SAN JUAN COUNTY WASHINGTON

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LANDUSE-23-0122 OPALCO CONDITIONAL USE

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COMMUNITY DEVELOPMENT

Land Use Project Permit Application

PROPERTY INFORMATION Land Use/Shoreline

Tax Parcel Number: **352713002000** Designation: **AG** Water Body:

Island: **San Juan** Subdivision: Lot Number:

Property Size: **19.27 acres** Application Type: Conditional Use Permit

Existing and Proposed Use: Existing: Agricultrual. Proposed: Solar Farm & Agricultural

Directions to Property: Located at intersection of Bailer Hill Rd and Douglas Rd

OWNER AND AGENT INFORMATION:

Name of Owners:	**Orcas Power & Light Cooperative**	Name of Agent:	**Russell H. Guerry**
Address	**183 MT BAKER RD**	Address	**183 MT BAKER RD**
City, State, Zip	**EASTSOUND WA 98245-9413**	City, State, Zip	**EASTSOUND WA 98245-9413**
Phone Number	**(360) 376-3589 or (360) 317-6534**	Phone Number	**(360) 376-3589 or (360) 317-6534**
Email	**rguerry@opalco.com**	E-mail	**rguerry@opalco.com**

NOTE: A timely appeal of Shoreline Exemptions will stay the effective date of the granting of the exemption until the appeal has been resolved at the County level. (SJCC 18.80.140A(7))

PERMIT CERTIFICATION (Must be signed by all property owners of record or a notarized agent signature provided.)

I have examined this application and attachments and know the same to be true and correct, and certify that this application is being made with the full knowledge and consent of all owners of the affected property. (Signed by property owner or agent. For agent signature, notarized authorization must be attached.)

Digitally signed by Russell H. Guerry
DN: cn=Russell H. Guerry, o=Orcas Power and Light Cooperative, email=rguerry@opalco.com, c=US
Date: 2023.06.30 15:41:28 -07'00'

Signature	*Printed Name*	*Date*
	Russell Guerry, Manager of E&O	6/30/2023
Signature	*Printed Name*	*Date*
Signature	*Printed Name*	*Date*

For CD&P Use Only Complete Application: ☐ YES ☐ NO

Amt. Paid: Date Received: Receipt Number: 0000

FOR STAFF USE ONLY

Date Received: 9/19/23 Amount Paid: EP 350.00 Receipt #: LA23-00244

SEPA Exempt Code Citation: Inspection Required: ☐ YES ☐ NO

☐ Approved ☐ Denied By: Date:

NOTE: The Application Submittal Checklist for Land Use Review is a separate form that must be completed and attached to all applications. This checklist, along with other forms that might be needed, and current fees, may be found at: http://sanjuanco.com/permitcenter/applicationforms.aspx

Community Development
135 Rhone Street P.O. Box 947
Friday Harbor, WA 98250

(360) 378-2354
dcd@sanjuanco.com
www.sanjuanco.com

Receipt Number: LA23-00244

Payer: OPALCO
183 MT BAKER RD
EASTSOUND WA 98245-9413

Cashier: Lynda Guernsey **Date:** 09/19/2023

LANDUSE-23-0122 CONDITIONAL USE **San Juan County**

Fee Description	Fee Amount	Amount Paid	Fee Balance
Conditional Use Permit	$3,500.00	$3,500.00	$0.00
TECHNOLOGY FEE - $50 FOR PERMITS >$200	$50.00	$50.00	$0.00
	$3,550.00	**$3,550.00**	**$0.00**
	Total Paid:	**$3,550.00**	

Payment Method	Reference	Payment Amount
CHECK	139448	$3,550.00
	Total Paid:	**3550.00**

SAN JUAN COUNTY DEPARTMENT OF COMMUNITY DEVELOPMENT

135 Rhone Street, PO Box 947, Friday Harbor, WA 98250
(360) 378-2354 | (360) 378-2116
dcd@sanjuanco.com | www.sanjuanco.com

About Land Use Permits

The San Juan County Unified Development Code (UDC) establishes several different types of land use permits, all of which use this application packet. The purpose for requiring a permit to conduct some land uses is to ensure that they are compatible with the County land use and development regulations. For most projects a final inspection is also required to confirm that development occurred in conformance with the approved plans. When complete, applicants are asked to call one of the above numbers to schedule an inspection.

Process

All Permits

After an application, fees, and required attachments and information are submitted, CD&P has 28 days to determine whether the application is complete. If it is not complete, the applicant has 90 days to provide all missing information. Once the application is complete, CD&P will begin processing it. For most permits the County must publish a notice of application in the local paper, and the applicant must post a notice on the property and mail the notice to adjacent property owners. Some projects must also undergo SEPA (State Environmental Policy Act) review which also requires publication and mailing of notices.

Provisional Permit

After the public comment period, CD&P staff determine whether the project is consistent with the County land use and development codes and the criteria for approval. At that point the application may be approved, approved with conditions, or denied. There is no public hearing. The decision may be appealed by any party of record to the County Hearing Examiner by filing a written appeal and appropriate fees within 21 days of the decision.

Conditional Use Permit, Variance, and Shoreline Conditional Use/ Variance/ Substantial Development Permit

When all necessary information has been submitted, CD&P staff will schedule a public hearing before the San Juan County Hearing Examiner. At least 10 days prior to the hearing staff will issue a staff report analyzing the proposal for consistency with code requirements and the criteria for approval. At the public hearing, the Hearing Examiner will review the staff report, the applicant's presentation, and all public testimony and, after the hearing is closed, determine whether the proposal is consistent with the criteria for approval. The Hearing Examiner may approve, approve with conditions, or deny the application. For shoreline permits a notice of the decision is sent to the Dept. of Ecology and for variance and conditional use permit applications, within 30 days of transmittal they make the final decision. The Hearing Examiner's action on all except shoreline permits may be appealed to Superior Court in accordance with the requirements of the Land Use Petition Act. Appeals of shoreline substantial development permits must be submitted to the Shoreline Hearings Board within 28 days of the transmittal to Ecology, and shoreline variances and conditional use permits, must be submitted within 28 days the Ecology's final decision.

Land Uses Subject to P/C Determination

The CD&P Director reviews the impacts of the proposal and, if they are above a certain threshold, a Conditional Use Permit is required. If the impacts are below the threshold a Provisional Use Permit is required.

Shoreline Exemption (exemption from requirement for shoreline substantial development permit). Some activities within shoreline jurisdiction require approval of a Shoreline Exemption. These projects must meet all the requirements of the shoreline and other development regulations, but are processed by CD&P staff and a public hearing is not required. Decisions may be appealed to the County Hearing Examiner by filing a written appeal and appropriate fees within 21 days of the decision.

State and Federal Requirements. Projects in wetlands, streams, lakes and marine shorelines are often subject to State and Federal requirements. Submitting a JARPA (Joint Aquatic Resources Permit Application) form to the WA Dept. of Fish and Wildlife, U.S. Army Corps of Engineers and WA Dept. of Ecology is a first step in meeting these requirements (available at: www.epermitting.wa.gov).

Criteria for Approval

Provisional Use Permits

1. The provisional use permit application shall only be approved by the administrator if the use has been reviewed for consistency with the applicable sections of this code (e.g., Chapter 18.40 SJCC, Performance Standards, Chapter 18.50 SJCC, Shoreline Master Program, and Chapter 18.60 SJCC, Development Standards) and found to meet the requirements set forth by this code; and
2. Any provisional use application (not including short subdivisions) involving property located within the jurisdiction of the state Shoreline Management Act but not requiring a shoreline permit must conform to the policies in Element 3 of the Comprehensive Plan and the applicable regulations in Chapter 18.50 SJCC (the Shoreline Master Program).

Conditional Use Permits

1. The proposed use will not be contrary to the intent or purposes and regulations of this code or the Comprehensive Plan;
2. The proposal is appropriate in design, character and appearance with the goals and policies for the land use designation in which the proposed use is located;
3. The proposed use will not cause significant adverse impacts on the human or natural environments that cannot be mitigated by conditions of approval;
4. The cumulative impact of additional requests for like actions (the total of the conditional uses over time or space) will not produce significant adverse effects to the environment that cannot be mitigated by conditions of approval;
5. The proposal will be served by adequate facilities including access, fire protection, water, stormwater control, and sewage disposal facilities;
6. The location, size, and height of buildings, structures, walls and fences, and screening vegetation associated with the proposed use shall not unreasonably interfere with allowable development or use of neighboring properties;
7. The pedestrian and vehicular traffic associated with the conditional use will not be hazardous to existing and anticipated traffic in the neighborhood;
8. The proposal complies with the performance standards set forth in Chapter 18.40 SJCC;
9. The proposal does not include any use or activity that would result in the siting of an incompatible use adjacent to an airport or airfield (RCW 36.70.547); and
10. The proposal conforms to the development standards in Chapter 18.60 SJCC.

Variances

1. Literal interpretation and application of provisions of this code would deprive the applicant of the rights commonly enjoyed by other properties in the same district under the terms of this code, and allowing the variance will be in harmony with the intent and spirit of this code;
2. A variance is necessary for the preservation and enjoyment of a property right possessed by other property in the same vicinity or district, but which is denied to the property in question because of special circumstances on that property;
3. That the hardship described under this subsection is specifically related to the property and is the result of unique conditions such as irregular lot shape, size, or natural features, and the application of this code, and not, for example, from deed restrictions or the applicant's own actions;
4. The granting of the variance will not be materially detrimental to the public welfare or injurious to the right of other property owners in the vicinity; and
5. The variance will not permit a use prohibited by this code in the district in which the subject property is located.

Shoreline Conditional Use Permits

1. The proposed use is consistent with the policies of RCW 90.58.020 and the policies of the Shoreline Master Program;
2. The proposed use will not interfere with the normal public use of public shorelines;
3. The proposed use of the site and design of the project is compatible with other permitted uses within the area;
4. The proposed use will cause no unreasonably adverse effects to the shoreline environment in which it is to be located;
5. The cumulative impacts of additional requests for like actions in the area, or for other locations where similar circumstances exist, shall not produce substantial adverse effects to the shoreline environment, e.g., the total of the conditional uses shall remain consistent with the policies of RCW 90.58.020 and the Shoreline Master Program; and
6. The public interest will suffer no substantial detrimental effect.

Shoreline Variances

Variances for development that will be located landward of the ordinary high water mark (OHWM), as defined in RCW 90.58.030(2)(b), except within those areas designated as wetlands pursuant to Chapter 173-22 WAC:

1. That the strict application of the bulk, dimensional, or performance standards set forth in the applicable master program precludes or significantly interferes with a reasonable use of the property not otherwise prohibited by the master program. The fact that a greater profit might result from using the property in a manner contrary to the intent of the Shoreline Master Program is not sufficient reason for granting a variance;
2. That the hardship described in this section is specifically related to the property and is the result of unique conditions such as irregular lot shape, size, or natural features, and the application of the Shoreline Master Program, and not, for example, from deed restrictions or the applicant's own actions;
3. That the design of the project is compatible with other permitted activities in the area and will not cause adverse effects to adjacent properties or the shoreline environment;
4. That the requested variance does not constitute a grant of special privilege not enjoyed by the other properties in the area, and is the minimum necessary to afford relief; and
5. That the public interest will suffer no substantial detrimental effect.

Variances for development that will be located either waterward of the ordinary high water mark (OHWM), as defined in RCW 90.58.030(2)(b), or within wetlands as designated under Chapter 173-22 WAC:

1. Strict application of the bulk, dimensional, or performance standards set forth in the master program precludes a reasonable use of the property not otherwise prohibited by the master program;
2. Proposal is consistent with the criteria established under subsection (I)(3)(a)(ii) through (v) of this section; and
3. ublic rights of navigation and use of the shorelines will not be adversely affected.

Shoreline Substantial Development Permits

1. Consistent with the policies of the Shoreline Management Act and its implementing regulations, Chapter 90.58 RCW and Chapter 173-27 WAC, as amended;

2. Consistent with the policies and regulations of the Shoreline Master Program in Chapter 18.50 SJCC;

3. Consistent with this chapter;

4. Consistent with the applicable sections of this code (e.g., Chapter 18.60 SJCC);

5. Consistent with the goals and policies of the Comprehensive Plan; and

6. All conditions specified by the hearing examiner to make the proposal consistent with the master program and to mitigate or avoid adverse impacts are attached to the permit.

Project Narrative and Compliance Review

PROJECT DESCRIPTION

The Orcas Power & Light Co-operative (OPALCO) is proposing the Bailer Hill Microgrid Project (Project). The Project is a solar farm, which consists of solar arrays and two Battery Energy Storage Systems (BESS) located on a 19.27 acre parcel at the intersection of Douglas Road and Bailer Hill Road on San Juan Island. The parcel is located in the Agricultural Resource (AG) land use designation within the San Juan Valley overlay district. The Project is designed to be compatible with grazing sheep, and OPALCO is working with a local farmer to lease the property.

The solar facility will serve the greater San Juan community by enhancing grid reliability and storing energy for later use. The facility will be integrated into the existing infrastructure and provide energy back into the grid. OPALCO anticipates approximately 2.5 megawatt (MW) of peak output, with approximately 3,800 MegaWatthours (MWh) of annual production. Storage can be used to shift peak loads to hours of reduced demand, such as late night and mid-day. In addition, solar production peaks midday, between the morning and evening load peaks. Storage can be used to "bank" solar production for use during the evening demand peak. The project is anticipated to be developed in 2024 or 2025.

The project will include the installation of parallel rows of solar arrays, oriented in a north-south direction. The arrays would generally span the full distance from the north property line to the south property line, with the exception of the northwest corner of the site, which will be maintained in open grassland. Each array is spaced approximately 21.5 feet apart. The project also includes the installation of two Battery Energy Storage Systems (BESS), which are comprised of batteries that store energy and transfer the energy back to the grid. The BESS equipment would be located in metal cabinets on concrete bases, located within a 136 foot by 119-foot graveled equipment area surrounded by a chain link security fence in the southwestern portion of the parcel. A Site Plan showing the layout of the facility is included as Attachment 1 (Site Plan, Volumes 1 & 2).

The entire facility would be enclosed by a new farm fence bordered by a 10-foot landscape buffer planted with native shrubs and ground cover on the north, east, and southern portion of the site. The existing hedge and mature trees on the western parcel boundary will remain. Two existing access points to the San Juan Island County (County) roads would be improved to gain access to the project site from Douglas Road and Bailer Hill Road.

The facility would be unstaffed, requiring only occasional visits from OPALCO technicians for maintenance or repair. The facility will not require water or sewer services. A fire safety system is integrated into the BESS design, and OPALCO will coordinate fire safety procedures with local authorities.

The BESS system has eight levels of protection to prevent, mitigate and contain any possible thermal runaway events. Internal temperature monitoring will shut down the system, contact emergency services, vent evolved gases and release internal fire suppression compounds.

The Vanadium Redox Flow battery electrolyte (contained within the BESS) is not flammable, and there are no special hazards arising from the mixture. In the event of a fire in or near the containers advice to fire fighters included in the Invinity Safety Data sheet explains, to fight the fire from maximum distance

or used unmanned hose holders or monitor nozzles. Stay away from the ends of the tanks. Cool container with flooding quantities of water until well after the fire is out.

The entire parcel would remain in agricultural use through livestock grazing onsite, thereby maximizing use of the property, and ultimately benefitting the residents of San Juan Island.

BACKGROUND

OPALCO attended a pre-application meeting with San Juan County staff on August 18, 2021, to discuss the proposed Project. County staff issued a Land Use Pre-Application Meeting Memorandum on August 30, 2021, in which staff concurred that the proposed project qualifies as a "Commercial power-generation facility," which is an allowed, conditional use in the Agricultural Resource (AG) land use designation (Attachment 2). Livestock grazing is considered an agricultural activity and is an allowed use in the Agricultural Resource (AG) land use designation. County staff instructed the applicant to demonstrate that the proposed project complies with the following sections of San Juan County Code (SJCC):

- SJCC 18.30.040, Table 18.30.040 – see response to question 1
- SJCC 18.30.070 – see response to question 1
- SJCC 18.35.030 – see response to question 1
- SJCC 18.35.85-105 – see response to question 1
- SJCC 18.40.430 – see response to question 8
- SJCC 18.60.050, Table 6.2 – see response to question 10
- SJCC 18.60.060 – see response to question 10
- SJCC 18.60.070 – see response to question 10
- SJCC 18.80.030 – see response to question 1
- SJCC 18.80.100 – see response to question 1

1. *The proposed use will not be contrary to the intent or purposes and regulations of this code or the Comprehensive Plan.*

Below is a discussion of the San Juan County Code (SJCC) and Comprehensive Plan sections that the County instructed OPALCO to address in this application.

SJCC 18.30.040 Table 18.30.040. Allowable and prohibited uses in rural, resource, and special land use designations

SJCC 18.30.040, Table 18.30.040 identifies *"commercial power-generation facilities"* as allowed, conditional uses in the Agricultural Resource land use designation.

Response: *The proposed Project qualifies as a commercial power generation facility and would be located in the Agricultural Resource land use designation. The proposed project is therefore allowed as a conditional use under SJCC 18.30.040, Table 18.30.040.*

SJCC 18.30.070 Rural, resource, and special lands – special provisions

A. Agricultural and Forest Resource Lands. On all agricultural or forest resource lands (AG and FOR), the maximum area of development which is not related to agricultural or forestry uses and activities shall be limited to 20 percent of the parcel area, but not less than one acre, regardless of the assigned density. Further, in the division of a parcel by any means, the allowable area for conversion of the parent parcel to nonfarm and/or non-forestry use shall not be exceeded. This shall not apply to parcels smaller than five acres.

   Per SJCC 18.20.010 "A" definitions, "Agricultural activities" means agricultural uses and practices defined in RCW 90.58.065.

   Per RCW 90.58.065(2) Application of guidelines and master programs to agricultural activities.

   a. "Agricultural activities" means agricultural uses and practices including, but not limited to: Producing, breeding, or increasing agricultural products; rotating and changing agricultural crops; allowing land used for agricultural activities to lie fallow in which it is plowed and tilled but left unseeded; allowing land used for agricultural activities to lie dormant as a result of adverse agricultural market conditions; allowing land used for agricultural activities to lie dormant because the land is enrolled in a local, state, or federal conservation program, or the land is subject to a conservation easement; conducting agricultural operations; maintaining, repairing, and replacing agricultural equipment; maintaining, repairing, and replacing agricultural facilities, provided that the replacement facility is no closer to the shoreline than the original facility; and maintaining agricultural lands under production or cultivation;

   b. "Agricultural products" includes but is not limited to horticultural, viticultural, floricultural, vegetable, fruit, berry, grain, hops, hay, straw, turf, sod, seed, and apiary products; feed or forage for livestock; Christmas trees; hybrid cottonwood and similar hardwood trees grown as crops and harvested within twenty years of planting; and livestock including both the animals themselves and animal products including but not limited to meat, upland finfish, poultry and poultry products, and dairy products;

***Response**: The Project includes two compatible and complementary uses; solar electricity production and livestock grazing. While a small portion of the parcel will be permanently impacted by the installation of equipment related to solar energy production and storage, the majority of the parcel will be utilized for livestock grazing, which is classified as an agricultural activity per RCW 90.58.065(2)(a).*

Up to 6.48 acres may be disturbed temporarily during construction of the solar farm, however, approximately 1 acre will ultimately contain development that is not related to agricultural or forestry uses. As described in response to question #10 (SJCC 18.60) below, OPALCO proposes to create 1.02 acres of impervious surface amounting to approximately 5.23% of the parcel area. The majority of the remaining 18.27 acres (94.77%) of the parcel will be replanted with sheep-friendly native grasses to allow sheep grazing amid the solar arrays, thereby maintaining approximately 95% of the parcel in agricultural use. (See Attachment 3 – Stormwater Site Plan (Cushing Terrell, 2023).

SJCC 18.30.070.B (Conservancy Designations) and 18.30.070.C (Natural Designations) do not apply to the proposed project because it is not located in shoreline jurisdiction.

SJCC 18.35.030 Critical areas - general exemptions.

***Response**: All of San Juan County is mapped as a Critical Aquifer Recharge Area, including the subject parcel. However, the Project will have no adverse impacts on ground water resources on site or in the vicinity, as no groundwater withdrawals are contemplated as part of the Project. No other critical areas were identified on the parcel and the proposed project would not cause any additional intrusion into geologically hazardous areas, frequently flooded areas, wetlands, or fish and wildlife habitat conservation areas or their buffers; soil erosion will be controlled; disturbed areas will be promptly stabilized; and actions will not have additional adverse impacts on the functions and values of critical areas.*

SJCC 18.35.85–105 Wetlands

***Response**: Sections 18.35.85 through 18.35.105 address wetlands. Because there are no regulated wetlands on site, these code sections do not apply to the Project.*

OPALCO has submitted a wetland report by a qualified professional that confirms that wetlands are not present on this property. See Attachment 4 - Jacobs Critical Areas Exemption Report, August 2020, amended April 2023.

SJCC 18.40.430 Utility (electrical, sewerage, and other) distribution and transmission lines and substations.

***Response**: See response to question 8 below.*

SJCC 18.60.050 Density, dimension, and open space standards, Table 6.2.

***Response**: See response to question 10 below.*

SJCC 18.60.060 Clearing and grading standards.

***Response**: See response to question 10 below.*

SJCC 18.60.070 Storm drainage standards.

***Response**: See response to question 10 below.*

SJCC 18.80.030 Notice of project permit applications, public comment, and notice of hearing.

***Response**: Applicant will adhere to all applicable public notice requirements.*

SJCC 18.80.100 Permit procedures for conditional use and variance permits.

***Response**: As described previously, the Project qualifies as a Commercial power-generation facility which is allowed as a conditional use in the Agricultural Resource land use designation. The submittal of this application demonstrates compliance with this SJCC code section.*

Comprehensive Plan

***Response**: The 2036 Comprehensive Plan Update was adopted November 30, 2022 and went into effect April 1, 2023. The Project is consistent with the following elements of the 2036 Comprehensive Plan:*

- *Section B, Element 2, Subsection 2.2.C (Energy)*

  The goal of this section is "to conserve energy and promote energy efficiency." The policies in this section include a provision that San Juan County "provide opportunities for the development and use of alternative energy resources that are compatible with the natural environment."

  As a solar farm, the Project is an example of an alternative energy resource that is compatible with the natural environment.

- *Section B, Element 8 Utilities - Section "8.1 Introduction"*

  This section establishes that "this Element of the Comprehensive Plan (Plan) establishes goals and policies to guide the provision of utility services" (p.1) and recognizes the assumption that "utility providers are the best identifiers of utility problems and the solutions needed to overcome them" (p.1).

  OPALCO has identified solar power as an important element of locally generated energy.

- *Section 8.3.1 Electricity "Energy Outlook"*

  This section states that "San Juan County can reduce carbon emissions by increasing reliance on electricity if it comes from clean, renewable sources, and is used as efficiently as possible" (p.3). The text goes on to the recognize that "OPALCO is transitioning to a more locally generated energy mix, which could include member-generated energy (solar, wind, micro-hydro), Community Solar, utility-scale solar, tidal energy, and other new technologies. OPALCO expects that up to fifty percent of County energy could be generated locally by 2040" (p.5) and that "the need for locally generated electricity from wind, solar, tidal, and other sources are vitally important to prevent economic disruption and preserve the County's environment" (p.5). The text in this section also recognizes that The County Vision states, "our community strives for energy independence...we use renewable energy." To achieve this vision will require significant land and water areas to host local renewable energy and tidal power sites" (p.5).

  The Project is consistent with the County's Energy Outlook.

- *Section 8.5.A General Goals and Policies*

  This project is also supported by several goals and policies listed under Section 8.5.A General Goals and Policies, including the following:

- *Goal 6 – "Minimize the environmental impacts of electricity production and use while promoting energy independence."*
- *Policy 1 - "Encourage utility service providers to explore innovative and alternative methods of producing energy."*
- *Policy 2 - "Work with the San Juan County Conservation District and OPALCO to promote community solar projects and provide technical assistance and incentives to increase individual home solar installations."*
- *Policy 7 - "Ensure that solar installations are sited and designed in a manner that minimizes impacts on agricultural land, allows for flexibility in future agricultural activity and maximizes potential for multiple benefits from "agrivoltaics."*

As described throughout this application, the Project combines energy production and agricultural uses to develop a resource that will benefit County residents. Solar energy is a passive, renewable alternative energy resource that is compatible with the natural environment. The proposed project is a step forward in OPALCO's commitment to generate electricity from clean, renewable sources and to transition to a locally generated energy mix while maintaining the rural use of the property through livestock grazing.

***San Juan Valley Overlay district** - The Project does not involve land subdivision. Therefore, this overlay district does not apply.*

The Project has been designed and sited to meet the intent, purposes, and regulations of the San Juan County Code and Comprehensive Plan and the proposed use will not be contrary to the intent or purposes and regulations of San Juan County Code or its Comprehensive Plan.

In addition, the project has significant support from OPALCO members, as evidenced by the attached letters of support to this application (Attachment 5).

2. The proposal is appropriate in design, character, and appearance with the goals and policies for the land use designation in which the proposed use is located.

***Response:** The Project qualifies as a commercial power generation facility and would be located in the Agricultural Resource Land Use designation. The Project is allowed as a conditional use under SJCC 18.30.040, Table 18.30.040. The Project is designed to meet all applicable development standards described under SJCC 18.60 Development Standards (see response to criteria #10) and also meets additional design criteria described 18.30.070 Rural, resource, and special lands – Special provisions (see response to criteria #1). The land will remain in agricultural use and support livestock grazing. Additionally, a landscaped buffer will be planted around the parcel to screen portions of the facility from adjacent roads and properties. The proposal is appropriate in design, character, and appearance with the goals and policies for the land use designation in which the proposed use is located.*

3. The proposed use will not cause significant adverse impacts on the human or natural environments that cannot be mitigated by conditions of approval.

***Response:** A State Environmental Policy Act Environmental (SEPA) Checklist was prepared pursuant to Washington Administrative Code (WAC) Title 197, Chapter 11, Section 960 (197-11-960) for San Juan*

County to consider the environmental impacts of this project, see Bailer Hill Microgrid Project SEPA Checklist dated June 15, 2023 (Attachment 6).

The project is not anticipated to cause significant adverse impact on the human or natural environment, including potential impacts to earth, air, water, plants, animals, energy and natural resources, environmental health, land and shoreline use, housing, aesthetics, light and glare, recreation, historic and cultural preservations, transportation, public services, and utilities.

4. ***The cumulative impact of additional requests for like actions (the total of the conditional uses over time or space) will not produce significant adverse effects to the environment that cannot be mitigated by conditions of approval.***

Response: *No additional related actions are anticipated at this time.*

5. ***The proposal will be served by adequate facilities including access, fire protection, water, stormwater control, and sewage disposal facilities;***

Response: *The Project will be served by adequate facilities, including access, fire protection, and stormwater management facilities. The Project will be unstaffed and will not require water service or sewage disposal facilities.*

The applicant has submitted a Stormwater Management Plan for the site, see Attachment 3. The solar panels and BESS equipment are made of flame-resistant material and do not increase the likelihood of fire in the area.

6. ***The location, size, and height of buildings, structures, walls and fences, and screening vegetation associated with the proposed use shall not unreasonably interfere with allowable development or use of neighboring properties.***

Response: *The location, size, and height of the Project equipment, as well as the screening vegetation, which is to be planted on the north, east, and southern 10-feet of the parcel perimeter, will not unreasonably interfere with allowable development or use of neighboring properties. The subject parcel is surrounded by land zoned either Agricultural Resource (AG) or Rural Farm Forest (RFF). The proposed facility is designed to meet the design criteria for the AG land use designation as well as the development standards of SJCC 18.60 and the additional criteria described in 18.30.070 (Rural, resource, and special lands – Special provisions). The Project will be an unstaffed, passive, low intensity use that will have no impact on allowable development or use of adjacent parcels.*

7. ***The pedestrian and vehicular traffic associated with the conditional use will not be hazardous to existing and anticipated traffic in the neighborhood.***

Response: *The pedestrian and vehicular traffic associated with the conditional use will not be hazardous to existing and anticipated traffic in the neighborhood. Following construction, the Project would be unstaffed and would only require approximately one to two visits per month for routine operations and maintenance.*

8. The proposal complies with the performance standards set forth in Chapter 18.40 SJCC.

Response: *In compliance with the provisions of SJCC 18.40, OPALCO will submit a study describing the baseline and projected electromagnetic field (EMF) density prior to permit issuance by San Juan County.*

9. The proposal does not include any use or activity that would result in the siting of an incompatible use adjacent to an airport or airfield (RCW 36.70.547).

The proposal does not include any use or activity that would result in the siting of an incompatible use adjacent to an airport or airfield. The facility will not emit any light, glare, or radio frequency transmissions that might interfere with aviation.

OPALCO has submitted a Glare Study by ForgeSolar, February 2023 (Attachment 7). The study included analysis of glare at the Friday Harbor Airport and determined that no glare from the Project would affect the airport.

10. The proposal conforms to the development standards in Chapter 18.60 SJCC.

The proposal conforms to all applicable development standards in Chapter 18.60 SJCC.

SJCC 18.60.050 Density, dimension, and open space standards, Table 6.2.

The project is designed to meet the development standards outlined in 18.60.050, including setbacks, height limit, and impervious surface. Table 6.2 defines the development Standards for the agricultural resource zone, including the following:

- **Maximum Density**
  Response: *Does not apply. No dwelling units proposed.*
- **Minimum Lot Area**
  Response: *Does not apply. No subdivision or dwellings proposed.*
- **Minimum Front or Road Setbacks**
  Response: *The Project meets required setbacks of 45 feet for collector roadways. The applicable setbacks are shown on the Attachment 1 - Site Plan, Volume 1, Sheet G100.*
- **Minimum Rear and Side Setbacks**
  Response: *Response: The Project meets the required setbacks. The applicable setbacks are shown on the Attachment 1 - Site Plan, Volume 1, Sheet G100.*
- **Building Height (Feet)**
  Response: *Proposed project meets building height limits. All proposed structures are under 35 feet in height.*
- **Maximum Area of Impervious Surface (%)**
  Response: *SJCC 18.60.050, Table 6.2, establishes 10% of the lot as the total impervious surface area allowed on an Agricultural Resource lot; Note 10 states the following:*

"Impervious surface is measured by calculating the horizontal land area of all surface areas that create a barrier to or retard the entry of water into the soil in comparison with natural conditions prior to development, including but not limited to buildings, parking areas, driveways, roads, sidewalks, patios, packed earth, and oiled surfaces. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces."

As described in Attachment 3 - OPALCO Community Solar Stormwater Site Plan prepared by Kris Desper, PE of Cushing Terrell, 2023, the project will create 1.02 acres of impervious surface, which is 5.23 % of the parcel area, and is below the 10% impervious surface area threshold of the code. The impervious surface calculation includes all proposed access roads, above ground equipment, concrete equipment slabs, graveled equipment yard, solar array pile foundations, and solar panels. Each of these elements is described in detail in Attachment 1 - Site Plan. See Table 1 below for impervious surface created by each Project component.

Table 1: Impervious Areas

Total Site Area = 19.27Acres				
Impervious Areas				
	Area (SQFT)	Quantity	Total SQFT	Acres
PV Array Piles W 6"x9"	0.02	495	9.9	0.000227
PV Array Piles W 6"x10"	0.03	660	19.8	0.000455
Gravel Access Roads	5,450	1	5,450	0.125115
Gravel Pad BESS Yard	16,184	1	16,184	0.371532
Concrete Equipment Slabs	486	1	486	0.011157
Solar Panel Area	22,166.67	1	22,167	0.508875
		Total	**44,317**	**1.017361**
		Percentage Impervious	5.23%	5.23%

Notes regarding impervious surface calculations for solar panels

As described in Attachment 3 - OPALCO Community Solar Stormwater Site Plan (Cushing Terrell, 2023), the impervious surface calculations for the solar panels were analyzed using the "PV-SMaRT Solar Runoff Calculator" developed for the Photovoltaic Stormwater Management Research and Testing (PV-SMaRT) project at the University of Minnesota. The PV-SMaRT Solar Runoff Calculator was developed to estimate stormwater runoff from ground-mounted solar photovoltaic sites for pre- and post-construction site-specific conditions. The calculator was developed to estimate stormwater runoff at solar photovoltaic (PV) sites by accounting for: 1) soil and topographic characteristics (soil texture, soil depth, soil bulk density, slope); 2) surface cover (row crop, turf, pollinator habitat, etc.); 3) disconnected impervious surfaces associated with solar panel design (panel spacing and orientation); and 4) climatic factors (precipitation).

Solar panels create less impervious surface than other similarly sized structures due to the design of the panels which are raised above the ground and therefore maintain the existing vegetation and soil conditions beneath. This design feature, called "disconnection," allows the flow off the

impervious surface to vegetated ground where the flow is infiltrated. Therefore, solar development is unique in the three-dimensional flow of stormwater; stormwater both flows along the impervious panel surface and can also infiltrate under the panel through pervious ground cover. The design of the panels allows water running off one row of panels to run across the ground and be absorbed in the ground located under adjacent panels. See Figure 1 below.

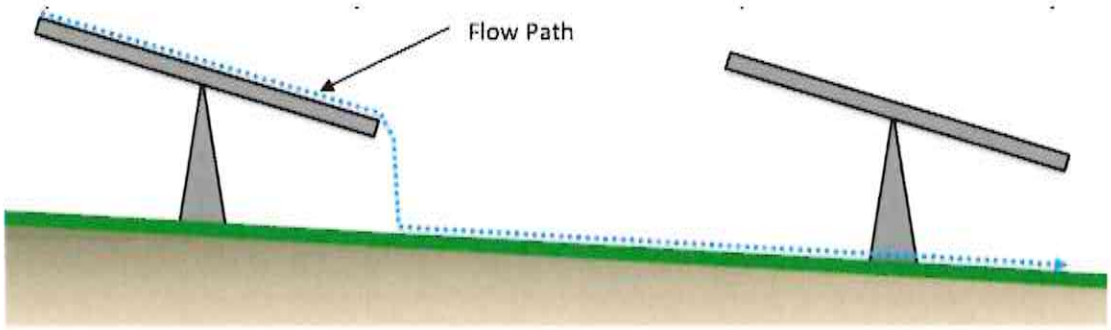

Figure 1: Water flow and infiltration from disconnected surface

In conclusion, *the proposed project would create 1.02 acres (44,317 square feet) of impervious surface, which is 5.23 % of the 19.27-acre parcel area. This complies with the 10% maximum impervious surface area on site.*

- **Minimum required open space or landscaped area (%)**
  ***Response**: Not applicable (per Table 6.2, Note 12).*

- **Maximum developable area (%),**
  ***Response**: Note 14, establishes that the maximum area of development that is not related to agricultural or forestry uses and activities shall be limited to 20 percent of the parcel area.*

  The full text of Note 14 states:

  > *"On all agricultural or forest resource lands (AG and FOR), the maximum area of development which is not related to agricultural or forestry uses and activities shall be limited to 20 percent of the parcel area, but not less than one acre, regardless of the assigned density. Further, in the division of a parcel by any means, the allowable area for conversion of the parent parcel to nonfarm and/or nonforestry use shall not be exceeded. This shall not apply to parcels smaller than five acres. "*

  As described in the discussion of SJCC 18.30.070 under criteria 1 response above, approximately 95% of the parcel will support agricultural activities in the form of livestock grazing. The only areas of the parcel that will not support the growth of native grasses for livestock graving are the areas covered by impervious surface. As described above, the total new impervious surface areas generated by the Project amount to approximately 5% of the total parcel area, which is below the twenty percent limit allowed under maximum developable area (%) (per Note 14, Table 6.2 of SJCC 18.60.050).

SJCC 18.60.060 Clearing and grading standards.

***Response**: As required by SJCC 18.60.060, all grading and clearing activities will be conducted so as to minimize potential adverse effects of these activities on forested lands, surface water quality and quantity, groundwater recharge, wildlife habitat, and scenic resources.*

Refer to the overall grading plan in Attachment 1 - Site Plan, Volume 1, Sheet C200 et seq. of attached plan set for details.

A Clearing and Grading Permit application is included as Attachment 8.

SJCC 18.60.070 Storm drainage standards.

***Response**: See Attachment 3 - OPALCO has submitted a Stormwater Management Plan with this application. See "OPALCO Community Solar Stormwater Site Plan" prepared by Kris Desper, PE of Cushing Terrell, 2023. The plan conforms to the standards and minimum requirements set by the Washington State Department of Ecology's Stormwater Management Manual for Western Washington (2019), Publication Nos. 05-10-029 through 05-10-033. In addition, the best management practices identified in the January 2005 Low Impact Development Technical Guidance Manual for Puget Sound, produced by the Puget Sound Action Team, are acceptable alternatives for managing runoff, controlling soil erosion, and maximizing and protecting recharge.*

List of Attachments:

- Attachment 1 - Site Plan Design Package, Volumes 1 and 2
- Attachment 2 - San Juan County Pre-application Report
- Attachment 3 - Stormwater Site Plan, Cushing Terrell, 2023
    - Appendix A : Soil Information & Geotech Report
- Attachment 4 - Critical Areas Exemption Report, Jacobs, 2020
- Attachment 5 - Letters of Support from OPALCO members
- Attachment 6 - SEPA checklist
    - Attachment A - Vanadium Spill Response Plan
    - Attachment B - Noise Analysis
    - Attachment C - Letter of Support from Oak Knoll Farm, June 30, 2023
    - Attachment D - Cultural Resources Inventory and Report for the Project (Jacobs, 2021)
    - Attachment E - DAHP Letter of Concurrence with No Adverse Effect determination, July 2021
- Attachment 7 - Glare Study, ForgeSolar, 2023
- Attachment 8 - Clearing and grading permit application, HDR

Acronyms and Abbreviations

BESS	battery energy storage system
County	San Juan County
MW	megawatt
OPALCO	Orcas Power & Light Cooperative
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SJCC	San Juan County Code
WAC	Washington Administrative Code

Re: Community Solar Update: Bailer Hill Microgrid

Jean Agapoff
Fri 6/16/2023 9:13 AM

To:**Community Solar <solar@opalco.com>**

Dear San Juan County Council, Building Advisory Council, and Permitting Department,

Our household supports OPALCO's planned Bailer Hill Solar System. My husband and I would like to put solar panels here on our house on Orcas, but due to orientation and trees we would not get much energy from the panels. We bought into OPALCO's Decatur solar system and would like to invest in the planned project on SJI as well. We feel strongly that clean energy independence is important for the islands. We have been waiting to invest in this project for some time. Please allow it to be built.

Thank you, Jean Agapoff and Hugh Everett

On Jun 14, 2023, at 4:12 PM, OPALCO Community Solar <solar@opalco.com> wrote:

View this email in your browser

COMMUNITY SOLAR
POWERED BY OPALCO & THE SUN

Dear Solar Enthusiasts:

Thanks for your interest in OPALCO's community solar program! The Bailer Hill Microgrid project will include a community solar array and battery storage. The project has encountered a few obstacles that have resulted in delays, to include limited availability of contractors and certain materials including the solar panels. We're moving forward as fast as we can and hope to begin construction in early 2024 – with subscriptions for shares in the project opening soon after.

Right now, we **need your help** to keep the project on track!

OPALCO is applying for a conditional use permit through San Juan County to allow solar and battery on agricultural land. We already have a local sheep farmer contracted to graze the land and plan to continue co-opting the land for agricultural use after we build the microgrid project.

How can you help?

I fully support the plans that OPALCO has for locating a community solar project at the curve from Douglas Rd to Bailer Hill Rd on San Juan Island. I have been a fulltime resident of San Juan Island for 23 years, a longtime proponent of solar energy, and understand the importance of renewable power sources for our islands. This project represents a positive step forward for all of us. I have rooftop solar on my house and am looking forward to being able to further contribute via a community solar project to increase the diversity of our local power sources. As a resident on the west side of the island, my normal drive to town is via Bailer Hill Rd/Douglas Rd going by the proposed OPALCO solar site. Seeing solar panels on that property is in no way a deterrent to my enjoyment of that drive and the pastoral atmosphere of the area. In fact it would give me pleasure to see the expansion of solar on this island. And seeing sheep grazing there is just a reminder of how progress and agriculture can be mixed effectively. I look forward to seeing this solar project move forward.

Susan Eberhard
San Juan Island

June 14, 2023

TO: San Juan County, Community Development

Letter in Support of OPALCO's Bailer Hill Community Solar Project

Sirs;

OPALCO's Bailer Hill Community Solar Project is an absolute necessity.

The world's energy reserves are being consumed at a ferocious rate. It is estimated that the entire world's supply of known coal reserves will be depleted in about 110 years. The known supply of crude oil will be depleted in 53 years. The known supply of natural gas will be gone in 54 years. The last new nuclear power plant in the United States was completed in 1996. Not a single new nuclear power plant project has even been proposed in the last 30 years. And conservation groups are calling for removal of dams everywhere. That leaves solar and wind power as the only two viable, **long term** sources of electrical power.

Projects such as the OPALCO's Bailer Hill Community Solar system are our future. Please do everything in your power to encourage it and ensure it succeeds. Also, please all encourage future development of both wind and solar electrical production projects.

Thank you,

John Becker, BSME, MSME, MBA Engineering
PO Box 1647
Eastsound, WA 98245

Re: Community Solar Update: Bailer Hill Microgrid/ county letter

jbeeman haller-beeman.com
Fri 6/16/2023 8:36 AM

To:Community Solar <solar@opalco.com>

Dear San Juan County Development Office,

I strongly support the Bailer Hill Community Solar project that OPALCO is currently trying to build. This project will include a large solar array and storage, which will help the islands become more self-reliant in terms of energy. This has many benefits to our island society, including:

- Less use of hydro-powered electricity from the mainland, which can then be used to offset other peak (often carbon-based fuel) demands
- Local storage can help keep refrigerators working when the mainland trunk line goes down
- Local production of electricity doesn't need as much grid improvement, which is a current bottleneck for most mainstream commercial renewable energy projects.
- As more electric cars and heat pumps come on-line, our grid will need more capacity to support these uses. Electric car charging, in particular, can be synchronized with solar output, using this source of energy more efficiently

Please expedite the permitting and approval of this project. It makes sense.

Sincerely,

Jeffrey Beeman
76 Hawk Hill Lane, Box 396
Orcas, WA 98280

From: OPALCO Community Solar <solar@opalco.com>
Sent: Wednesday, June 14, 2023 4:12 PM
To: jbeeman haller-beeman.com <jbeeman@haller-beeman.com>
Subject: Community Solar Update: Bailer Hill Microgrid

Re: Community Solar Update: Bailer Hill Microgrid

Mike Bentz
Fri 6/16/2023 9:15 AM

To:**Community Solar <solar@opalco.com>**
Cc:Cindi Bentz <cindihappy@centurylink.net>

To: San Juan County
Subject: Support for Bailer Hill Community Solar

We hope you will grant the conditional use permit for the subject project. As residents of Decatur Island, we are so proud of our OPALCO solar farm and we tell every guest about it. The ideals of green power, and of making the islands more self-sufficient, are important to us, and well worth the usage of the Decatur land. The proposed co-use of the Bailer Hill site sounds even better. This will be a great demonstration of how we can further those ideals.

Sincerely,

Mike and Cindi Bentz
Decatur Island

On Jun 14, 2023, at 4:12 PM, OPALCO Community Solar <solar@opalco.com> wrote:

View this email in your browser

COMMUNITY SOLAR

POWERED BY OPALCO & THE SUN

Dear Solar Enthusiasts:

Thanks for your interest in OPALCO's community solar program! The Bailer Hill Microgrid project will include a community solar array and battery storage. The project has encountered a few obstacles that have resulted in delays, to include limited availability of contractors and certain materials including the solar panels. We're moving forward as fast as we can and hope to begin construction in early 2024 – with subscriptions for shares in the project opening soon after.

Right now, we **need your help** to keep the project on track!

OPALCO is applying for a conditional use permit through San Juan County to allow solar and battery on agricultural land. We already have a local sheep farmer contracted to graze the land and plan to continue co-opting the land for agricultural use after we build the microgrid project.

RE: Community Solar Update: Bailer Hill Microgrid

Bruce Clarke
Fri 6/16/2023 9:13 AM

To:**Community Solar <solar@opalco.com>**

I certainly would like to add my support for this project. Anything that can help reduce our reliance on energy sources originating on the mainland is a good idea. And this project really does not negatively effect usage of agricultural resources since the acreage involved is still available for many-if-not-all typical island agricultural purposes.

To whomever in the County is involved in the permitting process, please take whatever steps are needed to fast-path this obviously important project. I drive by this site nearly every day and it is difficult to imagine any good reasons why this project can't move along quickly.

Bruce Clarke
601 Little Mountain Road
San Juan Island

From: OPALCO Community Solar <solar@opalco.com>
Sent: Wednesday, June 14, 2023 4:12 PM
To: Bruce Clarke <bruce@bclarke.net>
Subject: Community Solar Update: Bailer Hill Microgrid

COMMUNITY SOLAR

POWERED BY
OPALCO & THE SUN

Dear Solar Enthusiasts:

Thanks for your interest in OPALCO's community solar program! The Bailer Hill Microgrid project will include a community solar array and battery storage. The project has encountered a few obstacles that have resulted in delays, to include limited availability of contractors and certain materials including the solar panels. We're moving forward as fast as we can and hope to begin construction in early 2024 – with subscriptions for shares in the project opening soon after.

Right now, we **need your help** to keep the project on track!

OPALCO is applying for a conditional use permit through San Juan

RE: Community Solar Update: Bailer Hill Microgrid

dougcram@rockisland.com
Thu 6/15/2023 7:10 AM

To:**Community Solar <solar@opalco.com>**

As an OPALCO customer and a resident of the San Juan Islands, I support the Bailer Hill solar grid project. It is an important step forward in producing renewable, clean energy for the Islands. It is also an excellent example to set for other communities. Once the project is finished and operating, it will provide precedence for other small communities to look to, and hopefully follow suit. Building facilities like this has to start somewhere, and OPALCO is bold enough to take the steps to do it here.

Thanks for looking to the future, OPALCO!

Doug Cram
Lopez Island 98261

From: OPALCO Community Solar <solar@opalco.com>
Sent: Wednesday, June 14, 2023 4:12 PM
To: dougcram@rockisland.com
Subject: Community Solar Update: Bailer Hill Microgrid

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COMMUNITY SOLAR
POWERED BY OPALCO & THE SUN

Dear Solar Enthusiasts:

Thanks for your interest in OPALCO's community solar program! The Bailer Hill Microgrid project will include a community solar array and battery storage. The project has encountered a few obstacles that have resulted in delays, to include limited availability of contractors and certain materials including the solar panels. We're moving forward as fast as we can and hope to begin construction in early 2024 – with subscriptions for shares in the project opening soon after.

Right now, we **need your help** to keep the project on track!

Re: Community Solar Update: Bailer Hill Microgrid

Bryce Seidl
Fri 6/16/2023 9:11 AM

To:**Community Solar <solar@opalco.com>**

I am writing in the strong support of the pending OPALCO solar generation project.

I am a longtime landowner on Shaw Island. We cherish the islands. It is important that we support the local generation of power for both issues of reliability, as well as for purposes of ecological preservation. The plans appear to be very reasonable. Having the land used for some level of agricultural interest along with the solar farm is a nice dimension of the project.

Please provide support to Abaco in any way necessary for this project to be permitted.

Bryce Seidl
Shaw Island

Sent from my iPhone

On Jun 14, 2023, at 4:12 PM, OPALCO Community Solar <solar@opalco.com> wrote:

COMMUNITY SOLAR

POWERED BY
OPALCO & THE SUN

Dear Solar Enthusiasts:

Thanks for your interest in OPALCO's community solar program! The Bailer Hill Microgrid project will include a community solar array and battery storage. The project has encountered a few obstacles that have resulted in delays, to include limited availability of contractors and certain materials including the solar panels. We're moving forward as fast as we can and hope to begin construction in early 2024 - with subscriptions for shares in the project opening soon after.

Right now, we **need your help** to keep the project on track!

OPALCO is applying for a conditional use permit through San Juan County to allow solar and battery on agricultural land. We already have a local sheep farmer contracted to graze the land and plan to continue co-opting the land for agricultural use after we build the microgrid project.

Bailer Hill Microgrid

seraphim at rockisland.com
Thu 6/16/2023 6:30 AM

To:**Community Solar <solar@opalco.com>**

June 15, 2023
To: SanJuan County
From: Cynthia Dilling, Lopez Island
Subject: Bailer Hill Microgrid

Greetings,
I enthusiastically encourage San Juan County to grant a conditional use permit for the Bailer Hill Microgrid project to go forward on agricultural land. Renewable power on our islands is essential. Helping our county become more independent might offset long power outages like we experienced last winter. Assisting low-income households through OPALCO's Energy Assistance Program would be a plus.

I look forward to being part of this project!

Sincerely,
Cynthia Dilling
612 Cape Saint Mary Road
Lopez Island WA 98261

Re: Community Solar Update: Bailer Hill Microgrid

Mary Ferm
Fri 6/16/2023 8:35 AM

To:**Community Solar <solar@opalco.com>**

As a resident at 655 MacGinitie Rd on San Juan Island, and as a member of the Decatur microgrid project, I fully support the Bailer Hill microgrid solar project.
It is well thought out, and ready to be developed, balancing various land needs. We would like to purchase more solar shares than we already have.
It will help supply power to our islands which are so dependent on power drawn from the mainland.
It will contribute to the effort to mitigate climate change, which is having a direct effect on our shorelines through sea level rise.
Sincerely,
Mary Ferm

On Wed, Jun 14, 2023 at 4:12 PM OPALCO Community Solar <solar@opalco.com> wrote:

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COMMUNITY SOLAR

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Dear Solar Enthusiasts:

Thanks for your interest in OPALCO's community solar program! The Bailer Hill Microgrid project will include a community solar array and battery storage. The project has encountered a few obstacles that have resulted in delays, to include limited availability of contractors and certain materials including the solar panels. We're moving forward as fast as we can and hope to begin construction in early 2024 – with subscriptions for shares in the project opening soon after.

Right now, we **need your help** to keep the project on track!

OPALCO is applying for a conditional use permit through San Juan County to allow solar and battery on agricultural land. We already have a local sheep farmer contracted to graze the land and plan to continue co-opting the land for agricultural use after we build the microgrid project.

How can you help?

We need OPALCO members to write letters of support for this project. Your personal letter of support will help illustrate to the County the importance of local, renewable power on our islands. Your letter of support for project permitting in no way obligates you to buy Community Solar shares – but helps pave the way for this important project on San Juan Island.

Re: Community Solar Update: Bailer Hill Microgrid

Megan Frazer
Fri 6/16/2023 9:13 AM

To:**Community Solar <solar@opalco.com>**

To whom it may concern,
I am writing in support of the Bailer Hill Community Solar system to be installed by Opalco.
I have been waiting for years for the opportunity to invest in solar power for our home on San Juan Island.
Community solar projects are so much more efficient than projects on individual properties and they benefit the entire community.
Please do whatever you can to move this project forward as quickly as possible.
Sincerely,
Megan Frazer
123 Mytilus Lane,
Friday Harbor, WA 98250

On Wed, Jun 14, 2023 at 4:12 PM OPALCO Community Solar <solar@opalco.com> wrote:

View this email in your browser

COMMUNITY SOLAR
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Dear Solar Enthusiasts:

Thanks for your interest in OPALCO's community solar program! The Bailer Hill Microgrid project will include a community solar array and battery storage. The project has encountered a few obstacles that have resulted in delays, to include limited availability of contractors and certain materials including the solar panels. We're moving forward as fast as we can and hope to begin construction in early 2024 – with subscriptions for shares in the project opening soon after.

Right now, we **need your help** to keep the project on track!

OPALCO is applying for a conditional use permit through San Juan County to allow solar and battery on agricultural land. We already have a local sheep farmer contracted to graze the land and plan to continue co-opting the land for agricultural use after we build the microgrid project.

How can you help?

June 14, 2023

To: San Juan Island County

From: Michael J. Hansen

Re: OPALCO Conditional Use Application for the Bailer Hill Community Solar Project

I am writing to strongly encourage the County to approve the conditional use permit for this solar project. My wife and I moved to San Juan Island as our permanent home in June 2015. We are deeply committed to this community and its future. A big part of that future is providing for the infrastructure we all need to remain on the Island. A big part of that a reliable source of power. My wife and I have committed to this personally by installing solar panels on our home through the good planning and programing of OPALCO. Everything we can do to add to our energy independence deserves serious consideration and should be done. Please look favorably on this project and application.

My wife and I feel blessed to be part of this community now. It is remarkable to see how well our infrastructure and governmental institutions work and plan to secure our basic needs and growth of our entire county needs. Keep up the good work.

Re: Community Solar Update: Bailer Hill Microgrid

Michael Hayworth
Fri 6/16/2023 8:37 AM

To:Community Solar <solar@opalco.com>

To the San Juan County Council, OPALCO Board, OPALCO CO-OP members and residents of San Juan County,

Hello,

I'm writing in support of the issuance of a **conditional use permit** for the upcoming Bailer Hill Community Solar Project without any further delay.

OPALCO is taking the actions that we, as a nation, should have begun implementing decades ago. Now that the climate emergency is upon us we must all do our part to reduce our collective carbon footprint. This project will go a long way toward that goal and is an example of how government can solve problems and improve the quality of life for its citizens -- as only government can.

As a general contractor on Orcas Island, I have been building energy efficient houses since 1980. Now I will build only net zero houses. To achieve this, access to off site renewable energy is key (as all sites aren't blessed with perfect solar exposure). Although we have installed a solar array on our own property, we are still about 15% short of achieving our 100% net zero goal. We need to make up that deficit with membership in this community solar project. In addition, we are building a house for sale next door which we want to be net zero. It will require off site renewable energy too.

In addition to green lighting the Bailer Hill project, The county should be setting its own goal of transitioning to 100% renewable energy -- but that's a separate letter.

In closing, I cannot say enough about the "Switch It Up" program that is available to all county residents. 100% financing for up to 10 years at 2% interest, payments made on your power bill. Easy, painless, and the right thing to do -- for your community, your kids, grandkids and the planet.

It's time to get moving! We've run out of time to waste!

Sincerely,

Mike Hayworth

Hayworth Design & Construction
PO Box 133 / 114 Colgan Creek Rd.
Eastsound, WA 98245

360-376-4550 Office
360-378-7447 Mobile

mikehayworth@gmail.com
www.hayworthdesign.com

On Wed, Jun 14, 2023 at 4:12 PM OPALCO Community Solar <solar@opalco.com> wrote:

RE: Community Solar Update: Bailer Hill Microgrid

Pete Helsell
Fri 6/16/2023 8:36 AM

To:**Community Solar <solar@opalco.com>**

I just finished reading OPALCO's report on the progress to develop the Bailer Hill Microgrid project on San Juan Island. I am excited to hear that the project is progressing and understand that OPALCO has applied for a conditional use permit for this project. I am totally supportive of OPALCO's plan to develop local, renewable power for our island community and strongly encourage San Juan County to approve a conditional use permit for the Bailer Hill Microgrid project.
I am a board member of a regional foundation with a focus on funding projects and programs that address climate change as part of ensuring a sustainable environment. Renewable energy projects are a clear example of ways to help in addressing climate change. I also appreciate that the Bailer Hill Microgrid project will provide locally-produced power with a storage capacity to provide power to island residents during our too-frequent power outages.
Thank you!
Pete Helsell
Orcas Island

Sent from Mail for Windows

From: OPALCO Community Solar
Sent: Wednesday, June 14, 2023 4:12 PM
To: nw_eagle@hotmail.com
Subject: Community Solar Update: Bailer Hill Microgrid

COMMUNITY SOLAR
POWERED BY OPALCO & THE SUN

Dear Solar Enthusiasts:

Thanks for your interest in OPALCO's community solar program! The Bailer Hill Microgrid project will include a community solar array and battery storage. The project has encountered a few obstacles that have resulted in delays, to include limited availability of contractors and certain materials including the solar panels. We're moving forward as fast as we can and hope to begin construction in early 2024 – with subscriptions for shares in the project opening soon after.

Right now, we **need your help** to keep the project on track!

Re: Community Solar Update: Bailer Hill Microgrid

Susan Mahoney
Fri 6/16/2023 8:33 AM

To:**Community Solar <solar@opalco.com>**

To whom it may concern:
Yes, I support the community solar project. I appreciate the move towards greener energy sources. I live on San Juan Island, and have benefited from solar panels on a a home for more than 10 years. For my newer home, I researched adding solar panels. Unfortunately, it does not receive enough sunlight. I am looking forward to the opportunity to invest in a subscription from the Bailer Hill Community Solar System.
Thank you,
Susan Mahoney

Sent from my iPhone

On Jun 14, 2023, at 4:13 PM, OPALCO Community Solar <solar@opalco.com> wrote:

View this email in your browser

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OPALCO is applying for a conditional use permit through San Juan County to allow solar and battery on agricultural land. We already have a local sheep farmer contracted to graze the land and plan to continue co-opting the land for agricultural use after we build the microgrid project.

How can you help?

We need OPALCO members to write letters of support for this project.

Bailer Hill Microgrid Project

What a positive move for our community, especially for those of us who already harvest solar energy and convert it to food for the community. The application of Agrivoltaics Microgrid Project by OPALCO in an agricultural setting is a positive move in increasing the levels and means of harvesting solar energy. By integrating a livestock component on agricultural land with an energy harvesting solar array, we see an additional use for ag lands that can also include other cropping systems such as vegetables, perennial berry crops, even pollinator friendly plantings. The options are only as limited as the thinking and planning that goes into the system.

There are two levels of harvesting. One, solar harvest by sheep eating their natural preferred food, converting forage to meat and wool.

The solar panels and storage battery bank are the second level. It provides an additional source of electricity, fed into the grid that we all use on the islands.

Extensive research has already been done on agrivoltaic systems at Oregon State University by Chad Higgins, Associate Professor of Biological and Ecological Engineering. Since 2015 he and his students have been leading several pilot projects using solar installations and integrating grazing. Solar grazing is exploding in popularity and gives farmland, farms and farmers alternatives. These opportunities increase the bottom line ecologically and offer additional stewardship opportunities. This offers farmers income to keep solar installations on agricultural land grazed, weed-free and resilient against wildfires. It also intensively uses the land in a positive way.

Agrivoltaics are so cutting edge there is now legislation on a national level proposed in the U.S. Senate called the Agrivoltaics Research and Demonstration Act of 2023. This legislation, co-sponsored by Sens. Martin Heinrich, D-N.M. and Mike Braun, R-Ind., if passed, will fund and require USDA and the U.S. Department of Energy to jointly carry out a national study of agrivoltaic systems in multiple settings and climate locations.

We as a community should all welcome the opportunity to support such integrations in our geographically challenged islands, it fits with so many of the great things we have done as a community over the years.

If you don't eat anything local, you should. You could also support this great project and use locally produced energy!

Bruce and Colleen Howe-Gregory

Mitchell Bay Farm

San Juan Is.

Re: Community Solar Update: Bailer Hill Microgrid

Deirdre Morris
Fri 6/16/2023 9:13 AM

To:**Community Solar <solar@opalco.com>**

I support solar panels on ag land. I live in Friday Harbor near Bailer Hill and I would love to be a part of this and I certainly will be a supporter. We need power and we need alternatives and we need to hustle up and get it going. Hurray for solar what took so long? Thank you
Deirdre Morris
and

On Wed, Jun 14, 2023 at 4:12 PM OPALCO Community Solar <solar@opalco.com> wrote:

View this email in your browser

COMMUNITY SOLAR

POWERED BY
OPALCO & THE SUN

Dear Solar Enthusiasts:

Thanks for your interest in OPALCO's community solar program! The Bailer Hill Microgrid project will include a community solar array and battery storage. The project has encountered a few obstacles that have resulted in delays, to include limited availability of contractors and certain materials including the solar panels. We're moving forward as fast as we can and hope to begin construction in early 2024 – with subscriptions for shares in the project opening soon after.

Right now, we **need your help** to keep the project on track!

OPALCO is applying for a conditional use permit through San Juan County to allow solar and battery on agricultural land. We already have a local sheep farmer contracted to graze the land and plan to continue co-opting the land for agricultural use after we build the microgrid project.

How can you help?

We need OPALCO members to write letters of support for this project. Your personal letter of support will help illustrate to the County the importance of local, renewable power on our islands. Your letter of support for project permitting in no way obligates you to buy Community Solar shares -- but helps pave the way for this important project on San Juan Island.

Please reply to this email with your letter of support. It would be great to include what island you reside on, why you support the project and any

Re: Community Solar Update: Bailer Hill Microgrid

Bob Piotrowski
Fri 6/16/2023 8:36 AM

To:**Community Solar <solar@opalco.com>**

Hi, I'm writing in support of OPALCO's proposed solar farm on San Juan island. I already have shares in their Decatur solar farm and plan to purchase more. I think these solar farms are an excellent way of offering people a way to take advantage of solar without modifying their roofs and homes - and is more efficient than everyone installing their own systems.

Please allow OPALCO to build the solar farm at the location on San Juan Island.

Thanks/Regards

Bob Piotrowski
Lopez Island

From: OPALCO Community Solar <solar@opalco.com>
Sent: Wednesday, June 14, 2023 4:12:26 PM
To: camelontherocks@hotmail.com <camelontherocks@hotmail.com>
Subject: Community Solar Update: Bailer Hill Microgrid

COMMUNITY SOLAR
POWERED BY OPALCO & THE SUN

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How can you help?

Re: Community Solar Update: Bailer Hill Microgrid

Thomas Reynolds
Fri 6/16/2023 8:35 AM
To:**Community Solar <solar@opalco.com>**

Please find attached my letter of support.

To whom it may concern,

I am a San Juan County resident residing on Brown Island, and I am writing in support of the OPALCO Bailer Hill Microgrid project that includes a solar array and battery storage. I support renewable energy infrastructure buildouts to mitigate the worst of impending climate change. I invested in the Decatur project and plan to invest in this project as well. I would put solar on my house or property if I could, but we have too many tall trees and insufficient sun exposure to make this an effective personal solution. The Microgrid project enables me to support renewable energy directly through investment. An additional benefit is the provision of electricity supply to key facilities, such as the hospital, during outages that occur on the mainland and disrupt electric service to our entire archipelago, improving the community's energy resilience. I strongly support a conditional use permit for this facility.

Tom Reynolds
11 Brown Island
Friday Harbor, WA 98250

Thomas Reynolds

tom.reynolds@alumni.stanford.edu

11 Brown Island
Friday Harbor WA 98250

On Jun 14, 2023, at 4:12 PM, OPALCO Community Solar <solar@opalco.com> wrote:

View this email in your browser

COMMUNITY SOLAR
POWERED BY OPALCO & THE SUN

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We need OPALCO members to write letters of support for this project. Your personal letter of support will help illustrate to the County the importance of local, renewable power on our islands. Your letter of support for project permitting in no way obligates you to buy Community Solar shares – but helps pave the way for this important project on San Juan Island.

Please reply to this email with your letter of support. It would be great to include what island you reside on, why you support the project and any other pertinent details.

Project details:

The Bailer Hill Community Solar system is located off Bailer Hill Road and will feature tracking solar panels to maximize output while balancing agricultural and other land use needs. The anticipated size is ≈3 MW (about six times larger than the first community solar project on Decatur Island) with an annual output of up to 4,800 MWh. Wow - that's a lot of

Community Solar Update: Bailer Hill Microgrid

Robert Dash
Wed 6/28/2023 4:07 PM

To:**Community Solar <solar@opalco.com>**;council@sanjuanco.com <council@sanjuanco.com>;Jay Kimball <jay@mountaincedar.com>

Cc:Ranna McNeil <rannamcneil@hotmail.com>

5 attachments (25 MB)

Copy of DJI_0299-HDR.jpg; JSG Partners+map.png; PXL_20220712_152704029.MP_2.jpg; PXL_20220720_184857117.jpg; PXL_20220830_155906802.MP.jpg;

Dear San Juan County Council Members,

We're writing in enthusiastic support of the Baker Hill Community Solar project, proposed by Opalco. Our household is a charter member of the Decatur Community Solar project, so we're well aware of the program's benefits. What makes the Baker Hill project more interesting is its foray into agriculture. Agrivoltaics projects are starting to happen all over, for good reason: it's possible to grow food or manage livestock while at the same time producing electricity, all on the same land. This is obvious to the planners of the Baker Hill project, but possibly not to the general public. Messaging about the win/win/win nature of these systems is crucial.

We're sending a few images from an especially inspiring project in Colorado called Jack's Solar Garden. You'll see from the photos that they've taken the concept way beyond the norm, collaborating with several research institutions to ascertain the most productive use of the land in concert with the pv arrays. This summer marks their inaugural CSA. Wouldn't it be great for San Juan County to do our own version of this experimentation?

In any case, we hope you'll do all in your power to educate the public about the multiple benefits of this project, and continue to think creatively about all the potential collaborations that could arise there.

Looking forward to this project,

Robert Dash and Ranna McNeil

Robert Dash and Ranna McNeil

PO Box 88
Deer Harbor, WA 98243
360-376-3842

On Thursday, June 22, 2023 at 01:01:58 PM PDT, Robert Dash <rdashing46@yahoo.com> wrote:

SAN JUAN COUNTY DEPARTMENT OF COMMUNITY DEVELOPMENT

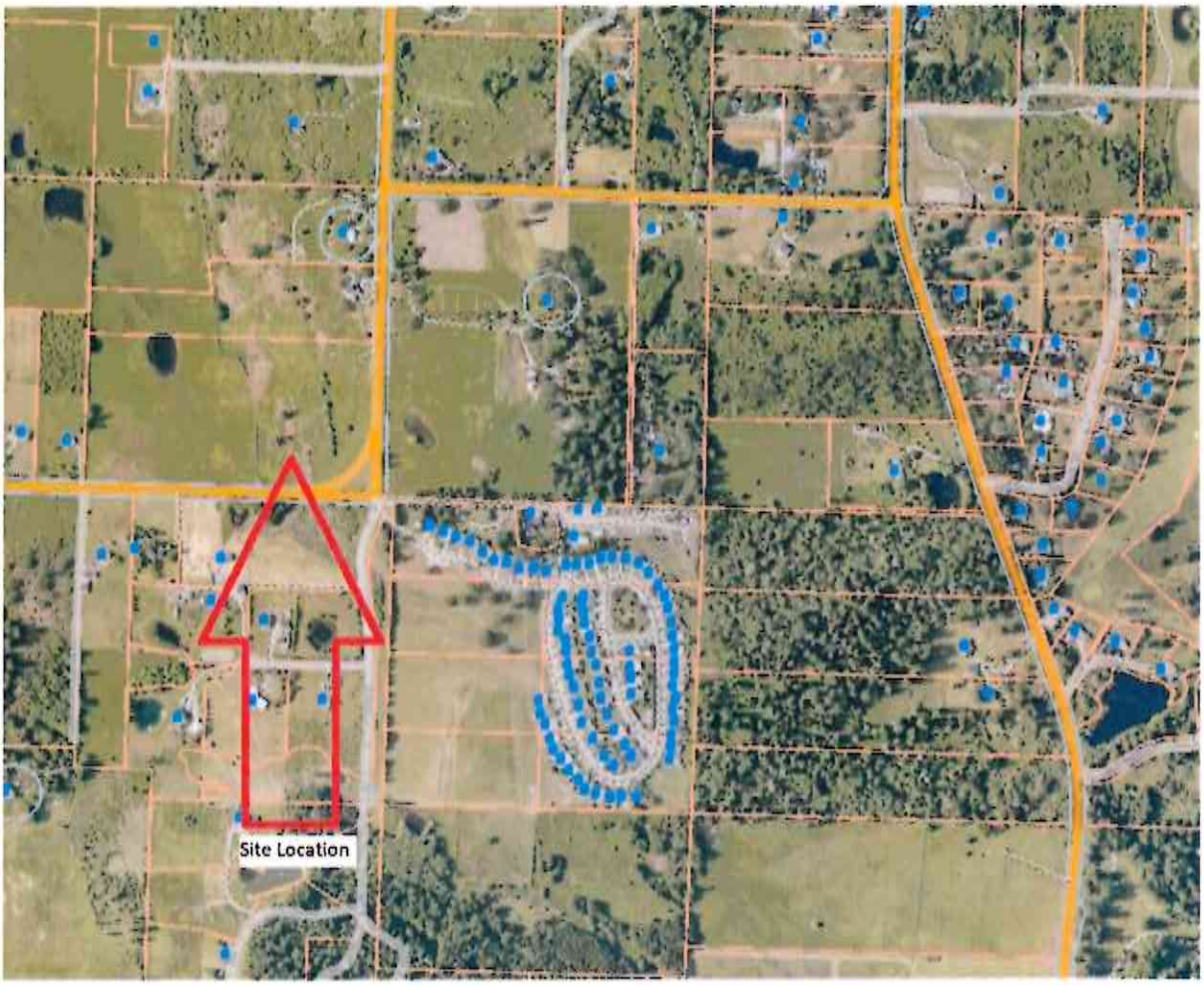
135 Rhone Street, PO Box 947, Friday Harbor, WA 98250
(360) 378-2354 | (360) 378-2116
dcd@sanjuanco.com | www.sanjuanco.com

LAND USE PRE-APPLICATION MEETING MEMORANDUM

FILE NUMBER	PREAPP-21-0031
REPORT DATE:	August 30, 2021
TO:	Jennifer Thomas
TPN:	352713002000
PROPERTY INFO	Legal Acres: 19.26: Taxable Acres: 17.49
LAND USE DESIGNATION	Agricultural Resource
FROM:	Colin Maycock, AICP, Planner IV *cm*
MEETING DATE:	August 18, 2021
ATTENDEES:	Jennifer Thomas, Dan Vekved, Grove Eland, Russel Guerry, Julie Thompson, Colin Maycock, AICP

1. LOCATION OF PROPOSED SOLAR PANEL FARM

The proposed construction of a solar panel farm is in a field located at the corner of a Bailer Hill Road and Douglas Road, central San Juan Island.



2. EXISTING CONDITIONS:

TPN 352713002000 has a taxable acreage of 17.49 acres. The total legal acreage for the parcel is 19.26 acres. The parcel is immediately north of the right-angle intersection of Douglas and Bailer Hill Roads, and a significant portion, 1.77 acres, is encumbered with a County Right of Way.

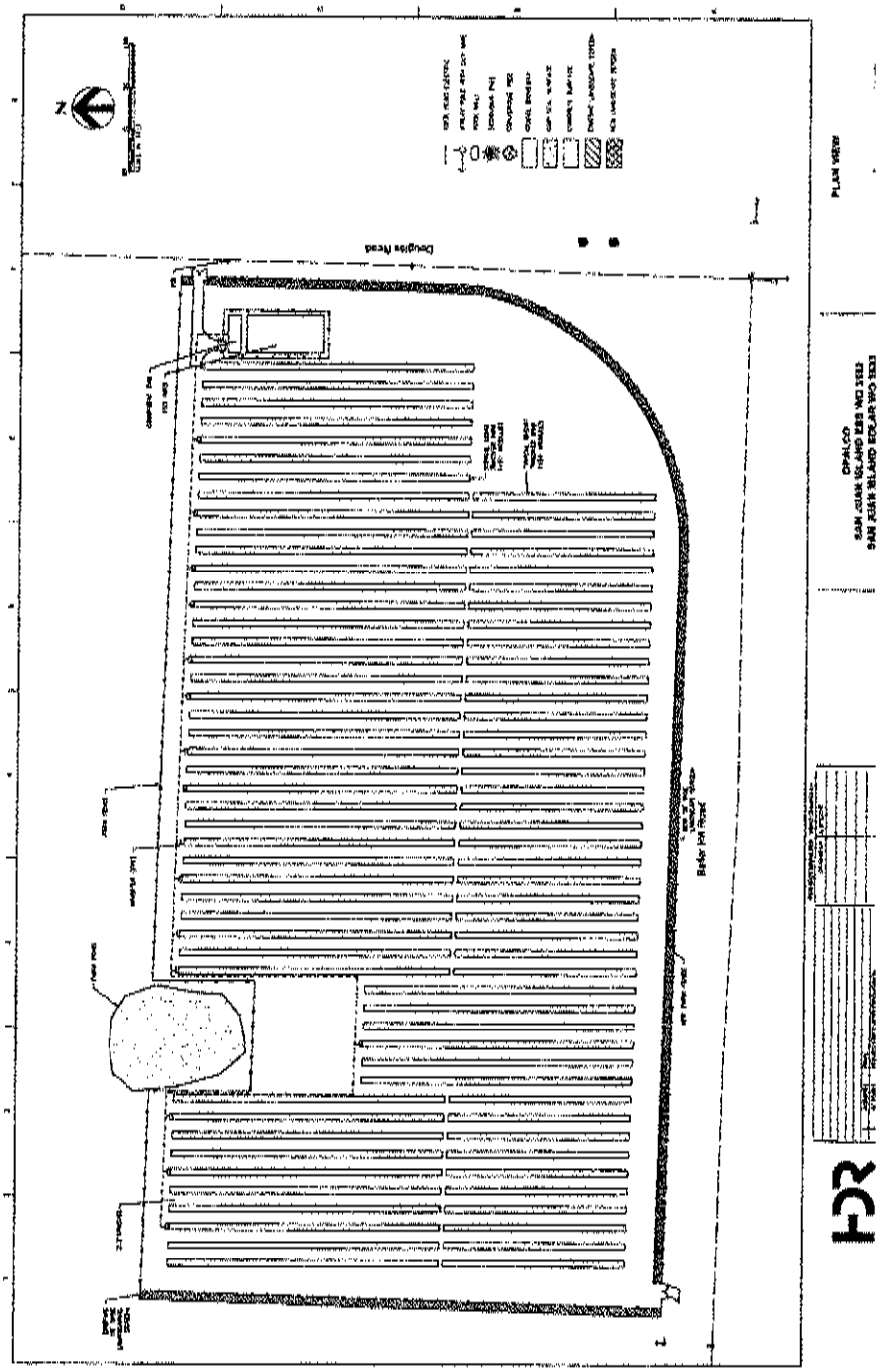
Since the early 20th century, this parcel has been used for agricultural production.

The wetland reconnaissance submitted by the applicant indicates that rather than naturally occurring, the pond on the property was constructed for farm purposes. The County's 1932 aerial photographs show the field as cleared, presumably arable, land, without a pond. The County's 2004 aerial photographs show the pond as present.

3. PROPOSAL:

The proposal is to create a solar panel farm on a 17-acre agricultural resource parcel. The solar panel farm will consist of multiple rows of solar panels which will change vertical orientation in response to track the movement of the sun.

The solar panel farm would also include an Energy Storage System comprising of one battery container measuring 40' X 8' X 10' and several support cabinets.



The project will include a landscaped buffer as a visual screen.

The project is likely to require significant grading and excavation; however, the extent of the required clearing and grading is not yet known.

4. LANDUSE DESIGNATION:

The proposed solar panel farm will be housed on a parcel with the land use designation of Agricultural Resource.

SJCC 18.30.040, Table 18.30.040 identifies commercial power generation facilities as an allowed, conditional use in the Agricultural Resource land use designation.

Land Uses	Rural Designations					Resource Lands		Special Lands[4]	
	RGU	RR	RFF	RI	RC	AG	FOR	C	N
Parking structures	N	N	N	N	N	N	N	N	N
Streets, public	Y	Y	Y	Y	Y	Y	Y	C	C
Trails and paths, public	Y	Y	Y	Y	Y	Y	Y	C	C
Unnamed transportation uses	P/C	P/C	P/C	P/C	P/C	C	C	C	C
Utilities Uses									
Commercial communication facilities	N	N	N	P	N	N	N	N (C at Mt. Con-stitution Sites)	N
Commercial power-generation facilities	C	N	N	P/C	P/C	C	C	N	N
Community sewerage treatment facilities	N	N	N	N	N	N	N	N	N

SJCC 18.40.430 establishes the performance standards for electrical distribution lines and substations. The applicant shall demonstrate the consistency of the project with these provisions.

SJCC 18.60.050, Table 6.2, establishes the development standards that apply to all projects within the Agricultural Resource designation.

Specifically, Table 6.2, note 14, establishes a maximum development area of 20 percent of the parcel area on Agricultural Resource parcels for non-agricultural development.

Table 6.2, establishes a maximum area of impervious surface of 10% within the Agricultural Resource designation.

Table 6.2. Density, Dimension, and Open Space Standards for Rural, Resource, and Special Land Use Districts.

Development Standard	Land Use District[1]								
	Rural					Resource		Special	
	RGU	RR	RFF	RI	RC	AG	FOR	C	N
Maximum Density (parcel area/total number of dwelling units)	[Please refer to the *Comprehensive Plan* official maps.]								*See* Note 2
Minimum Lot Area	See SJCC 18.70.010 E)								*See* Note 2
Minimum Front or Road Setbacks[4, 5, 6, 14]									
Existing road for collector (feet from centerline)	45	45	45	45	45	45	45	45	45
All other roads (feet from centerline)	40	40	40	40	40	40	40	40	40
Minimum Rear and Side Setbacks[4, 5, 6, 14]									
Parcels smaller than five acres (feet)	10	10	10	10	10	10	10	10	10
Parcels five acres or larger, and average width ≥ 80 feet (feet)	15	15	15	15	15	15	15	15	15
Maximum Dimensions									
Building height (feet)[7, 8]	35[9]	35[9]	35[9]	35[9]	35[9]	35	35	35	35
Area of impervious surface (%)[10, 13, 14]	10	10	15[13]	20	10	10	10	10	10
Set-Aside Requirements									
Minimum required open space or landscaped area (%)[11, 14]	30	30	30	30	30	ON.A (12)	N.A.	N.A.	N.A.
Maximum developable area (%)[14]	ON.A.	N.A.	N.A.	N.A.	N.A.	*See* Note 14	*See* Note 14	N.A.	N.A.

SJCC 18.60.050, Table 6.2, establishes 10% of the lot as the total impervious surface area allowed on an Agricultural Resource lot, note 10 establishes:

> Impervious surface is measured by calculating the horizontal land area of all surface areas that create a barrier to or retard the entry of water into the soil in comparison with natural conditions prior to development, including but not limited to buildings, parking areas, driveways, roads, sidewalks, patios, packed earth, and oiled surfaces. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces. See also SJCC 18.60.070, Storm drainage standards.

The applicant submitted a report, published by Kerry Jenks, in November, 2017, titled "A rainy day at a solar farm." This report concludes that while solar panel arrays have the potential to alter the volume, velocity and discharge patterns on the site during and after construction, solar panel arrays do not impact stormwater flows in the same way as buildings with a nominally similar impervious surface footprint. In terms of the disruption to stormwater flows, the report states that the solar arrays have a measurable impact of between 15-50 percent of solid impervious surface because the panels are raised

about 7 feet above the ground surface. In addition, the angle of the array shifts throughout the day in response to the sun.

County Stormwater engineering technician, Krista Davis, reviewed the proposal and the Kerry Jenks report, and stated that:

> In reviewing the proposed methodology for calculating the impervious surface, and reviewing the submitted Jenks report, it would be permissable to assume 50% coverage so long as the base substrate remains permeable. If gravel is proposed, then we would count that towards the impervious surface total.

SJCC 18.60.050, Table 6.2, and Note 14 establishes the maximum developable area on Agricultural Resource lands as 20% of the parcel area.
Note 14 states:

> 14. On all agricultural or forest resource lands (AG and FOR), the maximum area of development which is not related to agricultural or forestry uses and activities shall be limited to 20 percent of the parcel area, but not less than one acre, regardless of the assigned density. Further, in the division of a parcel by any means, the allowable area for conversion of the parent parcel to nonfarm and/or nonforestry use shall not be exceeded. This shall not apply to parcels smaller than five acres. (Emphasis added).

SJCC 18.60.060(E)(2) states that grading of more than 500 cubic yards requires a clearing and grading permit. The applicant expects to exceed this threshold; however, the extent of the prospective clearing is not clear.

5. CRITICAL AREAS:

The National Wetland Inventory of 2018 indicates the presence of an emergent freshwater wetland on this parcel (shown in pink).

The applicant has; however, submitted a wetland reconnaissance report by a qualified professional that demonstrates the absence of a wetland on this property.

6. CULTURAL RESOURCES:

The proposal is not within a cultural resource buffer. A cultural resource report is not required prior to development. However, as the project is likely to rely on federal funds a Section 106 consultation process may be required.

7. STATE ENVIRONMENTAL PROTECTION ACT (SEPA):

Although the extent of the clearing and grading required for this project has yet to be determined, it is likely that a SEPA threshold determination will be necessary. WAC 197-11-800(1)(b)(v) provides a categoric exemption from a SEPA threshold determination for development that is less than 100 cubic yards throughout the lifetime of the project. It is expected that the clearing and grading required by this project will exceed the 100 cubic yard threshold, although at this time the applicant has not provided any information to finalize a determination.

8. STORMWATER:

The applicant expects the final application to entail significant excavation and grading; however, at this time the extent of the excavation and grading is not yet determined. The size of the site and the character of the proposed development suggests that excavation and grading is likely to require a stormwater management plan. SJCC 18.60.070(D)(2) states that the creation of 5,000 square feet of impervious surface or land disturbing activities of an acre or more requires the preparation and submission of a stormwater site plan.

9. PROJECT PLANS REVIEW (COMMUNITY DEVELOPMENT):

The proposal to construct a solar panel farm on an agricultural resource parcel will require a conditional use permit.

The applicant must demonstrate compliance with the following sections of San Juan County Code:

SJCC 18.30.040, Table 18.30.040
SJCC 18.30.070
SJCC 18.35.030
SJCC 18.35.85-105
SJCC 18.40.430
SJCC 18.60.050, Table 6.2
SJCC 18.60.060
SJCC 18.60.070
SJCC 18.80.030
SJCC 18.80.100

The applicant must demonstrate the proposal's consistency with San Juan County Comprehensive Plan, Section B, Element 2, subsections 2.2.C (Energy) and 2.3.D (Agricultural resource lands).

10. REQUIRED PERMITS AND REPORTS:

- SEPA checklist, threshold determination and supporting documents.
- Site plan
- Clearing and grading application
- Stormwater management plan
- Updated wetland/critical areas report
- Conditional Use application

CODE CITATIONS

San Juan County Comprehensive Plan, Section B, Element 2, subsections 2.2.C (Energy) and 2.3.D (Agricultural resource lands).

2.2.C Energy

Goal: To conserve energy and promote energy efficiency.

Policies:

1. Promote education on site planning methods that make maximum use of energy-saving features of the natural environment.

2. Provide opportunities within land use designations for the development and use of alternative energy resources which are compatible with the natural environment.

2.3.D Resource Lands

Goal: To recognize and protect the physical conditions and characteristics of agricultural and forest resource lands which are conducive to the use of such lands for long-term commercial production.

Policies (2.3.D.1–5):

1. Identify lands as Agricultural and Forest Resource lands on the *Comprehensive Plan* Official Maps which are not designated as Activity Centers or Rural Lands.

2. Apply site planning standards for land division activities on resource lands to ensure that agricultural and forest resource lands are conserved for long-term farm and forest uses.

3. Strengthen Right-to-Farm and Right-to-Forestry provisions which establish the high priority and favored use of Resource Lands for farming and forestry operations and assure that such uses will not be considered a nuisance or inconvenience to adjacent non-farm uses.

4. Continue to apply the Open Space Conservation Overlay District regulations to Agricultural Resource Lands located within the San Juan Valley.

5. Establish clearly defined Resource Lands designations which protect and conserve long-term commercially significant agricultural and forest lands and associated uses. The designations are:

    a. Agricultural Resource Lands

    Goal: To ensure the conservation of agricultural resource lands of long-term commercial significance for existing and future generations, and protect these lands from interference by adjacent uses which may affect the continued use of these lands for production of food and agricultural products.

Policies:

(1) Lands in agricultural use which are characterized by the following criteria may be designated as Agricultural Resource Lands:

i. Areas in parcels of ten acres or larger with soils capable of supporting long term commercial agricultural production. The federal Natural Resources Conservation Service (NRCS) identified 34 soil types suitable for farming in San Juan County. These soils can be found on page 121 of the 2009 Soil Survey of San Juan County, Washington, available at: http://soils.usda.gov/survey/online_surveys/washington/#san2009; or

ii. Lands which meet the criteria in a. above which are under conservation easement for agricultural use or which are enrolled in the Open Space-Agriculture taxation program.

(2) Limit conversion of Agricultural Resource Lands to permanent non-farm uses through implementation of a purchase or transfer of development rights program, special tax assessment programs, conservation easements, and conservation site design options for residential land divisions and boundary line modifications.

(3) Allow cottage enterprises that do not interfere with agricultural use, and allow agriculture-related activities such as processing and limited retailing facilities for locally grown products on farm sites and within agricultural areas consistent with allowances in State law for accessory uses in agricultural resource lands.

(4) Allow farm labor housing and *farm stay accommodations* subject to specific performance standards on Agricultural Resource Lands.

(5) Limit the location of utility lines and facilities, new roads and road realignments, access routes and other non-agricultural public and private facilities, to the least disruptive locations within agricultural areas.

SAN JUAN COUNTY CODE

18.30.070 Rural, resource, and special lands – Special provisions.

A. Agricultural and Forest Resource Lands. On all agricultural or forest resource lands (AG and FOR), the maximum area of development which is not related to agricultural or forestry uses and activities shall be limited to 20 percent of the parcel area, but not less than one acre, regardless of the assigned density. Further, in the division of a parcel by any means, the allowable area for conversion of the parent parcel to nonfarm and/or nonforestry use shall not be exceeded. This shall not apply to parcels smaller than five acres.

B. Conservancy Designations.

1. Practices for the maintenance of indigenous plants, for continuous growth of desirable tree and plant species native to the site, and for uses which do not involve physical development or alteration of property shall be allowed outright.

2. Uses which require physical development or alteration of property must protect the conservancy resource. The uses may only be approved by the decision-maker if this protection is ensured.

3. Residential Density. The maximum in allowable residential densities for conservancy parcels are as described in SJCC 18.30.020(D)(7).

4. All residential development on publicly owned conservancy lands shall require a conditional use permit.

C. Natural Designations.

1. Residential Density. One residential unit is allowed per legal lot of record. Land division is prohibited.

2. Required Permits and Use Limitations.

a. Practices for the maintenance of indigenous plants, for continuous growth of desirable tree and plant species native to the site, and for uses which do not involve physical development or alteration of property shall be allowed outright.

b. Uses which require physical development or alteration of property are prohibited unless otherwise indicated in Table 18.30.040. The natural resource must be protected, and the uses may only be approved by the decision-maker if this protection is ensured.

c. Cultural facilities shall be limited to those designed for the purpose of conserving or interpreting the natural or cultural history of the property or for the education of visitors about its natural or cultural resources. Any such facility shall be small in scale, shall leave the

majority of the site undisturbed, and shall have no more than a minimal impact on the character or value of the natural area.

d. At Madrona Point on Orcas, if any provision of this section is in conflict with the terms or intent of the 1989 Agreement between the County and the Lummi Indian Tribe (executed under authority of 25 U.S.C. Section 465 and recorded under San Juan County Auditor's File Number 90164328), the 1989 agreement shall prevail. (Ord. 25-2012 § 11; Ord. 7-2005 §§ 4, 5; Ord. 11-2000 § 4; Ord. 2-1998 Exh. B § 3.5)

18.35.030 Critical areas – General exemptions.

When conducted in accordance with the provisions of this section, and other applicable requirements, the following uses and activities are exempt from standard critical area regulations:

A. Emergency Response. Those activities necessary to prevent an imminent threat to public health, safety, or the environment; or to public or private property, and that require remedial or preventive action in a time frame too short to allow for review and approval in accordance with critical area requirements. Within seven days of the emergency, the person or agency undertaking the action shall report to the director the extent of the action taken and any adverse impacts to critical area functions and values caused by the action. Any mitigation and/or restoration necessary to bring the action into compliance with these critical area requirements shall be undertaken pursuant to a mitigation plan or other plan that is consistent with the critical area requirements of this chapter. The director shall be the decision maker for these plans.

B. The operation, maintenance, repair, remodel, or replacement of existing structures, facilities, infrastructure systems, development areas and uses, provided there is no further intrusion into geologically hazardous areas, frequently flooded areas, wetlands, or fish and wildlife habitat conservation areas or their buffers; soil erosion is controlled; disturbed areas are promptly stabilized; and actions do not have an additional adverse effect on the functions and values of critical areas. Existing structures, uses and activities located within shorelines of the state are addressed separately as described in SJCC 18.35.025 and 18.35.110 through 18.35.140.

C. 1. Installation and construction of: electrical, telecommunications, cable, water, sewer, and other utility lines and equipment within existing structures, facilities, infrastructure systems, development areas and uses, utility easements, and public and private rights-of-way, provided:

a. There is no further intrusion into geologically hazardous areas, frequently flooded areas, wetlands, or fish and wildlife habitat conservation areas or their buffers;

b. Soil erosion is controlled;

c. Disturbed areas are promptly stabilized; and

d. Any adverse impacts to critical areas are mitigated in accordance with SJCC 18.35.040.

2. Installation and construction of utility lines and equipment not previously covered in subsections (B) and (C)(1) of this section; provided, that reasonable efforts are made to avoid impacts to critical area functions and values, and:

a. BMPs are used to minimize clearing, erosion, sedimentation and other soil disturbance;

b. Disturbed areas are promptly stabilized and revegetated; and

c. Any adverse impacts to critical areas are mitigated in accordance with SJCC 18.35.040.

D. Removal of hazard trees as defined in SJCC 18.20.080. In addition, to allow for defensible space for fire protection purposes, 30 feet of vegetation may be cleared around buildings lawfully existing on the effective date of the ordinance codified in this section.

E. The divisions of land specified in SJCC 18.70.010(C) are exempt from critical area compliance review. Parcels created via SJCC 18.70.010(C) are, however, subject to compliance with critical area protection requirements, and if created subsequent to the effective date of the ordinance codified in this section, they are not eligible for reasonable use exceptions.

F. Forest practices regulated under the provisions of Chapter 76.09 RCW and WAC Title 222.

G. Installation of navigation aids and survey markers.

H. Site investigative work associated with land use applications, such as surveys, soil borings, and test holes; provided, that critical area functions and values are protected and disturbed areas are immediately restored. (Ord. 1-2015 § 1; Ord. 2-2014 § 6; Ord. 26-2012 § 21; Ord. 15-2005 § 3; Ord. 2-1998 Exh. B § 3.6.4. Formerly 18.30.110(C))

18.40.430 Utility (electrical, sewerage, and other) distribution and transmission lines and substations.

"Wired utility distribution lines" operate at voltages of 15 kV and lower, and distribute power from a substation to the end user (connecting via a service line; see SJCC 18.60.150). "Wired utility transmission lines" operate at voltages of 24.9 kV and above. They move bulk power between substations and do not directly serve the end consumer.

The following standards apply to all utility distribution and transmission lines:

A. New utility distribution lines shall be placed underground wherever reasonable and practicable. Undergrounding of existing lines in the course of routine maintenance and replacement is encouraged where practicable, particularly where such undergrounding would enhance recognized scenic and open space areas and resources.

B. Environmental impacts resulting from installation or maintenance of utilities and utility facilities shall be avoided or minimized. Where no feasible alternative to the impact exists, and mitigation is not feasible, appropriate compensating measures should be developed.

C. Where revegetation of areas disturbed during construction is required by this code in order to mitigate erosion, surface water runoff, habitat, aesthetic or other impacts, such areas shall be replanted with native vegetation and maintained until firmly established. Clearing shall be confined to that necessary to allow installation and to prevent interference by vegetation once the system is in operation.

D. Utilities and transportation facilities shall be installed in the same rights-of-way when the effect will be to reduce the adverse impacts on the physical environment.

E. Applications for utility substations shall include baseline and projected electromagnetic field (EMF) density in accordance with the protocols in Table 4.2. Test measurements and results shall be shown on the permit application site plan. Post-construction and any operational testing shall also be done in accordance with Table 4.2. Post-construction test results shall be submitted to the director within 90 days to complete the file record, and copies will be made available to the public upon request.

F. Extension of community sewerage system lines outside of activity centers shall be allowed only if:

1. The extension is demonstrated to be necessary to remedy existing or potential groundwater contamination problems or to correct existing or impending health hazards, as determined by the County sanitarian; or

2. The extension is to provide sewage collection and treatment services to a public elementary or secondary school.

G. Routine maintenance and replacement of wired utility transmission and distribution lines and poles within existing rights-of-way, where frequently flooded areas, geologically hazardous areas, wetlands, and fish and wildlife habitat conservation areas are not present and where exempt from SEPA and Shoreline Master Program review (see SJCC 18.80.050 and 18.80.110), are authorized without further permit application and approval; provided, that such construction and activities must comply with applicable development and performance standards of this chapter and Chapter 18.60 SJCC.

Table 4.2. Protocol for Testing of Electromagnetic Fields (EMF) at Utility Substations.[1, 2]

Test Parameter	Test Equipment	Testing Method
Field Density of EMF produced by 60 Hz AC Power Equipment	ELF[3] monitor with three-axis sampling capability.	1) Record EMF levels at 50-foot intervals along property lines of the subject property (site). 2) Record EMF levels at 20-foot intervals along the fenceline of substation equipment. Measurements shall be made at waist height.

Notes:

1. A charged object produces an electric field in the space around it; an object that carries current or which is a magnet produces a magnetic field in the nearby area. Energy is transferred via these

"electromagnetic fields" (EMF) to people and other living organisms that pass through the fields. "Field density" or "flux density" is a measure of the strength of the fields. Unit of measurement of flux density: milli-Gauss.

2. Reporting requirements for this testing: see SJCC 18.40.430(E).

3. Abbreviations used:

ELF	=	Extremely low frequency radiation, 30 to 300 Hz	Hz	=	Hertz, a unit of frequency equal to one cycle of an electromagnetic wave per second	Gauss	= A unit of magnetic flux density, 10^{-4} Wb/m^2 = 10^{-4} Volt-seconds/square meter
EMF	=	Electromagnetic field					
AC	=	Alternating current					

(Ord. 52-2008 § 10; Ord. 2-1998 Exh. B § 4.32)

Table 6.2. Density, Dimension, and Open Space Standards for Rural, Resource, and Special Land Use Districts.

Development Standard	Land Use District[1]								
	Rural					Resource		Special	
	RGU	RR	RFF	RI	RC	AG	FOR	C	N
Maximum Density (parcel area/total number of dwelling units)	[Please refer to the *Comprehensive Plan* official maps.]								*See* Note 2
Minimum Lot Area	See SJCC 18.70.010(E)								*See*

Development Standard	Land Use District[1]								
	Rural					Resource		Special	
	RGU	RR	RFF	RI	RC	AG	FOR	C	N
									Note 2
Minimum Front or Road Setbacks[4, 5, 6, 16]									
Existing road for collector (feet from centerline)	45	45	45	45	45	45	45	45	45
All other roads (feet from centerline)	40	40	40	40	40	40	40	40	40
Minimum Rear and Side Setbacks[4, 5, 6, 16]									
Parcels smaller than five acres (feet)	10	10	10	10	10	10	10	10	10
Parcels five acres or larger, and average width ≥ 80 feet (feet)	15	15	15	15	15	15	15	15	15
Maximum Dimensions									
Building height (feet)[7, 8]	35[9]	35[9]	35[9]	35[9]	35[9]	35	35	35	35
Area of impervious surface (%)[10, 15, 16]	10	10	15[13]	20	10	10	10	10	10
Set-Aside Requirements									
Minimum required open space or landscaped area (%)[11, 16]	30	30	30	30	30	0N.A.[12]	N.A.	N.A.	N.A.
Maximum developable area (%)[16]	0N.A.	N.A.	N.A.	N.A.	N.A.	*See* Note 14	*See* Note 14	N.A.	N.A.

Notes:

1. Rural, resource, and special land use districts:

RGU	=	Rural general use	RR	=	Rural residential	RFF	= Rural farm-forest
RI	=	Rural industrial	RC	=	Rural commercial	AG	= Agricultural resource lands
FOR	=	Forest resource lands	C	=	Conservancy	N	= Natural

2. Only one single-family residence is allowed per existing parcel. Land division for the purpose of additional development is prohibited.

3. Setbacks from roads outside of activity centers are measured from the centerline of the existing road. This measurement shall be to a line parallel to and measured perpendicularly from the

appropriate line. Side and rear setbacks are measured from the edge of the property in the same manner as street setbacks.

4. Fences are exempt from setback requirements, except when impairing safe sight lines at intersections, as determined by the County engineer.

5. Setbacks do not apply to mail boxes, wells, pump houses, bus shelters, septic systems and drainfields, landscaping (including berms), utility apparatus such as poles, wires, pedestals, manholes, and vaults, and other items as approved by the administrator.

6. Road right-of-way setbacks may be waived, at the discretion of the County engineer, when the presence of shoreline setbacks, property lines, topography or other restrictions make it unreasonable to construct a structure without encroaching into the road right-of-way setback.

7. Chimneys, smokestacks, fire or parapet walls, ADA-required elevator shafts, flagpoles, utility lines and poles, skylights, communication sending and receiving devices, HVAC and similar equipment, and spires associated with places of worship are exempt from height requirements.

8. Structures used for the storage of materials for agricultural activities are exempt for the maximum building height requirements.

9. Approved subarea plans may establish different height requirements in rural districts.

10. Impervious surface is measured by calculating the horizontal land area of all surface areas that create a barrier to or retard the entry of water into the soil in comparison with natural conditions prior to development, including but not limited to buildings, parking areas, driveways, roads, sidewalks, patios, packed earth, and oiled surfaces. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces. See also SJCC 18.60.070, Storm drainage standards.

11. Required only for parcels over one acre in size.

12. "N.A." = Not Applicable.

13. In RFF land use districts, no more than 30 percent of the area of a parcel shall be covered by impervious surfaces, exclusive of roads and driveways.

14. On all agricultural or forest resource lands (AG and FOR), the maximum area of development which is not related to agricultural or forestry uses and activities shall be limited to 20 percent of the parcel area, but not less than one acre, regardless of the assigned density. Further, in the division of a parcel by any means, the allowable area for conversion of the parent parcel to nonfarm and/or nonforestry use shall not be exceeded. This shall not apply to parcels smaller than five acres.

15. This standard may be exceeded for parcels that are less than five acres in size. However, in such cases where the total percentage of impervious surface will exceed that specified, the administrator shall require measures to be employed to reduce the long-term stormwater runoff from the parcels, such as French drains for directing roof runoff into appropriately sized dry wells, and retention/detention measures for large parking areas.

16. This development standard shall not apply to residential development in subdivisions which consist of lots less than 0.3 acres in area that are (except for access roads and driveways) surrounded on all sides by property preserved as permanent open space.

(Ord. 26-2002 § 4; Ord. 12-2001 § 6; Ord. 11-2000 § 5; Ord. 6-2000; Ord. 7-1999; Ord. 2-1999; Ord. 2-1998 Exh. B § 6.5)

18.60.060 Clearing and grading standards.

A. General Regulations.

1. All grading and clearing activities shall be conducted so as to minimize potential adverse effects of these activities on forested lands, surface water quality and quantity, groundwater recharge, wildlife habitat, and scenic resources.

2. Grading to construct ponds and reservoirs shall:

a. Be located at least 30 feet from the edge of a public road right-of-way;

b. Maintain in-stream flows of natural drainage courses; and

c. Protect adjacent property from damage.

B. Drainage and Erosion Control. This subsection shall apply to any development for which a permit is required by this code or which is permitted outright by regulations in Chapter 18.30 SJCC.

All grading activities shall be accomplished as follows:

1. Design and maintain adequate buffers of undisturbed native vegetation to minimize off-site impacts of surface water runoff, erosion, and sedimentation.

2. Design and construct all graded surfaces that are to be revegetated to slope gradients (generally less than 1:2 or 1:3 slopes) so that the graded surfaces will hold topsoil and to minimize surface runoff, erosion, and sedimentation.

3. Selectively salvage the upper six to 12 inches of topsoil, stockpile it, and respread over all disturbed areas to be revegetated.

4. Any area cleared or graded and not covered with gravel or an impervious surface shall be seeded immediately on completion of the project. If erosion is probable, areas with exposed soil shall be protected by temporary means during construction. All disturbances should at least be revegetated with grasses and forbs; include shrubs, and trees as appropriate in the revegetation effort. Use of plant species native to the County is encouraged.

5. Natural vegetation shall be retained to the maximum extent possible in construction and operation of any use. All development shall ensure that soil erosion and sedimentation of

drainage ways will be controlled to prevent damage to adjoining property and downstream drainage channels and receiving waters.

6. Surface drainage shall not be directed to or discharged into County roads or ditches within County rights-of-way unless approved by the County engineer.

7. A drainage analysis shall be prepared if required by SJCC 18.60.070. Drainage controls may be required to regulate velocities of runoff water and to control pollutants, erosion, and sedimentation if it is probable that damage could occur downstream to property or to water quality. Such controls may include landscaping or reestablishing native vegetation, ponds, catch basins, and other control structures.

8. For effective long-term weed control, it is suggested that the landowner coordinate with the County weed control board to eradicate nuisance species.

C. Best Management Practices (BMPs). BMPs from the Stormwater Management Manual (SMM) (see SJCC 18.60.070) or as specified by the County engineer shall be employed in the control of erosion and sediment during construction, to permanently stabilize soil exposed during construction, and in the design and operation of stormwater and drainage control systems. These include BMPs for:

1. Erosion and sediment control and small parcel construction BMPs at Section II-5 in the SMM;

2. Control of pollutants other than sediment on construction sites at Section II-3 in the SMM;

3. BMPs for problem areas on construction sites at Section II-2 in the SMM; and

4. BMPs for runoff control at Section III in the SMM.

    a. Infiltration and filtration at Section III-3;

    b. Detention at Section III-4;

    c. Biofiltration at Section III-6;

    d. Oil/water separators at Section III-7; and

    e. Stream stabilization at Section III-8.a.

D. Environmentally Sensitive Areas. All clearing and grading activities that will occur in or adversely affect environmentally sensitive areas shall be subject to the regulations of SJCC 18.35.020 through 18.35.050 et seq., shall be reviewed for consistency with the applicable sections of this code (e.g., Chapter 18.40 SJCC, Performance and Use-Specific Standards; Chapter 18.50 SJCC, Shoreline Master Program; and Chapter 18.60 SJCC, Development Standards), and may only be approved by the decision-maker if they have been found to meet the requirements set forth by this code:

1. Geologically Hazardous Areas. Standards governing development activities in these areas are found in SJCC 18.35.055 through 18.35.070.

2. Frequently Flooded Areas. Fills in flood hazard areas as identified on the FIRMs (flood insurance rate maps) maps are not permitted unless the administrator finds that no reasonable alternative exists.

3. Critical Aquifer Recharge Areas. Standards governing development activities in these areas are found in SJCC 18.35.080.

4. Regulated Wetlands. Alteration (filling, excavating, or draining) of regulated wetlands shall be subject to the provisions of SJCC 18.35.085 through 18.35.105.

5. Fish and Wildlife Habitat Areas. Standards governing development activities in these areas are found in SJCC 18.35.110 through 18.35.140.

E. Grading.

1. Project or building permits which involve grading of 100 or more cubic yards are subject to environmental review under the State Environmental Policy Act (SEPA) (see SJCC 18.80.050) unless the grading is SEPA-exempt under WAC 197-11-800.

(Note: this does not apply when grading is associated with a development or activity which is categorically exempt from SEPA review requirements. Most minor new construction, including construction of a single-family house and related outbuildings, is exempt from SEPA review; see WAC 197-11-800.)

2. Clearing and Grading Permit. The clearing and grading permit is a development permit that is processed using the procedures under the Uniform Building Code, adopted as the San Juan County building code, Chapter 15.04 SJCC.

a. All grading of 500 cubic yards or more is subject to a clearing and grading permit, except grading associated with the following:

i. Maintenance of gravel roads;

ii. A SEPA-exempt (cf. WAC 197-11-800(2)(d)) residential driveway;

iii. Construction of a Class I – III logging road (per RCW 76.09.050 and WAC Title 222);

iv. Drainage improvements constructed in accordance with SJCC 18.60.060(B) and 18.60.070; or

v. Construction of a pond of one-half acre or less which is not in a regulated wetland (cf. SJCC 18.35.085 through 18.35.105).

b. Applications for projects which require a clearing and grading permit shall include the following information:

i. Source of fill material and deposition of excess material;

ii. Physical characteristics of fill material;

iii. Proposed methods of placement and compaction;

iv. Proposed surfacing material;

v. Proposed method(s) of drainage and erosion control;

vi. Methods for restoration of the site;

vii. Demonstration that instream flow of water will remain unobstructed;

viii. Demonstration that erosion and sedimentation from outflow channels will be minimized by vegetation or other means; and

ix. Demonstration that pond runoff will be controlled to protect adjacent property from damage. (Ord. 7-2005 § 17; Ord. 12-2001 § 6; Ord. 2-1998 Exh. B § 6.6)

18.60.070 Storm drainage standards.

All new development and redevelopment must conform to the standards and minimum requirements set by the Washington Department of Ecology Stormwater Management Manual for Western Washington, Publication Nos. 05-10-029 through 05-10-033. In addition, the best management practices identified in the January 2005 Low Impact Development Technical Guidance Manual for Puget Sound, produced by the Puget Sound Action Team, are acceptable alternatives for managing runoff, controlling soil erosion, and maximizing and protecting recharge.

A. Definitions. For the purposes of this section, the definitions at I-2.1 of the SMM shall apply:

1. "Small parcel development" is a development that creates or adds less than 5,000 square feet of impervious area, and that is either of the following:

a. The construction of an individual, detached, single-family residence, accessory dwelling unit, or duplex; or

b. Land-disturbing activities of less than one acre that include grading of 100 or more cubic yards.

2. "New development" includes land-disturbing activities, structural development (construction, installation or expansion of a building or other structure), creation of impervious surfaces, Class IV

General forest practices and COHP plans, and subdivision, short subdivision and binding site plans as defined in RCW 58.17.020.

3. "Redevelopment" includes, on an already developed site, the creation or addition of impervious surfaces, structural development, and replacement of impervious surface that is not part of routine maintenance; and also, land-disturbing activities that are associated with the above activities.

4. "Impervious surface" means a hard surface area which creates a barrier to the entry of water into the soil mantle in comparison with natural conditions prior to development, or which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include roofs, driveways, patios, packed earth, and oiled surfaces. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces.

5. A "land-disturbing activity" results in a change in the existing soil cover (both vegetative and nonvegetative) or the existing topography, and includes but is not limited to demolition, construction, clearing, grading, filling, and excavation.

B. Exemptions. Commercial agriculture, and forest practices regulated under WAC Title 222, except for Class IV General forest practices and COHPs (see SJCC 18.40.120 through 18.40.180), are exempt from the provisions of the minimum requirements.

C. Small Parcel Minimum Requirements. Small parcel development meeting the criteria of subsection (A)(1) of this section shall be required to control erosion and sediment during construction and to permanently stabilize soil exposed during construction. Such development shall:

1. Comply with the minimum requirements 1 through 4 for small parcels in Section I-2.3 of the SMM, and shall employ the small parcel best management practices (BMPs) of Section II-5.10. Additional guidance is provided in Sections I-3.3, I-4, and II-5.9 of the SMM;

2. Prepare a small parcel erosion and sediment control plot plan or illustration (or, show on other diagrams being prepared for the project, if appropriate) showing:

a. Vicinity map;

b. Location of the structure and its access;

c. All applicable setback requirements;

d. Location of all applicable erosion and sediment control BMPs; and

e. Existing site features and sensitive areas.

D. New Development Minimum Requirements.

1. New development that includes (a) the creation or addition of 5,000 or more square feet of impervious surface and (b) land-disturbing activities of less than one acre shall comply with minimum requirements 2 through 11 in Sections I-2.6 through I-2.15 of the SMM, and the small parcel minimum requirements of subsection (C) of this section.

2. New development that includes (a) the creation or addition of 5,000 or more square feet of impervious surface, and/or (b) land-disturbing activities of one acre or more, shall comply with minimum requirements 1 through 11 in Sections I-2.5 through I-2.15 of the SMM, and a stormwater site plan shall be prepared.

3. Stormwater Site Plan. A stormwater site plan required by subsections (D)(2), (E)(1) or (2) of this section shall be developed to the standards of Sections I-3.4 and I-3.5 of the SMM, and include:

a. Project overview;

b. Plot plan, including the elements of subsection (C)(2) of this section and:

i. Locations of structures and other impervious surfaces;

ii. Locations of stormwater runoff control facilities;

iii. Road rights-of-way and easements;

c. Preliminary conditions summary;

d. Analysis of off-site water quality impacts (including groundwater) resulting from the project, and mitigation measures;

e. Analysis and design of proposed stormwater runoff control facilities, including treatment and source control BMPs (cf. Section I-4 of the SMM, which provides a list of and selection process for BMPs);

f. Erosion and sediment control plan;

g. Special reports and studies;

h. Stormwater and drainage system maintenance and operations manual.

E. Redevelopment Minimum Requirements.

1. Where redevelopment of 5,000 or more square feet of impervious surface occurs:

a. The new development minimum requirements 1 through 11 in Sections I-2.5 through I-2.15 of the SMM shall apply to that portion of the site that is being redeveloped;

b. Source-control BMPs (cf. Section I-4 of the SMM, which provides a list of and selection process for BMPs) shall be applied to the entire site (including adjoining parcels if they are part of the project); and

c. A stormwater site plan shall be prepared.

2. In addition to the requirements of subsection (E)(1) of this section, a stormwater site plan (see subsection (D)(3) of this section) shall also be prepared to implement the minimum requirements to the maximum extent practicable for the entire site when any of the following conditions apply:

a. Existing sites larger than one acre with 50 percent or more impervious surface;

b. Sites that discharge to a receiving water that has a documented water quality problem as defined by the County health and community services department or by criteria listed in Section I-2.4.2.B.2 of the SMM; or

c. Sites where the need for additional stormwater control measures has been identified through a special study by the County or town of Friday Harbor, such as a watershed plan or marine habitat protection plan. (Ord. 52-2008 § 12; Ord. 21-2002 § 7; Ord. 2-1998 Exh. B § 6.7)

18.80.100 Permit procedures for conditional use and variance permits.

A. Purpose and Applicability. Conditional use permits allow flexibility in the implementation of this code by controlling undesirable impacts through specific permit conditions. Variances ensure that all persons and their property are guaranteed equal rights and opportunities under similar circumstances. A variance is never to be used to endow certain persons or property with special privileges denied to all others under similar circumstances. Variances may only be granted for dimensional, bulk, and area requirements specified by this code. (For changes from use or density standards, see the procedures for a site-specific redesignation, SJCC 18.90.020.) The following uses are subject to this section:

1. Conditional Uses (indicated by "C" in Tables 18.30.030 and 18.30.040) and discretionary uses (indicated by "D" in Tables 18.30.030 and 18.30.040) that the director has determined require a conditional use permit;

2. Variances from standards other than those in Chapter 18.50 SJCC.

B. Notice and Public Hearing. Notice of application and of public hearing is required in accordance with the procedures in SJCC 18.80.030. An open-record predecision hearing is required for conditional use permit and variance applications (see SJCC 18.80.040).

C. Decisionmaking Authority. The hearing examiner has the authority to approve or deny conditional use permit and/or variance applications, and to impose conditions of approval on such permits.

D. Conditional Use Permits – Criteria for Approval. A conditional use permit shall be granted by the County only if the following criteria are met:

1. The proposed use will not be contrary to the intent or purposes and regulations of this code or the Comprehensive Plan;

2. The proposal is appropriate in design, character and appearance with the goals and policies for the land use designation in which the proposed use is located;

3. The proposed use will not cause significant adverse impacts on the human or natural environments that cannot be mitigated by conditions of approval;

4. The cumulative impact of additional requests for like actions (the total of the conditional uses over time or space) will not produce significant adverse effects to the environment that cannot be mitigated by conditions of approval;

5. The proposal will be served by adequate facilities including access, fire protection, water, stormwater control, and sewage disposal facilities;

6. The location, size, and height of buildings, structures, walls and fences, and screening vegetation associated with the proposed use shall not unreasonably interfere with allowable development or use of neighboring properties;

7. The pedestrian and vehicular traffic associated with the conditional use will not be hazardous to existing and anticipated traffic in the neighborhood;

8. The proposal complies with the performance standards set forth in Chapter 18.40 SJCC;

9. The proposal does not include any use or activity that would result in the siting of an incompatible use adjacent to an airport or airfield (RCW 36.70.547); and

10. The proposal conforms to the development standards in Chapter 18.60 SJCC.

E. Variances – Criteria. A variance shall be granted only if the applicant demonstrates that the following criteria have been met:

1. Literal interpretation and application of provisions of this code would deprive the applicant of the rights commonly enjoyed by other properties in the same district under the terms of this code, and allowing the variance will be in harmony with the intent and spirit of this code;

2. A variance is necessary for the preservation and enjoyment of a property right possessed by other property in the same vicinity or district, but which is denied to the property in question because of special circumstances on that property;

3. That the hardship described under this subsection is specifically related to the property and is the result of unique conditions such as irregular lot shape, size, or natural features, and the application of this code, and not, for example, from deed restrictions or the applicant's own actions;

4. The granting of the variance will not be materially detrimental to the public welfare or injurious to the right of other property owners in the vicinity; and

5. The variance will not permit a use prohibited by this code in the district in which the subject property is located.

F. Term. Unless a shorter time period is specified in permit conditions, development authorized through a conditional use or variance permit shall be completed within five years from the date of permit approval or the permit shall become null and void. An extension of up to one year may be granted by the decisionmaking authority if the permittee demonstrates good cause for an extension. (Ord. 11-2011 § 8; Ord. 15-2002 § 10; Ord. 4-2001 §§ 2, 3; Ord. 14-2000 § 7(AAA); Ord. 2-1998 Exh. B § 8.10)

Jacobs

Critical Areas Ordinance Exemption

Bailer Hill Road Project

Prepared for:

Orcas Power & Light Cooperative

August 7, 2020

Updated April 12, 2023

Jacobs

Bailer Hill Road Project

Project No.:	W3X78100
Date:	August 7, 2020, updated April 12, 2023
Client Name:	Orcas Power & Light Cooperative
Authors(s):	Jennifer Thomas, Senior Environmental Project Manager

Jacobs Engineering Group Inc.
1100 112th Avenue NE, Suite 500
Bellevue, Washington 98004
425.453.5000
www.jacobs.com

This report was originally written by Jennifer Thomas, MES Jacobs Engineering. National Wetland Inventory mapping was added in 2023, at San Juan County's request. The report was updated by Environmental Science Associates (ESA).

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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
County	San Juan County
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
Jacobs	Jacobs Engineering Group Inc.
NRCS	Natural Resources Conservation Service
OBL	Obligate
RCW	Revised Code of Washington
SJCC	San Juan County Code
USACE	U.S. Army Corps of Engineers
USC	U.S. Code

1 INTRODUCTION

Jacobs Engineering Group Inc. (Jacobs) was contacted by Orcas Power & Light Cooperative to conduct a wetland reconnaissance of Tax Parcel Number 3527 1300 2000, a 19.27-acre parcel located northwest of the intersection of Douglas Road and Bailer Hill Road in the False Bay Creek Watershed on San Juan Island, San Juan County (County), Washington. The parcel is in Section 27 of Township 35 North, Range 3 West, within the San Juan Valley Heritage Overlay District, established in 2002 to protect agricultural lands and open space. The County maps indicate a "possible-non tidal wetland" on the subject parcel. This report presents the results of the wetland reconnaissance conducted on the subject parcel.

The wetland reconnaissance of the subject parcel was conducted by Jacobs Senior Environmental Scientist Jennifer Thomas, MES. Jennifer has 30 years' experience in wetland delineation in Western Washington and is trained in the application and use of the U.S. Army Corps of Engineers' (USACE) 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (Regional Guidance) and the *Washington State Wetland Rating System for Western Washington – 2014 Update* (Hruby 2014). Jennifer's experience exceeds the County's requirements for a Qualified Professional, with respect to wetland report preparation (see San Juan County Code [SJCC] 18.20.170.1).

A vicinity map is included as **Figure 1**. Existing conditions on the subject parcel are documented in **Figure 2**.

1.1 Purpose

The purpose of this report is to document that the mapped wetland on the subject parcel was created as a farm pond in a non-wetland area and is therefore exempt from regulation under the County's Critical Areas Ordinance.

1.2 Why Delineate Wetlands?

The County maps indicate a wetland on the subject parcel as a "possible non-tidal wetland." **Figure 3** shows the County's wetland mapping on the subject parcel. As the SJCC states: "Many wetlands are depicted on various maps developed by the County.... These maps are, however, only a guide and in all cases conditions in the field shall control." (SJCC 18.35.085 Wetlands – Applicability).

As the SJCC states: "The purpose of wetland boundary delineations and wetland reports is to provide information necessary to determine compliance with the wetland protection requirements of the County Code, and to help maintain protected areas over time." (SJCC 18.35.105.A Wetlands – Determination of wetland boundary requirements for wetland reports).

Wetlands are ecological systems that are identified by the presence of hydrophytic vegetation, hydric soils, and hydrology. In the County, wetland delineations follow the USACE's Regional

Guidance. Jurisdictional wetlands are characterized by the presence of all three parameters mentioned above (wetland plants, wetland soils, and the presence of hydrology long enough during the growing season to influence the soils and the plants).

Wetlands provide important functions related to water quantity (e.g., they store hydrology seasonally, slowly releasing it over time, and can contribute to baseflow support of streams) and water quality (they cycle and filter sediment and runoff); wetlands also provide habitat to a wide variety of plants and animals.

1.3 Wetland Regulations

In Washington State, wetlands are regulated at the federal, state, and local levels to protect the functions that they provide. At the federal level, wetlands are protected under the Clean Water Act, Section 404 (§ 1344 of Title 33 the *U.S. Code* [33 USC § 1344; Parts 230 and 232 of Title 40 of the *Code of Federal Regulations* [40 CFR Parts 230 and 232]).

At the state level, the Washington State Department of Ecology regulates wetlands under the Water Pollution Control Act (*Revised Code of Washington* [RCW] 90.48). The Washington State Department of Ecology delegates its regulatory authority over wetlands to local governments in compliance with Washington State's Growth Management Act (RCW 36.70A). The County undertakes land use planning in compliance with the Growth Management Act, and has adopted a Critical Areas Ordinance to regulate activities in and around wetlands. The County's Critical Areas Ordinance is detailed in Chapter 18.35 of its Unified Development Code.

Figure 1: Vicinity Map

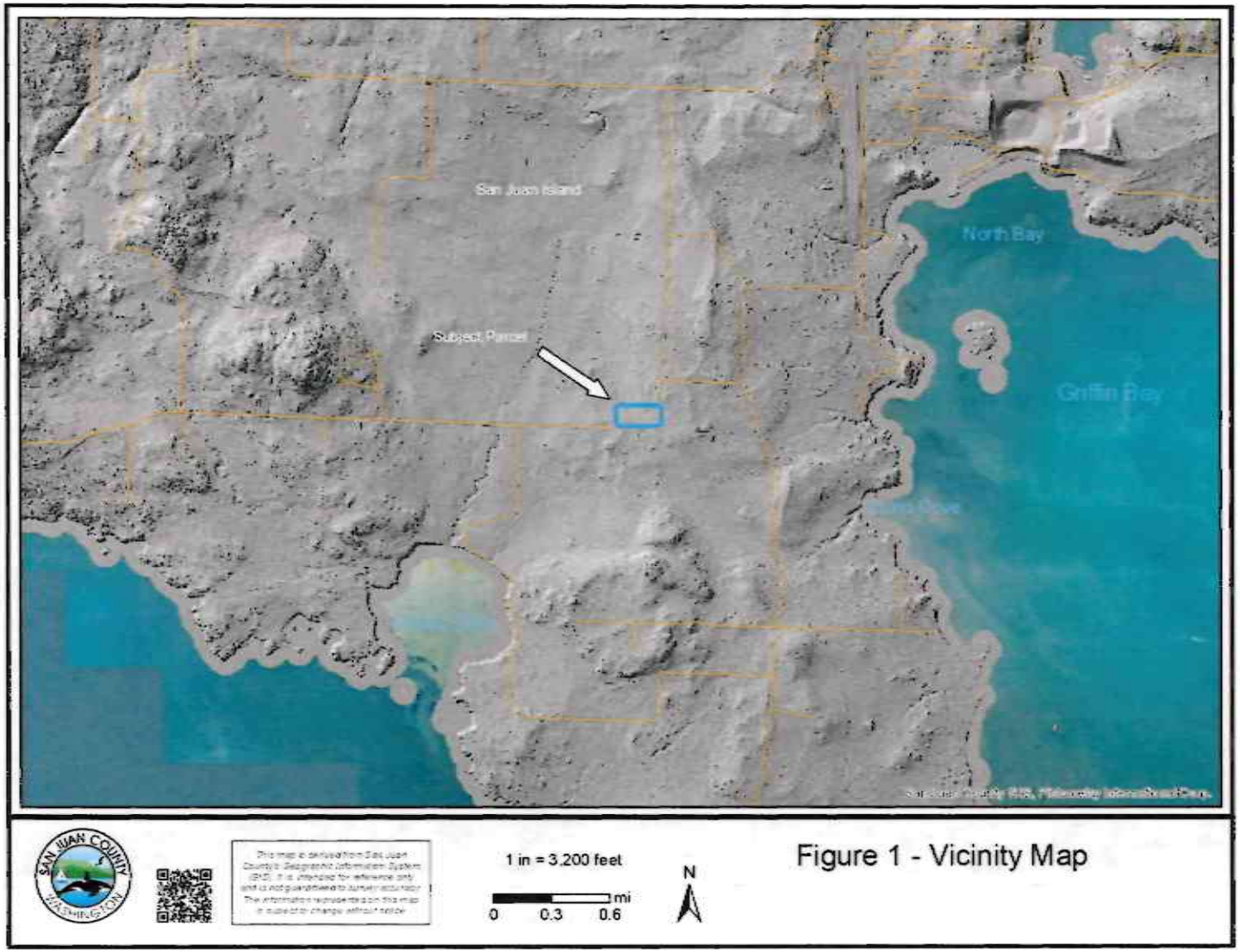


Figure 2: Existing Conditions

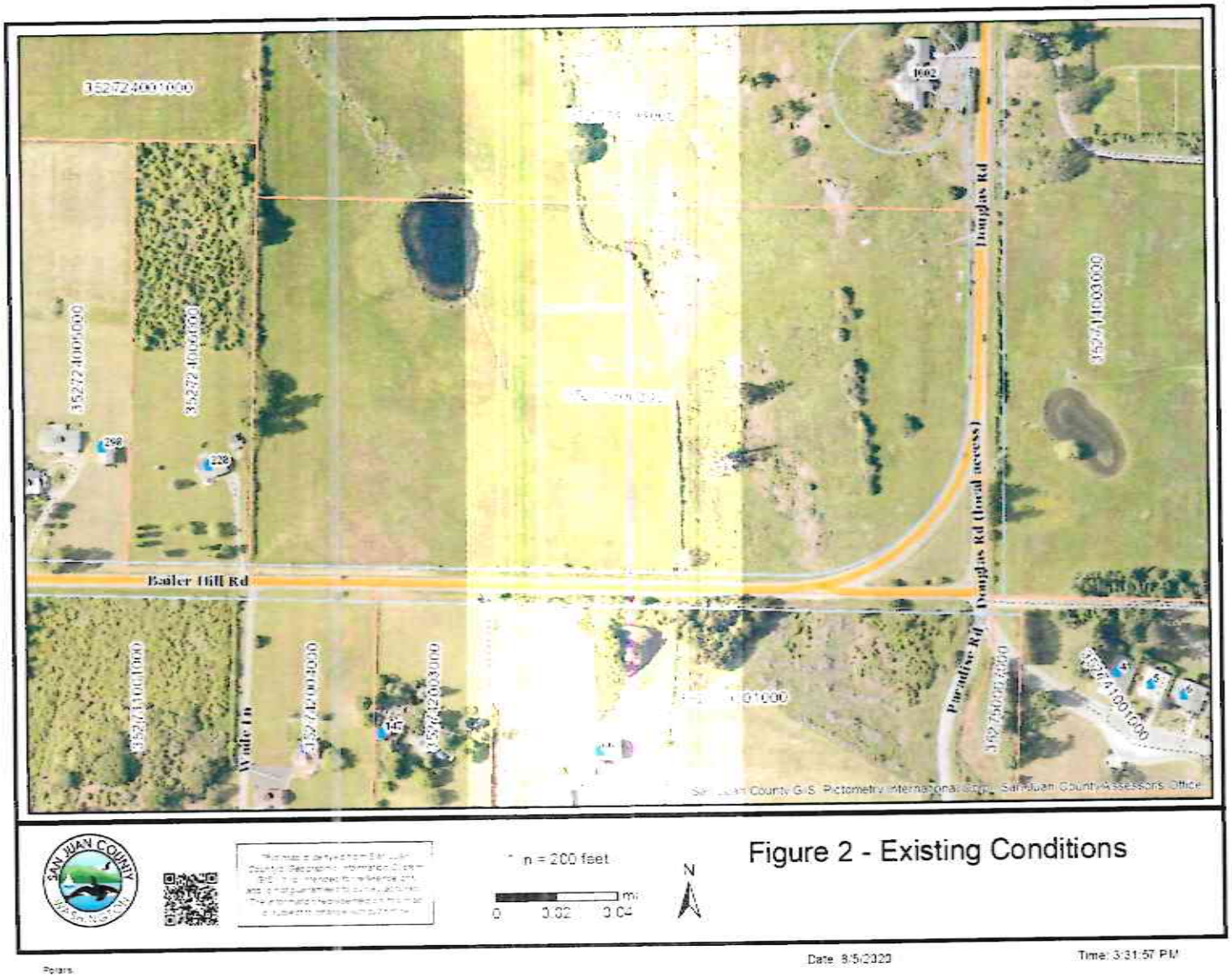
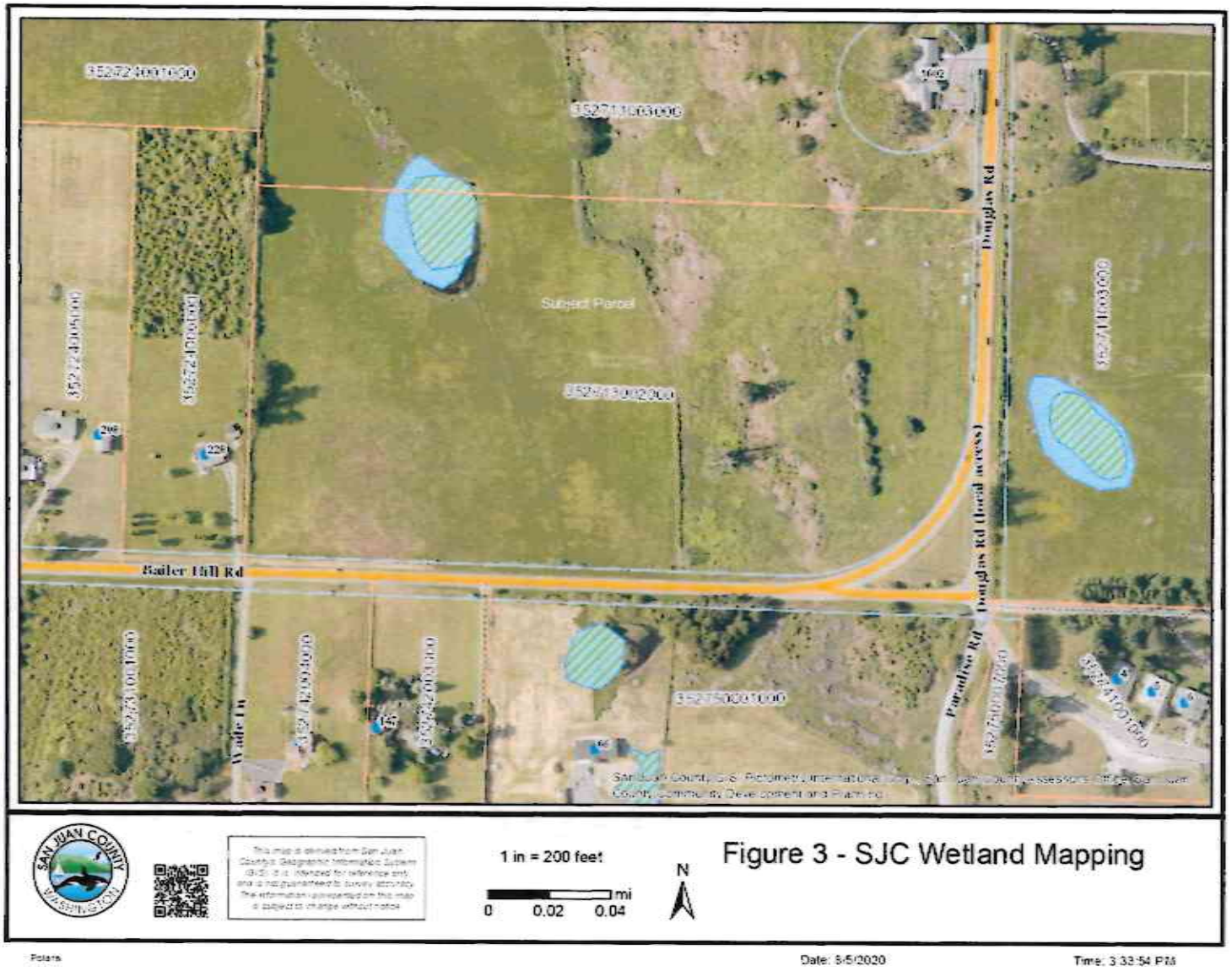


Figure 3: San Juan County Mapping



2 METHODOLOGY

The following databases were consulted before beginning field work at the subject parcel:

- The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) soil survey online (n.d.)
- The County's Polaris database online (n.d.), which includes the following:
  - Possible Non-Tidal Wetlands data layer (2014)
  - National Wetland Inventory (NWI) data layer (shown in Figure 3) as well as the 2019 NWI data layer (as shown in Figure 4).
  - Other Critical Areas data layers for Fish and Wildlife Habitat Conservation Areas:
    - Fish Distribution maps (Wild Fish Conservancy 2006–2009)
    - Garry Oak
    - Camas prairie
    - Natural Heritage Program Plants

Wetlands in Washington State follow the definition from the USACE's Regional Guidance (2010) and are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Washington State has adopted the federal manual on wetland delineation, including this definition of wetlands. The County has also adopted this definition of regulated wetlands in their Critical Areas Ordinance (SJCC 18.20.230 "W" definitions).

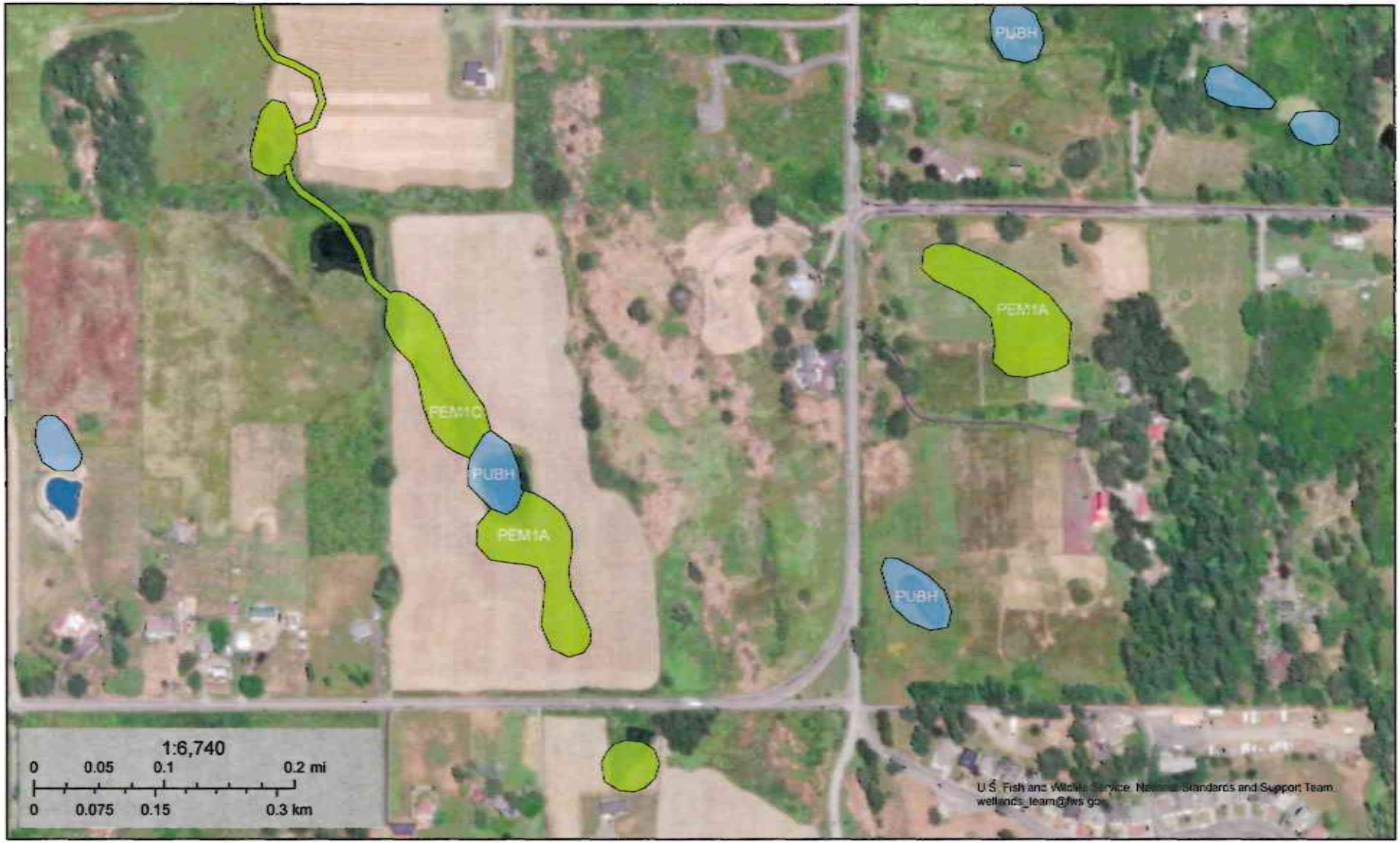
The County's definition of Wetlands is as follows:

> "Wetland" means an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas created to mitigate conversion of wetlands. (SJCC 18.20.230 "W" Definitions, emphasis added).

U.S. Fish and Wildlife Service

National Wetlands Inventory

Figure 4 - NWI 2019 Mapping



April 12, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

This report documents that the wetland on the subject parcel was created as a farm pond and is therefore exempt from regulation under the County's Critical Areas Ordinance.

2.1 Wetland Survey Protocols

Wetland survey protocols followed those described in Routine Determinations, Section D of the Regional Guidance. Wetland survey protocols are typically used to support wetland delineation reports. In the case of this report, a wetland delineation was not considered necessary.

2.2 Hydrophytic Vegetation

Cowardin et al. (1979) developed a method for classifying hydrophytic vegetation for the U.S. Fish and Wildlife Service using Obligate (OBL), FACW (Facultative Wetland), and FAC (Facultative) wetland plants. An OBL wetland plant species almost always occurs in wetlands (99 percent of the time) and rarely occurs in non-wetland areas. A FACW plant has a 67 to 99 percent probability of occurring in wetlands. A FAC plant occurs 33 to 67 percent of the time in a wetland. A Facultative Upland (FACU) plant occurs 1 to 33 percent of the time in a wetland. An area is considered to meet the hydrophytic vegetation criteria if more than 50 percent of all vegetation present (in all strata – forest, shrub, and understory) have an indicator status of OBL, FACW, or FAC. Plant indicator status is provided by the National Wetland Plant List (Lichvar et al. 2018).

The Regional Guidance (USACE 2010) includes indicators to determine if a certain area has enough hydrophytic vegetation to be considered a wetland. The most general hydrophytic vegetation indicators is an area that has more than 50 percent of a total plant species composition categorized as OBL, FACW, or FAC, as defined by the National Wetland Plant List (Lichvar et al. 2018). Dominant plant species are determined for each vegetation layer. A calculation is then done to determine the percentage of wetland plants compared to the total number of dominant plant species. This is called the dominance test. Another indicator of hydrophytic vegetation is called the prevalence test, and looks at the percentage of plant species cover based on their indicator status. If the resulting number is <3, then the vegetative layer is considered hydrophytic.

2.3 Hydric Soils

Hydric soils are defined as soils that form under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (U.S. Department of Agriculture 2018). Hydric soils are determined to be present based on field indicators. These indicators depend on the soil type present in the area and region according to the Regional Guidance. For our region, the western mountains, valleys, and coast, these indicators include histosol, histic epipedon, black histic, hydrogen sulfide, depleted below dark surface, thick dark surface, sandy mucky mineral, sandy gleyed matrix, sandy redox, stripped matrix, loamy mucky mineral, loamy gleyed matrix, depleted matrix, redox dark surface, depleted dark surface, and redox depressions. Many of these indicators are signs of high organic matter, oxygen-depleted soil conditions, and soil saturation. Soils are typically observed in a 16-

to 20-inch soil pit. Hydric soil characteristics and color are examined just below the A-horizon or at 12 inches below the surface, whichever is shallower, and identified using the Munsell Soil Color Chart (Munsell Soil Color Co. 2000). Wetland soils classified as hydric in the County soil survey are also considered (U.S. Department of Agriculture 2018).

2.4 Wetland Hydrology

Wetland hydrology is considered to be present when indicators of seasonal or permanent water inundation are observed. These indicators include surface water, high water table, saturation, water marks, sediment deposits, drift deposits, algal mats or crust, iron deposits, surface soil cracks, inundation visible on aerial imagery, sparsely vegetated concave surface, salt crust, aquatic invertebrates, hydrogen sulfide odor, oxidized rhizospheres along living roots, presence of reduced iron, recent iron reduction in tilled soils, stunted or stressed plants, water-stained leaves, drainage patterns, dry-season water table, saturation visible on aerial imagery, geomorphic position, shallow aquitard, FAC-neutral test, or Frost-heave hummocks.

3 EXISTING CONDITIONS

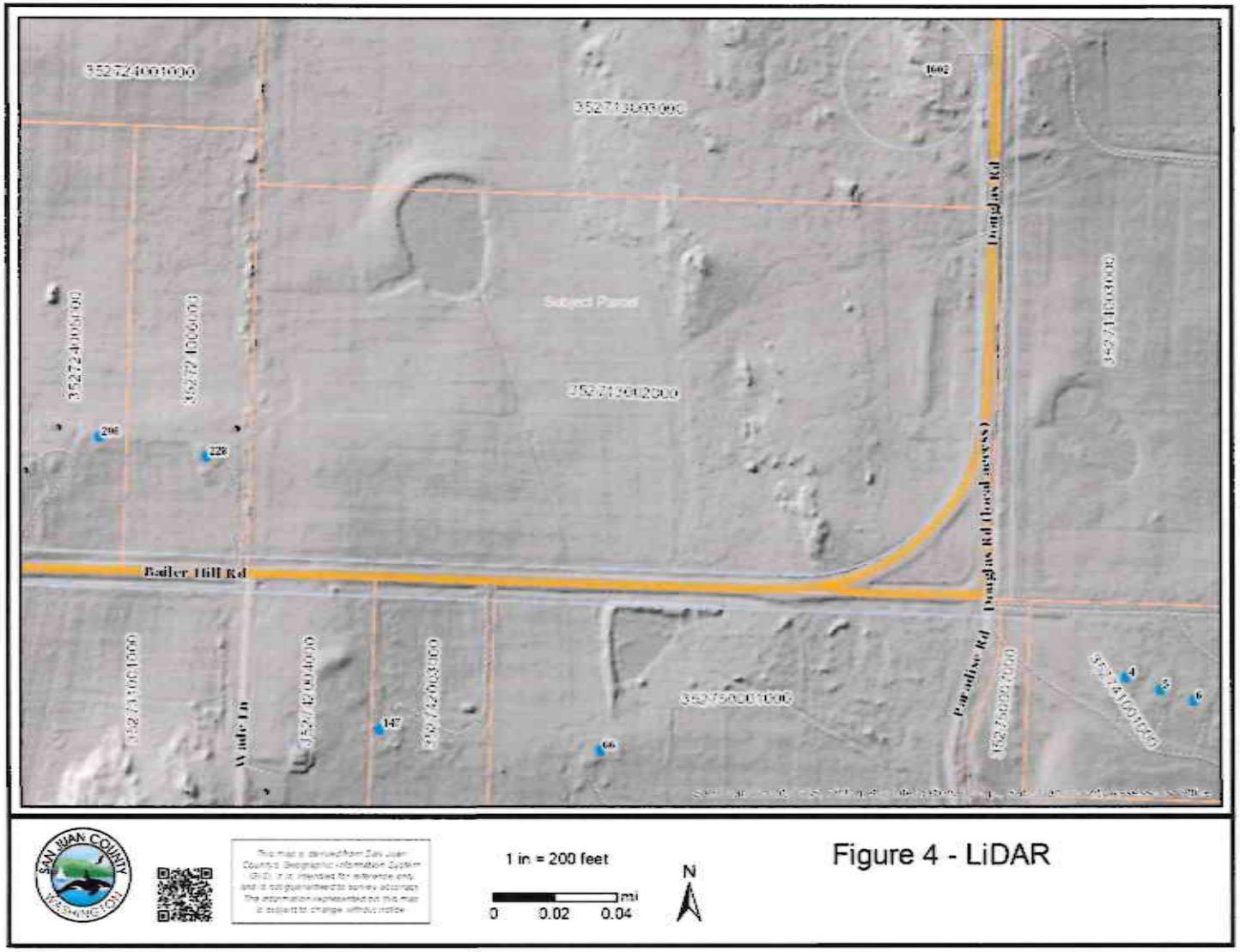
Jacobs conducted a site visit on July 24, 2020. The site has been in agricultural use for much of the twentieth century. It lies within the San Juan Valley Open Space and Heritage Overlay District, which was created in 2002 to preserve and protect agricultural use and open space in the Fale Bay valley. According to the current property owner, the site supported a pea field in the 1950s, and has been in hay production for many decades. The current owner farmed the site beginning in 1979, bringing in cattle. For most of the 1980s the western portion of the site was in hay production. Although the western portion of the site is still hayed, it has not been actively managed for hay production since the 1980s (Vaugh Mason, pers. comm with Jennifer Thomas, July 24, 2020). The hayfield/pasture portion of the site is dominated by Red fescue (*Festuca rubra;* FAC), with some patches of Colonial Bentgrass (*Agrostis stolonifera;* FAC), though the Bentgrass is not dominant. The pasture also supports Sweet Vernal grass (*Anthoxanthum odoratum;* FACU). **Figure 4** shows the LiDAR image of the site, which clearly shows evidence of cultivation and agricultural use, particularly in the western portion of the site.

The area mapped by the County as a "possible non-tidal wetland" occurs on the western portion of the site. It is an open-water pond that was clearly excavated for farm use. The pond was excavated out of non-wetland soils. It is regularly shaped. The soils that were excavated to create the pond were stockpiled next to the pond and leveled to create a berm, which sits several feet above the surrounding grade. Wetland plants, including cattail (*Typha latifolia;* OBL), Spikerush (*Eleocharis palustris;* OBL), and pondweed (*Potamageton natans;* OBL) have established in the pond, which supports an open-water area of approximately 200 feet long by 150 feet wide. There is a ditch from Bailer Hill Road to the pond. In the immediate vicinity of the pond, this ditch and a ditch to the west support reedcanarygrass (*Phalaris arundinacea;* FACW), but the reedcanarygrass is restricted to these low-lying areas on-site. While the farm pond does support wetland vegetation, it was clearly excavated out of non-wetland soils, and is therefore exempt from regulation under the County's Critical Areas Ordinance.

The NRCS (2018) maps the soils in the western portion of the site as Mitchellbay gravelly sandy loam on 5 to 15 percent slopes (**Appendix A**). Mitchellbay soils are considered prime farmland soils. There is a distinct break, based on soil type, between the pasture area, which encompasses approximately 50 percent of the western portion of the site (and slopes gently towards the valley) and the eastern portion of the site, which is mapped by the NRCS as Haro-Hiddenridge-Rock Outcrop complex on 5 to 30 percent slopes. The far eastern portion of the site is mapped as Mitchellbay gravelly sandy loam on 0 to 5 percent slopes. None of these soils are hydric.

The portion of the site that is mapped as Haro-Hiddenridge-Rock Outcrop contains rock outcrops to the surface, which provide attractive views of the False Bay Creek Valley. This portion of the site has not been maintained for some time and also supports Himalayan Blackberry (*Rubus armeniacus;* FAC), English Hawthorn (NI), Tansy Ragwort (*Jacobaea vulgaris;* FACU), and thistle (both Bull thistle [*Cirsium vulgare*; FACU] and Canada thistle [*Cirsium arvense*; FAC]) within the grass-dominated portions of the site.

Figure 4: LiDAR Map



4 FINDINGS

The subject property contains a farm pond that was created for agricultural use at some point in the twentieth century. The farm pond was intentionally created out of a non-wetland and is therefore exempt from regulation under the County's Critical Areas Ordinance.

5 REFERENCES

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe (Cowardin et al.). 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services. FWS/OBS-79-31. December 1979. Reprinted 1992.

Hruby, T. 2014. *Washington State Wetland Rating System for Western Washington – 2014 Update*. Washington State Department of Ecology Publication #14-06-029.

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U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2018. *Field Indicators of Hydric Soils in the United States*. A Guide for Identifying and Delineating Hydric Soils, Version 8.2.

———. n.d. "Web Soil Survey, San Juan County, Washington." https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed July 2020.

APPENDIX A
NRCS SITE MAP

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Soil Map—San Juan County, Washington
(Figure 5 - Bailer Hill Road)

Map Scale: 1:2,140 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Juan County, Washington
Survey Area Data: Version 21, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Sep 29, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2001	Mitchellbay gravelly sandy loam, 5 to 15 percent slopes	10.0	49.0%
2004	Mitchellbay gravelly sandy loam, 0 to 5 percent slopes	4.2	20.6%
5007	Haro-Hiddenridge-Rock Outcrop complex, 5 to 30 percent slopes	6.2	30.4%
Totals for Area of Interest		**20.3**	**100.0%**

FORGESOLAR GLARE ANALYSIS

Project: **OPALCO Bailer Hill Solar PV**
2.6MW solar project on San Juan Island in Washington.

Site configuration: **Untitled**

Created 03 Feb, 2023
Updated 06 Feb, 2023
Time-step 1 minute
Timezone offset UTC-8
Site ID 83624.14802
Category 1 MW to 5 MW
DNI peaks at 1,000.0 W/m^2
Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	1,405,000.0
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	1,404,000.0
PV array 3 - sloped	SA tracking	SA tracking	0	0.0	0	0.0	1,428,000.0
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	1,404,000.0
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	1,404,000.0
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	1,404,000.0

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Runway 16	0	0.0	0	0.0
Runway 34	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array 1
Axis tracking: Single-axis rotation
Backtracking: None
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 52.0°
Rated power: 490.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	48.501716	-123.050201	78.62	5.00	83.62
2	48.501714	-123.049453	82.73	5.00	87.73
3	48.501183	-123.049450	86.52	5.00	91.52
4	48.501188	-123.050220	85.44	5.00	90.44

Name: PV array 2
Axis tracking: Single-axis rotation
Backtracking: None
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 52.0°
Rated power: 490.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	48.501700	-123.048546	88.48	5.00	93.48
2	48.501192	-123.048554	89.06	5.00	94.06
3	48.501186	-123.047642	103.10	5.00	108.10
4	48.501709	-123.047634	106.44	5.00	111.44

Name: PV array 3 - sloped
Axis tracking: Single-axis rotation
Backtracking: None
Tracking axis orientation: 180.0°
Tracking axis tilt: 3.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 52.0°
Rated power: 490.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	48.501132	-123.050227	86.51	5.00	91.51
2	48.500105	-123.050238	108.77	5.00	113.77
3	48.500101	-123.048511	102.73	5.00	107.73
4	48.501139	-123.048527	90.08	5.00	95.08

Name: PV array 4
Axis tracking: Single-axis rotation
Backtracking: None
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 52.0°
Rated power: 490.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	48.500101	-123.048511	102.73	5.00	107.73
2	48.500090	-123.046821	114.29	5.00	119.29
3	48.501121	-123.046837	116.68	5.00	121.68
4	48.501139	-123.048527	90.08	5.00	95.08

Name: PV array 5
Axis tracking: Single-axis rotation
Backtracking: None
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 52.0°
Rated power: 490.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	48.501182	-123.047132	113.90	5.00	118.90
2	48.501708	-123.047132	116.47	5.00	121.47
3	48.501704	-123.046209	129.52	5.00	134.52
4	48.501182	-123.046220	127.67	5.00	132.67

Name: PV array 6
Axis tracking: Single-axis rotation
Backtracking: None
Tracking axis orientation: 180.0°
Tracking axis tilt: 0.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 52.0°
Rated power: 490.0 kW
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	48.501121	-123.046842	116.68	5.00	121.68
2	48.501114	-123.046220	127.83	5.00	132.83
3	48.500595	-123.046220	128.14	5.00	133.14
4	48.500602	-123.046826	115.17	5.00	120.17

Route Receptors

Name: Route 1
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	48.499959	-123.057605	50.93	0.00	50.93
2	48.499963	-123.046568	119.29	0.00	119.29
3	48.500006	-123.046202	125.19	0.00	125.19
4	48.500114	123.045813	131.49	0.00	131.49
5	48.500274	123.045545	134.21	0.00	134.21
6	48.500441	-123.045360	136.28	0.00	136.28
7	48.500599	-123.045253	139.26	0.00	139.26
8	48.500914	123.045183	140.14	0.00	140.14
9	48.501152	123.045166	139.49	0.00	139.49
10	48.502194	123.045178	153.01	0.00	153.01
11	48.503638	123.045175	150.66	0.00	150.66

Flight Path Receptors

Name: Runway 16
Description:
Threshold height: 43 ft
Direction: 356.9°
Glide slope: 4.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	48.526572	-123.024799	112.48	43.00	155.48
Two-mile	48.497701	-123.022451	74.80	819.11	893.91

Name: Runway 34
Description:
Threshold height: 42 ft
Direction: 177.1°
Glide slope: 3.5°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	48.517349	-123.024091	84.05	42.00	126.05
Two-mile	48.546225	-123.026309	90.69	681.24	771.93

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	48.502323	-123.045756	142.01	10.00
OP 2	2	48.503011	-123.045843	148.43	10.00
OP 3	3	48.499444	123.044174	149.51	6.00
OP 4	4	48.499250	-123.047897	113.26	6.00
OP 5	5	48.499418	-123.049323	114.16	6.00
OP 6	6	48.500537	-123.050509	105.44	6.00
OP 7	7	48.500609	-123.051363	102.20	10.00
OP 8	8	48.501375	-123.042527	157.62	6.00
OP 9	9	48.504544	-123.049486	72.76	10.00

Obstruction Components

Name: Hedge 1
Top height: 6.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.500044	-123.050274	108.71
2	48.500073	-123.050271	108.72
3	48.500059	-123.046830	114.04
4	48.500033	-123.046832	113.90
5	48.500044	-123.050274	108.71

Name: Hedge 2
Top height: 6.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.500061	-123.046836	113.89
2	48.500070	-123.046442	121.98
3	48.500183	-123.045940	131.06
4	48.500365	-123.045618	132.59
5	48.500343	-123.045591	132.98
6	48.500158	-123.045928	131.08
7	48.500042	-123.046446	121.64
8	48.500031	-123.046837	113.76
9	48.500061	-123.046836	113.89

Name: Hedge 3
Top height: 6.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.500367	-123.045620	132.52
2	48.500343	-123.045593	132.98
3	48.500549	-123.045392	135.66
4	48.500822	-123.045316	138.02
5	48.501082	-123.045279	137.66
6	48.501082	-123.045317	137.23
7	48.500816	-123.045362	137.31
8	48.500554	-123.045432	134.83
9	48.500367	-123.045620	132.52

Name: Hedge 4
Top height: 6.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.501081	-123.045276	137.66
2	48.501728	-123.045287	141.32
3	48.501757	-123.045292	141.44
4	48.501774	-123.048634	88.16
5	48.501748	-123.048634	88.17
6	48.501725	-123.045337	140.67
7	48.501085	-123.045332	137.11
8	48.501081	-123.045276	137.66

Name: Hedge 5
Top height: 6.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.501739	-123.049470	81.19
2	48.501767	-123.049465	80.09
3	48.501767	-123.050291	78.36
4	48.500089	-123.050361	108.26
5	48.500093	-123.050318	109.05
6	48.501735	-123.050248	78.54
7	48.501739	-123.049470	81.19

Name: Tree 1
Top height: 20.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.502307	-123.045911	136.91
2	48.502098	-123.045916	135.25
3	48.502090	-123.045766	138.02
4	48.502247	-123.045728	142.52
5	48.502332	-123.045804	140.79
6	48.502307	-123.045911	136.91

Name: Tree 2
Top height: 20.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.499926	-123.048620	104.84
2	48.499919	-123.046597	119.10
3	48.499582	-123.046951	115.69
4	48.499638	-123.047209	111.47
5	48.499806	-123.047343	111.50
6	48.499873	-123.047960	104.37
7	48.499880	-123.048620	105.04
8	48.499926	-123.048620	104.84

Name: Tree 3
Top height: 20.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.499276	-123.049465	115.45
2	48.499432	-123.049336	114.44
3	48.499112	-123.048735	113.00
4	48.499319	-123.048542	110.80
5	48.499340	-123.049025	112.29
6	48.499535	-123.049052	110.12
7	48.499539	-123.049465	115.08
8	48.499276	-123.049465	115.45

Name: Tree 4
Top height: 20.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.499143	-123.044922	131.63
2	48.499194	-123.044751	135.61
3	48.499626	-123.044871	141.87
4	48.499637	-123.045097	137.03
5	48.499143	-123.044922	131.63

Name: Tree 5
Top height: 20.0 ft

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)
1	48.499878	-123.044890	141.58
2	48.499639	-123.044788	142.36
3	48.499642	-123.044683	144.29
4	48.499934	-123.044756	143.77
5	48.499878	-123.044890	141.58

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array 1	SA tracking	SA tracking	0	0.0	0	0.0	1,405,000.0
PV array 2	SA tracking	SA tracking	0	0.0	0	0.0	1,404,000.0
PV array 3 - sloped	SA tracking	SA tracking	0	0.0	0	0.0	1,428,000.0
PV array 4	SA tracking	SA tracking	0	0.0	0	0.0	1,404,000.0
PV array 5	SA tracking	SA tracking	0	0.0	0	0.0	1,404,000.0
PV array 6	SA tracking	SA tracking	0	0.0	0	0.0	1,404,000.0

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Runway 16	0	0.0	0	0.0
Runway 34	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0

PV: PV array 1 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Runway 16	0	0.0	0	0.0
Runway 34	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0

PV array 1 and Route 1

Receptor type: Route
No glare found

PV array 1 and Runway 16

Receptor type: 2-mile Flight Path
No glare found

PV array 1 and Runway 34

Receptor type: 2-mile Flight Path
No glare found

PV array 1 and OP 1

Receptor type: Observation Point
No glare found

PV array 1 and OP 2

Receptor type: Observation Point
No glare found

PV array 1 and OP 3

Receptor type: Observation Point
No glare found

PV array 1 and OP 4

Receptor type: Observation Point
No glare found

PV array 1 and OP 5

Receptor type: Observation Point
No glare found

PV array 1 and OP 6

Receptor type: Observation Point
No glare found

PV array 1 and OP 7

Receptor type: Observation Point
No glare found

PV array 1 and OP 8

Receptor type: Observation Point
No glare found

PV array 1 and OP 9

Receptor type: Observation Point
No glare found

PV: PV array 2 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Runway 16	0	0.0	0	0.0
Runway 34	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0

PV array 2 and Route 1

Receptor type: Route
No glare found

PV array 2 and Runway 16

Receptor type: 2-mile Flight Path
No glare found

PV array 2 and Runway 34

Receptor type: 2-mile Flight Path
No glare found

PV array 2 and OP 1

Receptor type: Observation Point
No glare found

PV array 2 and OP 2

Receptor type: Observation Point
No glare found

PV array 2 and OP 3

Receptor type: Observation Point
No glare found

PV array 2 and OP 4

Receptor type: Observation Point
No glare found

PV array 2 and OP 5

Receptor type: Observation Point
No glare found

PV array 2 and OP 6

Receptor type: Observation Point
No glare found

PV array 2 and OP 7

Receptor type: Observation Point
No glare found

PV array 2 and OP 8

Receptor type: Observation Point
No glare found

PV array 2 and OP 9

Receptor type: Observation Point
No glare found

PV: PV array 3 - sloped

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Runway 16	0	0.0	0	0.0
Runway 34	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0

PV array 3 - sloped and Route 1

Receptor type: Route
No glare found

PV array 3 - sloped and Runway 16

Receptor type: 2-mile Flight Path
No glare found

PV array 3 - sloped and Runway 34

Receptor type: 2-mile Flight Path
No glare found

PV array 3 - sloped and OP 1

Receptor type: Observation Point
No glare found

PV array 3 - sloped and OP 2

Receptor type: Observation Point
No glare found

PV array 3 - sloped and OP 3

Receptor type: Observation Point
No glare found

PV array 3 - sloped and OP 4

Receptor type: Observation Point
No glare found

PV array 3 - sloped and OP 5

Receptor type: Observation Point
No glare found

PV array 3 - sloped and OP 6

Receptor type: Observation Point
No glare found

PV array 3 - sloped and OP 7

Receptor type: Observation Point
No glare found

PV array 3 - sloped and OP 8

Receptor type: Observation Point
No glare found

PV array 3 - sloped and OP 9

Receptor type: Observation Point
No glare found

PV: PV array 4 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Runway 16	0	0.0	0	0.0
Runway 34	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0

PV array 4 and Route 1

Receptor type: Route
No glare found

PV array 4 and Runway 16

Receptor type: 2 mile Flight Path
No glare found

PV array 4 and Runway 34

Receptor type: 2 mile Flight Path
No glare found

PV array 4 and OP 1

Receptor type: Observation Point
No glare found

PV array 4 and OP 2

Receptor type: Observation Point
No glare found

PV array 4 and OP 3

Receptor type: Observation Point
No glare found

PV array 4 and OP 4

Receptor type: Observation Point
No glare found

PV array 4 and OP 5

Receptor type: Observation Point
No glare found

PV array 4 and OP 6

Receptor type: Observation Point
No glare found

PV array 4 and OP 7

Receptor type: Observation Point
No glare found

PV array 4 and OP 8

Receptor type: Observation Point
No glare found

PV array 4 and OP 9

Receptor type: Observation Point
No glare found

PV: PV array 5 no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Runway 16	0	0.0	0	0.0
Runway 34	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0

PV array 5 and Route 1

Receptor type: Route
No glare found

PV array 5 and Runway 16

Receptor type: 2-mile Flight Path
No glare found

PV array 5 and Runway 34

Receptor type: 2-mile Flight Path
No glare found

PV array 5 and OP 1

Receptor type: Observation Point
No glare found

PV array 5 and OP 2

Receptor type: Observation Point
No glare found

PV array 5 and OP 3

Receptor type: Observation Point
No glare found

PV array 5 and OP 4

Receptor type: Observation Point
No glare found

PV array 5 and OP 5

Receptor type: Observation Point
No glare found

PV array 5 and OP 6

Receptor type: Observation Point
No glare found

PV array 5 and OP 7

Receptor type: Observation Point
No glare found

PV array 5 and OP 8

Receptor type: Observation Point
No glare found

PV array 5 and OP 9

Receptor type: Observation Point
No glare found

PV: PV array 6

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Route 1	0	0.0	0	0.0
Runway 16	0	0.0	0	0.0
Runway 34	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0

PV array 6 and Route 1

Receptor type: Route
No glare found

PV array 6 and Runway 16

Receptor type: 2-mile Flight Path
No glare found

PV array 6 and Runway 34

Receptor type: 2-mile Flight Path
No glare found

PV array 6 and OP 1

Receptor type: Observation Point
No glare found

PV array 6 and OP 2

Receptor type: Observation Point
No glare found

PV array 6 and OP 3

Receptor type: Observation Point
No glare found

PV array 6 and OP 4

Receptor type: Observation Point
No glare found

PV array 6 and OP 5

Receptor type: Observation Point
No glare found

PV array 6 and OP 6

Receptor type: Observation Point
No glare found

PV array 6 and OP 7

Receptor type: Observation Point
No glare found

PV array 6 and OP 8

Receptor type: Observation Point
No glare found

PV array 6 and OP 9

Receptor type: Observation Point
No glare found

Assumptions

"Green" glare is glare with low potential to cause an after image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub array size. Additional analyses of the combined area of adjacent sub arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

Clearing and Grading Permit

Bailer Hill Community Solar and Mirogrid

Solar and BESS Facility

San Juan Island, Washington

June 23, 2023

Purpose

This package is to accompany the clearing and grading permit submittal to San Juan County for the construction of a Solar Facility with a Battery Energy Storage System.

Project Narrative

This project is proposing the construction of a 136' x 119' gravel pad to house containers for Battery Energy Storage Systems (BESS). The containerized system and supporting equipment will be enclosed with a chainlink fence (126'x109'). This BESS pad will be in conjunction with the construction of solar array, completed by Cushing Terrell.

The project site is located at the northwest corner of the intersection of Bailer Hill Road and Douglas Road in San Juan County, Washington. The site is bordered by Bailer Hill Road to the South and Douglas Road on the East. The 19-acre parcel is currently undeveloped with a portion being used as agricultural land since at least 1990 according to historical imagery. A geotechnical investigation was conducted by Geotest Inc., excavating 12 test pits on February 3, 2021, to explore the subsurface conditions. Test pits varied in depth from 2.1 feet to 7.5 feet deep. Results were observed to be similar across all test pits. Subsurface layers consist of 6-18 inches of topsoil, followed by a dense layer of glacial till, which has the same properties as a silty sand soil type. It is the findings of the geotechnical report that the native soils on this property are suitable for fill purposes within the site for this project use. Subgrade below BESS foundations shall consist of 12 inches of compacted structural fill on top of undisturbed native soils.

The construction of the BESS pad will require fill to provide an even surface for the equipment and promote positive stormwater runoff. Stormwater runoff from the BESS pad will be treated in the stormwater pond constructed as a part of the solar development. The BESS pad will be surfaced with a 4" thick layer of aggregate base course. This layer of aggregate base course will generate run off, however, grading of the pad is intended to promote sheet flow off the pad where it will enter its natural course within the property and solar development. The sheet flow from the BESS pad will be captured by the downstream stormwater ponds.

Design of the solar development has been completed by Cushing Terrell. The construction of the solar array panels will require some onsite grading to level areas in the property for installation. The design contours and cut fill volumes can be found on sheet C200 in the Volume 1 sheets.

During construction of the Solar Array and the BESS pad, the stormwater ponds will function as sediment basins before they are cleaned out for their permanent functions. Other erosion and sediment control measures placed on site will include the installation of graveled construction entrances off roadways, silt fence, and rock check dams. Stabilization of the site will be achieved through seeding and sodding. The final surfacing of the property will be planted with sheep friendly native grasses as the solar array area will be used as livestock grazing.

For detailed stormwater runoff modeling and calculations, refer to the Cushing Terrell Calculation package that has been attached as an appendix to this memo.