45	0.71	7.37
1980	M1.56	1.39	0.49	0.84	1.49	0.84	0.02	0.00	1.04	0.47	0.60	2.19	10.93
1981	0.49	0.70	0.31	0.10	0.99	0.79	0.15	0.05	0.72	0.62	0.99	1.90	7.81
1982	M0.49	0.22	0.68	1.33	0.36	1.61	0.04	0.42	1.33	2.05	0.66	1.49	10.68
1983	M1.47	1.52	1.08	0.81	0.66	0.74	0.69	0.67	0.34	0.96	2.44	M1.96	13.34
1984	0.11	0.86	1.03		0.79	0.83	T	0.02	0.90	0.12	2.20	0.59	7.45
1985	0.39	0.65	0.55	0.10	0.61	0.50	T	0.27	0.99	0.51	0.75	0.74	6.06
1986	1.85	1.05	1.07	0.19				0.07	1.81	0.62	0.63	1.32	8.61
1987	0.80		1.53	0.39	M0.19	0.62	0.06	0.04	0.12	0.00	0.55	2.06	6.36
1988	1.07	0.00	0.63	1.18	0.53	0.55	0.15	0.00	0.54	0.04	1.59	0.40	6.68
1989	0.35	0.58	1.78		0.55	0.06	0.05	0.99		0.71	0.77	0.50	6.34
1990	0.89	0.38	0.23	0.62	0.80	0.59	0.04	1.11	0.00		0.07	0.60	5.33
1991	0.44	0.96	M0.56	0.33	0.81	1.25	0.24	0.05	0.00	0.61	2.00	0.84	8.09
1992				2.19	0.02	1.18	0.48	0.42	0.30	0.64	1.33	0.83	7.39
1993	1.23	0.66		0.88	0.38	0.54	0.32	0.12	0.00	0.05	0.19	0.90	5.27
1994	1.01	0.86	0.13		1.08	0.74	0.37	0.13					4.32
1995					0.41								0.41
1996									0.29	1.35	1.16	M1.92	4.72
1997	1.73	M0.56	M1.36	0.83	0.28	0.49	0.52	M0.18	0.86	M0.80	0.80	0.50	8.91
1998	1.45	1.04		0.33	1.26	0.23	0.55	0.27		0.10	1.55	1.19	7.97
1999	0.93	1.64	0.17	0.00	0.41	0.10	0.03	0.12	0.00	0.71	0.71	1.28	6.10
2000	M0.80	1.59	1.12	0.03	1.21	0.84	0.00	0.00	0.51	0.42	1.28	0.27	8.07
2001	M0.53	M0.16	0.81	0.79	0.43	0.60	0.15	0.15	0.08	0.61	1.75	1.27	7.33
2002	0.56	0.83	0.30	0.02	0.76	0.67	0.19	0.00	0.	0.	0.43	2.	6.74

									05	10		83	
2003	2.06	1.25	0.66	1.17	0.16	0.00	0.00	0.58	0.16	0.20	0.63	1.97	8.84
2004	2.43	1.34	0.32	0.25	1.02	1.54	0.06	1.40	0.27	0.88	0.17	0.99	10.67
2005	0.84	M0.00	0.91	0.75	0.73	M0.21	0.42	0.05	0.00	1.21	1.45	2.80	9.37
2006	2.16	0.53	0.78	1.11	0.62	1.63	0.00	0.00	0.15	0.96	0.89	1.96	10.79
2007	0.52	0.80	1.16	0.68	0.36	0.16	0.11	0.35	0.26	1.10	M0.88	M2.38	8.76
2008	1.51	0.59	0.57	0.23	0.70	0.80	0.00		0.15	0.24	0.75		5.54
2009					0.66	0.15		0.06	0.10	1.58	0.42	0.33	3.30
2010		0.97	0.15	0.71		1.53	0.29	0.00	1.70	1.00	M0.87	2.19	9.41
2011	M0.63	M0.16	M1.56	M0.34	M1.74	M0.20				M0.69	M0.21	M0.18	5.71
2012	M0.50		M1.06				M0.24	M0.00	0.00	1.76	M1.37	2.06	6.99
2013	0.10	0.09	0.56		M1.33	1.58	0.00	0.12	M0.89	M0.27	0.37	M0.12	5.43
2014	M0.00	0.98	0.66	0.69	0.41	0.30	0.20	0.31	0.08	0.46	0.33	1.07	5.49
2015	0.53	0.66	0.50	0.12	1.95	0.00	0.00	M0.00	M0.07	0.23	M0.85	M2.46	7.37
2016	1.96	M0.55	0.98	M0.25	M0.50	0.35	0.38	M0.06	M0.31	2.74	0.71	0.82	9.61
2017	M0.49	2.13	1.15	1.47	1.41	0.15	0.00	0.10	0.61	1.06	1.23	0.42	10.22
2018	1.42	M0.51	M0.39	1.23	M0.23	M0.17	M0.00	0.05	M0.00	M1.14	0.51	0.83	6.48
2019	1.33	1.47	M0.29	M0.75	1.05	0.14	0.45	0.52	0.25	0.56	0.09	0.55	7.45
2020	1.24	0.04	0.42	0.09	0.87	M0.33	0.00	T	0.00	0.22	1.12	M0.45	4.78
2021	0.83	M0.14	0.04	0.03	0.00	0.17	T	0.04	0.76	0.81	1.57	0.87	5.26
2022	0.48	M0.07	0.63	1.40	1.70	M1.22	0.00	M0.00					5.50

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2022-08-19

AgACIS

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.04	0.03	0.03	0.02	0.02	0.03	0.01	0.01	0.01	0.01	0.03	0.04
2	0.04	0.03	0.03	0.03	0.03	0.02	0.01	0.00	0.00	0.02	0.03	0.04
3	0.05	0.04	0.03	0.02	0.03	0.03	0.01	0.01	0.01	0.01	0.03	0.03
4	0.04	0.03	0.02	0.03	0.02	0.03	0.01	0.00	0.01	0.02	0.02	0.04
5	0.05	0.03	0.03	0.02	0.03	0.02	0.01	0.00	0.01	0.02	0.03	0.04
6	0.04	0.04	0.02	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.03	0.04
7	0.05	0.03	0.03	0.03	0.03	0.03	0.00	0.00	0.01	0.02	0.03	0.04
8	0.05	0.03	0.02	0.02	0.03	0.02	0.01	0.01	0.00	0.02	0.02	0.04
9	0.04	0.03	0.03	0.03	0.03	0.03	0.01	0.00	0.01	0.02	0.03	0.03
10	0.05	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.03	0.04
11	0.04	0.04	0.02	0.03	0.03	0.03	0.00	0.01	0.01	0.03	0.03	0.04
12	0.05	0.03	0.02	0.02	0.03	0.02	0.01	0.00	0.00	0.02	0.02	0.04
13	0.04	0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.02	0.03	0.04
14	0.04	0.04	0.02	0.02	0.02	0.03	0.00	0.00	0.01	0.03	0.03	0.04
15	0.04	0.03	0.02	0.02	0.03	0.02	0.01	0.01	0.01	0.03	0.02	0.04
16	0.04	0.03	0.02	0.03	0.03	0.03	0.01	0.01	0.00	0.02	0.03	0.05
17	0.04	0.04	0.02	0.02	0.02	0.02	0.00	0.00	0.01	0.03	0.03	0.04
18	0.04	0.03	0.02	0.03	0.03	0.03	0.01	0.01	0.01	0.03	0.03	0.05
19	0.04	0.03	0.02	0.02	0.03	0.02	0.00	0.00	0.01	0.02	0.03	0.04
20	0.03	0.03	0.02	0.03	0.03	0.02	0.01	0.01	0.01	0.03	0.03	0.05
21	0.04	0.04	0.02	0.02	0.03	0.02	0.00	0.00	0.01	0.03	0.03	0.05
22	0.03	0.03	0.02	0.03	0.03	0.02	0.01	0.01	0.01	0.03	0.03	0.04
23	0.04	0.03	0.02	0.03	0.03	0.02	0.00	0.00	0.01	0.03	0.02	0.05
24	0.04	0.03	0.02	0.02	0.03	0.01	0.01	0.01	0.01	0.03	0.03	0.05
25	0.03	0.03	0.02	0.02	0.03	0.02	0.01	0.00	0.01	0.03	0.03	0.05
26	0.04	0.03	0.02	0.03	0.03	0.02	0.00	0.01	0.01	0.03	0.03	0.05
27	0.03	0.03	0.02	0.02	0.04	0.01	0.01	0.00	0.01	0.03	0.03	0.05
28	0.04	0.03	0.02	0.02	0.03	0.02	0.00	0.01	0.01	0.03	0.03	0.04
29	0.03	-	0.02	0.03	0.02	0.02	0.01	0.00	0.02	0.04	0.04	0.05
30	0.04	-	0.02	0.02	0.03	0.01	0.00	0.01	0.01	0.03	0.03	0.04
31	0.03	-	0.02	-	0.03	-	0.01	0.00	-	0.03	-	0.05

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) [help]

US Army Corps of Engineers ®
Seattle District

AGENCY USE ONLY

Date received: _____

Agency reference #: _____

Tax Parcel #(s): _____

_____

_____

Attachment A:
For additional property owner(s) [help]

TO BE COMPLETED BY APPLICANT [help]

Project Name: _____

Location Name (if applicable): _____

_____

Use this attachment only if you have more than one property owner. Complete one attachment for each additional property owner impacted by the project.

Signatures of property owners are not needed for repair or maintenance activities on existing rights-of-way or easements.

Use black or blue ink to enter answers in white spaces below.

1. Name (Last, First, Middle) and Organization (if applicable)			
Anderson, Marshall, K.			
2. Mailing Address (Street or PO Box)			
PO Box 469			
3. City, State, Zip			
Prosser, WA, 99350			
4. Phone (1)	**5.** Phone (2)	**6.** Fax	**7.** E-mail
Address or tax parcel number of property you own:			
128043000002000			
Signature of Property Owner			
I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.			
_____ Printed Name		_____ Signature	

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ORIA-16-012 rev. 10/2016

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) [help]

US Army Corps of Engineers ®
Seattle District

AGENCY USE ONLY

Date received: _____

Agency reference #: _____

Tax Parcel #(s): _____

_____

_____

TO BE COMPLETED BY APPLICANT [help]

Project Name: _____

Location Name (if applicable): _____

_____

Attachment A:
For additional property owner(s) [help]

Use this attachment only if you have more than one property owner. Complete one attachment for each additional property owner impacted by the project.

Signatures of property owners are not needed for repair or maintenance activities on existing rights-of-way or easements.

Use black or blue ink to enter answers in white spaces below.

1. Name (Last, First, Middle) and Organization (if applicable)			
Anderson Rattlesnake Farms			
2. Mailing Address (Street or PO Box)			
PO Box 469			
3. City, State, Zip			
Prosser, WA, 99350			
4. Phone (1)	**5.** Phone (2)	**6.** Fax	**7.** E-mail
Address or tax parcel number of property you own:			
119040000000000			
Signature of Property Owner			
I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.			
_____ Printed Name		_____ Signature	

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ORIA-16-012 rev. 10/2016

WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) [help]

US Army Corps of Engineers ®
Seattle District

AGENCY USE ONLY

Date received: _____

Agency reference #: _____

Tax Parcel #(s): _____

_____

_____

TO BE COMPLETED BY APPLICANT [help]

Project Name: _____

Location Name (if applicable): _____

_____

Attachment A:
For additional property owner(s) [help]

Use this attachment only if you have more than one property owner. Complete one attachment for each additional property owner impacted by the project.

Signatures of property owners are not needed for repair or maintenance activities on existing rights-of-way or easements.

Use black or blue ink to enter answers in white spaces below.

1. Name (Last, First, Middle) and Organization (if applicable)			
Elmer C. Anderson, Inc and Anderson Rattlesnake Farms General Partnership			
2. Mailing Address (Street or PO Box)			
PO Box 469			
3. City, State, Zip			
Prosser, WA, 99350			
4. Phone (1)	**5.** Phone (2)	**6.** Fax	**7.** E-mail
Address or tax parcel number of property you own:			
108042000000000			
Signature of Property Owner			
I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.			
_____ Printed Name		_____ Signature	

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ORIA-16-012 rev. 10/2016

SOLAR GENERATING FACILITY
LAND OPTION AND LEASE AGREEMENT

This Solar Generating Facility Land Option and Lease Agreement (the "***Agreement***") made and entered into as of the 16th day of September, 2021 (the "***Effective Date***"), by and between HOHI bn, LLC ("***Lessee***"), and Elmer C Anderson Inc and Anderson Rattlesnake Farms General Partnership both previously known as Anderson Brothers, Elmer C Anderson Inc, Anderson Rattlesnake Farms, Anderson Rattlesnake Partnership, Anderson Family Holdings LLC, and Henry Jr & Grote et all Anderson ("***Landlord***"). Lessee and Landlord are at times collectively referred to hereinafter as the "***Parties***" or individually as a "***Party***."

RECITALS

A. Landlord is the owner of that certain real property located in Benton County, State of Washington, as more particularly described and depicted on **Exhibit A** attached hereto, which contains approximately four thousand acres (4,000) (the "***Property***"). Pursuant to the terms and conditions of this Agreement, Landlord desires to grant to Lessee, and Lessee desires to obtain from Landlord, an exclusive option to lease the Property. [redacted]

B. Lessee desires to obtain from Landlord an exclusive option to lease the Site for purposes of building, owning, operating and maintaining a solar energy generating facility (the "***Generating Facility***") [redacted]

C. Landlord desires to grant Lessee an exclusive option to lease the Site for purposes of building, owning, operating and maintaining the Generating Facility thereon.

[redacted]

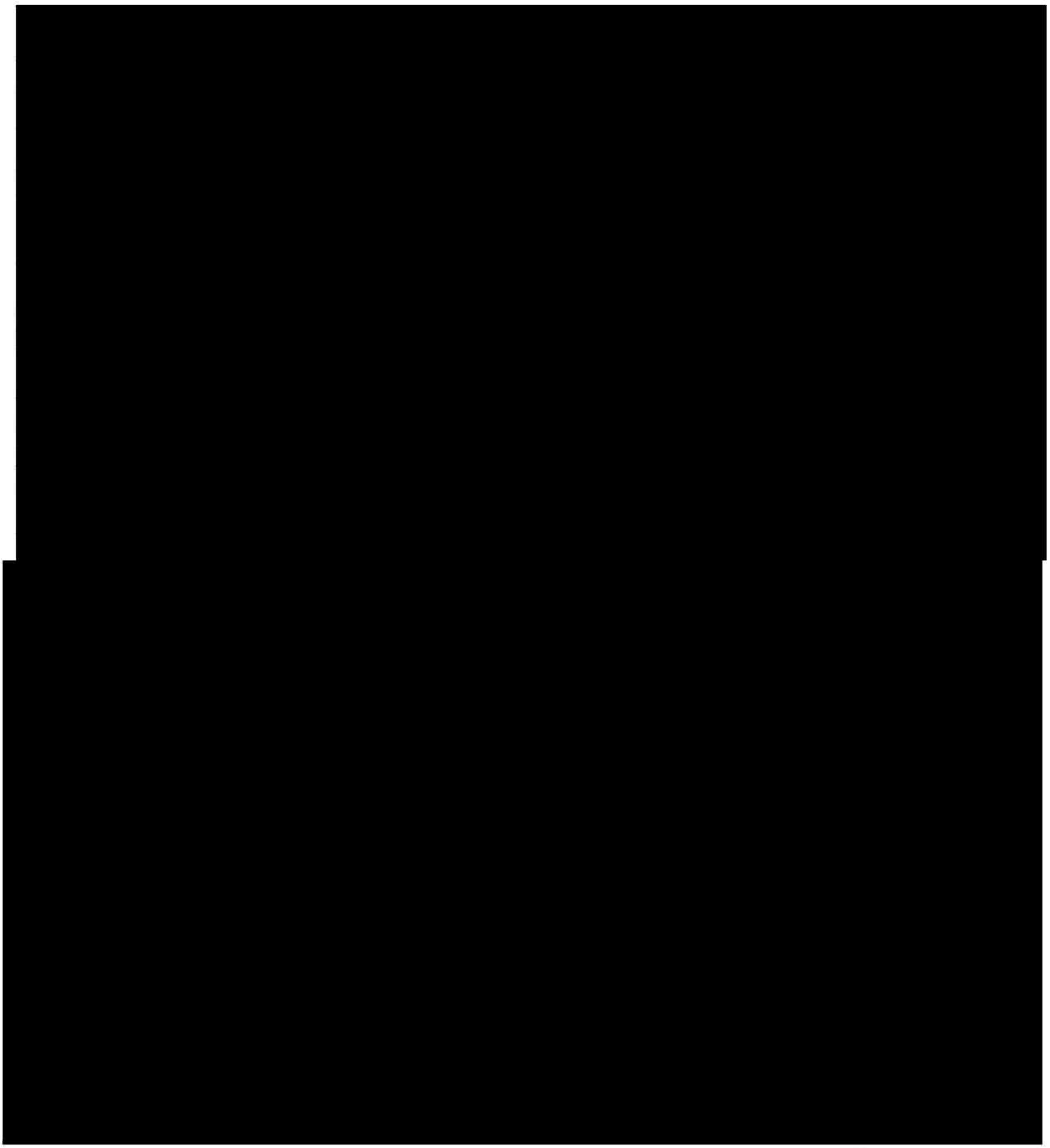
E. The Parties are entering into this Agreement to memorialize their understanding regarding the foregoing.

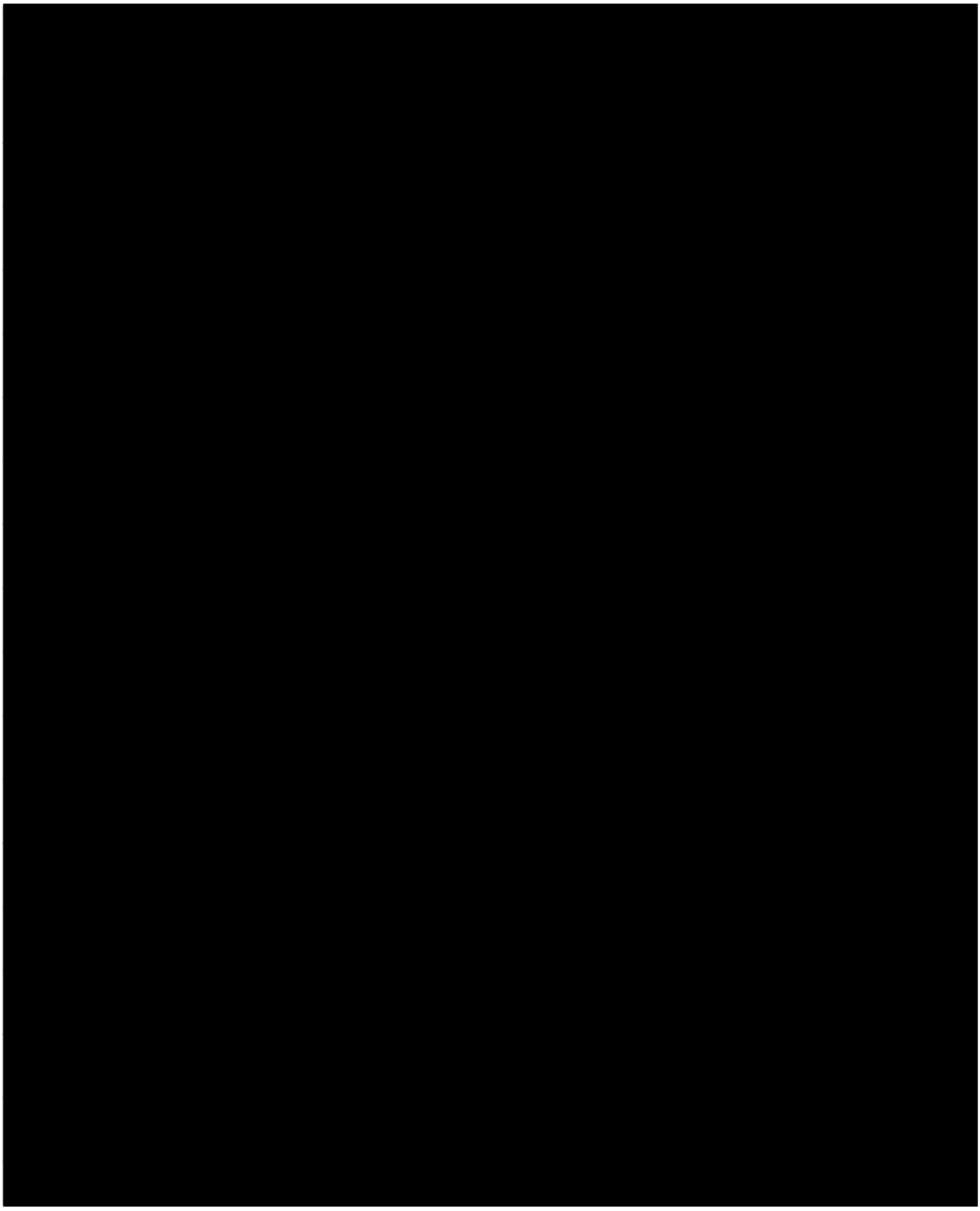
Initials: Landlord MKA GLW Lessee _____

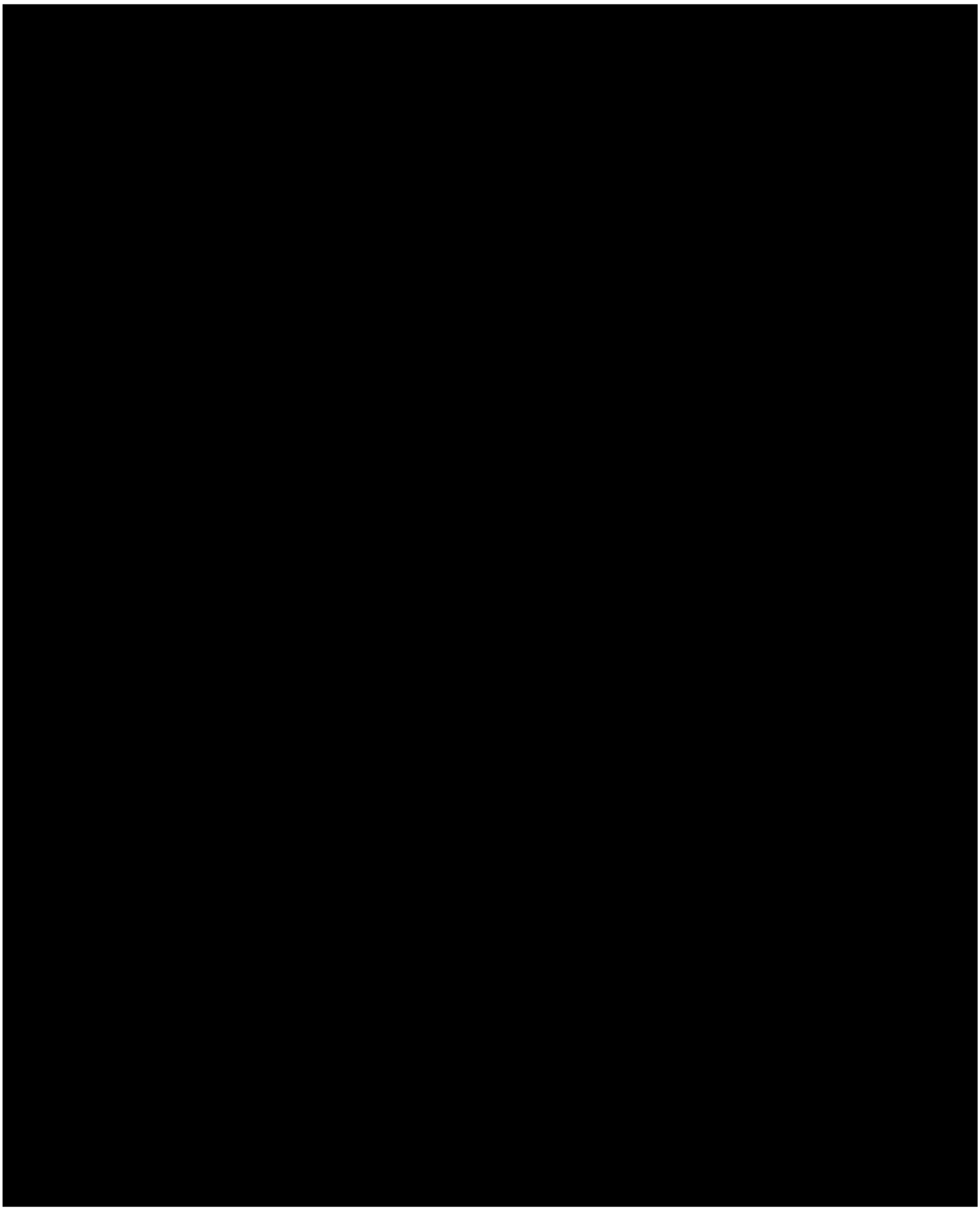
AGREEMENT

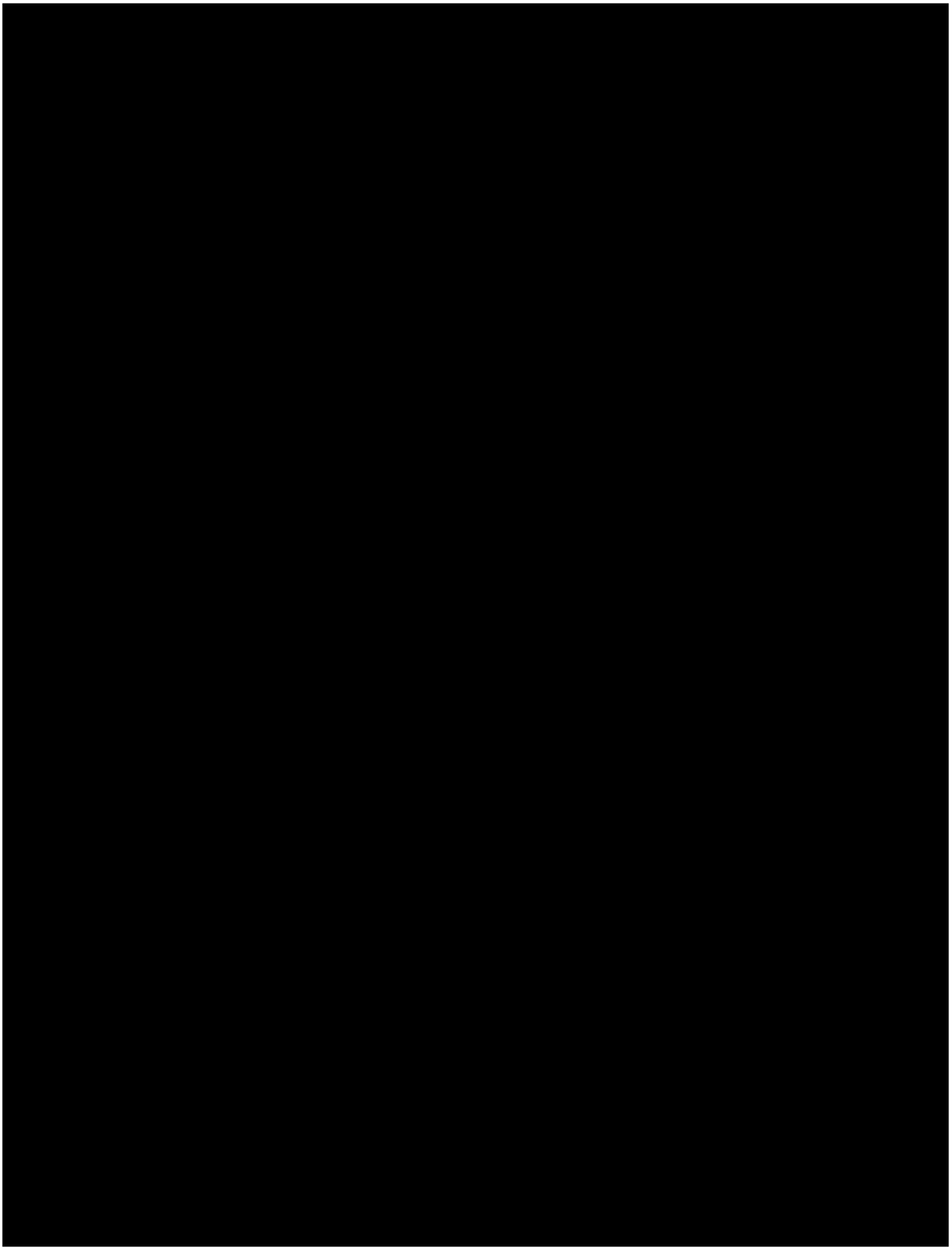
NOW, THEREFORE, in consideration of the foregoing and the mutual covenants and agreements herein contained, and intending to be legally bound hereby, Lessee and Landlord hereby agree as follows:

1. Definitions.



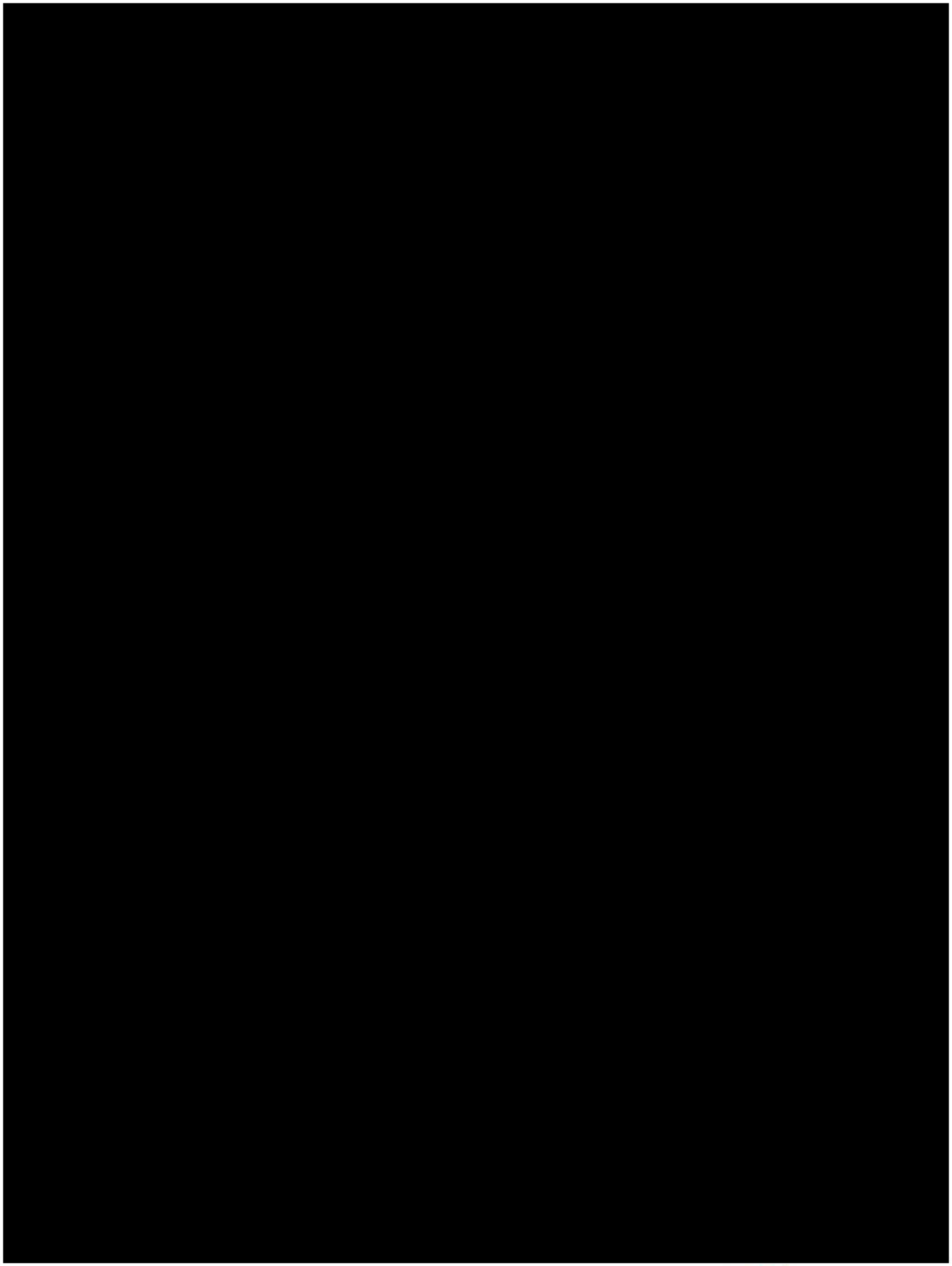






[redacted]

[redacted]



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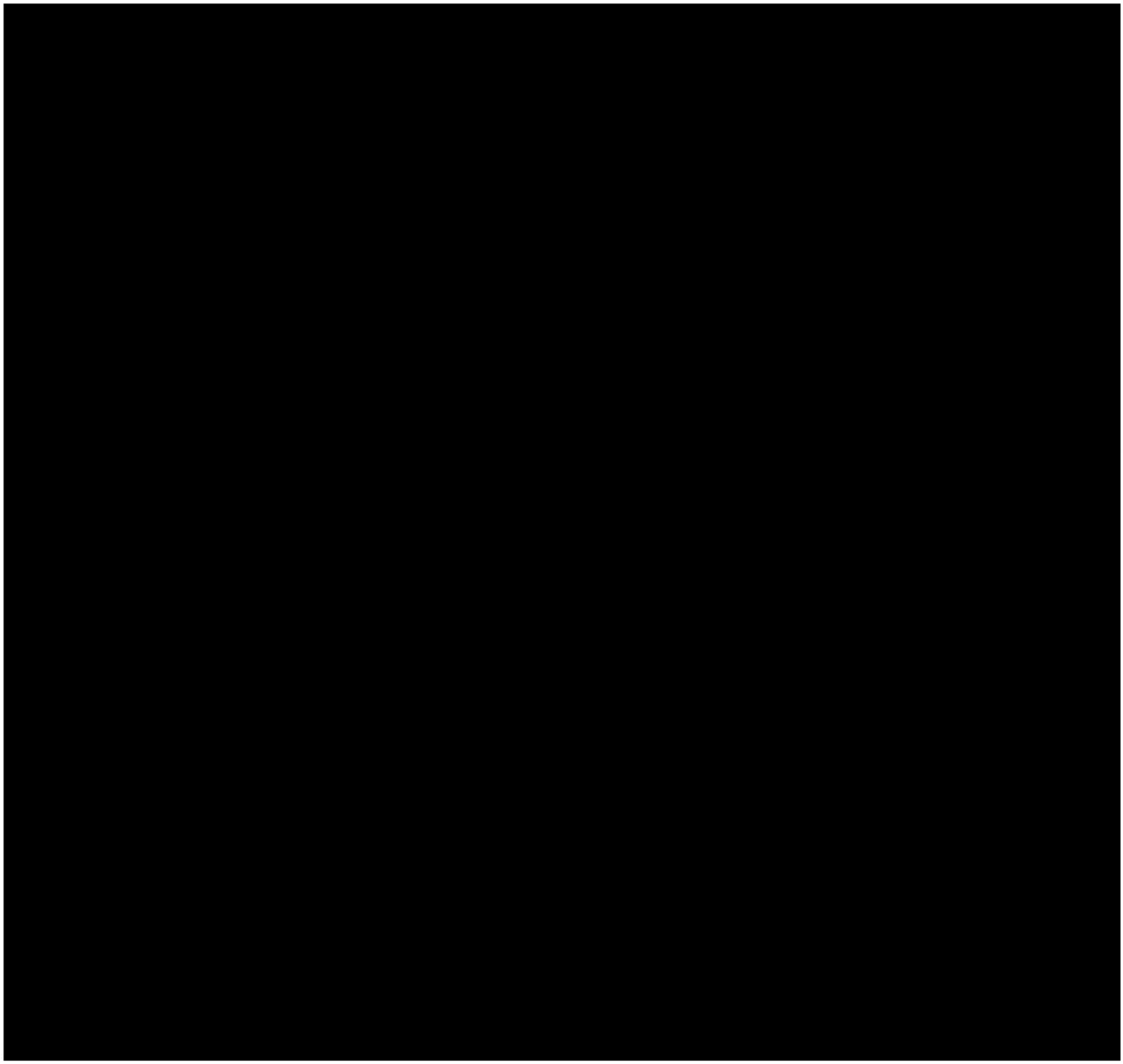
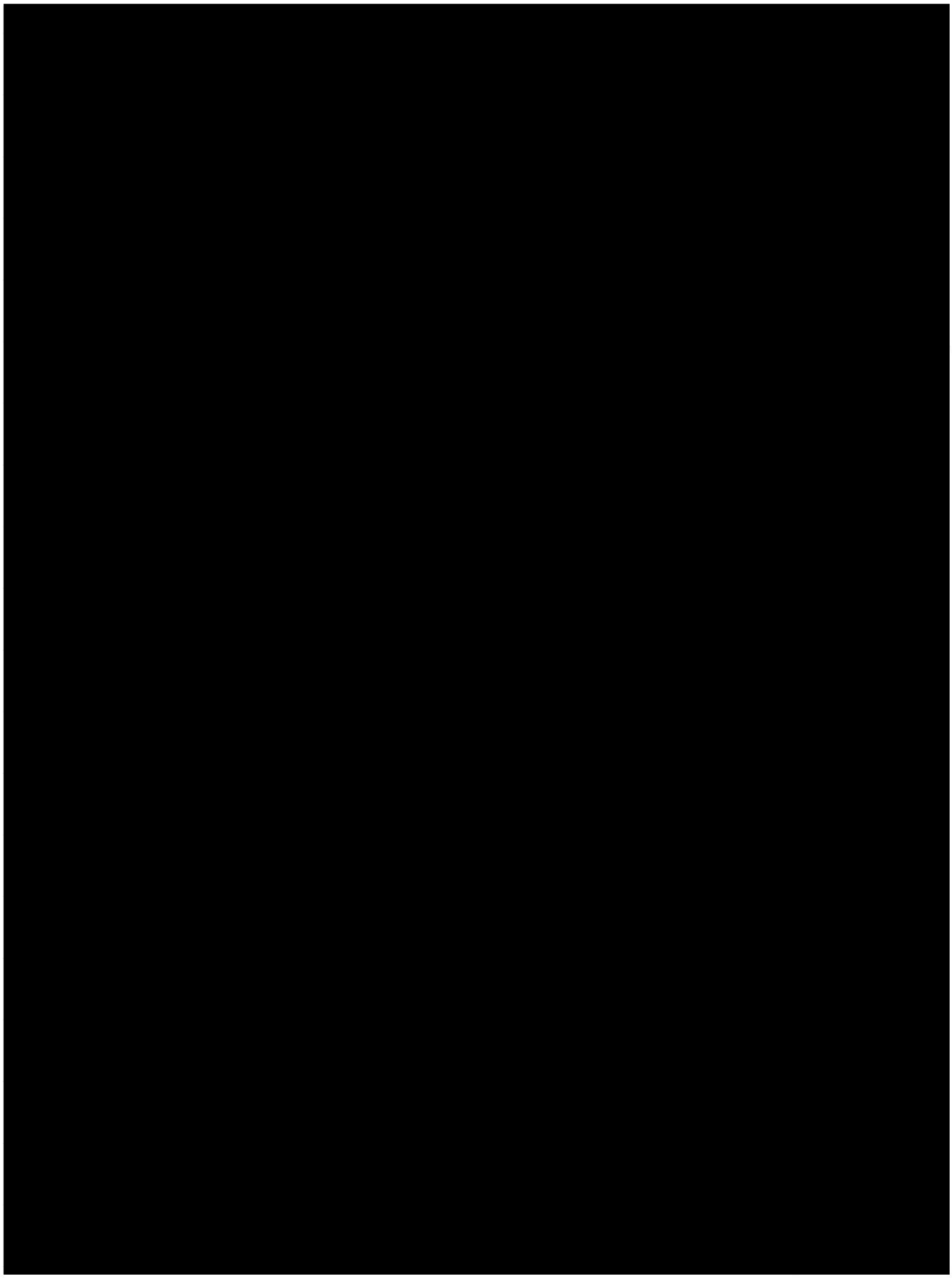


4. Lease Term; Extension Options. The initial lease term (*"**Initial Term**"*) shall commence on the first day of the calendar month following the date of the Exercise Notice (***"Lease Commencement Date"***), and shall end on the 31st anniversary of the Lease Commencement Date (***"Lease Expiration Date"***). Lessee shall have the right to extend the Initial Term for eighteen (18) consecutive periods of one (1) year each and one (1) consecutive period of eleven (11) months (each such separate extension, an ***"Extension Term,"*** and, collectively with the Initial Term, ***"Term"***) by giving Landlord written notice of its intent to extend the Lease not later than one hundred twenty (120) days prior to the end of the Initial Term or the then current Extension Term. In the event Lessee elects to exercise its right to extend the lease beyond the Initial Term, the terms and conditions in effect during the Initial Term shall be applicable during each Extension Term.



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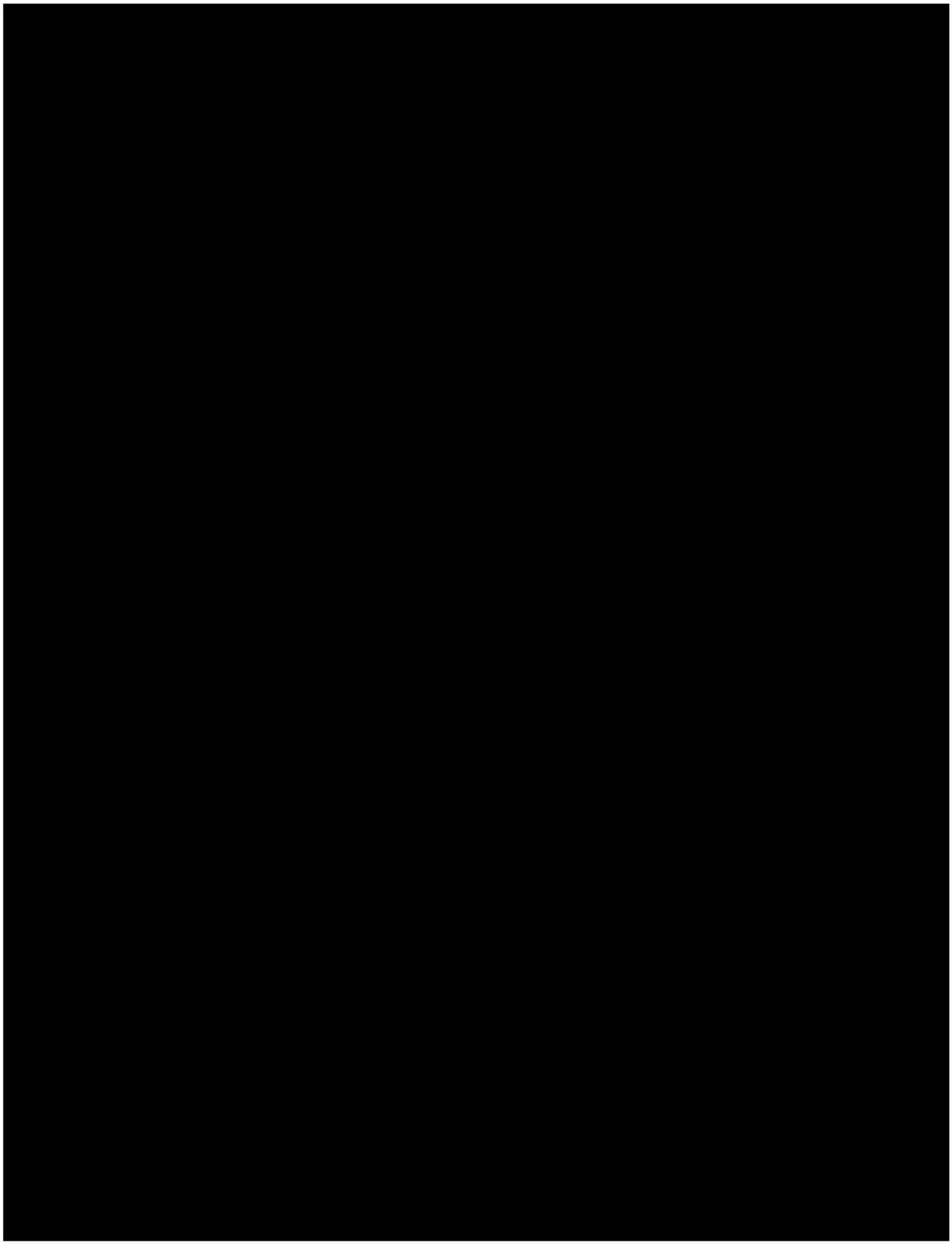

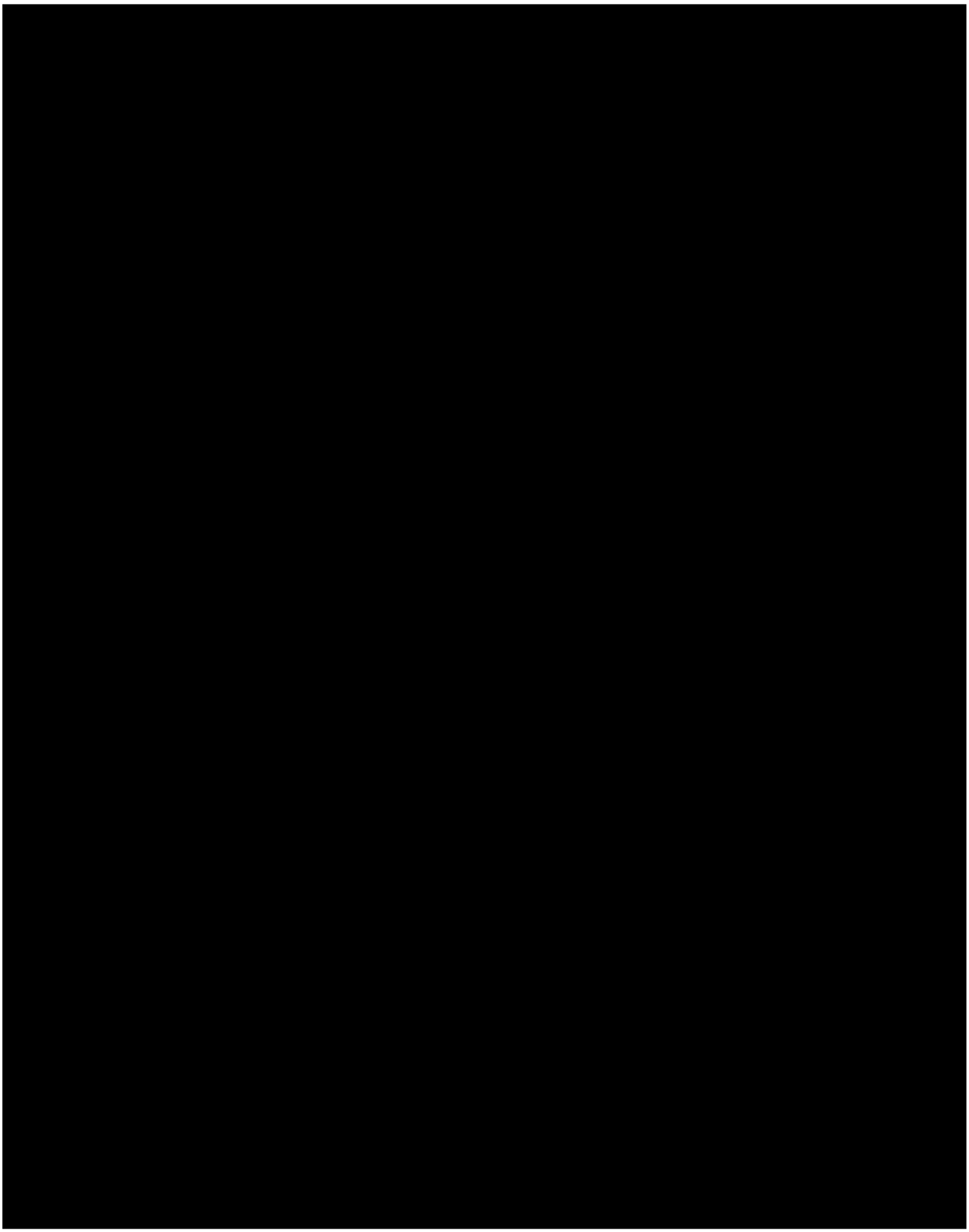

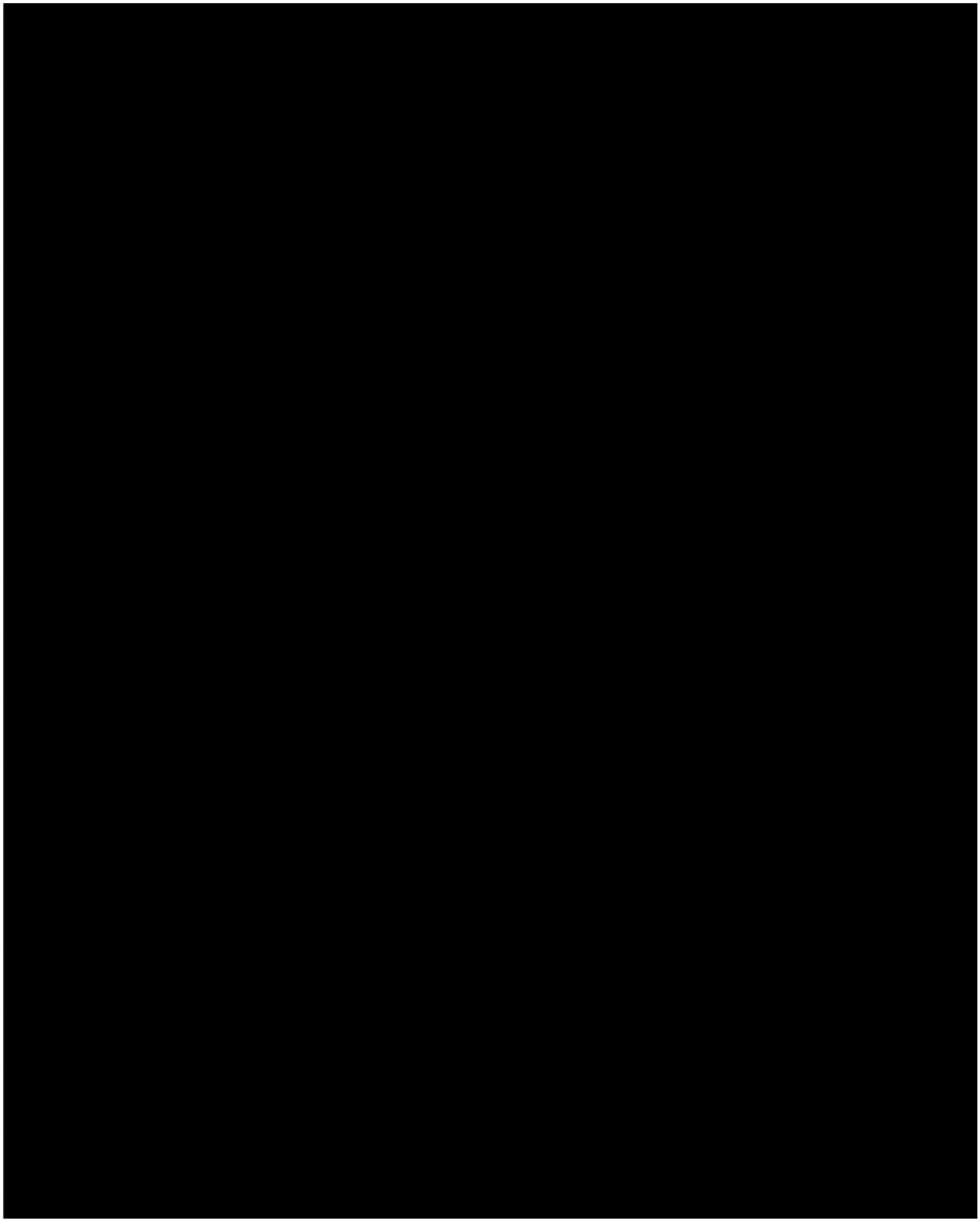

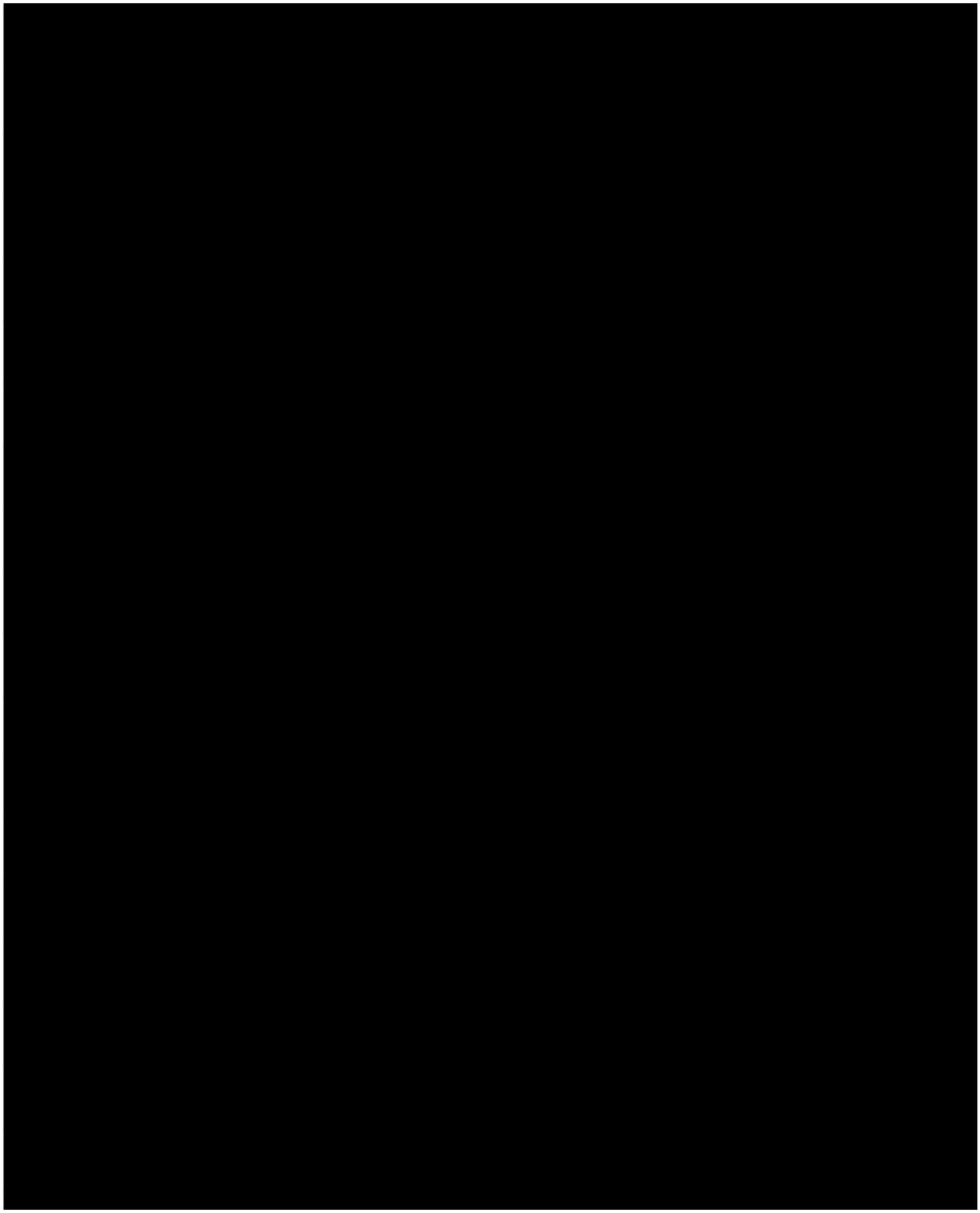

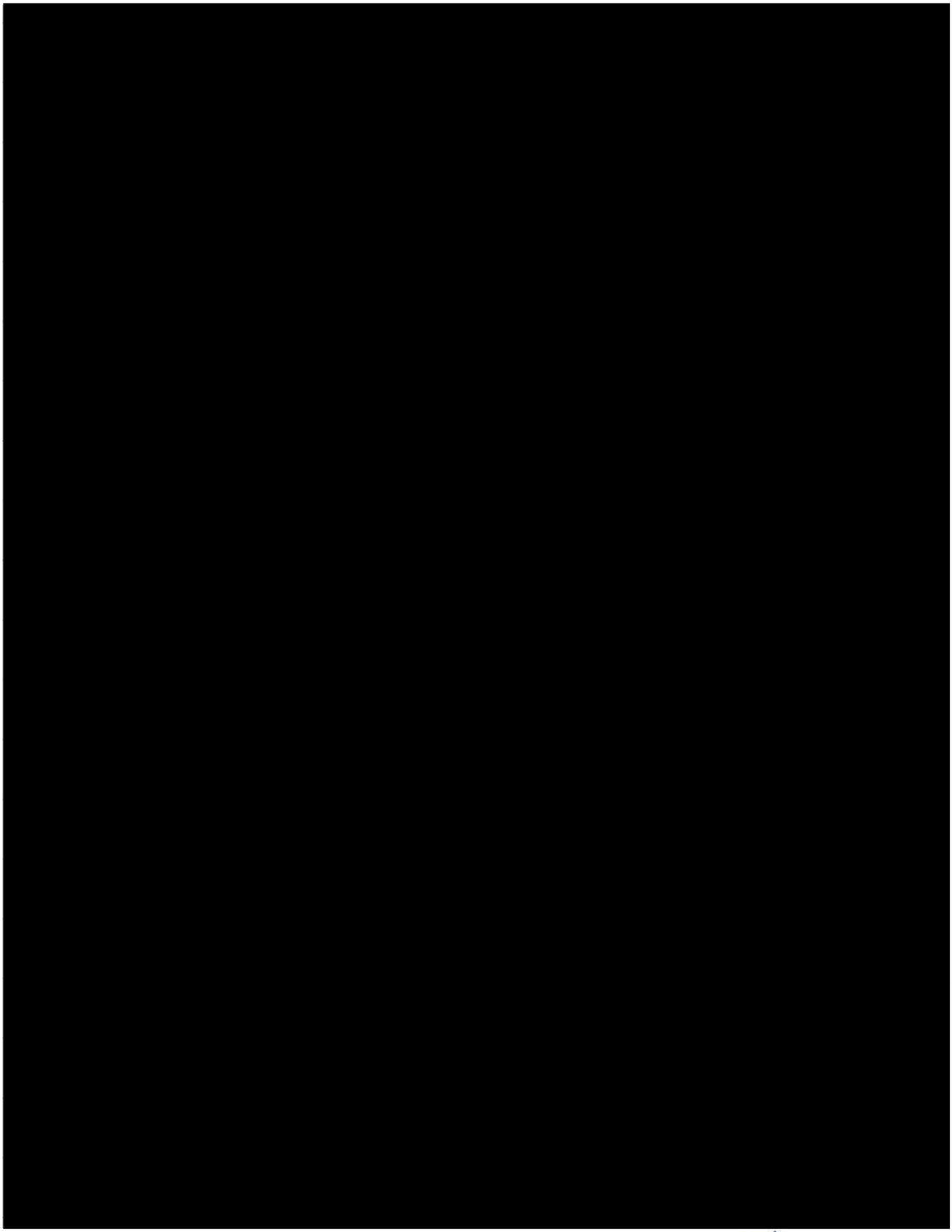

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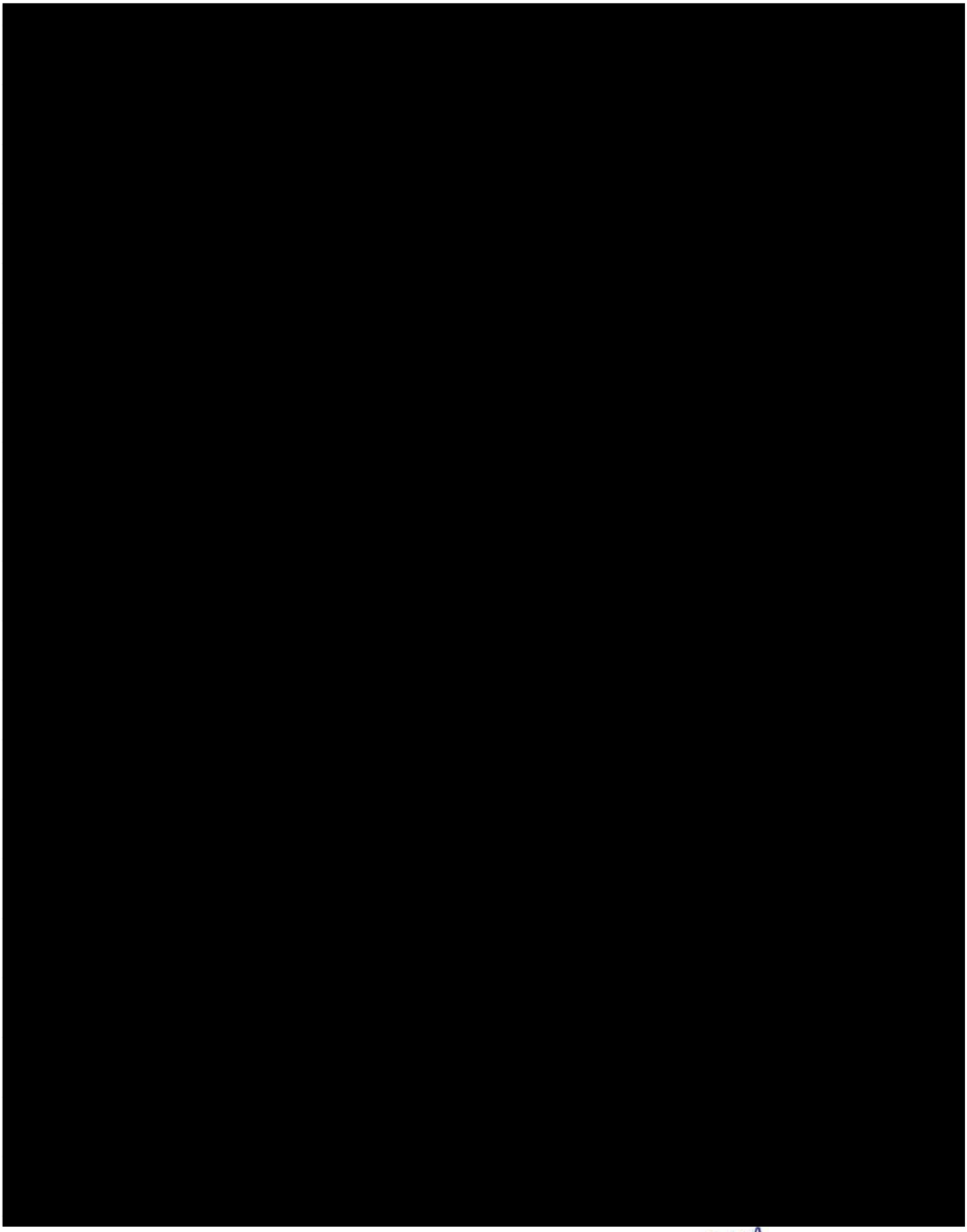
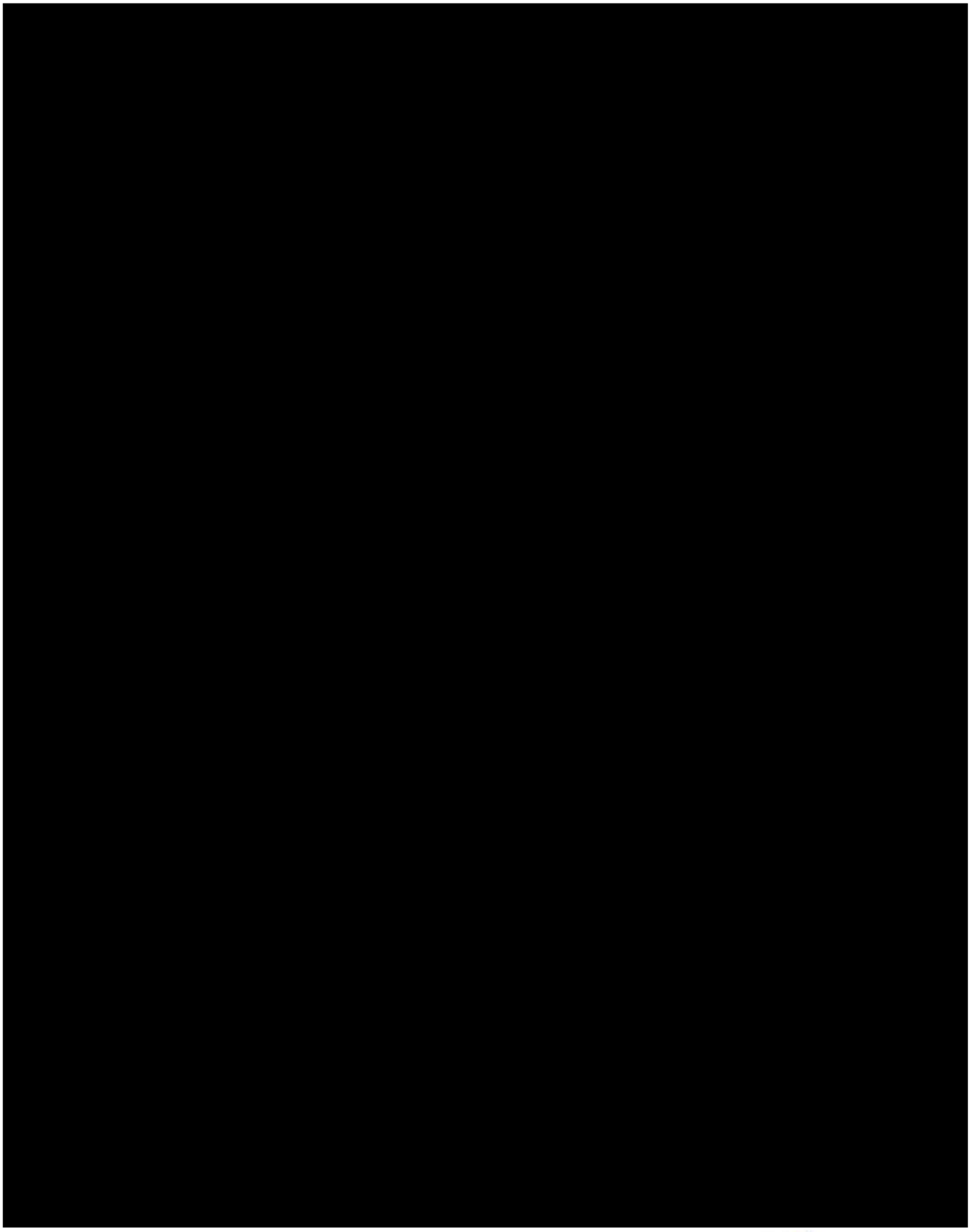
[redacted]

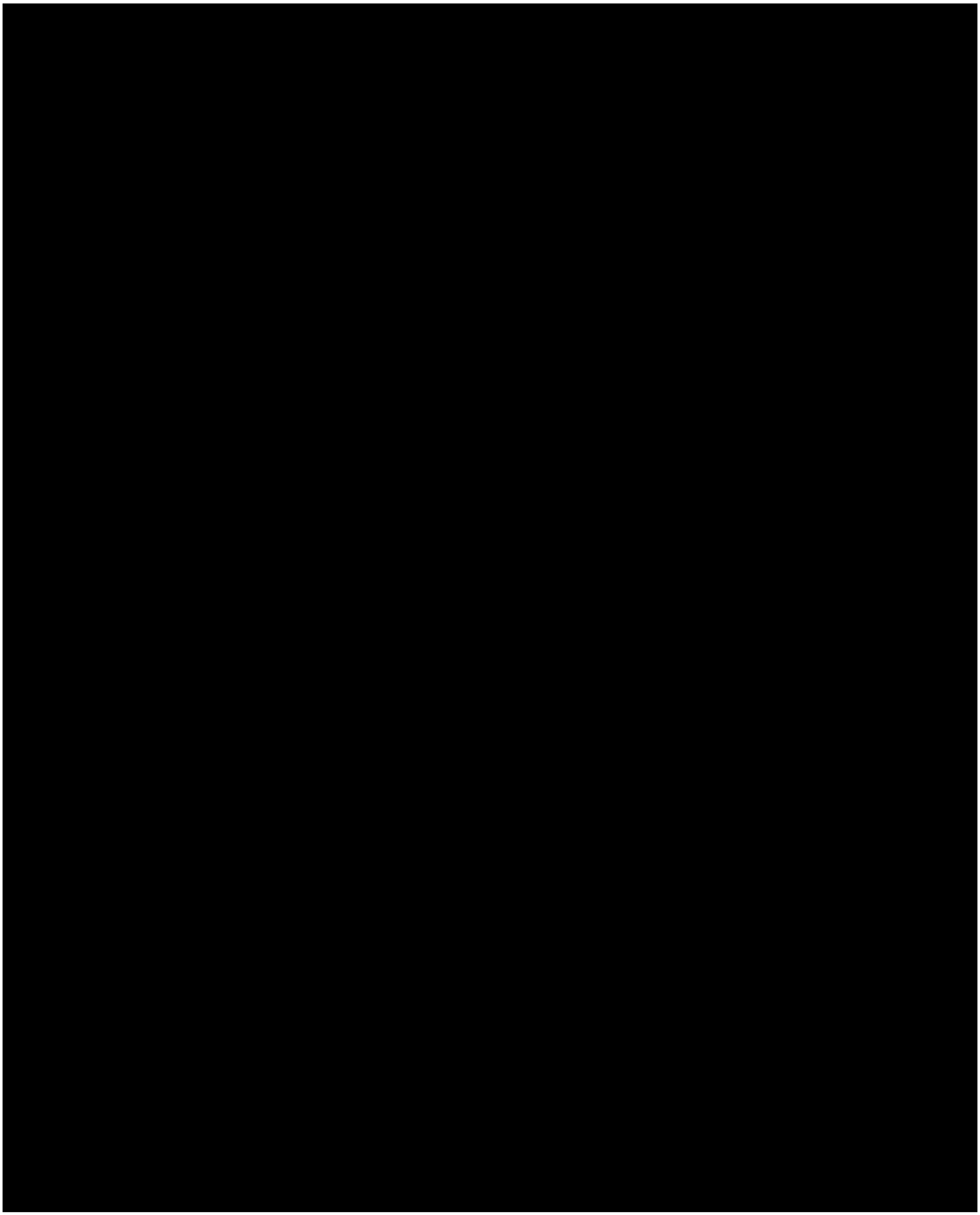
[redacted]

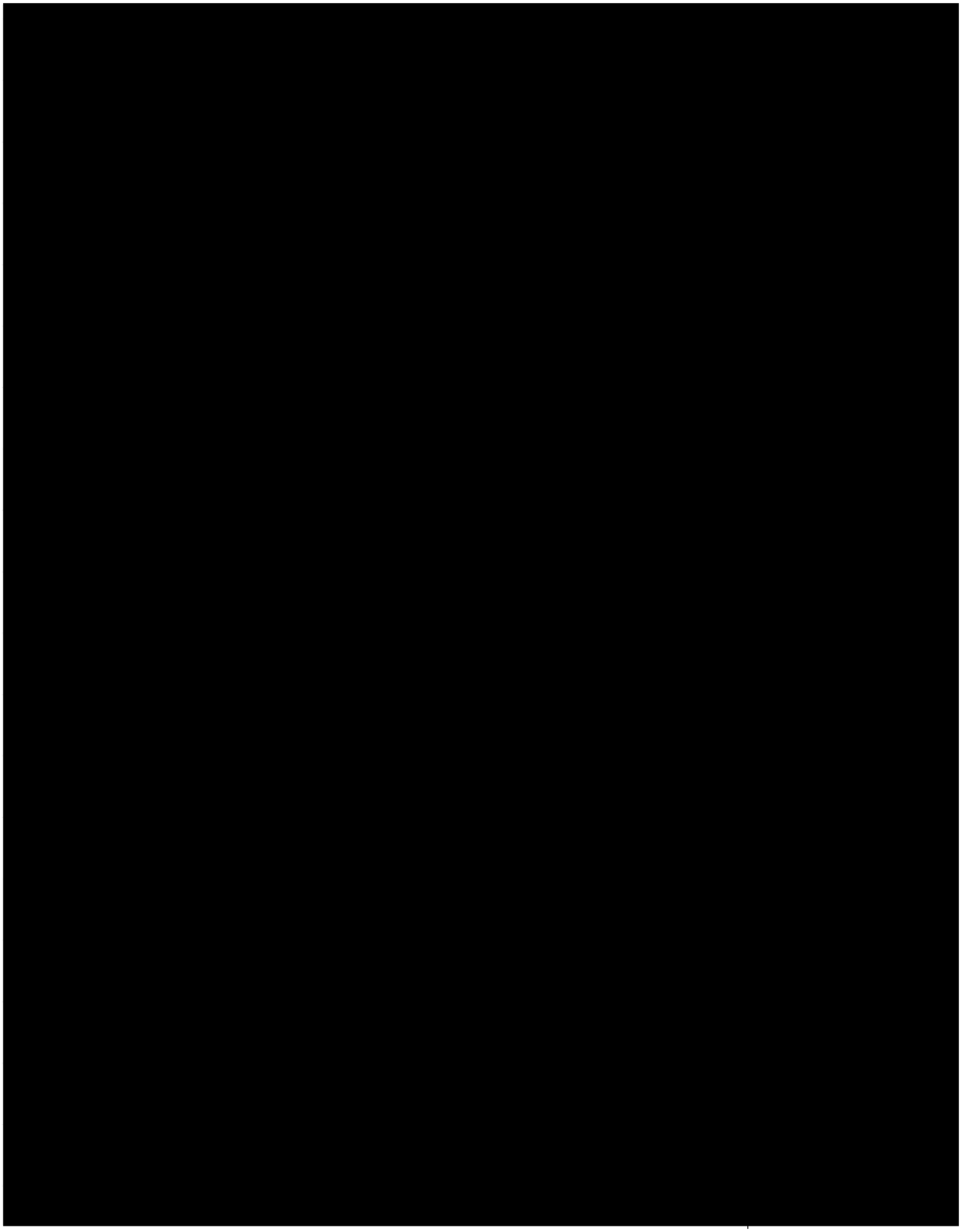
[redacted]

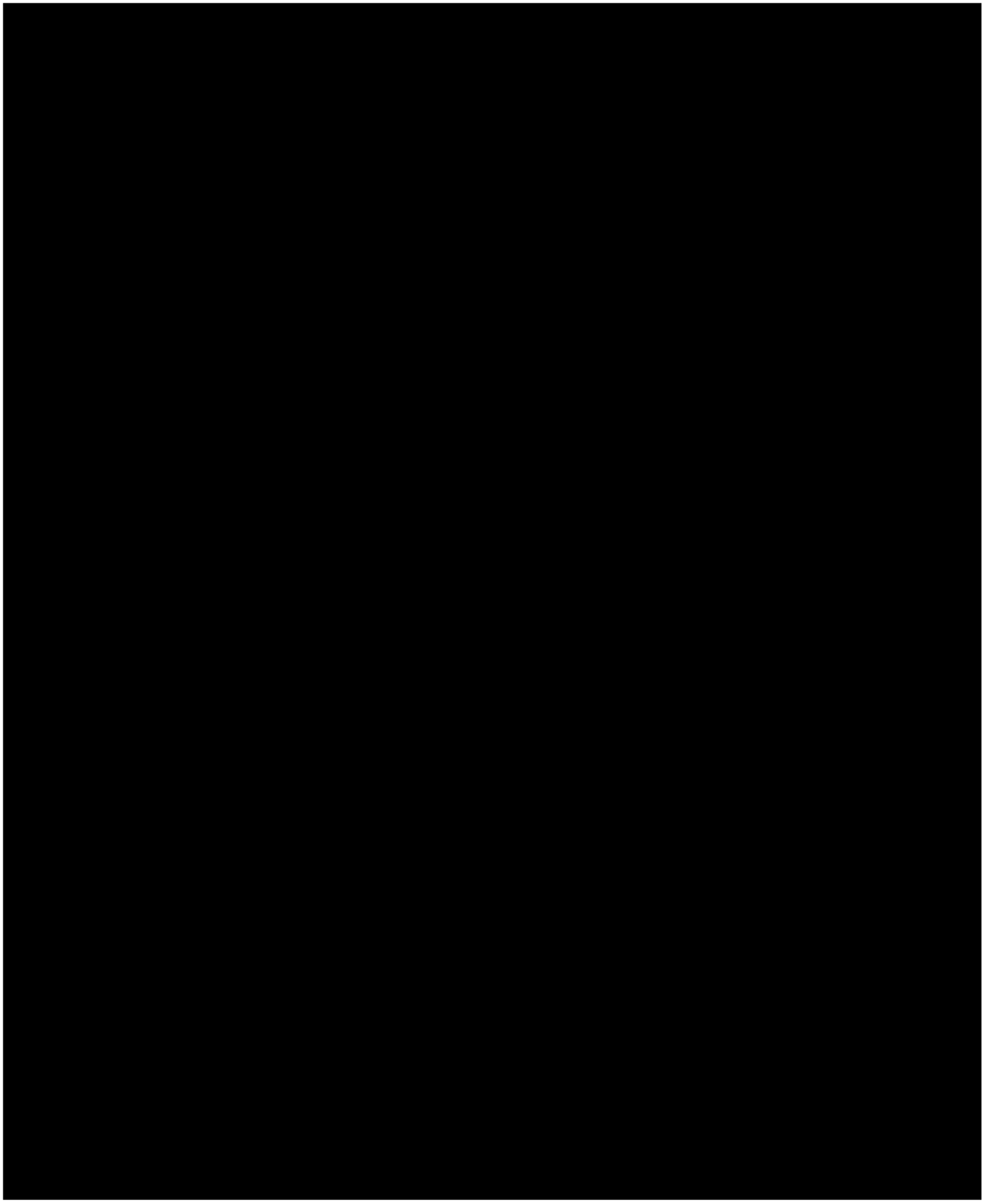
[redacted]

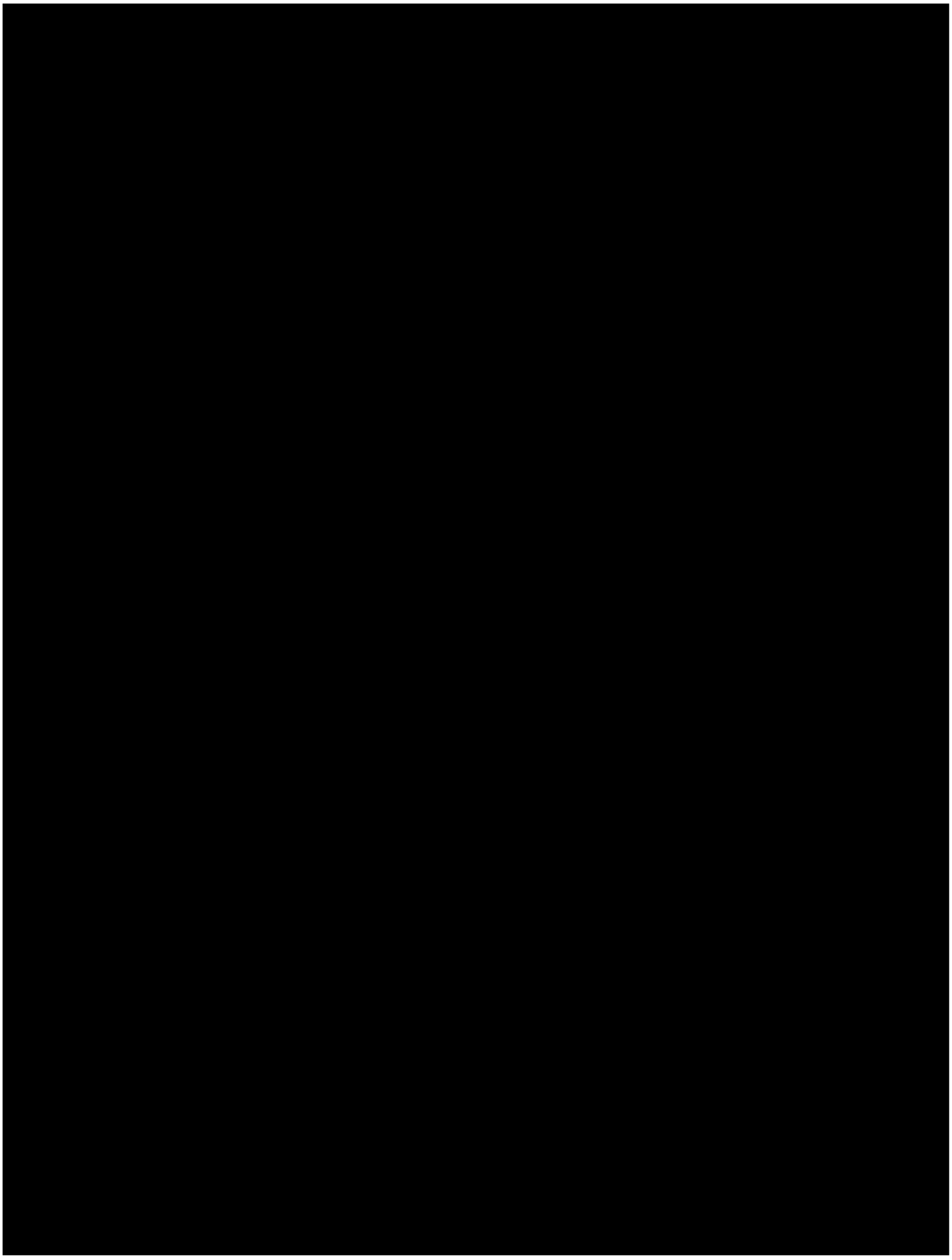








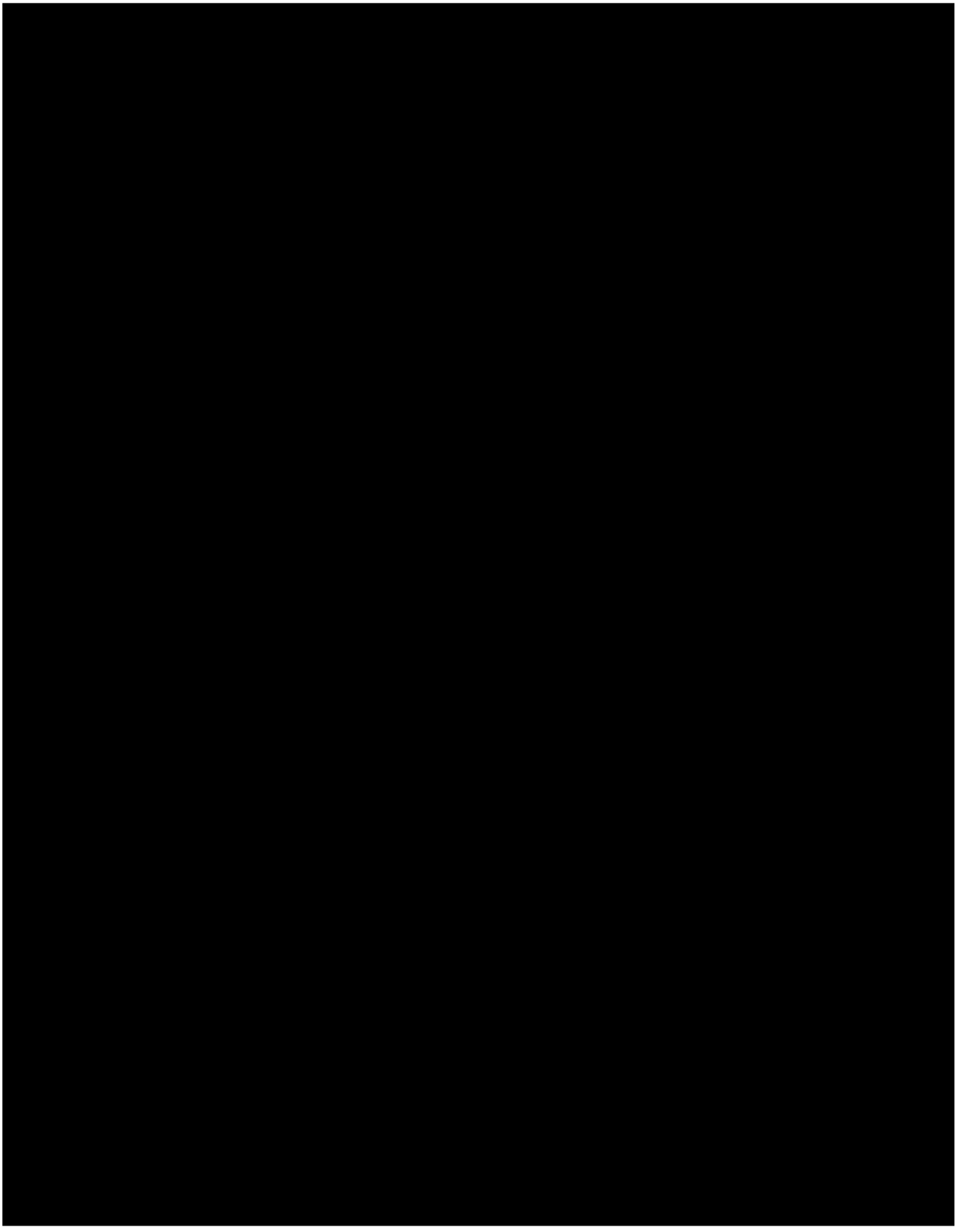




[redacted]

MKA

Initials: Landlord AKW Lessee _____



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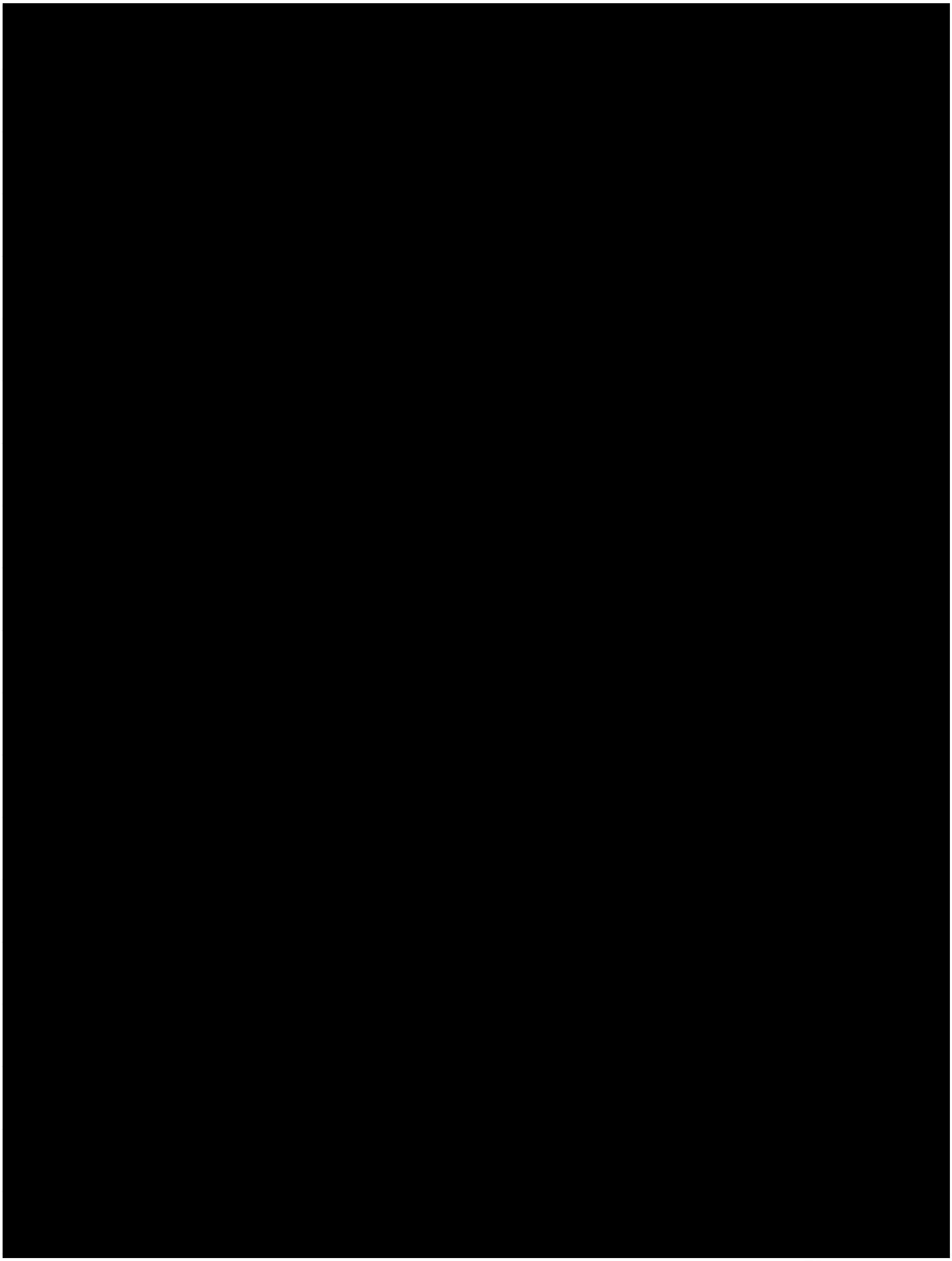


[Signature page to follow]

IN WITNESS WHEREOF, the parties have executed this Solar Generating Facility Land Option and Lease Agreement, affecting the Property, on the day and year first above written.

LANDLORD:

Elmer C Anderson Inc and Anderson Rattlesnake Farms General Partnership

By: Marshall K. Anderson
Name: Elmer C. Anderson

By: Arva L. Whitney
Name: Anderson Rattlesnake Farms

LESSEE:

HOHI bn, LLC
a Delaware Corporation

Martin Hermann
By: _____
Name: Martin Hermann
Title: CEO

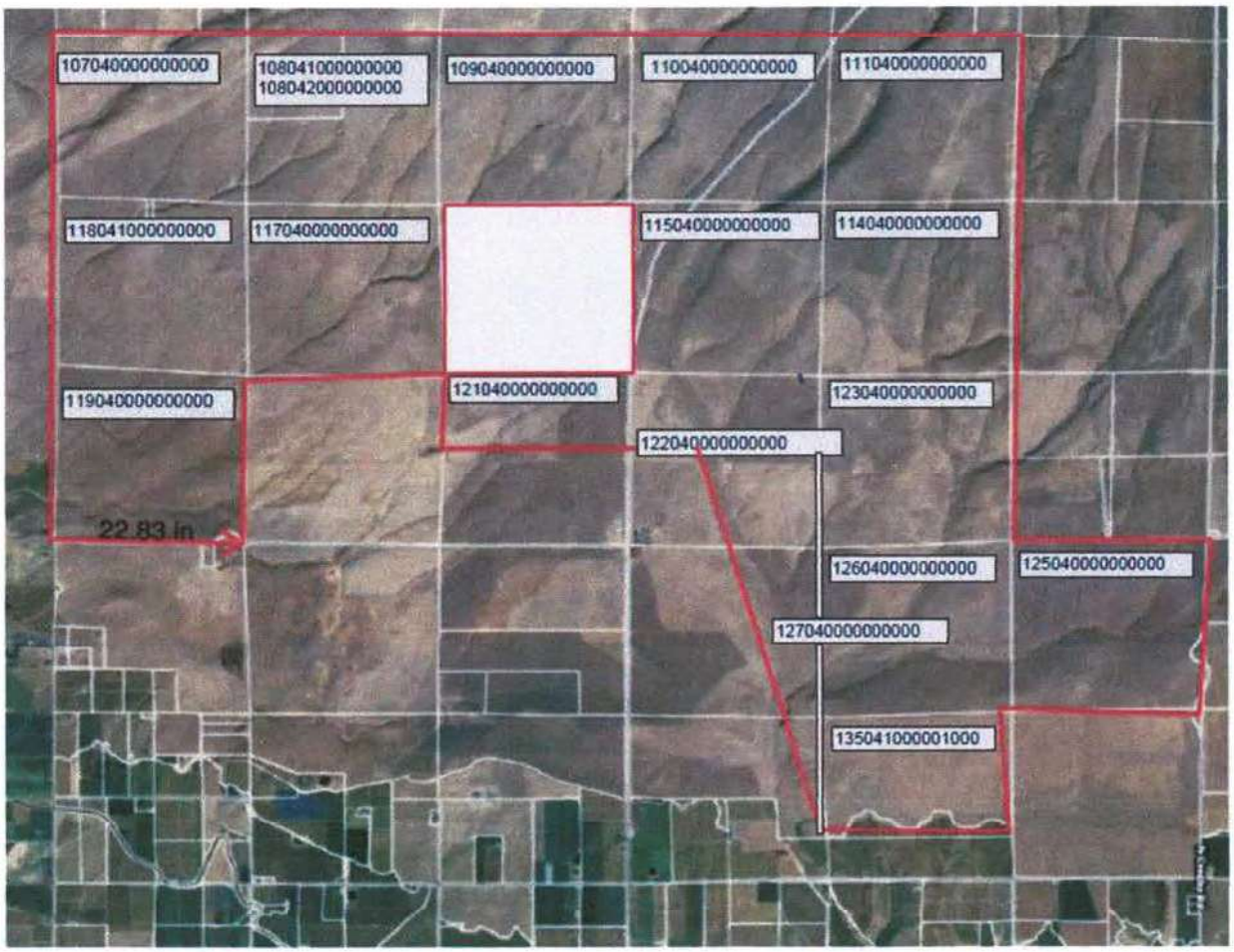
Ron Kiecana

EXHIBIT A

Legal Description of Property

The land referred to herein is situated in the State of Washington, County of Benton and described as follows:

A 4,000 acre portion within the initial lease option area shown and described below.



Initials: Landlord MKA Lessee _____

ANDERSON BROTHERS 111040000000000
640 acres
SECTION 11 TOWNSHIP 10 NORTH RANGE 24: ALL

ANDERSON BROTHERS 110040000000000
640 acres
SECTION 10 TOWNSHIP 10 NORTH RANGE 24: ALL

ANDERSON BROTHERS 109040000000000
640 acres
SECTION 9 TOWNSHIP 10 NORTH RANGE 24: ALL

ANDERSON BROTHERS 108041000000000
480 acres
SECTION 8 TOWNSHIP 10 NORTH RANGE 24: THE NORTHEAST QUARTER: THE SOUTHWEST QUARTER: THE SOUTHEAST QUARTER:

ELMER C ANDERSON INC & ANDERSON RATTLESNAKE FARMS GENERAL PARTNERSHIP 108042000000000
160 acres
SECTION 8 TOWNSHIP 10 NORTH RANGE 24: THE NORTHWEST QUARTER:

ELMER C ANDERSON INC 107040000000000
633.50 acres
SECTION 7 TOWNSHIP 10 NORTH RANGE 24: ALL

ELMER C ANDERSON INC 118041000000000
635.64
SECTION 18 TOWNSHIP 10 NORTH RANGE 24: ALL, EXCEPT THE NORTH 46 RODS OF THE EAST 10.435 RODS OF THE NORTHWEST QUARTER.

ANDERSON RATTLESNAKE FARMS 119040000000000
642.40 acres
SECTION 19 TOWNSHIP 10 NORTH RANGE 24: ALL (LOTS 2, 3 AND 4 AND THE EAST ONE/HALF OF THE SOUTHWEST QUARTER, EXCLUDED FROM ROZA, 7-5-49).

ANDERSON BROTHERS 117040000000000
640 acres
SECTION 17 TOWNSHIP 10 NORTH RANGE 24: ALL

ANDERSON BROTHERS 115040000000000
640 acres
SECTION 15 TOWNSHIP 10 NORTH RANGE 24: ALL

ANDERSON BROTHERS 114040000000000
640 acres
SECTION 14 TOWNSHIP 10 NORTH RANGE 24: ALL

ANDERSON BROTHERS 123040000000000
640 acres
SECTION 23 TOWNSHIP 10 NORTH RANGE 24: ALL

ANDERSON BROTHERS 126040000000000
640 acres
SECTION 26 TOWNSHIP 10 NORTH RANGE 24: ALL

ANDERSON BROTHERS 135041000001000
430 acres

SECTION 35 TOWNSHIP 10 NORTH RANGE 24: THE NORTH ONE/HALF TOGETHER WITH THE NORTH ONE/HALF OF THE SOUTH ONE/HALF, NORTH OF CANAL.

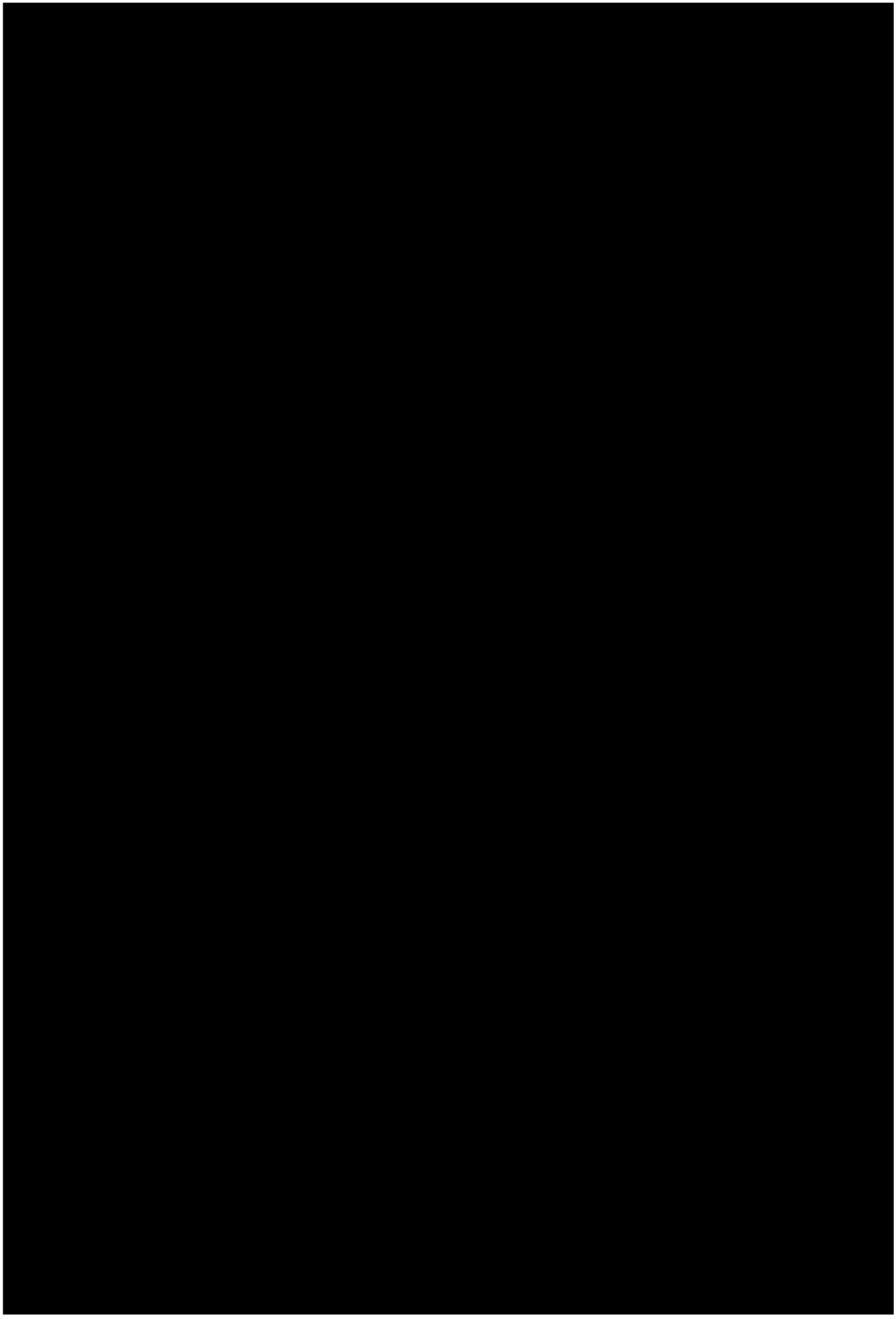
ANDERSON BROTHERS 125040000000000
640 acres
SECTION 25 TOWNSHIP 10 NORTH RANGE 24: ALL

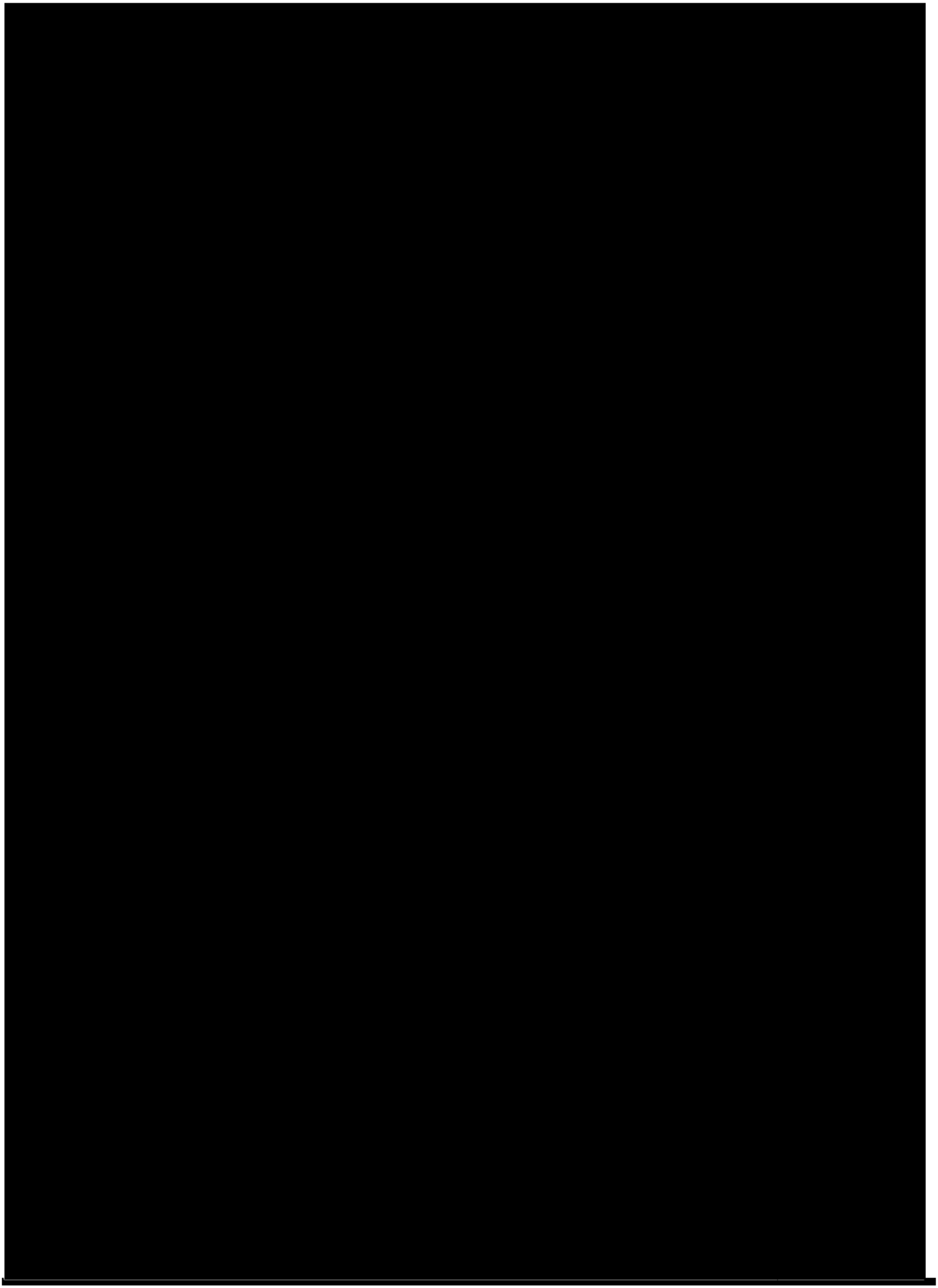
ANDERSON BROTHERS 127040000000000
640 acres
SECTION 27 TOWNSHIP 10 NORTH RANGE 24: ALL

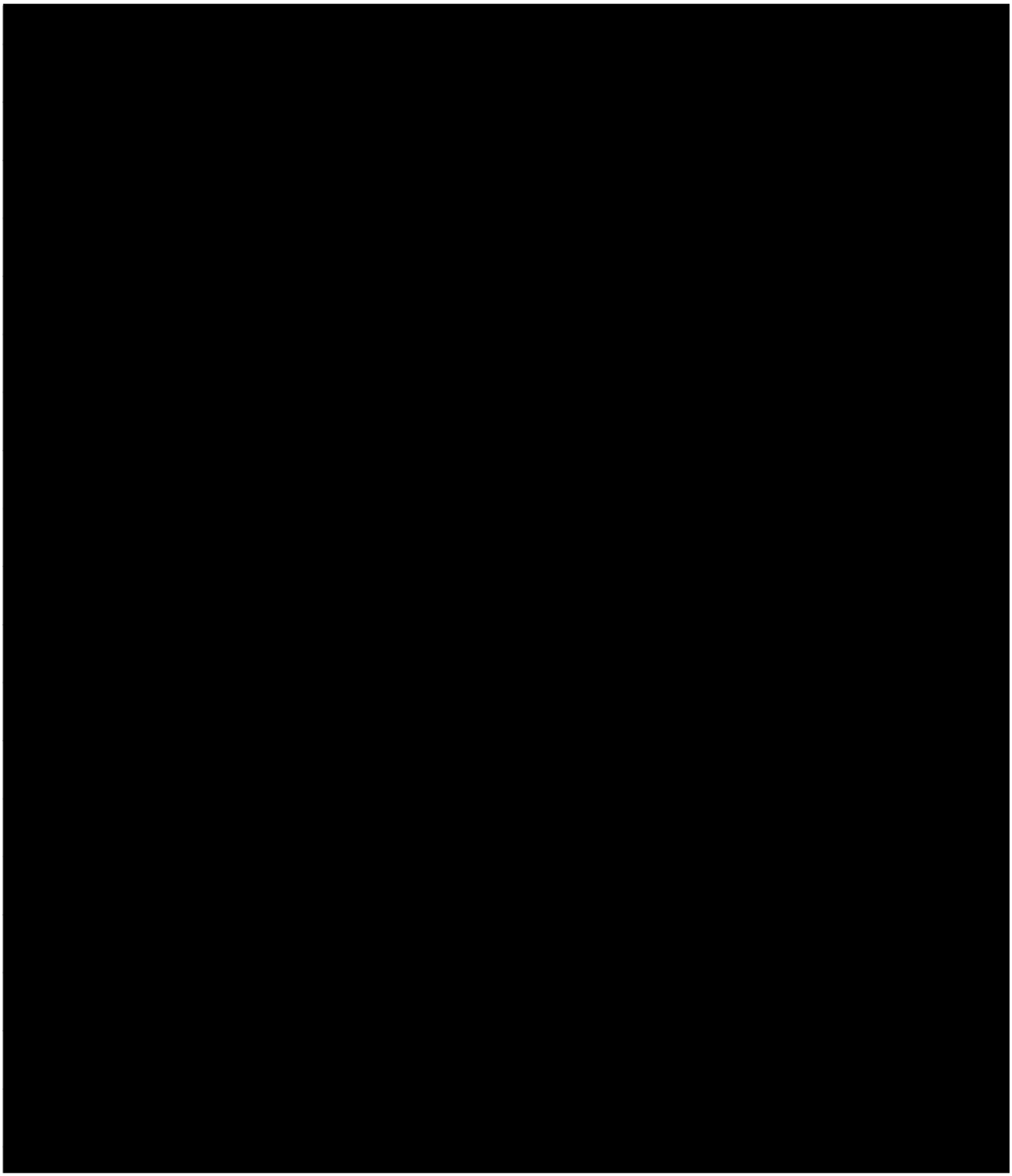
[redacted]

[redacted]

Initials: Landlord MKA Lessee _____







WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) [help]

US Army Corps of Engineers
Seattle District

AGENCY USE ONLY

Date received: _____

Agency reference #: _____

Tax Parcel #(s): _____

TO BE COMPLETED BY APPLICANT [help]

Project Name: _____

Location Name (if applicable): _____

Attachment C:
Contact information for adjoining property owners. [help]

Use this attachment only if you have more than four adjoining property owners.

Use black or blue ink to enter answers in white spaces below.

1. Contact information for all adjoining property owners. [help]

Name	Mailing Address	Tax Parcel # (if known)
John Denhoed LLC	62002 Missimer Rd Grandview, WA 98930	133044000002000 134043000004000
John Hancock Mutual Life Insurance	301 E Main St Turlock, CA 95380-4537	133042000000000
Miller, Gordon A. and Glenda J.	106 8th Street Prosser, WA 99350	101040000000000 102041000000000 112042000000000 113040000000000
Roza Irrigation District	PO Box 810 Sunnyside, WA 98944	130041000001000
Sapporo Vineyards USA, Inc	Wilgus and Evans Road PO Box 249 Grandview, WA 98930	135044000000000
State of Washington, Department of Natural Resources	PO Box 47014 Olympia, WA 98504	116041000001000
State of Washington, Department of Natural Resources State Lands Division	PO Box 47016 Olympia, WA 98504-7016	116041000002000 136040000000000
T & V Family Farm LLC	371 Northview Loop West Richland, WA 99353-8123	124043000000000
Valley Housing LLC	1510 Hambelton Bvld Yakima, WA 98902	132041000002000
Wycoff Farms Inc, A Washington Corporation	PO Box 249 Grandview, WA 98930	134043000001000 134043000002000 134044000000000

Slegers Farms LLC	5360 N County Line Rd Sunnyside, WA 98944	23102444001 23102511001
A Gene & Jimmie L Fernandez	4041 Factory Rd Sunnyside, WA 98944	23101211001 23101241001 23101311004
J2 Land & Cattle LLC	PO Box 398 Outlook, WA 98938	23100111001
Nathan & Bethany Jean Clement	3130 Portage Bay Pl E Apt A Seattle, WA 98102	23102411001
Wooden Shoe LLC	414 Concord Dr Outlook, WA 98938	23102441006 23102441004

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ORIA-16-014 rev. 10/2016