Organizational Expertise Exhibit

PREPARED FOR

DATE
December 2025

REFERENCE
Oregon Energy Facility Siting Council

CONTENTS

LIST OF ATTACHMENTS

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

Acronym	Description
Applicant	DECH bn, LLC
BESS	Battery Energy Storage System
BrightNight	BrightNight Power, LLC
CEO	Chief Executive Officer
CFR	Code of Federal Regulations
DEQ	Department of Environmental Quality
EFSC	Energy Facility Siting Council
EPC	Engineering, Procurement & Construction
ERM	Environmental Resources Management, Inc.
Facility	Solar photovoltaic power generation facility and related or supporting facilities in Wasco County, Oregon
GW	Gigawatt
LNG	Liquefied natural gas
MW	Megawatt
NPDES	National Pollutant Discharge Elimination System
OAR	Oregon Administrative Rules
ODOT	Oregon Department of Transportation
ORS	Oregon Revised Statutes
PGE	Portland General Electric Company
PV	Photovoltaic
U.S.	United States
USC	United States Code
WCLUDO	Wasco County Land Use and Development Ordinance

1. INTRODUCTION

DECH bn, LLC (Applicant) plans to construct a solar photovoltaic (PV) power generation facility and related or supporting facilities in Wasco County, Oregon (Facility). The Facility will include up to 1,000 megawatts (MW) of solar generation and a battery energy storage system (BESS) with a capacity of up to 1,000 megawatt (MW). This Organizational Expertise Exhibit has been prepared to meet the requirements in OAR 345-022-0010.

2. PROJECT INFORMATION

2.1 APPLICANT AND CONTACT PERSONS

OAR 345-022-0010(5)(a) Information about the applicant and participating persons, including:

(A) The name and address of the applicant including all co-owners of the proposed facility, the name, mailing address, email address and telephone number of the contact person for the application, and if there is a contact person other than the applicant, the name, title, mailing address, email address and telephone number of that person.

Name and Address of the Applicant

DECH bn, LLC
c/o BrightNight Power, LLC
850 New Burton Road
Suite 201
Dover, DE 19904

Contact Person Other than Applicant

Bijan Damavandi
Director, Development
BrightNight Power, LLC
850 New Burton Road
Suite 201
Dover, DE 19904
bijan@brightnightpower.com
(850) 842-1855

2.2 PARTICIPATING ENTITIES

(B) The contact name, mailing address, email address and telephone number of all participating persons, other than individuals, including but not limited to any parent corporation of the applicant, persons upon whom the applicant will rely for third-party permits or approvals related to the facility, and, if known, other persons upon whom the applicant will rely in meeting any facility standard adopted by the Council;

The Applicant is a wholly-owned subsidiary of BrightNight Power, LLC (BrightNight or Parent Company); see Section 4 for the Applicant name and address.

Parent Company contact person:

Bijan Damavandi
Director, Development
BrightNight Power, LLC
850 New Burton Road
Suite 201
Dover, DE 19904
bijan@brightnightpower.com
(850) 842-1855

Contact persons other than the Applicant:

Alice Sandzén and Sarah Seekins
Environmental Resources Management
1050 SW 6th Ave
Suite 1650
Portland, OR 97204
alice.sandzen@erm.com
(603) 667-0682
sarah.seekins@erm.com
(802) 579-5455

Elaine Albrich
Davis Wright Tremaine, LLP
560 SW 10th Ave
Suite 700
Portland, OR 97205
elainealbrich@dwt.com
(503) 778-5423

2.3 OWNER INFORMATION

(D) If the applicant is a wholly owned subsidiary of a company, corporation or other business entity, in addition to the information required by paragraph (C), the full name and business address of each of the applicant's full or partial owners;

The Applicant is a wholly-owned subsidiary of BrightNight. The Parent Company name and business address are as follows:

Name and Address of the Parent Company

BrightNight Power, LLC
850 New Burton Road
Suite 201
Dover, DE 19904

2.4 LIMITED LIABILITY COMPANY INFORMATION

345-022-0010(5)(a)(H) If the applicant is a limited liability company, it shall give:

i. The full name, official designation, mailing address, email address and telephone number of the officer responsible for submitting the application;

ii. The date and place of its formation;

iii. A copy of its articles of organization and its authorization for submitting the application; and

iv. In the case of a limited liability company not registered in Oregon, the name and address of the resident attorney-in-fact in this state and proof of registration to do business in Oregon.

The Applicant is a limited liability company. The Applicant contact submitting this Application for Site Certificate is:

Bijan Damavandi
Director, Development
BrightNight Power, LLC
850 New Burton Road
Suite 201
Dover, DE 19904
Bijan@brightnightpower.com
(850) 842-1855

The officer for Applicant is:

Martin Hermann
CEO
BrightNight Power, LLC
850 New Burton Road
Suite 201
Dover, DE 19904
martin@brightnightpower.com
(408) 221-9390

The Applicant was formed with the Secretary of State in Delaware on 1 July 2024, and was acknowledged and registered to do business in Oregon by the Oregon Secretary of State on 29 January 2025, in Salem, Oregon.

A copy of the Applicant's articles of organization and registration in Oregon are provided as Attachment 1.

3. ORGANIZATION INFORMATION

3.1 APPLICANT'S PREVIOUS EXPERIENCE

OAR 345-022-0010(5)(b) Information about the organizational expertise of the applicant to construct and operate the proposed facility including:

(A) *The applicant's previous experience, if any, in constructing and operating similar facilities.*

The Applicant will rely on BrightNight (its parent company) experience to demonstrate compliance with OAR 345-022-0010. BrightNight funds and supports its project subsidiaries by providing specific qualified and experienced internal personnel for management and design, construction, and operation of the Facility. BrightNight is a United States (U.S.) based company that designs, develops, and operates safe, reliable, large-scale, renewable power projects optimized to manage the intermittent nature of renewable energy. BrightNight partners with utility companies, landowners, and commercial and industrial customers to decarbonize the energy sector while meeting energy demand. The company develops, builds, owns, and operates hybrid firm power

projects that integrate solar PV, BESS, and clean gas generation to maximize uptime and deliver 24-hour/7-day-a-week power solutions.

BrightNight's ability to fulfill its obligations under Energy Facility Siting Council (EFSC) standards is underpinned by its strong financial backing and rigorous accountability to institutional investors. In 2024, Goldman Sachs Alternatives provided a $440 million strategic investment, fully funding BrightNight's five-year business plan. The company also maintains a $400 million corporate credit facility supported by 10 leading project finance banks. These resources provide substantial liquidity, credit support, and investor oversight, ensuring that BrightNight meets all financial, construction, and operational commitments for its projects.

BrightNight manages one of the largest advanced-stage renewable pipelines in the U.S., totalling approximately 35 gigawatts (GW) across solar PV, co-located storage, standalone storage, and clean gas generation. Across the U.S., BrightNight has approximately 19.1 GW of projects that have achieved advanced interconnection status, with costs and schedules established through completed System Impact Studies. This level of queue maturity provides a high degree of cost and schedule certainty for project execution.

BrightNight's projects include a 300 MW solar project in Arizona called Box Canyon that began construction in early 2024 and reached Commercial Operation date (COD) in June 2025, two months ahead of schedule, and is now operational. BrightNight is also developing the Frontier Solar Project and Starfire Renewable Power Project, both in Kentucky, which are expected to have capacities of 120 and 210 MW, respectively. BrightNight's project portfolio includes 2.7 GW of projects with Power Purchase Agreements secured or under negotiation. BrightNight will have over 1 GW of projects in construction in 2025 and additional projects anticipated in construction/operation in 2026. A selection of U.S. projects under development is detailed in Table 1. Within the Pacific Northwest, BrightNight has additional projects that are contracted or in late-stage development, including hybrid projects totaling 650 MW that are in negotiation. Further details on BrightNight's Pacific Northwest portfolio are discussed below.

In Oregon, BrightNight has secured the required county-level land use permit to develop the Tualatin Battery Energy Storage Facility, a 400 MW project in Washington County, which is anticipated to be under construction in 2026. BrightNight is also working with Portland General Electric Company (PGE) to develop solar PV power generation and battery storage for PGE's operating Biglow Canyon Wind Farm in Sherman County and is working with PGE to pursue a site certificate amendment to add up to 125 MW of solar and 125 MW of BESS to the existing, operational wind farm. As part of this project, BrightNight is developing an agricultural-mitigation plan to reserve dedicated funds to strengthen local farm businesses during project operations, and is expected to generate hundreds of millions of dollars in local tax revenue. Additionally, BrightNight is developing the Salmonfly Solar Project, which will supply up to 250 MW of PV and up to 250 MW in battery storage to the Confederated Tribes of the Warm Springs and surrounding Jefferson County, Oregon.

In Washington, BrightNight has secured the required city-level land use permit to develop the Greenwater 200 MW Battery Energy Storage Facility, in the City of Sumner, Washington, which is

anticipated to be under construction in 2025. The Hop Hill Renewable Power Project will provide up to 500 MW of PV solar energy and 500 MW of battery storage for Benton County.

TABLE 1 SELECT BRIGHTNIGHT PROJECTS UNDER DEVELOPMENT

Project Name	Location	Capacity (MW)
Tualatin Battery Energy Storage	Washington County, Oregon	400
Biglow Solar	Sherman County, Oregon	125
Salmon Fly Solar Project	Jefferson County, Oregon	250
Greenwater Battery Energy Storage	Pierce County, Washington	200
Hop Hill Renewable Power Project	Benton County, Washington	500
Box Canyon Solar Project	Pinal County, Arizona	300
Frontier Solar Project	Washington and Marion Counties, Kentucky	120
Orchard Solar Project	Yuma County, Arizona	600
Starfire Renewable Power Project	Perry, Knott, and Breathitt Counties, Kentucky	210
Total		**2,705**

MW= megawatt

3.2 QUALIFICATIONS OF APPLICANT'S PERSONNEL

OAR 345-022-0010(5)(b)(B) The qualifications of the applicant's personnel who will be responsible for constructing and operating the facility, to the extent that the identities of such personnel are known when the application is submitted.

BrightNight employs over 150 people who have deep expertise in utilities and power markets and who have experience and depth across renewables, software, finance, and operations. BrightNight's senior leadership team has decades of experience in renewable energy development; brief biographies of key senior leaders and project personnel are provided below.

3.2.1 EXECUTIVE MANAGEMENT

Martin Hermann, Chief Executive Officer (CEO): Martin Hermann is a seasoned entrepreneur and executive with over 27 years of experience in the solar, clean tech, and high-tech industries. As CEO of BrightNight, he is leading the delivery of next generation renewable power by combining solar, wind, and battery storage to provide reliable, dispatchable clean energy for utilities and commercial customers. Before BrightNight, Martin founded and served as CEO of 8minute Solar Energy, building it into the largest independent solar developer in North America. Under his leadership, the company developed over 18 GW of solar projects and closed more than $5.3 billion in transactions.

Earlier in his career, Martin co-founded and sold CAD UL Electronic Services, a semiconductor software company, to Intel Corporation, where he later led the development of wireless processors during the rapid growth of the smartphone market. He also played a key role in growing Advent Solar Inc., a solar cell and module manufacturer advancing PV technology. Martin holds a degree in computer science and is widely recognized for his ability to scale innovation, anticipate market trends, and drive the transition to a more resilient and sustainable energy future.

3.2.2 PROJECT DEVELOPMENT

David Gil, Executive Vice President: David brings over a decade of experience in renewable energy and finance to BrightNight, where he leads development efforts across the Eastern and Midwestern United States. Before joining BrightNight, David served as the head of utility-scale development for the Central U.S. at NextEra Energy, Inc., overseeing a 30-person team responsible for more than 100 wind, solar, and storage projects across 14 states. Under his leadership, the team delivered over 5 gigawatts of operational assets and secured more than $10 billion in investment. In addition to his development work, David held roles in Regulatory and Legislative Affairs at NextEra, focusing on the Pennsylvania-New Jersey-Maryland Interconnection and the New York Independent System Operator.

Earlier in his career, David served as a strategic analyst to the CEO at NextEra, where he supported special projects, policy initiatives, and corporate communications. Prior to entering the renewable energy sector, he worked in investment banking at Callisto Partners LLC and Volpe, Brown, Whelan & Company. In these roles, he specialized in mergers and acquisitions and capital raising, primarily for clients in the energy and technology sectors. David’s broad background in finance, policy, and large-scale project execution makes him a valuable asset in navigating today’s complex energy landscape.

Jess Melin, Executive Vice President, Development: Jess has over 20 years of experience in the development of utility scale wind, solar, and energy storage projects across the United States. At BrightNight, Jess supports project teams in identifying clear development pathways and navigating complex industry challenges. His cross-functional expertise enables him to provide valuable guidance across all stages of project development, from early strategy to execution.

Prior to joining BrightNight, Jess served as Executive Director of Development at NextEra Energy Resources, where he led a regional team focused on advancing utility scale renewable projects across multiple markets. During his tenure, he developed and constructed projects across various technologies, building strong relationships with utilities nationwide and gaining a comprehensive understanding of project origination, permitting, and delivery.

Armand Anselmo, Vice President, Development: With over 12 years of experience, Armand brings a diverse background in renewable energy development, with experience spanning wind, solar, and liquefied natural gas (LNG) project work across multiple U.S. markets. At BrightNight, he helps lead project strategy and execution, drawing on his multidisciplinary expertise to guide complex development efforts from early siting through construction.

Before joining BrightNight, Armand was with Terra-Gen, LLC where he led development efforts for approximately 500 megawatts of wind energy in New York and oversaw the successful repowering

of over 1,000 wind turbines across four jurisdictions in Palm Springs, California. Prior to Terra-Gen, LLC, he worked with Sempra Energy, leading and supporting development in the Southwest Power Pool, Midcontinent Independent System Operator, and Hawaiian Electric Company markets, and participating in mergers and acquisitions analysis to help grow Sempra's renewable portfolio. He also contributed to the company's LNG Fuels Team, repurposing LNG facilities for use in transportation.

3.2.3 ENVIRONMENTAL PERMITTING

Kevin Martin, Vice President, Environmental Permitting: Kevin is an ecologist with 30 years of experience in environmental data collection, analysis, project design, and implementation. He brings deep expertise in ecosystem management, wildlife and renewable energy interactions, wetlands, water policy, and permitting. At BrightNight, Kevin focuses on the permitting side of the development team, supporting the advancement of wind, solar, and storage projects. For the past 16 years, he has led natural resource and regulatory permitting efforts specifically for renewable energy development. Prior to joining BrightNight, Kevin served as Senior Director of Environmental Permitting at Terra-Gen, where he oversaw environmental strategy and compliance for utility-scale projects.

Todd Ellwood, Senior Director, Environmental Permitting: Todd is a wildlife biologist with over 25 years of experience in biological resource management, including field studies, analysis, and reporting across a wide range of habitats throughout the U.S. Todd's experience includes strategic planning for species mitigation including habitat protection, restoration, and/or creation. His focus for the past 15 years has been on assessing the impacts of wind and solar projects ensuring compliance with local, state, and federal regulations.

3.2.4 PROJECT CONSTRUCTION AND ENGINEERING

Doren Emmett, Senior Vice President, Construction and Project Delivery: Doren brings over 30 years of experience managing complex projects across multiple industries, with a focus on renewable energy. At BrightNight, he leads contracting with Engineering, Procurement, and Construction partners and oversees EPC management for the company's project portfolio. Prior to joining BrightNight, he served as Senior Vice President of Construction at National Renewable Solutions, LLC and previously led offshore wind construction at Avangrid Renewables, LLC. His background includes more than a decade of overseeing engineering and construction for onshore wind and solar projects, as well as direct experience working for EPC contractors.

Logan Granger, Chief Technical Officer: Logan is a seasoned renewable energy leader with over 20 years of experience spanning architecture, construction, and clean energy development. He began his career as an architect in the design-build industry before transitioning to renewable energy in 2004. Since then, he has held key technical leadership roles at PowerLight, SunPower, and First Solar, contributing to the advancement of large-scale solar projects. At 8minutenergy, Logan played a pivotal role in getting the company's first utility-scale solar project into construction and commercial operation.

He later joined NRG Renewables, where he supported the development and construction of more than 5 GW of solar projects across the U.S. and in ten other countries. Most recently, Logan was a founding member of the leadership team at Clearway Energy Group, where he led Technical Services. Since 2018, he has helped drive the development, engineering, procurement, and construction of over 6 GW of wind, solar, and battery storage projects nationwide. Logan brings deep technical expertise and a proven track record of execution to our leadership team.

Arturo Alvarez, Senior Director, Project Development Engineering: Arturo is a solar energy professional with over 15 years of experience, including 10 years focused on development engineering. At BrightNight, he supports the project pipeline from preliminary design through construction execution. His background includes technical sales, mergers and acquisitions diligence, and standardization of design strategies for complex utility-scale projects. Prior to joining BrightNight, he served as Director of Development Engineering at Erthos, where he led technical teams in delivering innovative, sustainable energy solutions.

Radha Soorya, Senior Vice President, Transmission: Dr. Radha Soorya brings over 18 years of experience in the energy industry, with deep expertise in transmission strategy, regulatory policy, grid planning, and renewable development. Her background spans key areas including grid resiliency, interconnection planning, offshore wind, wholesale market design, and grid modernization. She has been a leading voice in advancing system reliability and innovation, with a strong track record of shaping policy and technical frameworks across multiple regions.

Prior to joining our team, Radha served as Vice President of Interconnection and Grid Analysis at Invenergy, where she led interconnection efforts across New York Independent System Operator, Pennsylvania-New Jersey-Maryland Interconnection, Southeastern Electric Reliability Council, and Independent System Operator-New England. In that role, she oversaw the successful integration of renewable and offshore wind projects, as well as High-Voltage Direct Current transmission infrastructure. Radha has also contributed to numerous industry committees and task forces in leadership roles, helping to drive forward reliability and planning standards nationwide. We’re excited to have her lead our transmission efforts.

Stefan Bird, President, Head of Origination: Stefan has over 30 years of experience in the energy sector, including 25 years in executive roles at Berkshire Hathaway Energy. His leadership spans utility operations, power generation, trading, development, and strategic growth initiatives, particularly across the Western U.S. At BrightNight, Stefan supports strategic planning and partnerships aligned with the company’s Western growth portfolio.

Previously, he served as President and Chief Executive Officer of Pacific Power, where he led service to over 800,000 customers and advanced renewable integration, interstate transmission expansion, and innovative customer programs. Stefan’s work includes the commercialization of over 3 GW of renewables, implementation of regional energy markets such as the Western Energy Imbalance Market, and leadership in major infrastructure projects. His early career includes international development roles with Koch Industries and co-founding one of the first U.S. power marketing firms.

Katy Falkenborg, Vice President, Asset Management: Katy has over 17 years' experience managing renewable energy portfolios across solar, renewable natural gas, combined heat and power, and biomass technologies. At BrightNight, Katy leads asset management strategies to optimize project performance and long-term value.

Prior to joining BrightNight, Katy served as Head of Asset Management at IHI Power Services Corp., where she led a growing team overseeing multiple renewable portfolios, onboarding 1.35 GW of utility-scale solar projects and guiding the first 400 MW through Commercial Operations Date. She also managed two biomass-to-electricity plants and directed government affairs.

Previously, as Director of Asset Management at Brightmark, Katy was responsible for the profit and loss of seven renewable natural gas plants and a combined heat and power facility, implementing operational processes across assets. At Canadian Solar, she managed 500 MW of utility-scale solar assets, supporting project finance efforts that yielded over $90 million in capital from project sales. She also helped establish Canadian Solar's asset management presence in Australia and expand its third-party services portfolio.

3.2.5 FINANCE AND LEGAL

David Grigsby, Chief Accounting Officer: David has over 28 years of accounting and finance experience, with over 25 of those years in the energy industry, including renewables. David holds a Master of Business Administration in Finance from the University of St. Thomas, and a bachelor's degree in accounting from Oklahoma State University, where he currently serves on the Accounting Advisory Board. David has also held a Certified Public Accountant license since 1996.

Before joining BrightNight, David spent 25 years at ENGIE (formerly known as GDF Suez) in many roles including Chief Accounting Officer, Corporate Controller, Controller for Generation Business Unit, and Controller of Commodity Trading Business Unit. This tenure included leadership roles across various finance functions during the growth and maturity of the ENGIE North America region including many material acquisitions and divestitures, restructurings, and finance transformation projects. Prior to his tenure with ENGIE, he worked as an audit senior for Deloitte & Touché in Oklahoma City, executing audits of a wide range of industries.

Jatin Gupta, Chief Investment Officer: Jatin brings over 20 years of investment experience in renewable energy and infrastructure industries acquired as a principal investor and an investment banker. Prior to joining BrightNight, Jatin was a managing director at Rubicon Capital Advisors Inc., focusing on mergers and acquisitions, corporate finance, project finance, and tax equity transactions across the energy spectrum. Before Rubicon, Jatin was a senior vice president at GE Energy Financial Services, where he closed over $5 billion in investments across power, renewable, and oil & gas. He joined GE Energy Financial Services as a founding member of the cleantech venture capital practice and worked across project development, asset management, and principal investments during his tenure.

Duane Duclaux, General Counsel: Duane is an industry-leading legal expert with a focus on advising clients to secure opportunities and mitigate risks associated with developing, owning and operating merchant electric generation projects in the U.S. and abroad and assisting those clients to participate in the competitive markets for electric power and other energy commodities. As

BrightNight's General Counsel, Duane supports the execution of commercial contracts, evaluates opportunities in new markets and products, and helps to enhance BrightNight's global operations.

Prior to joining BrightNight, Duane served as Deputy General Counsel at Castleton Commodities International, LLC for 15 years. Over the course of his tenure, Duane provided legal support to Castleton Commodities International, LLC. U.S. and international commodity trading desks with particular emphasis on participation in the U.S. electricity and capacity markets and electric generation project acquisition and support. Earlier in his career, Duane served as Senior Counsel at Dominion Resources Inc., supporting its unregulated electric power and natural gas activities. Duane began his legal career in the Washington, D.C. office of Thelen, Reid & Priest LLP practicing in support of clients involved in the rapidly changing markets for electric generation and other energy infrastructure projects as the result of evolving regulatory policies during the deregulation of energy markets as the result of Federal Energy Regulatory Commission Orders 888 and 636.

3.3 QUALIFICATIONS OF KNOWN CONTRACTORS

OAR 345-022-0010(5)(b)(C) The qualifications of any architect, engineer, major component vendor, or prime contractor upon whom the applicant will rely in constructing and operating the facility, to the extent that the identities of such persons are known when the application is submitted.

The Applicant has not yet selected an EPC for the Facility construction or operation; however, BrightNight has a robust record of engaging, contracting, and delivering complex energy projects with leading EPC contractors in the construction, operation, and maintenance of solar and BESS projects. BrightNight's approach is grounded in rigorous partner selection, practical project management, and a consistent focus on safety, quality, and on-time outcomes. The Applicant will follow a rigorous EPC selection process to select qualified contractors with well-documented experience and proven industry track records of successfully constructing and operating other solar and BESS projects. BrightNight selects EPC partners through a competitive bid process, typically involving 3 to 5 qualified bidders depending on market dynamics and project geography. Key evaluation metrics include:

- Scope of work and technical capability
- Safety risk (screened and verified via Avetta)
- Credit risk and financial health
- Geotechnical risk analysis
- Provisions for liquidated damages
- Force majeure and weather risk mitigation
- Favorable commercial terms
- Schedule and design approach

As discussed in Section 3.1, BrightNight has fully contracted and delivered Box Canyon to COD with an EPC partner. Additionally, two other projects are fully contracted and expected to begin construction by end of 2025, and three projects have completed the EPC Request for Proposal stage and are in active negotiations. BrightNight has either contracted with or is in the process of

negotiating EPC contracts with Blattner Energy, Gridworks, LLC, PCL Solar Constructors USA, Inc., and Signal Energy Constructors.

3.4 APPLICANT'S PAST PERFORMANCE

(D) The past performance of the applicant, including but not limited to the number and severity of any regulatory citations in constructing or operating a facility, type of equipment, or process similar to the proposed facility.

BrightNight has maintained a strong compliance record throughout its history, as evidenced by the absence of any regulatory citations pertaining to the construction or operation of its ten permitted facilities. BrightNight assigns an experienced Lead Asset Manager to each project. This person has overall responsibility for ensuring operational compliance. The Lead Asset Manager is supported by a structured team and systems, including:

- BrightNight Legal Department – Maintains a Compliance Matrix and obligations tracking to ensure contractual, regulatory, and permitting requirements are monitored and met.
- BN PowerAlpha – BrightNight's proprietary performance management and analytics platform, which provides advanced monitoring to track compliance-related performance indicators.
- Operational Technology Security & NERC GO Program – Managed compliance services provided by third-party subject matter experts to ensure adherence to cybersecurity and North American Electric Reliability Corporation standards.
- BrightNight O&M Manager – Oversees the third-party O&M provider, conducting regular site inspections and compliance monitoring.
- Third-Party O&M Provider – Has direct site control and is responsible for maintaining site compliance, including access protocols, safety programs, and CIP (Critical Infrastructure Protection) requirements.
- BrightNight Environmental Compliance Manager – Ensures the project complies with BrightNight's Environmental Compliance Program and regulatory requirements.
- Safety Compliance Manager – An independent third-party subject matter expert responsible for monitoring and verifying full implementation of BrightNight's safety program, with results regularly reported back to BrightNight.

3.5 MITIGATION

(G) If the applicant relies on mitigation to demonstrate compliance with any standards of Division 22 or 24 of this chapter, evidence that the applicant can successfully complete such proposed mitigation, including past experience with other projects and the qualifications and experience of personnel upon whom the applicant will rely, to the extent that the identities of such persons are known at the date of submittal.

The Applicant will rely on mitigation to ensure compliance with OAR Division 22, as outlined in the relevant exhibits. Example mitigation experience includes BrightNight's 300 MW Box Canyon Solar Project in Pinal County, Arizona, where nesting birds were avoided during construction and 15

native saguaros were safely removed from the project site and successfully transplanted to burn scarred areas of the region[1]. Example photographs from this project are presented in Attachment 2. Other mitigation experience includes development of a Habitat Mitigation Plan for the Tualatin BESS project in Washington County, Oregon; this mitigation plan was required to permit the project's generation-tie line, and the mitigation plan is included in Attachment 2. In addition, BrightNight's project team has significant mitigation experience, with collectively having over forty years of experience developing and implementing mitigation concepts, agreements, and plans. Brief biographies of BrightNight's mitigation experts, Kevin Martin and Todd Ellwood, are included in Sections 3.2.2 and 3.2.3.

For the Facility, BrightNight is partnering with Environmental Resources Management, Inc. (ERM) and their qualified biologists, wetland scientists, and planners in the Pacific Northwest. The ERM team supporting BrightNight has experience developing and successfully implementing mitigation plans and their curriculum vitae along with example habitat mitigation plans developed by ERM are included in Attachment 3. ERM's Pacific Northwest team has designed and implemented mitigation plans specific to Oregon for impacts on jurisdictional waters and wetlands and impacts on biological resources. Examples of ERM's mitigation experience include development of the Tualatin Habitat Mitigation Plan referenced above and provided in Attachment 2, and the Quality Technology Services Data Center Project perennial stream mitigation and the Quincy Valley Solar Shrubsteppe habitat mitigation plan, provided in Attachment 3. These projects include assessment, avoidance, minimization measures, alternative analyses, agency coordination, assessment of available mitigation options, implementation, and post construction monitoring. For example, the Quality Technology Services Data Center Project perennial stream mitigation included widening an existing culvert, and improving flood resilience, fish passage and habitat, and stream health. ERM also worked with the Washington Department of Fish and Wildlife to develop the Quincy Valley Solar Shrubsteppe habitat mitigation plan, designed to protect shrubsteppe habitat by revegetating disturbed areas, preserving non-disturbed areas, and designing solar panels to allow vegetation beneath the arrays to receive sunlight.

4. PERMITS REQUIRED

4.1 IDENTIFICATION AND DESCRIPTION OF REQUIRED PERMITS

OAR 345-022-0010(5)(c) Information about permits needed for construction and operation of the facility, including:

(A) Identification of all federal, state and local government permits related to the siting of the proposed facility, a legal citation of the statute, rule or ordinance governing each permit, and the name, mailing address, email address and telephone number of the agency or office responsible for each permit;

(B) A description of each permit, the reasons the permit is needed for construction or operation of the facility and the applicant's analysis of whether the permit should or should not be included in and governed by the site certificate.

[1] A habitat mitigation plan was not required for the Box Canyon Solar project.

4.1.1 FEDERAL PERMITS

Table 2 identifies and describes federal permits required for the construction and operation of the Facility, as required to meet OAR 345-022-0010(5)(c) paragraphs (A) and (B).

TABLE 2 FEDERAL PERMITS

Permit	Agency	Authority/Description
Clean Water Act, Section 404	U.S Army Corps of Engineers, Portland District Attn: Trey Fraley, Project Manager P.O. Box 2946 Portland, OR 97208-2946 (503) 808-4632 Robert.H.Fraley@usace.army.mil	Clean Water Act, Section 404 (33 USC § 1344); 33 CFR §§ 320, 323, 325-28, and 330 Description: Coverage under one or more Section 404 Nationwide Permits will be required if there will be dredge or fill in federally jurisdictional Waters of the United States. This federal permit is not within the jurisdiction of EFSC and should not be included in the site certificate.
Notice of Proposed Construction or Alteration (Form 7460.1)	Federal Aviation Administration Attn: Dan Shoemaker Airspace Specialist Seattle Obstruction Evaluation Group 1601 Lind Ave SW Renton, WA 98057 (425) 227-2791 Dan.Shoemaker@faa.gov	Federal Aviation Act of 1958 (14 USC § 44718); 14 CFR § 77 Description: The Applicant's proposed construction or alterations may affect navigable airspace with potential glare from the Facility's solar arrays. The Applicant may also build structures within specified distances of airports. As such, the Applicant may be required to file this notice or perform a Glint and Glare analysis. No permit is issued by the Federal Aviation Administration. This federal process is not within the jurisdiction of EFSC and therefore should not be included in the site certificate.
Supplemental Notice of Actual Construction or Alteration (Form 7460-2)	Federal Aviation Administration Attn: Dan Shoemaker Airspace Specialist Seattle Obstruction Evaluation Group 1601 Lind Ave SW Renton, WA 98057 (425) 227-2791 Dan.Shoemaker@faa.gov	Federal Aviation Act of 1958 (14 USC § 44718); 14 CFR § 77 Description: If a Notice of Proposed Construction or Alteration with the Federal Aviation Administration is required, then a Supplemental Notice of Actual Construction or Alteration form must be filed within 5 days after construction reaches

Permit	Agency	Authority/Description
		its greatest height (as specified in the No Hazard Determination). This federal process is not within the jurisdiction of EFSC and therefore should not be included in the site certificate.
Record of Decision/ National Environmental Policy Act Compliance	Bonneville Power Administration Attn: Eric Taylor, Customer Manager PO Box 3621 Portland, OR 97208-3621 (360) 619-6014 ektaylor@bpa.gov	National Environmental Policy Act, Section 102 (42 USC § 4332); 40 CFR § 1500 Description: Interconnection to Bonneville Power Administration's transmission system is subject to National Environmental Policy Act review. Bonneville Power Administration will lead this process, separately from the solar facility site certificate process. This federal process is not within the jurisdiction of EFSC and therefore should not be included within the site certificate.
Use Authorization Permit/Easement Encroachment Permit	U.S. Bureau of Reclamation Attn: David Weidinger Field Office Manager Bend Field Office 1375 SE Wilson Ave, Suite 100 Bend, OR 97702-1435 (541) 381-6541 pninfo@usbr.gov	43 CFR § 429 Description: The Juniper Flat District Improvement Company manages an irrigation district within the site boundary, which is part of the Wapinitia Project. The Wapinitia Project is a Bureau of Reclamation water storage and irrigation project, and an easement or encroachment authorization may be required. This federal process is not within the jurisdiction of EFSC and therefore should not be included in the site certificate.

Notes: CFR = Code of Federal Regulations, EFSC = Energy Facility Siting County, USC = United States Code

4.1.2 STATE PERMITS NOT FEDERALLY DELEGATED

Table 3 identifies and describes state permits required for the construction and operation of the Facility, as required to meet OAR 345-022-0010(5)(c) paragraphs (A) and (B).

TABLE 3 STATE PERMITS NOT FEDERALLY DELEGATED

Permit	Agency	Authority/Description
Final Order and Site Certificate	Oregon Department of Energy and Energy Facility Siting Council	ORS 469.300 et seq.; OAR Chapter 345, Divisions 1, 21-24

Permit	Agency	Authority/Description
	Attn: Todd Cornett 550 Capitol Street NE Salem, OR 97301 503-428-2962 Todd.Cornett@energy.oregon.gov	Description: The Oregon Department of Energy administers the EFSC facility siting process, which consolidates state agency and local government regulations into a single review process. State agencies and local governments participate throughout the process. Through EFSC, the Oregon Department of Energy will issue a Final Order and Site Certificate. The Site Certificate is a binding agreement between the State of Oregon and the Applicant, authorizing the Applicant to construct and operate a facility on an approved site, incorporating all conditions imposed by the Council on the approved facility.
State Electrical Permit	Oregon Department of Consumer & Business Services, Building Codes Division Building Codes Division 2705 East 2nd Street The Dalles, OR 97058 (541) 506-2650	OAR 918, Division 309 Description: A state electrical permit is required prior to the installation of electric, phone, or cable service to the operations and maintenance building or the Facility substation. Electrical permits may be obtained in person at the Building Codes Division, or online through the state's e-permitting system (available at: https://aca-oregon.accela.com/oregon/Default.aspx) A state electrical permit will be obtained by the construction contractor prior to construction of each component for which electrical, phone, or cable service would be required and therefore should not be included in or governed by the site certificate.
On-Site Sewage Disposal Construction-Installation Permit	Oregon Department of Environmental Quality Wasco-Sherman Public Health Department Attn: Glenn Pierce Wasco-Sherman Public Health Department 419 East 7th Street The Dalles, OR 97058-2607 Glennp@co.wasco.or.us (541) 506-2601	ORS 454 and 468B; OAR Chapter 340, Divisions 71 Description: Facilities with on-site sewage disposal system must obtain a Construction-Installation Permit before construction. The operations and maintenance facility may require an on-site sewage disposal system for operations. The Applicant's third-party contractor will obtain from the Oregon DEQ a Construction-Installation Permit. Therefore, this permit should not be included in or governed by the site certificate.
General Water Pollution Control	Oregon Department of Environmental Quality, Eastern Region	ORS 468B; OAR Chapter 340, Division 45

Permit	Agency	Authority/Description
Facilities Permit, WPCF-1700-B	Attn: Jeff Navarro Water Quality Program Analysis 400 E Scenic Drive, Suite 307 The Dalles, OR 97058 (503) 229-5257 Navarro.Jeffrey@deq.state.or.us	A third-party contractor that washes the solar panels, may seek coverage under the WPCF-1700-B permit from Oregon DEQ following completion of construction and before initiating any washing activities if the activities will result in discharge to surface waters. Therefore, this permit should not be included in or governed by the site certificate.
Water Right Permit or Water Use Authorization	Oregon Water Resources Department Water Rights Section District 5 Attn: Greg Silbernagel 116 SE Dorion Ave Pendleton, OR 97801 (541) 278-5456 Greg.M.Silbernagel@wrd.state.or.us	ORS 537; OAR 690 Divisions 310, 340, 410 and 502 Description: Applicant is in the process of analyzing available water supplies and conditions within the project area. Construction needs may be addressed through a temporary license or transfer from existing water rights within the project area or through municipal service, and operation needs would likely be addressed through an exempt well limited to 5,000 gallons per day.
General Water Pollution Control Facilities (WPCF) Permit, WPCF-1000, Gravel Mining and Batch Plant	Oregon Department of Environmental Quality Attn: Krista Ratliff Stormwater Specialist 475 NE Bellevue Drive, Suite 110 Bend, OR 97701 (541) 633-2033 ratliff.krista@deq.state.or.us	OAR 468B; OAR Chapter 340, Divisions 40, 41, 44, 45, 52 Description: A WPCF-1000 permit authorizes the permittee to operate a wastewater collection, treatment, control, and disposal system for sand, gravel, and other nonmetallic mineral quarrying and mining operations, including asphalt-mix batch plants, concrete batch plants, and other related activities. A determination will be made by the construction contractor prior to construction as to whether a temporary batch plant is needed for Facility construction, and if so, the contractor will obtain the permit from ODEQ. Therefore, this permit should not be included in and governed by the site certificate.
Oversize Load Movement Permit/Load Registration	Oregon Department of Transportation Attn: Christy Jordan Motor Carriers Transportation Division 355 Capitol Street NE, MS 11 Salem, OR 97301 (971) 201-6958 Christy.A.Jordan@odot.oregon.gov	ORS 818.030; OAR Chapter 734, Division 82 Description: Authorization for oversized loads. Moving construction cranes and other equipment and materials may require this permit. If needed, the Applicant's third-party contractor will obtain this permit and load registration from the ODOT; therefore, this permit

Permit	Agency	Authority/Description
		should not be included in or governed by the site certificate.
Access Management Permit	Oregon Department of Transportation Attn: Access Management Unit 4040 Fairview Industrial Drive SE Salem, Oregon 97302 (503) 986-3632 Peter.V.Ignatovich@odot.oregon.gov	OAR Chapter 734, Division 51 Description: Access from Oregon state highways would require an access permit, which may be issued by the local ODOT District Offices. The Applicant's third-party contractor will obtain this permit from the ODOT; therefore, this permit should not be included in or governed by the site certificate.
Permit to Occupy or Perform Operations Upon a State Highway	Oregon Department of Transportation Attn: ODOT Utility and Miscellaneous Permit Specialist ODOT District 9 3313 Bret Clodfelter Way The Dalles, OR 97058 (541) 296-2215	OAR Chapter 734, Division 55 (Pole Lines, Buried Cables, and Miscellaneous Operations) Description: Utility installations within the right-of-way of a state highway in Oregon require a permit issued by the ODOT. If needed, the Applicant's third-party contractor will obtain this permit from the ODOT; therefore, this permit should not be included in or governed by the site certificate.
Archaeological Excavation Permit	Oregon Parks and Recreation Department, State Historic Preservation Office Attn: John Pouley 725 Summer Street NE, Suite C Salem, OR 97301 (503) 986-0577 John.Pouley@oregon.gov	ORS Chapter 97, 358, and 390; OAR Chapter 736, Division 51 Description: Ground-disturbing activity that may affect a known or unknown archaeological resource on public or private lands requires a state permit. If needed, the Applicant will obtain the permit through the site certificate. If there is a discovery during construction that requires a permit, then one will be obtained with the State Historic Preservation Office.
Removal-Fill Permit	Oregon Department of State Lands Attn: Richard Fitzgerald, Aquatic Resource Coordinator 951 SW Simpson Ave, Ste 104 Bend, OR 97702 (503) 910-4565 richard.w.fitzgerald@dsl.oregon.gov	OAR Chapter 141, Division 85 Description: Ground-disturbing activities in certain wetlands and rivers, streams, lakes, or other waters not subject to federal jurisdiction requires a removal-fill permit. If needed, the Applicant will obtain the permit through the site certificate.
Fish Passage Plan Approval	Oregon Department of Fish and Wildlife Attn: Fish Passage Coordinator 4034 Fairview Industrial Dr. SE	OAR Chapter 635, Division 412; ORS Chapter 509 Description: New or modified crossings of streams with fish presence requires

Permit	Agency	Authority/Description
	Salem, OR 98302 (503) 947–6256 fish.passage@odfw.oregon.gov	passage plan approval. If needed, the Applicant will obtain the permit through the site certificate.

Notes: CFR = Code of Federal Regulations, EFSC = Energy Facility Siting Council, OAR = Oregon Administrative Rules, DEQ = Department of Environmental Quality, ODOT = Oregon Department of Transportation, ORS = Oregon Revised Statutes.

4.1.3 STATE PERMITS FEDERALLY DELEGATED

Table 4 identifies and describes state permits that have been delegated by the federal government that may be required for the construction and operation of the Facility to meet OAR 345-022-0010(5)(c) paragraphs (A) and (B).

TABLE 4 STATE PERMITS FEDERALLY DELEGATED

Permit	Agency	Authority/Description
401 Water Quality Certification	Oregon Department of Environmental Quality Attn: Jeff Navarro Water Quality Program Analysis 400 E Scenic Drive, Suite 307 The Dalles, OR 97058 (503) 229-5257 Navarro.Jeffrey@deq.state.or.us	Clean Water Act, Section 401 (33 USC § 1341); OAR Chapter 340, Division 48 Description: Water quality certification is required for projects that are processed under the U.S. Army Corps of Engineers Section 404 Nationwide Permits. If the Facility requires coverage under Section 404 of the Clean Water Act, the Applicant will obtain this certification directly from Oregon DEQ as it is a federally delegated authority. The 401 certification is outside EFSC's jurisdiction and should not be included in or governed by the site certificate.
National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Discharge Permit 1200-C	Oregon Department of Environmental Quality Attn: Jeff Navarro Water Quality Program Analysis 400 E Scenic Drive, Suite 307 The Dalles, OR 97058 (503) 229-5257 Navarro.Jeffrey@deq.state.or.us	Clean Water Act, Section 402 (33 USC § 1342); 40 CFR § 122; ORS 468 and 468B; OAR Chapter 340, Division 45 Description: NPDES 1200-C permit coverage is required for construction activities that will disturb one or more acres of land. The NPDES 1200-C Permit is a federally delegated permit to Oregon DEQ. The Applicant's construction contractor will obtain this coverage directly from Oregon DEQ. Therefore, this permit should not be included in or governed by the site certificate.
NPDES Stormwater and Mine Dewatering Discharge Permit 1200-A	Oregon Department of Environmental Quality Attn: Krista Ratliff Stormwater Specialist 475 NE Bellevue Drive, Suite 110 Bend, OR 97701 (541) 633-2033 ratliff.krista@deq.state.or.us	ORS 468B.050, OAR Chapter 340, Division 45 Description: The NPDES 1200-A Permit is a federally delegated permit to Oregon DEQ for stormwater discharge to surface waters from concrete batch plants. A determination will be made by the construction contractor prior to construction as to whether a temporary batch plant is needed for Facility construction, and if so, the contractor will obtain the permit

Permit	Agency	Authority/Description
		from ODEQ. Therefore, this permit should not be included in and governed by the site certificate.
Air Contaminant Discharge Permit (ACDP)	Oregon Department of Environmental Quality Attn: Eastern Region Air Quality Permit Coordinator 400 E Scenic Drive, Suite 307 The Dalles, OR 97058 (541) 633-2021 eraqpermits@deq.oregon.gov	CFR Parts 50, 51, and 52; ORS Chapters 468 and 468A; OAR Chapter 340, Division 216 Description: The ACDP is a federally delegated permit to Oregon DEQ that may be required for each concrete batch plant. Depending on the expected annual output of each facility, either a Basic (between 5,000 and 25,000 cubic yards) or General (greater than 25,000 cubic yards) ADCP may be required. A determination will be made by the construction contractor prior to construction as to whether a temporary batch plant is needed for Facility construction, and if so, the contractor will obtain the permit from ODEQ. Therefore, this permit should not be included in and governed by the site certificate.

Notes: DEQ = Department of Environmental Quality

4.1.4 LOCAL PERMITS

Table 5 identifies and describes local permits that are required for the construction and operation of the Facility, as required to meet OAR 345-022-0010(5)(c) paragraphs (A) and (B).

TABLE 5 LOCAL PERMITS

Permit	Agency	Authority/Description
Conditional Use Permit and Zoning Permit	Wasco County Planning Department Attn: Daniel Dougherty, Planning Director 2705 East 2nd Street The Dalles, OR 97058 (541) 506-2560 DanielD@co.wasco.or.us	WCLUDO Section 3.210, Exclusive Farm Use Zone; WCLUDO Chapter 5, Conditional Use Review; WCLUDO Chapter 20, Site Plan Review Description: The Applicant elects to obtain an EFSC determination under ORS Chapter 469.504(1)(b). Under ORS 469.401(3), following issuance of the site certificate, the County, upon the Applicant's submission of the proper

Permit	Agency	Authority/Description
		application and fee, shall issue the permits addressed in the site certificate, subject only to the conditions set forth in the site certificate and without hearings or other proceedings. This permit should be included in and governed by the site certificate.
Floodplain Development Permit	Wasco County Planning Department Attn: Daniel Dougherty, Planning Director 2705 East 2nd Street The Dalles, OR 97058 (541) 506-2560 DanielD@co.wasco.or.us	WCLUDO Section 3.710, Flood Hazard Overlay Zone (OZ-1) Description: A Floodplain Development Permit is required for any development activities located inside identified Areas of Special Flood Hazards. Because Applicant has opted to obtain an EFSC determination under ORS 469.504(1), this local development permit should be included in and governed by the site certificate, like the CUP and zoning permit.
Building Permit for Construction in Wasco County	Oregon Department Consumer and Business Services, Building Codes Division 1535 Edgewater Street NW Salem, OR 97304 (503) 378-4133 dcbs.info@dcbs.oregon.gov	OAR 734, Division 51 Description: A Building Permit is required prior to beginning construction of the Project. Wasco County does not have its own building department, so building permits are issued by the Oregon State Building Codes Division. The building permit is not subject to the site certificate.
Utility Crossing Permit and Access Approach Site Permit	Wasco County Public Works Department Attn: Arthur Smith, Public Works Director 2705 East 2nd Street The Dalles, OR 97058 (541) 506-2645 ArthurS@co.wasco.or.us	ORS 374.305 to 374.325 Description: A Utility Crossing Permit is required any time a utility is constructed within or across a county road right-of-way. An Approach Site Permit will be required for each location where Facility access roads intersect with county roads, or if necessary, upgrades to existing access roads affect a county road.
Road Use Agreement	Wasco County Public Works Department Attn: Arthur Smith, Public Works Director	WCLUDO Chapter 19.030 Standards for Energy Facilities

Permit	Agency	Authority/Description
	2705 East 2nd Street The Dalles, OR 97058 (541) 506-2645 ArthurS@co.wasco.or.us	Per WCLUDO Chapter 19.030.C.10, the Applicant is required to enter into a Road Use Agreement with the County to ensure that potential damage to county roads caused by construction is repaired by the Applicant.

Notes: Applicant = DECH bn, LLC, EFSC = Energy Facility Siting Council, OAR = Oregon Administrative Rules, ORS = Oregon Revised Statutes, WCLUDO = Wasco County Land Use and Development Ordinance

4.2 PERMIT APPLICATIONS NOT FEDERALLY DELEGATED

OAR 345-022-0010(5)(c)(C) For any state or local government agency permits, licenses or certificates that are proposed to be included in and governed by the site certificate, evidence to support findings by the Council that construction and operation of the proposed facility will comply with the statutes, rules and standards applicable to the permit. For permits related to wetlands and water rights the applicant may show this evidence in the State and Local Laws and Regulations Exhibit.

The Applicant seeks to include the County conditional use permit, zoning permit, and floodplain development permit in the site certificate and possibly the DSL removal/fill permit if one is required. All other state or local permits, licenses or certifications will be issued to a third party. Evidence to supporting findings for the requested County approvals is included in the Land Use Exhibit. Evidence to support findings for the DSL removal/fill permit is included in the State and Local Laws and Regulations Exhibit.

4.3 PERMIT APPLICATIONS FEDERALLY DELEGATED

OAR 345-022-0010(5)(c)(D) For federally-delegated permit applications, evidence that the responsible agency has received a permit application and the estimated date when the responsible agency will complete its review and issue a permit decision;

The Applicant will obtain a Section 401 Water Quality Certification concurrently with the Clean Water Act, Section 404 permit from USACE. This application will be submitted for review after the application for site certificate is completed and the permit will be obtained prior to the Facility beginning construction activity.

All other identified federally-delegated permits will be obtained by the Applicant's construction contractor. Anticipated application and review schedules are discussed in Section 4.5.

4.4 THIRD PARTY STATE OR LOCAL PERMITS

OAR 345-022-0010(5)(c)(E) If the applicant relies on a state or local government permit or approval issued to a third party, identification of any such third-party permit and for each:

i. Evidence that the applicant has, or has a reasonable likelihood of entering into, a contract or other agreement with the third party for access to the resource or service to be secured by that permit.

Potential third-party state or local permits are listed below in Table 6. The Applicant's construction contractor will obtain the required permits as needed for construction and operation of the Facility. As discussed in Section 3.3, the Applicant is experienced delivering complex energy projects with leading EPC contractors in the construction, operation, and maintenance of solar and BESS projects. The Applicant will undergo a rigorous contractor selection process to select qualified contractors with experience constructing similar facilities and demonstrated experience obtaining the required permits. To qualify for selection, the EPC will be required to demonstrate their ability to obtain the required permits.

TABLE 6 POTENTIAL THIRD-PARTY STATE OR LOCAL PERMITS

Permit Name	Project Phase	Description
General Water Pollution Control Facilities Permit, Oregon DEQ	Construction	A general water pollution control facilities permit (WPCF-1000) may be required to manage wastewater and stormwater during the construction phase if the construction contractor intends to have an on-site batch plant. The construction contractor will decide prior to construction whether a temporary batch plant is needed for Facility construction, and if so, the contractor will obtain the permit from ODEQ. The Applicant will contract with a qualified contractor and require as a part of the EPC contract that contractor obtain the WPCF 1000 permit if one is needed.
Onsite Sewage Disposal Construction-Installation Permit, Oregon DEQ	Construction	An onsite sewage disposal construction installation permit will be required for the operations and maintenance building during construction. The septic system will serve the operation and maintenance building. The Applicant will contract with a qualified contractor and require as part of the EPC contract that the contractor obtain the Onsite Sewage Disposal Construction-Installation Permit.
Oversized Load Movement Permit/Load Registration, ODOT	Construction	An oversized land movement permit and load registration will be required for transporting large or overweight equipment to the site

Permit Name	Project Phase	Description
		over state roads. The Applicant will contract with a qualified contractor and require as part of the EPC contract that the contractor obtain the Oversized Load Movement Permit/Load Registration.
Access Management Permit, ODOT	Construction	An access management permit will be required for access to and use of Oregon state highways. The Applicant will contract with a qualified contractor and require as part of the EPC contract that the contractor obtain the Access Management Permit.
Permit to Occupy or Perform Operations Upon a State Highway, ODOT	Construction	A permit to occupy or perform operations upon a state highway will be required for utility installations within the right-of-way of a state highway (including pole Lines, Buried Cables, and other Miscellaneous Operations). The Applicant will contract with a qualified contractor and require as part of the EPC contract that the contractor obtain the Permit to Occupy or Perform Operations Upon a State Highway.
Water Right Permit or Water Use Authorization, Oregon Water Resources Department (OWRD)	Construction and Operation	A water rights permit or water use authorization is not likely to be required, however, will be obtained if needed for deriving water from existing or newly constructed on-site wells, or with landowners for temporary transfers off-site for the life of the project. The Applicant will contract with a qualified contractor and require as part of the EPC contract that the contractor obtain the Water Right Permit or Use Authorization.

OAR 345-022-0010(5)(c)(E)(ii) Evidence that the third party has, or has a reasonable likelihood of obtaining, the necessary permit.

Applicant will work with contractors familiar with the requirements applying to the construction and operation of renewable energy facilities, with knowledge of the requirements of such permits, and with demonstrated experience obtaining such permits.

(iii) An assessment of the impact of the proposed facility on any permits that a third party has obtained and on which the applicant relies to comply with any applicable Council standard.

The Applicant is not relying on any permits that a third party has obtained to comply with any applicable Council standard.

4.5 THIRD PARTY FEDERALLY DELEGATED PERMITS

OAR 345-022-0010(5)(c)(F) If the applicant relies on a federally-delegated permit issued to a third party, identification of any such third-party permit and for each:

- *ii. Evidence that the applicant has, or has a reasonable likelihood of entering into, a contract or other agreement with the third party for access to the resource or service to be secured by that permit.*
- *iii. Evidence that the responsible agency has received a permit application.*
- *iv. The estimated the date when the responsible agency will complete its review and issue a permit decision.*

The Applicant's construction contractor will apply for and obtain the NPDES permit 1200-C from the Oregon DEQ as it is not included within EFSC's jurisdiction.

Establishment of temporary concrete batch plants may be required for construction at the Facility. If so, the Applicant may utilize a third party contractor to obtain a Basic Air Contaminant Discharge Permit (Clean Air Act [42 U.S.C. Section 7401 et seq.]; 40 CFR Parts 50, 51, and 52; ORS Chapters 468 and 468A; OAR Chapter 340, Division 216), as is typically required for construction of renewable energy facilities in Oregon to provide a source of concrete in the vicinity of the construction activities. A determination will be made by the construction contractor prior to construction as to whether a temporary batch plant is needed for Facility construction, and if so, the contractor will obtain the necessary permits prior to construction.

The Applicant will select a qualified contractor with experience in constructing similar facilities and demonstrated experience obtaining the required permits.

4.6 MONITORING

OAR 345-022-0010(5)(c)(G) The applicant's proposed monitoring program, if any, for compliance with permit conditions.

A monitoring program will be developed and implemented to monitor compliance with permit conditions in accordance with OAR 345-022-0010(5)(c)(G).

5. SUBMITTAL REQUIREMENTS AND APPROVAL STANDARDS

The Applicant has satisfied the standards for the Organizational Expertise Exhibit outlined in OAR 345-022-0010. Approval standards are summarized in Table 7.

TABLE 7 APPROVAL STANDARDS MATRIX

Approval Standard	Handling
OAR 345-022-0010 Organizational Expertise	

Approval Standard	Handling
(1) To issue a site certificate, the Council must find that the applicant has the organizational expertise to construct, operate and retire the proposed facility in compliance with Council standards and conditions of the site certificate. To conclude that the applicant has this expertise, the Council must find that the applicant has demonstrated the ability to design, construct and operate the proposed facility in compliance with site certificate conditions and in a manner that protects public health and safety and has demonstrated the ability to restore the site to a useful, non-hazardous condition. The Council may consider the applicant's experience, the applicant's access to technical expertise and the applicant's past performance in constructing, operating and retiring other facilities, including, but not limited to, the number and severity of regulatory citations issued to the applicant.	Sections 2-6
(2) The Council may base its findings under section (1) on a rebuttable presumption that an applicant has organizational, managerial and technical expertise, if the applicant has an ISO 9000 or ISO 14000 certified program and proposes to design, construct and operate the facility according to that program.	The Applicant does not have an ISO 9000 or ISO 14000 certified program, and therefore, this requirement is not applicable.
(3) If the applicant does not itself obtain a state or local government permit or approval for which the Council would ordinarily determine compliance but instead relies on a permit or approval issued to a third party, the Council, to issue a site certificate, must find that the third party has, or has a reasonable likelihood of obtaining, the necessary permit or approval, and that the applicant has, or has a reasonable likelihood of entering into, a contractual or other arrangement with the third party for access to the resource or service secured by that permit or approval.	The Applicant obtained a state permit, and therefore, this requirement is not applicable.
(4) If the applicant relies on a permit or approval issued to a third party and the third party does not have the necessary permit or approval at the time the Council issues the site certificate, the Council may issue the site certificate subject to the condition that the certificate holder shall not commence construction or operation as appropriate until the third party has obtained the necessary permit or approval and the applicant has a contract or other arrangement for access to the resource or service secured by that permit or approval.	The Applicant does not rely on a permit issued to a third party, and therefore, this requirement is not applicable.
(5) To assist the Council in determining whether the standard outlined in (1) through (4) has been met, the Applicant must submit: (a) Information about the applicant and participating persons, including:	
(A) The name and address of the applicant including all co-owners of the proposed facility, the name, mailing address, email address and telephone number of the contact person for the application, and if there is a contact person other than the applicant, the name, title, mailing address, email address and telephone number of that person.	Section 2.1
(B) The contact name, mailing address, email address and telephone number of all participating persons, other than individuals, including but not limited to any parent corporation of the applicant, persons upon whom the applicant will rely for third-party permits or approvals related to the facility, and, if known,	Section 2.2 and Section 2.4

Approval Standard	Handling
other persons upon whom the applicant will rely in meeting any facility standard adopted by the Council.	
(C) If the applicant is a corporation: i. The full name, official designation, mailing address, email address and telephone number of the officer responsible for submitting the application; ii. The date and place of its incorporation; iii. A copy of its articles of incorporation and its authorization for submitting the application; and iv. In the case of a corporation not incorporated in Oregon, the name and address of the resident attorney-in-fact in this state and proof of registration to do business in Oregon.	The Applicant is not a corporation, and therefore, this requirement is not applicable.
(D) If the applicant is a wholly owned subsidiary of a company, corporation or other business entity, in addition to the information required by paragraph (C), the full name and business address of each of the applicant's full or partial owners.	Section 2.3
(E) If the applicant is an association of citizens, a joint venture or a partnership: i. The full name, official designation, mailing address, email address and telephone number of the person responsible for submitting the application; ii. The name, business address and telephone number of each person participating in the association, joint venture or partnership and the percentage interest held by each; iii. Proof of registration to do business in Oregon; iv. A copy of its articles of association, joint venture agreement or partnership agreement and a list of its members and their cities of residence; and v. If there are no articles of association, joint venture agreement or partnership agreement, the applicant must state that fact over the signature of each member.	The Applicant is not an association of citizens, a joint venture, or partnership, and therefore, this requirement is not applicable.
(F) If the applicant is a public or governmental entity: i. The full name, official designation, mailing address, email address and telephone number of the person responsible for submitting the application; and ii. Written authorization from the entity's governing body to submit an application.	The Applicant is not a public or governmental entity, and therefore, this requirement is not applicable.
(G) If the applicant is an individual, the individual's mailing address, email address and telephone number.	The Applicant is not an individual, and therefore, this requirement is not applicable.
(H) If the applicant is a limited liability company: i. The full name, official designation, mailing address, email address and telephone number of the officer responsible for submitting the application; ii. The date and place of its formation; iii. A copy of its articles of organization and its authorization for submitting the application; and iv. In the case of a limited liability company not registered in Oregon, the name and address of the resident	Section 2.4 and Attachment 1

Approval Standard	Handling
attorney-in-fact in this state and proof of registration to do business in Oregon.	
OAR 345-020-0010(5)(b) information about the organizational expertise of the applicant to construct and operate the proposed facility, including:	
(A) The applicant's previous experience, if any, in constructing and operating similar facilities.	Section 3.1
(A) The qualifications of the applicant's personnel who will be responsible for constructing and operating the facility, to the extent that the identities of such personnel are known when the application is submitted.	Section 3.2
(B) The qualifications of any architect, engineer, major component vendor, or prime contractor upon whom the applicant will rely in constructing and operating the facility, to the extent that the identities of such persons are known when the application is submitted.	Section 3.3
(C) The past performance of the applicant, including but not limited to the number and severity of any regulatory citations in constructing or operating a facility, type of equipment, or process similar to the proposed facility.	Section 3.4
(D) If the applicant has no previous experience in constructing or operating similar facilities and has not identified a prime contractor for construction or operation of the proposed facility, other evidence that the applicant can successfully construct and operate the proposed facility. The applicant may include, as evidence, a warranty that it will, through contracts, secure the necessary expertise.	The Applicant has previous experience (outlined in Section 2), and therefore, this requirement is not applicable.
(E) If the applicant has an ISO 9000 or ISO 14000 certified program and proposes to design, construct and operate the facility according to that program, a description of the program.	The Applicant does not propose to design, construct, or operate this project according to an ISO 9000 or ISO 14000 certified program.
(F) If the applicant relies on mitigation to demonstrate compliance with any standards of Division 22 or 24 of this chapter, evidence that the applicant can successfully complete such proposed mitigation, including past experience with other projects and the qualifications and experience of personnel upon whom the applicant will rely, to the extent that the identities of such persons are known at the date of submittal.	Section 3.5, Attachment 2
OAR 345-022-0010(5)(c) Information about permits needed for construction and operation of the facility, including:	
(A) Identification of all federal, state and local government permits related to the siting of the proposed facility, a legal citation of the statute, rule or ordinance governing each permit, and the name, mailing address, email address and telephone number of the agency or office responsible for each permit.	Section 4.1

Approval Standard	Handling
(B) A description of each permit, the reasons the permit is needed for construction or operation of the facility and the applicant's analysis of whether the permit should or should not be included in and governed by the site certificate.	Section 4.1
(C) For any state or local government agency permits, licenses or certificates that are proposed to be included in and governed by the site certificate, evidence to support findings by the Council that construction and operation of the proposed facility will comply with the statutes, rules and standards applicable to the permit. The applicant may show this evidence in the State and Local Laws and Regulations Exhibit.	Section 4.2
(D) For federally-delegated permit applications, evidence that the responsible agency has received a permit application and the estimated date when the responsible agency will complete its review and issue a permit decision.	
(E) If the applicant relies on a state or local government permit or approval issued to a third party, identification of any such third-party permit and for each: i. Evidence that the applicant has, or has a reasonable likelihood of entering into, a contract or other agreement with the third party for access to the resource or service to be secured by that permit; ii. Evidence that the third party has, or has a reasonable likelihood of obtaining, the necessary permit; iii. An assessment of the impact of the proposed facility on any permits that a third party has obtained and on which the applicant relies to comply with any applicable Council standard.	Section 4.4
(F) If the applicant relies on a federally-delegated permit issued to a third party, identification of any such third-party permit and for each: i. Evidence that the applicant has, or has a reasonable likelihood of entering into, a contract or other agreement with the third party for access to the resource or service to be secured by that permit; ii. Evidence that the responsible agency has received a permit application; iii. The estimated the date when the responsible agency will complete its review and issue a permit decision	Section 4.5
(G) The applicant's proposed monitoring program, if any, for compliance with permit conditions.	Section 4.6

ATTACHMENT 1 ARTICLES OF INCORPORATION

BrightNight Power, LLC
515 N Flagler Drive
Suite 250
West Palm Beach, FL 33401

October 6, 2025

Mr. Todd Cornett
Assistant Director, Energy Siting
Oregon Department of Energy
550 Capitol St. NE, 1st Floor
Salem, Oregon 97301

Re: Parent and Authorized Signature Letter for Deschutes Solar and BESS Project

Dear Mr. Cornett:

DECH bn, LLC ("Applicant") is filing an Application for Site Certificate ("ASC") for the Deschutes Solar and Battery Storage Project located in Wasco County, Oregon ("Facility"). Applicant is an indirect subsidiary and affiliate of BrightNight Power, LLC, a Delaware limited liability company ("BrightNight") and BrightNight is exclusively responsible for the development and construction of the Facility. I am providing this letter as testimony in support of Applicant's compliance with OAR 345-022-0010 (Organizational Expertise Standard).

As Chief Executive Officer of Applicant and BrightNight, I confirm that (i) the Applicant will have access to sufficient resources and (ii) BrightNight will provide the expert services required to construct, own, operate, and maintain the Facility. The necessary resources and services will be provided by BrightNight to the Applicant on terms and conditions that will ensure the safe and reliable construction and operation of the Facility.

With this letter I also confirm for the Department that the BrightNight employees listed in the ASC are authorized in their permitting and development roles to submit the ASC and supporting materials on behalf of the Applicant.

Thank you for your consideration, and please let BrightNight know if additional information is required to support the ASC.

Sincerely yours,

Martin Hermann (Oct 6, 2025 15:30:53 CDT)

Martin Hermann
Chief Executive Officer
BrightNight Power, LLC

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF FORMATION OF "BRIGHTNIGHT POWER, LLC", FILED IN THIS OFFICE ON THE FIRST DAY OF JULY, A.D. 2024, AT 12:01 O`CLOCK P.M.

Jeffrey W. Bullock, Secretary of State

4100472 8100
SR# 20243030769

Authentication: 203841402
Date: 07-01-24

You may verify this certificate online at corp.delaware.gov/authver.shtml

STATE OF DELAWARE
CERTIFICATE OF FORMATION
OF LIMITED LIABILITY COMPANY

The undersigned authorized person, desiring to form a limited liability company pursuant to the Limited Liability Company Act of the State of Delaware, hereby certifies as follows:

1. The name of the limited liability company is BrightNight Power, LLC.

2. The Registered Office of the limited liability company in the State of Delaware is located at 850 New Burton Road Suite 201 (street), in the City of Dover, Zip Code 19904. The name of the Registered Agent at such address upon whom process against this limited liability company may be served is Cogency Global Inc.

By: /s/ Duane K. Duclaux
Authorized Person

Name: Duane K. Duclaux
Print or Type

State of Delaware
Secretary of State
Division of Corporations
Delivered 12:01 PM 07/01/2024
FILED 12:01 PM 07/01/2024
SR 20243030769 - File Number 4100472

State of Oregon

OFFICE OF THE SECRETARY OF STATE
Corporation Division

Certificate of Existence 4622478

I, TOBIAS READ, SECRETARY OF STATE and Custodian of the Seal of said State, do hereby certify:

DECH BN, LLC

is

Authorized to Transact Business

under the laws of The State of Oregon

and is active on the records of the Corporation Division as of the date of this certificate.

In Testimony Whereof, I have hereunto set my hand and affixed hereto the Seal of the State of Oregon.

TOBIAS READ, SECRETARY OF STATE

Issued Date: 1/29/2025

Come visit us on the internet at: https://sos.oregon.gov/business or use the QR code to check their current status.

ATTACHMENT 2 BRIGHTNIGHT MITIGATION EXPERIENCE

Approved Habitat Mitigation Plan for the Tualatin BESS Project in Washington County, Oregon

Photos of saguaros relocation at the Box Canyon Solar Project in Pinal County, Arizona

One Beacon Street
5th Floor
Boston, MA, 02108

T +1 603 667 0682

erm.com

MEMO

TO	Maitreyee Sinha, Senior Planner
FROM	Alice Sandzén
DATE	28 August 2025
REFERENCE	S2500076
SUBJECT	FEMA Habitat Assessment and Mitigation Plan for Revised Type 1 Application for Development in the Floodplain in the EFU District

Dear Ms. Sinha:

Environmental Resources Management, Inc. (ERM), on behalf of the Applicant, TUAL bn, has prepared this Federal Emergency Management Agency (FEMA) Floodplain Habitat Assessment and Mitigation Plan to satisfy Washington County and FEMA requirements regarding floodplain development impacts on federally listed species under Endangered Species Act and National Flood Insurance Program standards.

This application was originally submitted on 26 March 2025 and payment was received by Washington County on 2 April 2025. On 30 April 2025, ERM received a Notice of Incomplete Application and the application was assigned Temporary Tracking Number S2500076. The revised application was submitted and received by Washington County on 23 June 2025. On 26 June 2025, Washington County notified the Applicant of new requirements associated with the Endangered Species Act and National Flood Insurance Program standards. The intent of this report is to satisfy those requirements as supplemental to the application.

Please feel free to contact me at alice.sandzen@erm.com or by phone at 603-667-0682 if you have any questions about this submittal.

Alice Sandzén

Floodplain Habitat Assessment and Mitigation Plan

Tualatin BESS Project

PREPARED FOR

BRIGHTNIGHT

DATE
27 August 2025

REFERENCE
0717214

SIGNATURE PAGE

Floodplain Habitat Assessment and Mitigation Plan

Tualatin BESS Project

0717214

Alice Sandzén
Partner-in-Charger

Kelly Kramer
Project Manager

ERM's Portland Office

Environmental Resources Management, Inc

1050 SW 6th Ave
Suite 1650
Portland, Oregon, 97204

T +1 503 488 5282

CONTENTS

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

Acronym	Description
Applicant	BrightNight
BESS	Battery Energy Storage System
BMPs	Best management practices
BrightNight	BrightNight U.S., LLC
ERM	Environmental Resources Management, Inc.
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
Gen-tie	Generation tie line
IPaC	Information for Planning and Consultation
ODFW	Oregon Department of Fish and Wildlife
PGE	Portland General Electric
Project	A lithium-ion battery energy storage facility capable of storing and delivering up to 400 megawatts of electric energy and associated ancillary services within Washington County, Oregon
Project Action Area	The extent of construction within the FEMA one percent annual chance floodplain
TESC	Temporary erosion and sediment control
USFWS	United States Fish and Wildlife Service

EXECUTIVE SUMMARY

TUAL bn, LLC (TUAL or Applicant), a subsidiary of BrightNight U.S., LLC, is proposing to construct, own, and operate the Tualatin Battery Energy Storage System Project in Washington County, Oregon. The BESS Project will construct a lithium-ion battery energy storage facility capable of storing and delivering up to 400 megawatts of electric energy and associated ancillary services to Portland General Electric network through the existing Sherwood Substation.

Environmental Resources Management, Inc. has prepared this Federal Emergency Management Agency (FEMA) Floodplain Habitat Assessment and Mitigation Plan to satisfy Washington County and FEMA requirements regarding floodplain development impacts on federally listed species under Endangered Species Act and National Flood Insurance Program standards.

The BESS Project will include permanent installation of three utility poles and temporary impacts associated with construction activities within the one percent annual chance floodplain. Mitigation for proposed impacts will be provided through vegetation replacement and removal of existing structures to satisfy the beneficial gain standard described in FEMA's 2024 Floodplain Habitat Assessment and Mitigation Regional Guidance for Oregon. By meeting FEMA's beneficial gain standard, the Project is anticipated to result in no effect on Endangered Species Act listed species and critical habitat that may be present in and around the Project.

1. HABITAT ASSESSMENT

1.1 INTRODUCTION

1.1.1 PROJECT DESCRIPTION

TUAL bn, LLC (TUAL or Applicant), a subsidiary of BrightNight U.S., LLC, plans to construct, own, and operate the Tualatin Battery Energy Storage System (BESS) Project, a lithium-ion battery energy storage facility capable of storing and delivering up to 400 megawatts of electric energy and associated ancillary services within Washington County, Oregon (BESS Project). The BESS Project will connect to the adjacent existing Sherwood Substation owned by Portland General Electric (PGE) at 20655 SW Langer Farms Parkway in Sherwood, Oregon. The BESS Project is a type of utility facility that will provide important electric grid reliability services to Washington County and the greater Portland metropolitan area.

The BESS Project requires a 0.2-mile generation tie line (gen-tie) to interconnect the BESS to the regional grid from the Project Area, which traverses parcels 2S129A001651, 2S129A000801, and 2S120D000700 and will require the placement of three utility poles (Poles #7, 8, and 9) within the one percent annual chance floodplain (Zone AE), resulting in a minimal footprint and negligible impacts to the floodplain. Design plans for the gen-tie are included in **Appendix A.**

Analysis within this Floodplain Habitat Assessment and Mitigation Plan is limited to gen-tie construction activities (herein described as 'Project') within the one percent annual chance floodplain, as described in the Project Action Area below.

1.1.2 PROJECT ACTION AREA

The Project Action Area includes directly impacted areas, all areas where the Project may have potential environmental effects, and impacted areas from interrelated and interdependent activities within the one percent annual chance floodplain, defined as the extent of construction footprints as shown in **Appendix B**.

Appropriate temporary erosion and sediment control (TESC) best management practices (BMPs) will be implemented to prevent erosion and sedimentation into nearby waters. Besides minor changes to the existing drainage patterns from construction, the completed project will restore the ground surface to pre-construction elevations and will not result in increased stormwater runoff within the Project Action Area. The Project Action Area does not include aquatic areas subject to potential sedimentation or turbidity impacts from the Project, as none are proposed.

1.1.3 FLOODPLAINS

The northern and eastern areas of the Project Action Area are within a special flood hazard area, flood zone AE, which is defined as having a one percent annual chance of flooding. The south and west portions of the Project Action Area are within Zone AE, defined as areas at high risk of flooding (FEMA 2023). The base flood elevation for the Project Action Area is 134.3 feet, which was surveyed by a licensed professional land surveyor.

The Project's impacts to floodplain functions are documented in this assessment. The FEMA floodplain map is provided in **Appendix B**.

1.1.4 WATER RESOURCE INFORMATION

The Project is within the Rock Creek-Tualatin River Watershed (Hydrologic Unit Code [HUC] 170900100503) in the Tualatin River subbasin (HUC 17090010). The United States Fish and Wildlife Service (USFWS) National Wetland Inventory mapping does not show any mapped wetlands (USFWS undated). Additionally, no United States Geological Service (USGS) National Hydrology Dataset-mapped features are present within the Project Action Area (USGS). ERM completed a wetland and waters delineation for the Project in January and May 2024 and identified one wetland east of the Project Action Area. Oregon Department of State Lands (DSL) confirmed ERM's findings in May 2025 (DSL WD# 2024-0387).

According to USGS contour data, the topography surrounding the Project Action Area consists of valleys, rolling hills, and flat open space with the highest elevation point at about 130 feet above mean sea level (USGS 2023).

1.1.5 ADDITIONAL GOAL 5 RESOURCE AREAS

No additional Goal 5 resource areas are mapped within the Project Action Area.

1.2 EXISTING CONDITIONS

1.2.1 PROTECTED SPECIES INFORMATION

An initial desktop review identified a total of 23 federal listed and sensitive species with the potential to occur in and up to 1-mile from the Project (USFWS n.d. and NOAA 2024). A list of these species is included below in Table 1. Of these 23 species, five have the potential to occur within the Project Action Area.

TABLE 1 FEDERAL LISTED SPECIES

Species	Status	Habitat Requirements	Potential to Occur at the Site
Birds			
Bald eagle (*Haliaeetus leucocephalus*)	Bald and Golden Eagle Protection Act	Well-distributed within Oregon. Nest in large trees, usually near marine shorelines, large lakes, or rivers. Bald eagles prefer tall trees, often mature or old-growth, with strong limbs to support their large nests.	Not likely; no potentially suitable habitat in Project Action Area.
Northern Spotted owl (*Strix occidentalis caurina*)	Threatened	Generally high canopy closure. Complex canopy structure involving trees of multiple age or size classes. Large decaying trees and/or snags. A high volume of downed wood.	Not likely; no potentially suitable habitat in Project Action Area.

Streaked horned lark (*Eremophila alpestris strigata*)	Threatened	Found in large expansive areas, such as prairie and grassland south of Puget Sound, coastal beaches, dredge spoil islands and sparsely vegetated shoreline sites. Also found on agricultural fields and drying seasonal wetlands.	Potential: potentially suitable habitat in Project Action Area.
Fish			
Chinook salmon (*Oncorhynchus tshawytscha*)	Threatened	Require streams with clean gravel, complex habitat, and cool temperatures for spawning and rearing.	Not likely; no potentially suitable habitat in Project Action Area.
Winter steelhead / coastal rainbow trout (*Oncorhynchus mykiss / Oncorhynchus mykiss irideus*)	Threatened	Require streams with clean gravel, complex habitat, and cool temperatures for spawning and rearing.	Not likely; no potentially suitable habitat in Project Action Area.
Insects			
Fender's blue butterfly (*Icaricia icarioides fenderi*)	Threatened	Inhabit native prairie and oak savannah. They require Kincaid's lupine as a host plant.	Potential; suitable habitat in Project Action Area.
Reptiles			
Northwestern pond turtle (*Actinemys marmorata*)	Proposed Threatened	Open upland habitats that receive extensive sun exposure. Ponds and lakes with a variety of logs for basking.	Not likely; no potentially suitable habitat in Project Action Area.
Vascular Plants			
Kincaid's lupine (*Lupinus oreganus*)	Threatened	This species is associated with remnant upland prairie and oak savanna habitats but can also be found on disturbed sites such as roadcuts and ditchbanks.	Potential; suitable habitat in Project Action Area.
Willamette daisy (*Erigeron decumbens*)	Threatened	Found in seasonally wet prairies and drier upland prairie sites, where woody cover is nearly absent and herbaceous vegetation tends to be low in stature.	Potential; suitable habitat in Project Action Area.

1.3 LISTED SPECIES IN THE PROJECT ACTION AREA

Five listed or proposed to be listed terrestrial species have the potential to occur in the Project Action Area. No listed or proposed to be listed aquatic species are likely to occur in the Project Action Area.

1.3.1 STREAKED HORNED LARK

Streaked horned lark (*Eremophila alpestris strigata*) is a federally threatened species that occurs in open, sparsely vegetated areas west of the Cascade Mountains. While historical habitats were maintained by natural disturbances like floods and fires, these processes have been significantly reduced. Consequently, they now depend heavily on human-modified habitats like agricultural fields. In the Willamette Valley, streaked horned larks are primarily found in scattered, small populations in the central Willamette Valley. This is due to urban development and agricultural practices. Streaked horned larks prefer large, open areas with minimal obstructions like trees or

shrubs and bare ground or sparsely vegetated areas to allow for nesting and access to food (Cornell Lab of Ornithology 2015a).

The Project Action Area and nearby Tualatin River National Wildlife Refuge/Rock Creek riparian corridor provide some nesting habitat and food supply for this species. Therefore, there is potential for this species to occur.

1.3.2 FENDER'S BLUE BUTTERFLY

Fender's blue butterfly (*Icaricia icarioides fenderi*) is a federally threatened species endemic to upland prairies of the Willamette Valley. Within these areas, the butterfly relies on the Kincaid's lupine (Lupinus oreganus) for reproduction, as it is the primary larval host plant. Adults also feed on nectar from various wildflowers within these prairies (Black and Vaughan 2005).

The Project Action Area provides suitable habitat for Kincaid’s lupine; therefore, this species does have the potential to occur.

1.3.3 KINCAID'S LUPINE

Kincaid's lupine (*Lupinus oreganus*) is a federally threatened species that primarily inhabits the Willamette Valley in Oregon, with additional populations in southwestern Washington and Douglas County, Oregon. It's typically found in native upland prairies and open oak woodlands with well-drained soil and no prolonged standing water, at elevations below 838 meters (2,750 feet). Kincaid’s lupine often occurs in areas that have been historically maintained by periodic disturbances like fire and roadsides. However, their roadside habitats are susceptible to invasion by non-native plants that can outcompete the lupine for resources (ODA n.d.).

The Project Action Area provides suitable habitat for this species; therefore, this species does have the potential to occur.

1.3.4 WILLAMETTE DAISY

Willamette daisy (*Erigeron decumbens*) is a federally threatened species that occurs in the Willamette Valley, in seasonally flooded bottomland prairies and well-drained upland prairies at elevations ranging from 70 to 290 meters (240 to 950 feet). Though once found throughout the valley, the species is now restricted to scattered habitat remnants. Historic populations in Clackamas, Washington, and Yamhill Counties have not been relocated, and the species may no longer occur in these counties. Most extant populations are located on private lands vulnerable to development. The plant is shade-intolerant, an early-successional species which depends on flooding and fire to maintain its open prairie habitat (ODA n.d.a).

The Project Action Area provides suitable habitats for this species; therefore, this species does have the potential to occur.

1.4 FIELD SURVEYS

ERM completed field surveys for the BESS Project on 24 and 25 January and 16 May 2024 for biological, wetland, and water resources within the Project Area, which includes the Project Action

Area. Results of these field surveys, including site photographs, are presented in ERM's Biological Resources Report (2024) and Wetland and Waters Report (2024).

No federal listed fish, insects, reptiles, or vascular plants were observed. Several non-state- or federal-listed passerine species were observed utilizing the Project Area and adjacent flooded areas. Bald eagle and an unidentified hawk species were observed perching in trees utilizing the Project Area, one American white pelican was observed wading in the flooded portions of the wetland offsite to the east, and one western meadowlark was observed as a flyover. No nests of bald eagle or hawk species were observed in the Project Action Area.

The delineated wetlands included two Palustrine Emergent wetlands (Wetlands B and C) and one Palustrine Scrub-Shrub wetland (Wetland A). As per county regulations, these wetlands likely require a 25-foot buffer width with the implementation of closely spaced trees and shrubs. Wetland C is hydrologically connected to the off-site Rock Creek and likely regulated to similar standards. As all three wetlands and Rock Creek are in the mapped one percent annual chance floodplain, they are likely categorized as significant natural resources.

No ESA-listed species or strategy habitats were documented within the Project Action Area. Additionally, the Project Action Area is outside of any adjacent wetland or stream areas. Therefore, there is a low likelihood of any listed species or critical habitats to occur within the Project Action Area.

1.5 EXISTING HABITAT CONDITIONS

The Project Action Area is comprised of active to recently active agricultural and residential lands bordered by the SW Pacific Highway to the north and west, agricultural land to the east, and light industry to the south. The Tualatin River National Wildlife Refuge is northwest (across SW Pacific Highway) and east of the Project Area. Rock Creek was identified off-site to the east of the Project Area.

The vegetation on the Project Action Area is dominated by many native and invasive species, including, but not limited to, species of blackberries and vetch.

1.6 PROJECT IMPACT ANALYSIS

1.6.1 CRITICAL HABITAT

No ESA-species critical habitat primary constituent elements are mapped within the Project Action Area. No direct or indirect project impacts will occur to critical habitat for any ESA-listed species.

1.6.2 WATER QUALITY

The Project actions may result in temporary impacts to pH from the utilization of concrete for the base of the utility poles and turbidity from vegetation removal and sediment runoff if flooding occurs at the same time as construction activities. However, the Project will follow proper TESC measures that will be utilized to prevent construction stormwater impacts to nearby waterbodies. Construction TESC measures and BMPs will be described in the Project's Stormwater Pollution Prevention Plan (SWPPP).

No in-water work will occur during the Project. The additional impervious surface resulting from the installation of the three utility poles will not generate pollution. Vegetation that will be removed from the Project Action Area includes maintained grass and up to five trees. No riparian vegetation will be impacted by the Project. Overall, the Project will meet state water quality standards for any water quality variables (over any temporal scale) within the Project Action Area.

1.6.3 WATER QUANTITY AND FLOOD STORAGE

The Project will not negatively affect water quantity or flood storage capacity in the Project Action Area. No direct or indirect impacts on water quantity are expected from the Project. Stormwater drainage patterns are not expected to change from current conditions (such as frequency, timing, and duration) after construction.

A loss of approximately 130.6 cubic feet of flood storage will occur due to installation of three utility poles in the floodplain. To ensure the Project does not adversely impact flood storage, the Project will provide compensatory flood storage onsite by removing approximately 94,526 cubic feet of existing structures from the floodplain, for a net gain in floodplain storage of 94,395 cubic feet. Table 2 provides a detailed calculation of proposed floodplain storage impacts and mitigation.

TABLE 2 FLOODPLAIN STORAGE IMPACTS AND MITIGATION

Structure	Modification Type	Lowest Adjacent Grade (ft)	Base Flood Elevation (ft)	Area Within Floodplain (sq ft)	Flood Storage Volume Change (cu ft)
Pole #7	Installation of new structure	129.0	134.3	7.1	-37.6
Pole #8	Installation of new structure	130.5	134.3	7.1	-27.0
Pole #9	Installation of new structure	125.0	134.3	7.1	-66.0
Barn #1	Removal of existing structure	126.5	134.3	2279.5	+17,780.1
Barn #2	Removal of existing structure	130.0	134.3	17,847.9	+76,746.0
				Net Change	**+94,395.5**

Note: Flood Storage Volume Change calculated by multiplying the "Area Within Floodplain" x ("Base Flood Elevation" – "Lowest Adjacent Grade").

1.6.4 FLOOD VELOCITIES AND HYDROLOGIC REGIME

The Project will not adversely impact flood velocities and volumes within the Project Action Area. Project actions will reduce the overall volume of structures and area of impervious surface within the floodplain which, in turn, will allow flood waters to spread out and slow down. The floodplain's overall hydrologic regime will be maintained.

1.6.5 SEDIMENT REGIME

The Project will not adversely impact the sediment regime and will not alter the existing erosion patterns of the Project Area.

1.6.6 FLOODPLAIN REFUGIA AND AQUATIC HABITAT

The Project Action Area contains minimal floodplain refugia and no aquatic habitat. No in-water work or impacts to refugia or aquatic habitat will occur from the Project. Therefore, the Project will not adversely impact floodplain refugia or any other aquatic habitat of the Project Action Area.

1.6.7 OTHER FLOODPLAIN FUNCTIONS

No impacts to habitat connectivity, riparian vegetation communities, waterbody substrates, stormwater discharge, large woody debris recruitment, hyporheic zones, wetlands, or bank stability are anticipated as a result of construction or the completed Project.

1.6.8 ESSENTIAL FISH HABITAT

According to the National Oceanic and Atmospheric Administration's (NOAA) Essential Fish Habitat (EFH) mapper, EFH is not present in the Project Action Area. The National Marine Fisheries (NMFS) West Coast Region (WCR) Species and Habitat App, the Project is mapped as EFH for Salmon.

No in-water work is proposed, and the Project will meet state water quality standards for any water quality variables (over any temporal scale). Therefore, the Project will not adversely impact EFH.

1.7 PROJECT CONSTRUCTION

1.7.1 OVERVIEW AND SCHEDULE

Land disturbances associated with the construction include excavation and grading for the three poles and foundations, and vegetation clearing and tree removal. However, no native riparian vegetation will be removed by the Project. No construction activities will occur within regulated Goal 5 resource areas or within protected habitats. Project construction will comply with all approved permit conditions, including application and maintenance of BMPs detailed in the Project's SWPPP and the Washington County code.

The construction of the gen-tie will result in the placement of material in the floodplain, (i.e., the volume of the utility poles within the floodplain). To compensate for flood storage impacts from the utility poles, additional flood storage will be excavated to match the volume of fill in the existing floodplain.

Project construction is tentatively scheduled to commence in Q3 2026 and have a target completion of Q4 2027 and last approximately 18 months. Construction of the Project will include the following steps:

1. Pre-construction activities
    a. Establish laydown yards and mobilize equipment
    b. Stake construction area (right-of-way, structure locations, limits)
2. Civil and site prep work
    a. Clear and grub along working areas
    b. Establish environmental controls (BMPs, silt fence, mats etc.)
    c. Prepare crane pads and cranes path
3. Foundation construction
    a. Drill pier foundations, prep and pour foundations (inspections as needed)
    b. Drill direct embed foundations
    c. Foundation cure time
4. Pole structure prep
    a. Deliver and assemble steel poles
    b. Set up crane and rigging
    c. Erect and frame steel poles, install hardware
5. Conductor installation
    a. Set up stringing: puller/tensioner station set up, pulleys and traveler installation on structures
    b. String conductors and communication lines
    c. Set up and position cranes, and boom trucks
6. Testing and commissioning
7. Site restoration and demobilization
    a. Restore disturbed areas per permit requirements
    b. Remove temporary roads, mats, temporary erosion control measures
    c. Seed, stabilize and close out SWPP
    d. Demobilize all equipment

1.7.2 METHODS

Site preparation will minimize grading and vegetation removal to reduce impacts in the Project Action Area. Up to five existing trees, including one Oregon white oak tree (*Quercus garryana*)

and four other unidentified trees, will be removed, and other herbaceous vegetation will be cleared from the site of each of the utility poles for assembly of structure elements and necessary crane maneuvers. Two to three stringing sites, or pull sites, will be established to pull and tension the conductors.

An auger truck or excavator will be used to excavate a hole for each utility pole base or for a foundation, if required. Pole diameters will be 3 feet or less with concrete foundations, where required. For poles requiring foundation, concrete will be cast-in-place to fill the hole with reinforcing steel bars and anchoring bolts. Vertical excavations will be made with power augering equipment, no blasting is anticipated. During excavation, utility pole sites will be accessed by truck-mounted power augers or drill rigs, cranes, material trucks, and crew trucks. A vehicle-mounted power auger or backhoe will be used where soils permit. In rocky areas, holes will be excavated by drilling or by installing special rock anchors. Spoil material (excavated soil) will be used for fill where suitable, and the remainder will be spread at an upland location within Project Area outside of the floodplain. The overhead structure foundations will be installed by excavating foundation holes to a variable depth, determined by the Project's Structural Engineer, using a truck-mounted drill rig. The size of the temporary disturbance footprint for construction of the pole foundations would be approximately 4.38 acres.

Utility pole placement activities include mobilizing construction vehicles, equipment, and pole components along access routes and utility pole locations and assembling and erecting the utility poles. The utility poles and associated hardware will be delivered to each pole location by flatbed truck. The utility poles will then be fitted with cross-arms, supports, and insulators as needed by final designs. Erection crews will assemble pole structures on the ground, then position the poles in the augured holes using a large mobile crane and backfill around each pole or attach to concrete foundations.

Conductor installation and stringing is anticipated to require pickup trucks, manlifts/boom trucks, hydraulic tensioning machines, wire reel stringing trailers, and drum pulling machines. The conductors and shield wires will be pulled into place from the pulling and splicing locations. Crews will install insulators and sheaves at the end of each supporting structure cross-arm. Sheaves are rollers that would be temporarily attached to the lower end of the insulators that allow crews to pull sock lines (rope or wire used to pull transmission line conductors into place). Once the equipment is set up, a lightweight vehicle will pull the sock line from one supporting structure to the next. At each structure, the sock line will be hoisted to the cross arm and passed through the sheaves on the ends of the insulators. The sock line will be used to pull the conductor through the sheaves. The conductors will then be attached to the sock line and pulled through each supporting structure under tension. After the conductors are pulled into place, they will be pulled to a pre-calculated sag and tension clamped to the end of each insulator. The final step of the conductor installation process would be to remove the sheaves and install vibration dampers and accessories.

The Project will restore all temporarily disturbed areas, including re-contouring to pre-construction conditions and reseeding with local, native, certified weed-free seed mix.

After the Project is mechanically complete, the facilities will be tested and commissioned prior to commencing commercial operations. This process includes visual inspection and electrical testing of the transmission lines.

1.7.3 PROTECTION MEASURES

The Project will follow applicable federal, state, and local regulatory requirements that require development projects to include measures that avoid, minimize, replace, or compensate for negative effects on populations or habitat functions due to project impacts. A list of the protective measures that will be implemented is described below:

- Restrict all construction vehicles and equipment to pre-designated access points and laydown yards.
- Restrict construction-related disturbances to areas that will avoid Goal 5 resource areas.
- Leave vegetation in place wherever possible, with an overall goal to maintain existing landscape features where possible and maintain the original contour to avoid excessive root damage and allow for re-sprouting.
- Provide all site personnel with project orientation, including environmental, health, and safety procedures and rules.
- Develop and implement a SWPPP to prevent erosion and sedimentation during construction.
- Implement drainage/erosion control plans during construction.
- Control dust from vehicle traffic and disturbed areas through regular watering, dust palliatives, and speed limits on unpaved roads.
- Avoid clearing and grading or other construction impacts within any waterbodies or buffer areas.
- Limit staging and stockpiling to areas adjacent to the poles.
- Store all materials, including wastes, and maintain all grounds in a manner which will not attract or aid the propagation of insects or rodents or create a health hazard.
- Comply with all Department of Environmental Quality Water Quality Standards for all runoff, drainage, and wastewater.
- Stabilize temporarily exposed soils and stockpiled materials.
- Implement and maintain surfacing BMPs.

1.8 ENVIRONMENTAL EFFECTS

1.8.1 DIRECT EFFECTS

The Project has the potential for impacts from temporary clearing and grading. The Project will restore all temporarily disturbed areas, including re-contouring to pre-construction conditions and reseeding with local, native, certified weed-free seed mix to achieve uniform vegetation. Up to five trees, including one Oregon white oak tree (*Quercus garryana*), will be removed and replaced at a ratio of 5.25:1 to meet FEMA's tree replacement and beneficial gain standards. Two existing barns, representing an existing 20,127.4 square feet of impervious surface, will be removed from the

floodplain and no new pollution-generating impervious surface will be added within the floodplain. Therefore, no impacts to ESA-listed species or their habitats will result from the Project.

1.8.2 INDIRECT EFFECTS

The Project will not contribute to sedimentation in the floodplain, block corridors that connect habitat areas, degrade water quality through removal of riparian areas, or impact wetland areas. Therefore, Project construction and the finished Project are not expected to result in adverse indirect effects to ESA-listed species or their habitats.

1.8.3 INTERDEPENDENT AND INTERRELATED ACTIONS

No impacts from interdependent and interrelated actions are anticipated. No ESA-listed species, critical habitats, or EFH (e.g., types of aquatic habitat where fish spawn, breed, feed, or grow to maturity) are known to exist within the Project Action Area and no Project impacts will expand offsite.

1.8.4 CUMULATIVE EFFECTS

No known future actions are anticipated to occur within the Project Action Area that may affect ESA-listed species or floodplain storage. Cumulative effects from the proposed Project are not anticipated.

1.9 EFFECTS DETERMINATIONS

Table 3 provides effect determinations for four federally listed species identified during literature and desktop review that are under federal jurisdiction and have the potential to occur in the vicinity of the Project Action Area.

TABLE 3 SPECIES AND DESIGNATED CRITICAL HABITAT DETERMINATIONS

Species	Status	Determination/Species Potential to occur in Project Action Area	Determination/Critical Habitat Presence within the Project Action Area
Birds			
Streaked horned lark (*Eremophila alpestris strigata*)	Threatened	No effect. Although the Project Action Area occurs within the range of the species, suitable habitat is minimal in the Project Action Area and this species was not observed during the field surveys. Therefore, this species is not anticipated in the Project Action Area. The Project would have no effect on this species.	No Effect. The designated critical habitat for the streaked horned lark does not overlap with the Project Action Area.
Insects			

Species	Status	Determination/Species Potential to occur in Project Action Area	Determination/Critical Habitat Presence within the Project Action Area
Fender's blue butterfly (*Icaricia icarioides fenderi*)	Threatened	No effect. Although the Project Action Area occurs within the range of the species, suitable habitat is minimal in the Project Action Area and this species' host plant, Kincaid's lupine, was not observed during the field surveys. Therefore, this species is not anticipated in the Project Action Area. The Project would have no effect on this species.	No Effect. The designated critical habitat for the Fender's blue butterfly does not overlap with the Project Action Area.
Vascular Plants			
Kincaid's lupine (*Lupinus oreganus*)	Threatened	No effect. Although the Project Action Area occurs within the range of the species, suitable habitat is minimal in the Project Action Area and this species was not observed during the field surveys. Therefore, this species is not anticipated in the Project Action Area. The Project would have no effect on this species.	No Effect. The designated critical habitat for the Kincaid's lupine does not overlap with the Project Action Area.
Willamette daisy (*Erigeron decumbens*)	Threatened	No effect. Although the Project Action Area occurs within the range of the species, suitable habitat is minimal in the Project Action Area and this species was not observed during the field surveys. Therefore, this species is not anticipated in the Project Action Area. The Project would have no effect on this species.	No Effect. The designated critical habitat for the Willamette daisy does not overlap with the Project Action Area.

The habitat assessment concludes that the Project would have ***no effect*** on streaked horned larks, Fender's blue butterfly, Kincaid's lupine, and Willamette daisy because the species and habitat are not present within the Project Action Area. Additionally, the habitat assessment concludes that the Project would have ***no effect*** on designated critical habitats because no designated critical habitats are located within the Project Action Area***.***

2. MITIGATION AND MANAGEMENT

2.1 DESCRIPTION OF IMPACTS AND MITIGATION ACTIONS

The Project's gen-tie requires the installation of three utility poles within the one percent annual chance floodplain, resulting in temporary and permanent impacts to specific floodplain functions during and after construction. A summary of impacted floodplain functions and proposed mitigation based on FEMA's 2024 guidance is provided in Table 4 below. The location of each proposed mitigation action is shown in **Appendix A**.

TABLE 4 FLOODPLAIN IMPACTS AND MITIGATION

Floodplain Function	Proposed Impact	Proposed Mitigation
Storage	Approximately 130.6 cubic feet of fill from 3 utility poles	Approximately 94,526 cubic feet of compensatory floodplain storage creation onsite through removal of two existing barn structures
Water Quality	None – no new pollution generating surfaces proposed within floodplain	None required – approximately 20,127 square feet of existing impervious surfaces will be removed from the floodplain through removal of two existing barn structures
Riparian Vegetation	Up to 5 trees removed 4.38 acres of existing herbaceous vegetation removed for temporary construction access	Up to 27 trees planted within floodplain onsite Temporarily impacted construction areas restored with native erosion control seed mix

Floodplain storage will be reduced due to installation of the utility poles. Vegetation within the floodplain, including not more than five trees, will be removed to provide access to the construction site. If existing trees can be retained within the floodplain, the number of replacement trees planted as mitigation will be reduced accordingly.

The Project also proposes management and treatment of Project stormwater runoff as a non-compensatory action. The combined compensatory and non-compensatory mitigation actions are anticipated to result in a beneficial gain in floodplain function that exceeds FEMA requirements within the Project Action Area and the overall watershed.

2.2 GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

The mitigation goal for the Project is to restore temporary impacts and mitigate permanent impacts associated with the installation of the three utility poles within the one-year annual chance floodplain in accordance with FEMA's beneficial gain standard applicable to projects impacting floodplain functions.

Goal 1 – Improve floodplain storage volume.

Objective 1.1 – Replace floodplain storage lost due to construction of three utility poles to offset displacement caused by construction activities and maintain connectivity between Rock Creek and its floodplain.

Performance standard 1.1.1 – Barns #1 and #2 (see Appendix B?) will be removed prior to installation of the utility poles.

Goal 2 – Improve floodplain vegetation coverage.

Objective 2.1 – Plant replacement trees as required to meet the 5.25:1 replacement ratio and seed 4.38 acres of areas impacted by temporary construction activities to replace floodplain vegetation removed by construction actions.

Performance standard 2.1.1 – In all monitoring years, survival of planted woody vegetation at the mitigation site will be 100 percent. If all dead plantings are replaced, the standard will be considered met.

Performance standard 2.1.2 – In all monitoring years, Oregon Department of Agriculture Class A and B noxious weeds will not exceed 15 percent aerial cover in either the mitigation area or restoration area.

2.3 MAINTENANCE & MONITORING PLAN

The Applicant is committed to compliance with the mitigation plan and the overall success of the Project. As such, the Applicant will continue to monitor and maintain the Project for 3 years after site construction, keeping the site free from non-native invasive vegetation, trash, and waste.

The Applicant will complete monitoring reports after each monitoring event, detailing the current conditions of the Project Action Area, measurement of performance standards, and any recommended adaptive management recommendations. The report will be submitted to Washington County within 90 days of each monitoring event to ensure full compliance with the mitigation plan.

If monitoring results indicate that performance standards are not being met, the Project will implement the contingency measures outlined below:

- Replace any plant species with a 20 percent or greater mortality rate after two growing seasons with the same species or native species of similar form and function;
- Irrigate mitigation areas only as necessary during dry weather if plants appear to be too dry, using a minimal quantity of water provided from a permitted water source;
- Reseed and/or repair buffer areas as necessary if erosion or sedimentation occurs;
- Spot treat non-native invasive plant species; and
- Remove all trash or undesirable debris from the buffer areas as necessary.

3. CONCLUSION

This Floodplain Habitat Assessment and Mitigation Plan forms the basis for conclusions on the effects of the Project on the following federally listed ESA species and associated critical habitat in the Project Area: streaked horned lark, Fender's blue butterfly, Kincaid’s lupine, and Willamette daisy. By avoiding impacts to designated critical habitat areas and implementing mitigation measures to satisfy FEMA’s beneficial gain standard, the Project is anticipated to result in no effect on listed species or critical habitat.

4. REFERENCES

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APPENDIX A DESIGN PLANS

FIGURE A-1 – TRANSMISSION LINE PLAN AND PROFILE

FIGURE A-2 – POLE ELEVATION (POLES #7 AND 9)

FIGURE A-3 – POLE ELEVATION (POLE #8)

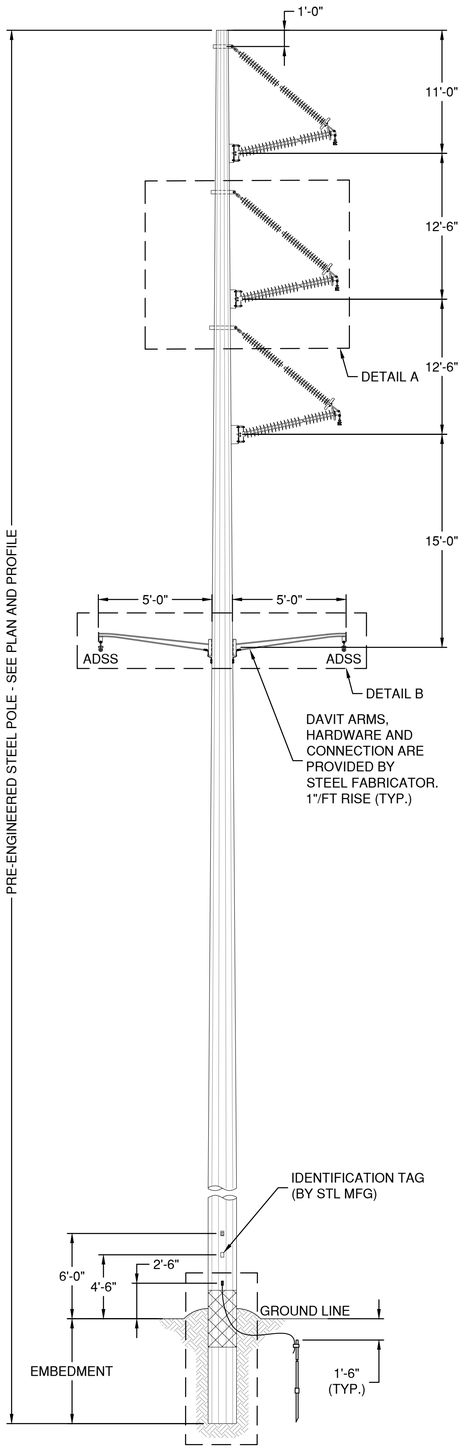
MAJOR ASSEMBLY - 230S-TAN-BP			
SUB-ASSEMBLY NAME	**QUANTITY**	**SUB-ASSEMBLY DESCRIPTION**	**SHEET REFERENCE**
INS-BLP-4N01	3	230KV BRACED LINE POST INSULATOR	TUA-TRN-0600

NOTES:

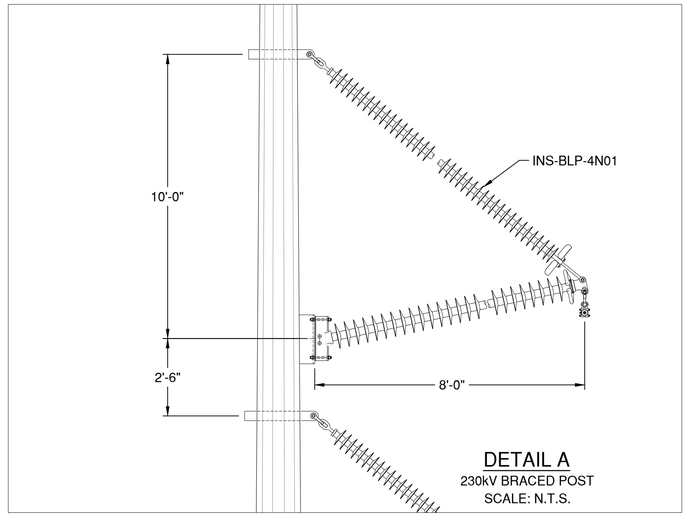
1) POLE CLASSES LISTED IN TABLE ABOVE REFERENCE VALMONT STEEL POLE CLASSES. IF VENDOR OTHER THAN VALMONT IS USED FOR STEEL POLE FABRICATION, POLE CAPACITIES SHALL MEET OR EXCEED THAT OF THE VALMONT STANDARD POLE CLASSES.

DRAWING REFERENCES:

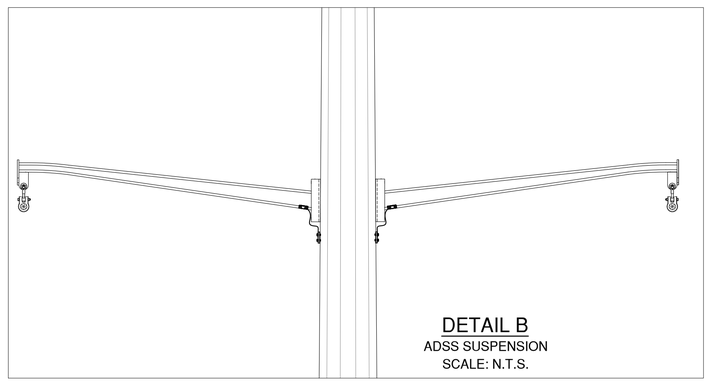
PLAN & PROFILE: TUA-TRN-0300
INSULATOR DETAILS: TUA-TRN-0600 - 0601



ELEVATION
SCALE: N.T.S.
LOOKING AHEAD STATION



DETAIL A
230kV BRACED POST
SCALE: N.T.S.



DETAIL B
ADSS SUSPENSION
SCALE: N.T.S.

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TUALATIN BESS PROJECT

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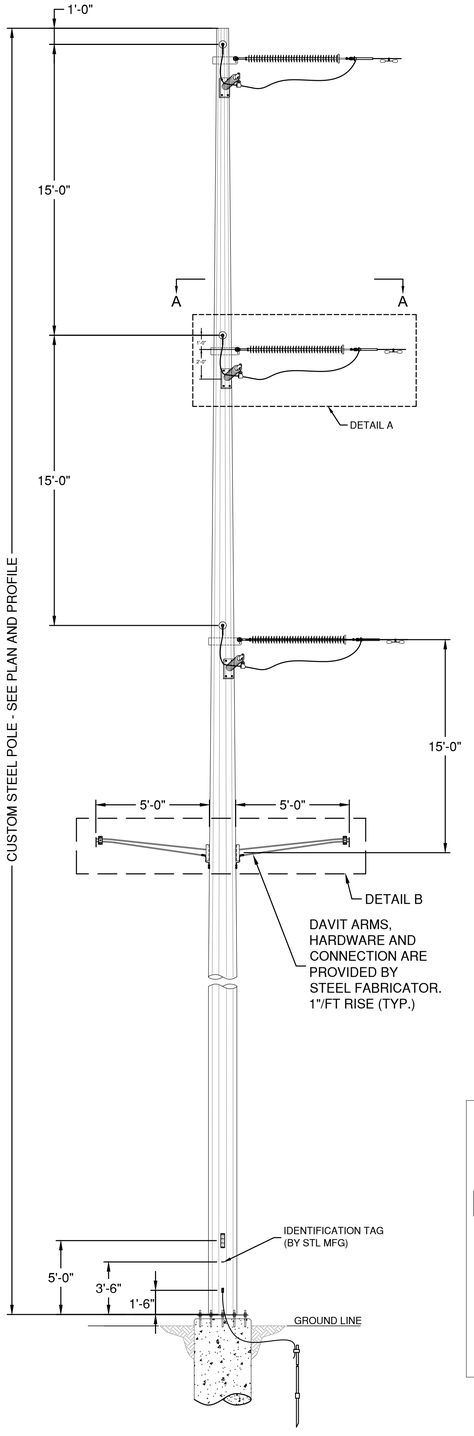
Drawn By:	GJP	Project Number:	24.03282
Checked By:	EMB	Date:	04/25/2025
Approved By:	EMB	Sheets:	1 of 1

230KV TRANSMISSION LINE
DIRECT EMBED STEEL
TANGENT

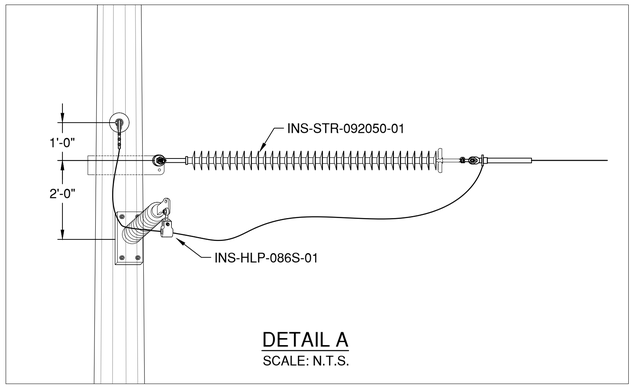
DWG # TUA-TRN-0400 REV # A

MAJOR ASSEMBLY - 230S-DE-STRJMP50			
SUB-ASSEMBLY NAME	QUANTITY	SUB-ASSEMBLY DESCRIPTION	SHEET REFERENCE
INS-HLP-086S-01	3	230KV JUMPER POST INSULATOR ASSEMBLY	TUA-TRN-0600
INS-STR-092050-01	6	230KV DEADEND INSULATOR ASSEMBLY	TUA-TRN-0600



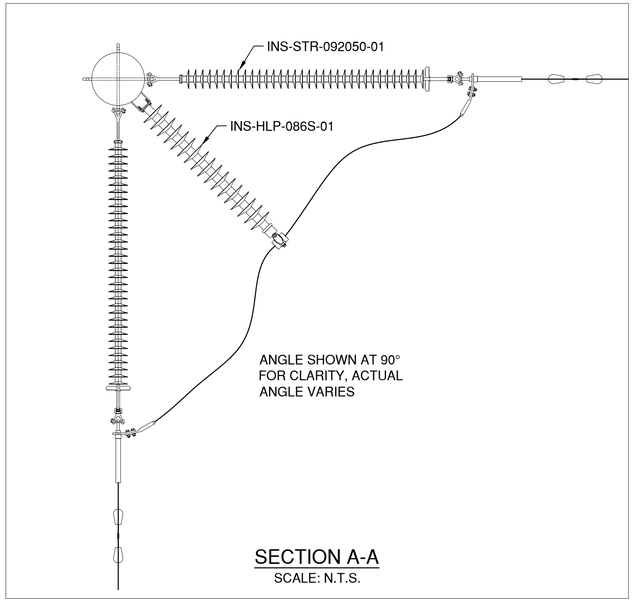
ELEVATION

SCALE: N.T.S.
STRUCTURE ORIENTATION WILL VARY BASED UPON THE DIRECTION OF TURN



DETAIL A

SCALE: N.T.S.



SECTION A-A

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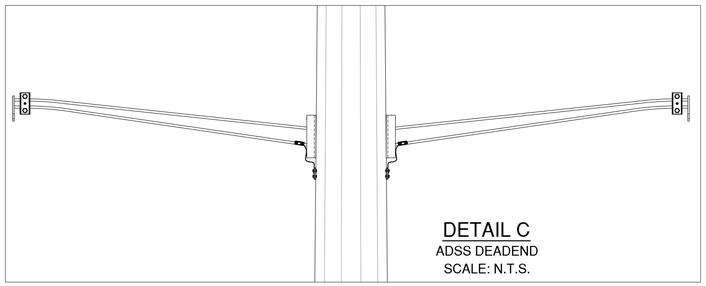

DETAIL C

ADSS DEADEND
SCALE: N.T.S.

NOTES:

1) POLE CLASSES LISTED IN TABLE ABOVE REFERENCE VALMONT STEEL POLE CLASSES. IF VENDOR OTHER THAN VALMONT IS USED FOR STEEL POLE FABRICATION, POLE CAPACITIES SHALL MEET OR EXCEED THAT OF THE VALMONT STANDARD POLE CLASSES.

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PLAN & PROFILE: TUA-TRN-0300
INSULATOR DETAILS: TUA-TRN-0600 - 0601

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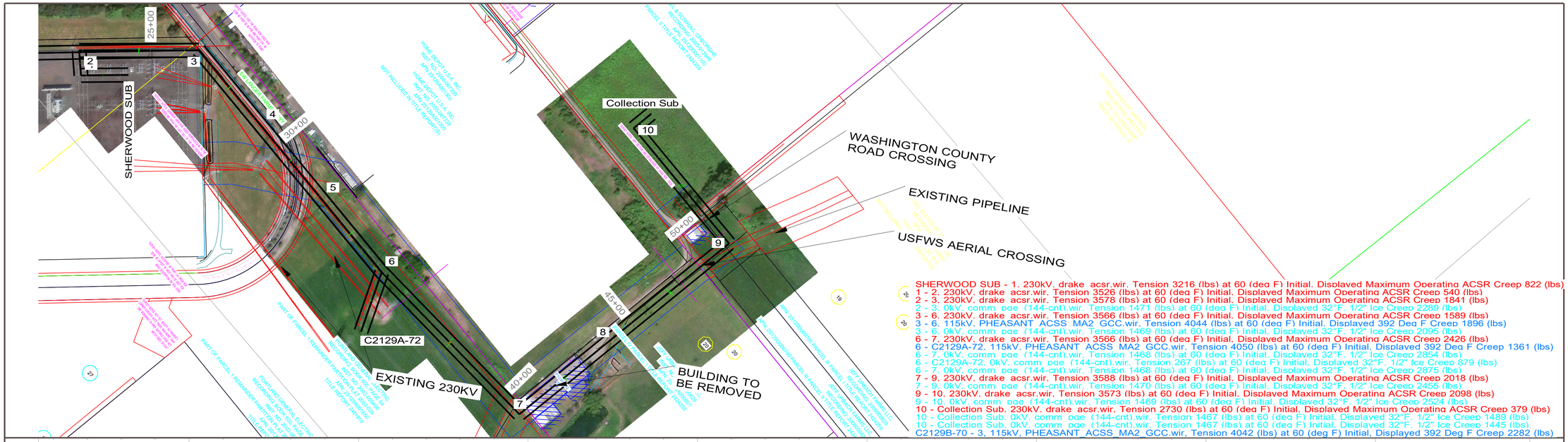
Checked By:	EMB	Date:	04/25/2025
Approved By:	EMB	Sheets:	1 of 1

230KV TRANSMISSION LINE SELF SUPPORT STEEL ANGLE DEADEND

DWG # TUA-TRN-0402 REV # A

PLS-CADD Drawing



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3 - 6. 230kV, drake acsr,wir, Tension 3566 (lbs) at 60 (deg F) Initial, Displayed Maximum Operating ACSR Creep 1589 (lbs)
3 - 6. 115kV, PHEASANT ACSS MA2 GCC,wir, Tension 4044 (lbs) at 60 (deg F) Initial, Displayed 392 Deg F Creep 1896 (lbs)
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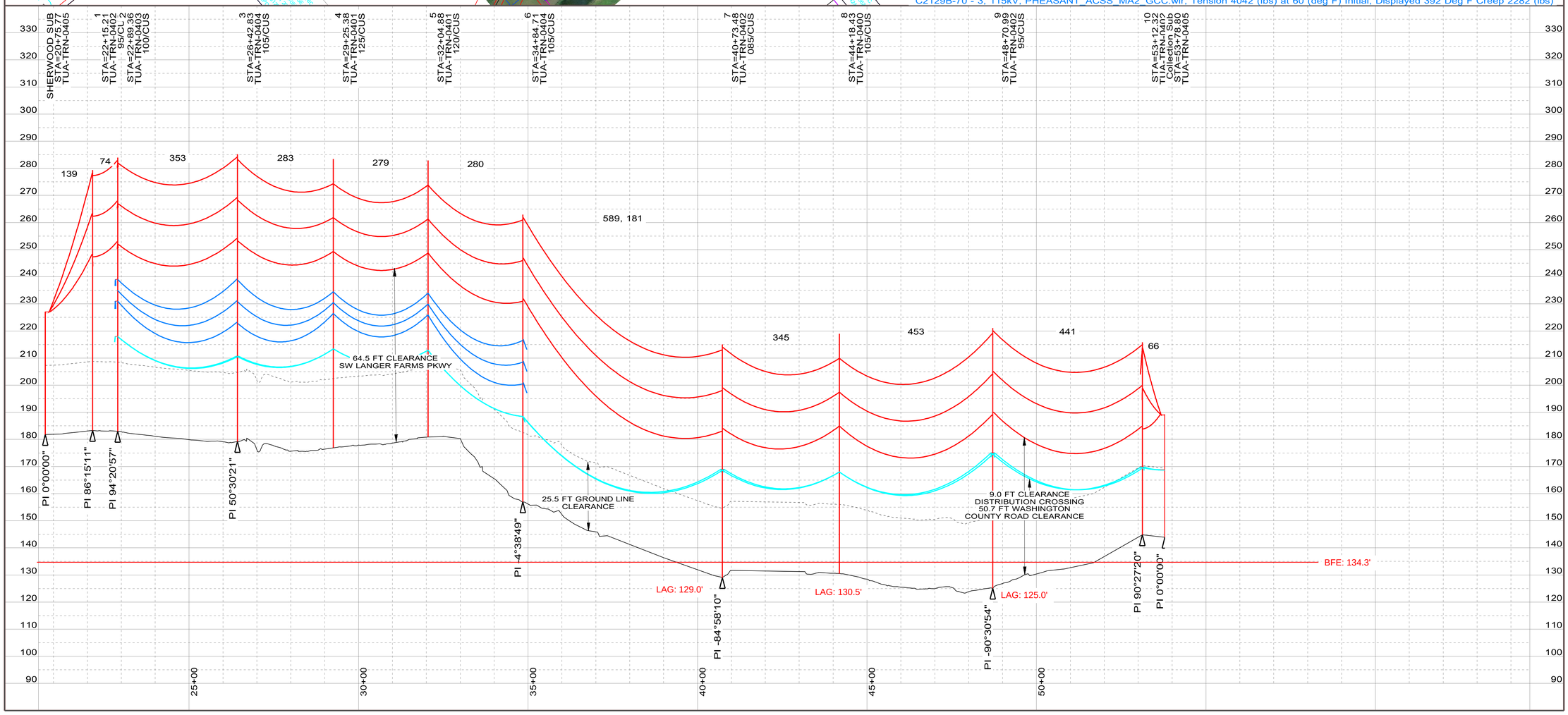

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160.0 ft. Horiz. Scale

20.0 ft. Vert. Scale

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Approved By:	EMB	Sheets:	1 OF 1

230KV TRANSMISSION LINE PLAN AND PROFILE

DWG #: TUA-TRN-0300

REV #: A

APPENDIX B MITIGATION PLAN

Drawn By: Dana Scott

M:\US\Projects\A-C\BrightNight\Tualatin\ArcGIS\Tualatin Wetlands\Tualatin Wetlands.aprx\Existing Conditions Overview, REVISED: 08/26/2025, SCALE: 1:6,000 when printed at 8.5x11

Subject Property
Wetland
25Ft Wetland Buffer
170ft Riparian Buffer Zone
Rock Creek
1% Annual Chance Flood Hazard
Floodway

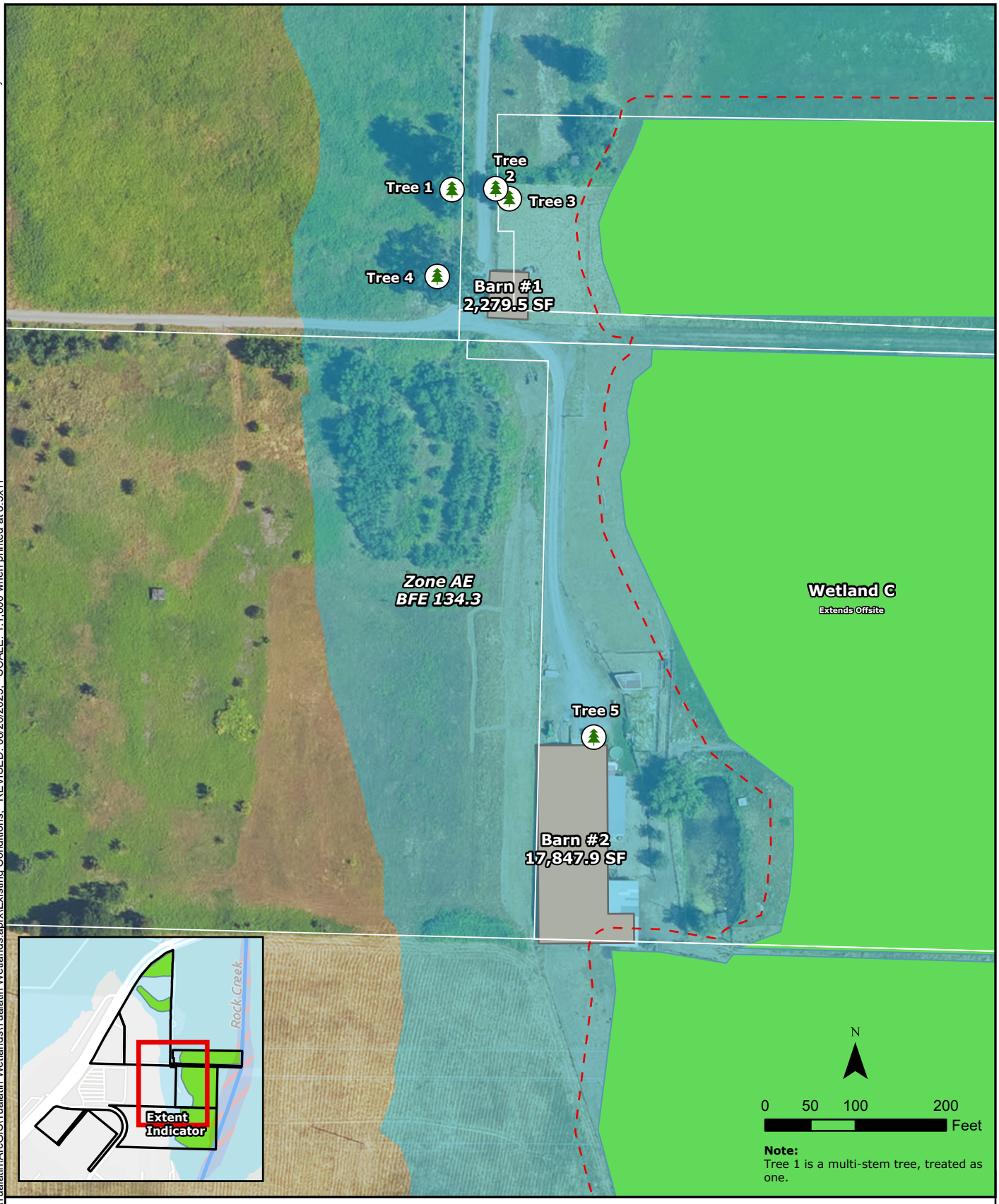
N

0 150 300 600
Feet

Existing Conditions Overview
Tualatin BESS
BrightNight Power
Washington County, OR

ERM

Source: Esri - World Imagery Map; NAD 1983 HARN StatePlane Oregon North FIPS 3601



Subject Property
Existing Tree (To be Removed)
Wetland
Existing Structures
25ft Wetland Buffer
1% Annual Chance Flood Hazard

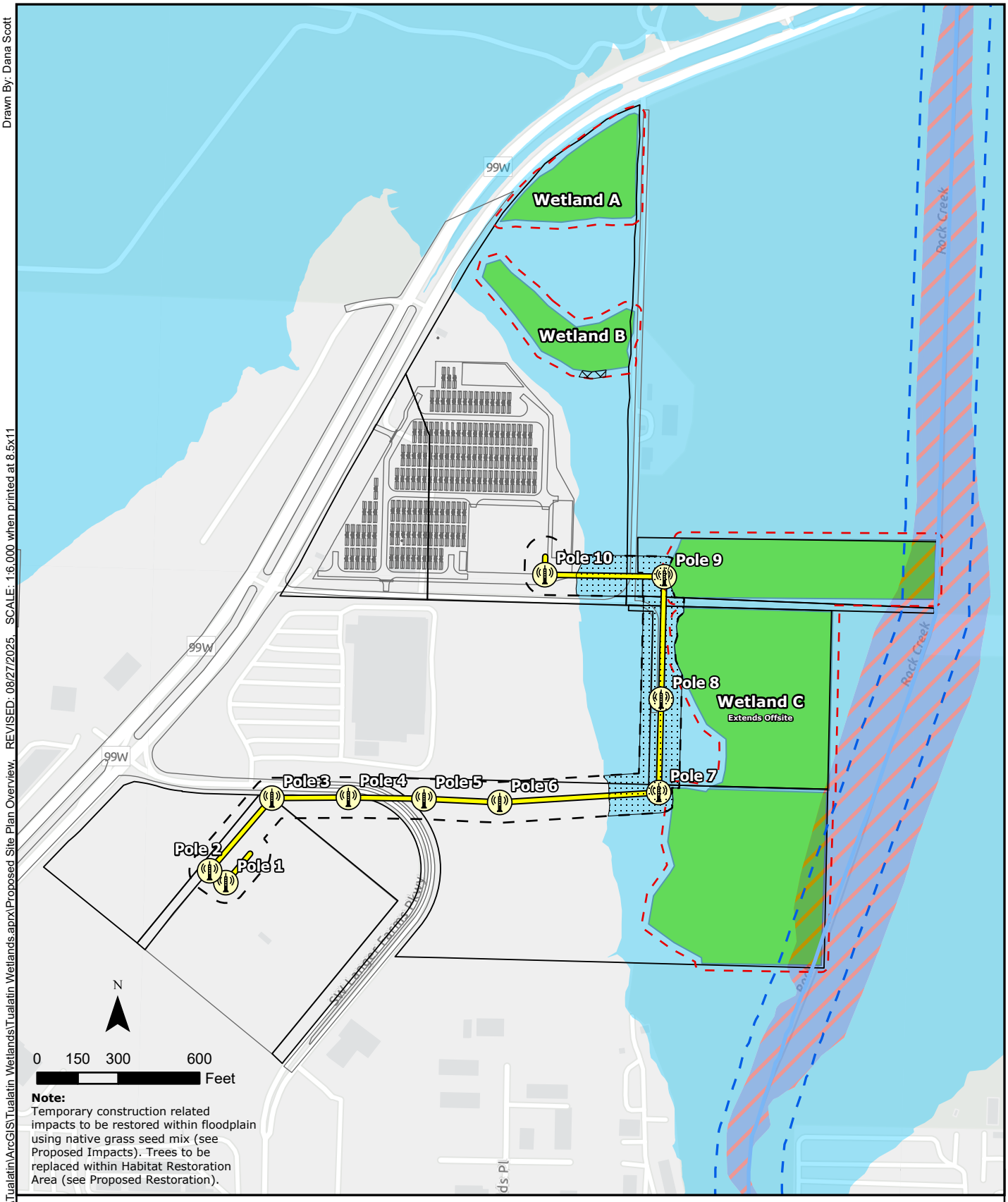
Existing Conditions
Tualatin BESS
BrightNight Power
Washington County, OR

ERM

Drawn By: Dana Scott

M:\US\Projects\A-C\BrightNight\Tualatin\ArcGIS\Tualatin Wetlands\Tualatin Wetlands.aprx\Existing Conditions, REVISED: 08/26/2025, SCALE: 1:1,800 when printed at 8.5x11

Source: Esri - World Imagery Map; NAD 1983 HARN StatePlane Oregon North FIPS 3601



Note:
Temporary construction related impacts to be restored within floodplain using native grass seed mix (see Proposed Impacts). Trees to be replaced within Habitat Restoration Area (see Proposed Restoration).

- Subject Property
- Wetland
- 25ft Wetland Buffer
- 170ft Riparian Buffer Zone
- Rock Creek
- Proposed Pole
- Proposed Gen-Tie
- Gen-Tie Corridor
- Habitat Restoration Area (4,700 SF)
- Temporary Construction Related Impact Area (4.13 Ac)
- 1% Annual Chance Flood Hazard
- Floodway

Proposed Site Plan Overview

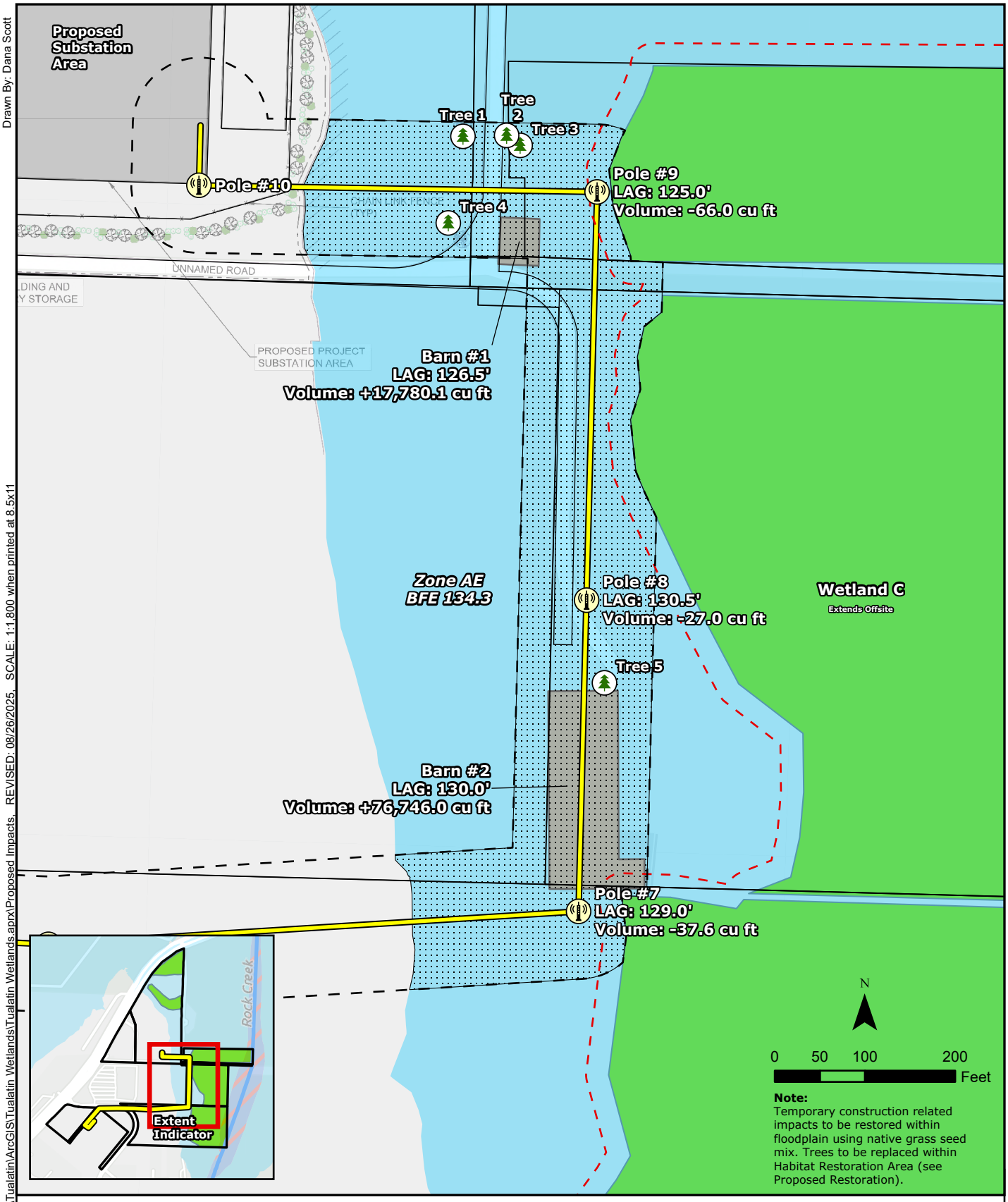
Tualatin BESS
BrightNight Power
Washington County, OR

ERM

Drawn By: Dana Scott

M:\US\Projects\A-C\BrightNight\Tualatin\ArcGIS\Tualatin Wetlands\Tualatin Wetlands.aprx\Proposed Site Plan Overview, REVISED: 08/27/2025, SCALE: 1:6,000 when printed at 8.5x11

Source: Esri - World Imagery Map; NAD 1983 HARN StatePlane Oregon North FIPS 3601



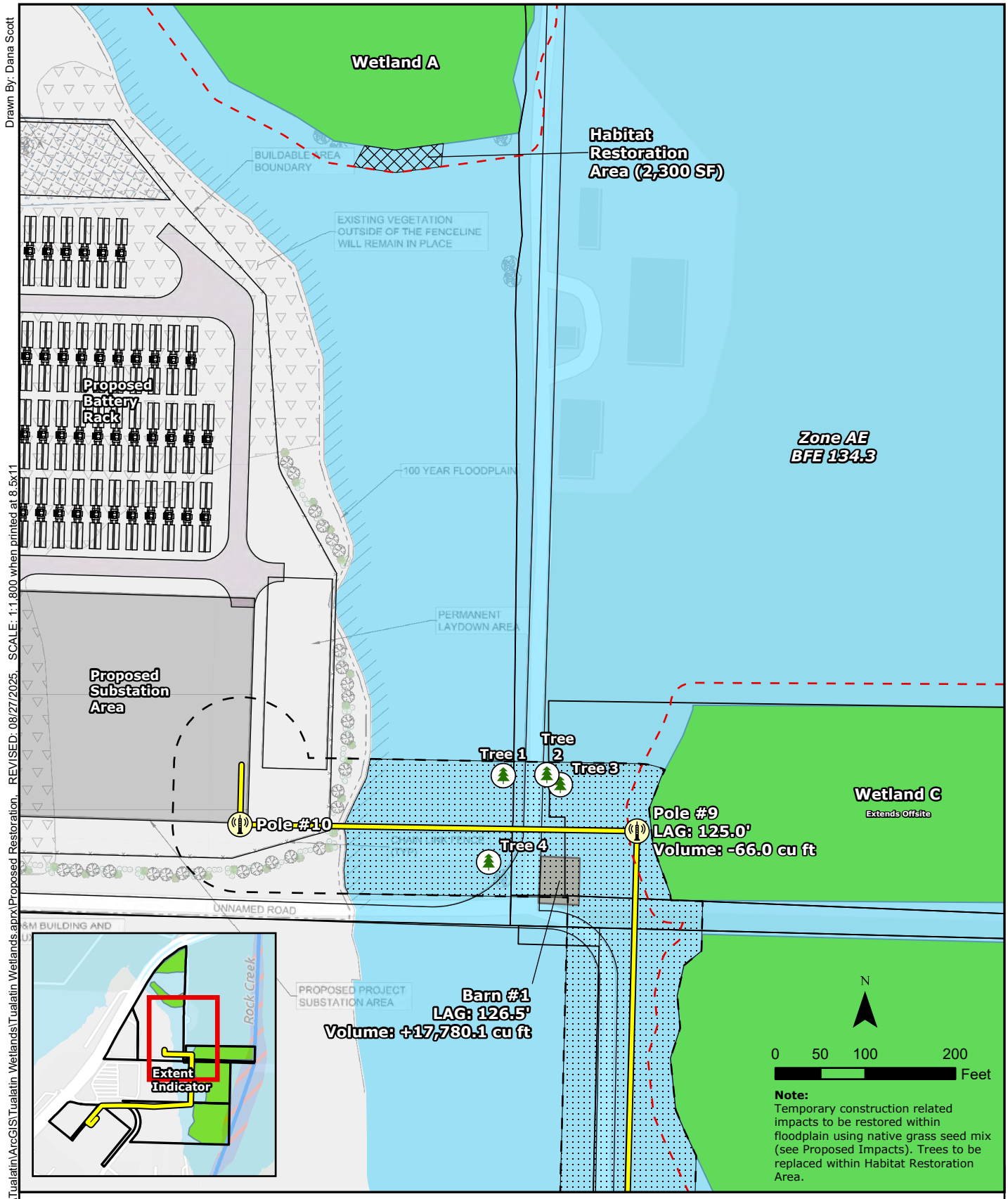
Proposed Impacts
Tualatin BESS
BrightNight Power
Washington County, OR

ERM

Drawn By: Dana Scott

M:\US\Projects\A-C\BrightNight\Tualatin\ArcGIS\Tualatin Wetlands\Tualatin Wetlands aprx\Proposed Impacts, REVISED: 08/26/2025, SCALE: 1:1,800 when printed at 8.5x11

Source: Esri - World Imagery Map; NAD 1983 HARN StatePlane Oregon North FIPS 3601



Proposed Restoration
Tualatin BESS
BrightNight Power
Washington County, OR

ERM

Drawn By: Dana Scott

REVISED: 08/27/2025, SCALE: 1:1,800 when printed at 8.5x11

M:\US\Projects\A-C\Brightnight\Tualatin\ArcGIS\Tualatin Wetlands.aprx\Proposed Restoration,

Source: Esri - World Imagery Map; NAD 1983 HARN StatePlane Oregon North FIPS 3601

Drawn By: Dana Scott

		Area (sf):	2,300				
		Cov'g (%):	100				
		Trees (%):	100				
		Shrubs (%):	0				
Botanical Name	**Common Name**	**Wetland Indicator Status**	**Habitat Restoration Area**	**Minimun Plant Spacing (Triangular**	**Minimum Height**	**Minimun Pot Size**	**Moisture Condition (Planting Area)**
TREES			**(Qty)**				
Pseudotsuga menziesii	Douglas fir	FACU	10	**10 ft**	**3 ft**	**2 gal**	**Dry**
Quercus garryana	Oregon white oak	FACU	17	**10 ft**	**3 ft**	**2 gal**	**Dry**
		Total:	**27**				
SEED MIXES (www.riverrefugeseed.com)		**WL Status**	**Temporary Impact Area**				
Native Upland Grass Mix #9	**20 lbs/acre**		**(Qty)**				
Elymus glaucus	Blue wildrye	30%					
Bromus carinatus	California brome	25%					
Hordeum brachyantherum	Meadow barley	10%					
Festuca roemeri	Roemer's fescue	10%					
Deschampsia elongata	Slender hairgrass	10%					
Agrostis exarata	Spike bentgrass	5%					
Deschampsia cespitosa	Tufted hairgrass	5%					
Festuca rubra var. rubra	Red fescue	5%					
		Total (lbs):	**83**				

1 - Scientific names and species identification taken from *Flora of the Pacific Northwest, 2nd Edition (Hitchcock and Cronquist, Ed. by Giblin, Ledger, Zika, and Olmstead, 2018).*
2 - Over-sized container plants are suitable for replacement pending Project Biologist approval.
3 - Alternate native plant species may be substituted or added with Project Biologist approval.
4 - All disturbed and bare soil areas in the buffer to be seeded with a native grass seed mix.
5 - Tree calculations based upon 10-ft average spacing.

Plant Schedule
Tualatin BESS
BrightNight Power
Washington County, OR

ERM

ERM HAS OVER 140 OFFICES ACROSS THE FOLLOWING COUNTRIES AND TERRITORIES WORLDWIDE

Argentina
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China
Colombia
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France
Germany
Hong Kong
India
Indonesia
Ireland
Italy
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Kenya
Malaysia
Mexico
Mozambique
Netherlands
New Zealand
Panama
Peru
Poland
Portugal
Romania
Singapore
South Africa
South Korea
Spain
Switzerland
Taiwan
Thailand
UAE
UK
US
Vietnam

ERM's Portland Office

Environmental Resources Management, Inc

1050 SW 6th Ave
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Portland, Oregon, 97204

T +1 503 488 5282

www.erm.com

FIGURE 1

DESCHUTES SOLAR PROJECT	BRIGHTNIGHT Power when you need it ERM
Box Canyon Mitigation Project	

FIGURE 2

DESCHUTES SOLAR PROJECT	BRIGHTNIGHT Power when you need it ERM
Box Canyon Mitigation Project	

ATTACHMENT 3 ERM HABITAT MITIGATION EXPERIENCE

Curriculum Vitae for Select Project Team Members

Approved Habitat Mitigation Plans for the QTS Data Center in Hillsboro, Oregon, and the Quincy Valley Solar Project in Grant County, Washington

Alex Murphy, AICP

Principal Consultant, Capital Project Delivery

Alex is a Certified Planner with 11 years of experience, having dedicated his career to supporting clients across a wide spectrum of development proposals. He has worked in several states, including Washington, Oregon, and Utah, where he has collaborated with agencies and stakeholders to ensure each project aligns with both regulatory requirements and the aspirations of the communities they serve. Alex's approach to planning is characterized by a commitment to sustainable development, ensuring that each project meets his client's needs while also contributing positively to the environment and society at large.

EXPERIENCE: 11 years' experience in land use/environmental planning and project management.

LINKEDIN: www.linkedin.com/in/alexanderlmurphy

EMAIL: alex.murphy@erm.com

EDUCATION

- Bachelor of Landscape Architecture. Landscape Architecture and Environmental Planning, Utah State University, USA, 2012

PROFESSIONAL AFFILIATIONS AND REGISTRATIONS

- American Institute of Certified Planners
- American Planning Association

SPECIALIZED TRAINING

- NOAA: Climate Adaptation for Coastal Communities
- WA Dept. of Ecology: Navigating SEPA
- WA Dept. of Ecology: Advanced Shoreline Permitting – No Net Loss and Mitigation
- WA Dept. of Ecology: How to Administer Development Permits in Washington's Shorelines

LANGUAGES

- English, native speaker

FIELDS OF COMPETENCE

- Project management
- Environmental and land use planning
- Federal, state, and local permitting

KEY INDUSTRY SECTORS

- Renewable energy
- Residential, commercial, and industrial development
- Local government

KEY PROJECTS PRIOR TO JOINING ERM

Confidential Power Client, Washington 2023-2025

Managed biological resource analysis for an emergency backup generator project on former forestry/mining land in Kitsap County, WA for review by the Washington Energy Facility Site Evaluation Council. Responsibilities included supervising wetland, stream, and habitat assessment efforts; mitigation planning; coordinating with local, state, and federal agencies; and completing relevant portions of the EFSEC application.

Confidential Data Center Client, Oregon 2024-2025

Managed biological resource analysis for power generation and data center site in Washington County, OR for review by the Oregon Energy Facility Siting Council. Responsibilities included supervising wetland, stream, and habitat assessment efforts; coordinating with local, state, and federal agencies; and preparing initial versions of Exhibits J, P, & Q.

Confidential Industrial Client, Washington 2022-2025

Managed biological resource analysis and permitting for a large-scale warehousing/distribution facility on a severely constrained site in Clark County, WA. Responsibilities included supervising wetland, stream, habitat, and shoreline assessment efforts; developing a mitigation plan; coordinating with local, state, and federal agencies; and completing local permitting. This project received the rare approval to use preservation-only as a mitigation strategy, allowing wetland impacts without requiring the construction of replacement wetland.

Confidential Commercial/Residential Client, Washington 2023-2025

Managed biological resource analysis and permitting for a commercial and residential mixed-use development in Pierce County, WA. Responsibilities included supervising wetland, stream, and habitat assessment efforts; developing a mitigation plan; completing permitting with local, state, and federal agencies; and monitoring implementation through construction. Mitigation efforts on this project included relocating 800 feet of a heavily impacted stream and restoring fish and wildlife habitat for a tributary to the Puyallup River.

Richard Peel, MS, PWS

Principal Consultant, Capital Project Delivery

Richard is a senior biologist and Professional Wetland Scientist (PWS) with a focus on wetland, riparian, and estuarine ecology.

Richard has over 12 years of experience in project management, regulatory assistance and permitting, mitigation/restoration site design, implementation, and monitoring, and analyses of sensitive ecosystems.

Richard is highly experienced in large field project organization and currently manages several large renewable energy projects in the Pacific Northwest. Richard also serves as a subject matter expert for multiple other large terrestrial and marine projects. He maintains advanced education and training in biology, ecology, and soil biogeochemistry.

EXPERIENCE: 12 years of experience in wetland and stream ecology, biologic surveys, permitting, and project management.

LINKEDIN: www.linkedin.com/in/richard-peel-pws-1672262b

EMAIL: richard.peel@erm.com

EDUCATION

- MS, Biology, George Washington University, 2022
- BS, Ecology, The Evergreen State College, 2016
- BA, Economics, The Evergreen State College, 2015

PROFESSIONAL AFFILIATIONS AND REGISTRATIONS

- The Society of Wetland Scientists
- The National Association of Wetland Managers
- Society for Integrative and Comparative Biology

SPECIALIZED TRAINING

- WA Dept. of Ecology: Wetlands of high conservational value
- WA Dept. of Ecology: Shoreline management and stabilization
- WA Dept. of Ecology: Shoreline modifica

- tion and restoration
- WA Dept. of Ecology: Washington State Rating System
- WA Dept. of Ecology: Eelgrass delineation
- WA Dept. of Ecology: Forage Fish

LANGUAGES

- English, native speaker

FIELDS OF COMPETENCE

- Project management
- Environmental and land use planning
- Federal, state, and local permitting
- Wetland and stream ecology
- Biological study
- Estuarine ecology
- Environmental policy and regulation
- Federal, state, and local permitting
- Project management
- Soil science and management

KEY INDUSTRY SECTORS

- Renewable energy
- Commercial land
- Marine
- Traditional energy
- Linear projects

KEY PROJECTS PRIOR TO JOINING ERM

BrightNight Power, Wasco County, Oregon. 2024-Current

Project manager for an approximate 2GW solar facility. Responsible for environmental surveys, state and local permitting coordination, and guidance through the Energy Facility Siting Council (EFSC) process. Tasks within the permit application include glare analysis, noise studies, visual simulations, decommissioning plan, establishing setbacks, wetland and stream delineations, threatened and endangered species habitat assessments, Phase I Environmental Site Assessments, cultural resources, and community outreach.

BrightNight Power – Batter Energy Storage (BESS), Kitsap County, Washington. 2024-Current

Project manager for the development of a BESS facility. Responsible for environmental surveys, state and local permitting coordination, and guidance through the local conditional use permit (CUP) process.

BrightNight Power – Batter Energy Storage (BESS), Sherman County, Oregon. 2024-Current

Project manager for the development of a BESS facility. Responsible for environmental surveys, state and local permitting coordination, and guidance through the local conditional use permit (CUP) process.

Silicon Ranch, Grant County, Washington. 2022-Current

Responsible for environmental surveys and state and local permitting coordination. Tasks within the permit application include glare analysis, noise studies, visual simulations, decommissioning plan, establishing setbacks, wetland and stream delineations, threatened and endangered species habitat assessments, Phase I Environmental Site Assessments, cultural resources, and community outreach.

Confidential Solar Development, Pennsylvania. 2023

Served as the technical lead wetland and stream delineator for an ~2,000-acre solar project located near Ulyesses, Pennsylvania.

Confidential Solar Development, Virginia. 2022

Served as the technical lead wetland and stream delineator for an ~3,000-acre solar project located near Farmville, Virginia.

Confidential Solar Client, Mississippi. 2022

Served as the technical lead wetland and stream delineator for a solar project located near Indianola, Mississippi.

Confidential Wetland Monitoring for Energy Development, West Virginia. 2022

Served as the technical lead for wetland and stream monitoring for an ~100-mile energy corridor located near Moundsville, West Virginia supervising wetland, stream, and habitat assessment efforts; coordinating with local, state, and federal agencies; and preparing initial versions of Exhibits J, P, & Q.

Confidential Industrial Client, Washington 2022-2025

Managed biological resource analysis and permitting for a large-scale warehousing/distribution facility on a severely constrained site in Clark County, WA. Responsibilities included supervising wetland, stream, habitat, and shoreline assessment efforts; developing a mitigation plan; coordinating with local, state, and federal agencies; and completing local permitting. This project received rare approval to use preservation-only as a mitigation strategy, allowing wetland impacts without requiring the construction of replacement wetland.

Confidential Commercial/Residential Client, Washington 2023-2025

Managed biological resource analysis and permitting commercial and residential mixed-use development in Pierce County, WA. Responsibilities included supervising wetland, stream, and habitat assessment efforts; developing a mitigation plan; completing permitting with local, state, and federal agencies; and monitoring implementation through construction. Mitigation efforts on this project included relocating 800 feet of a heavily impacted stream and restoring fish and wildlife habitat for a tributary to the Puyallup River.

KEY PROJECTS PRIOR TO JOINING ERM

Huntersville Petroleum Mitigation, North Carolina. 2021 – 2022

Designed a large wetland system to treat and mitigate contamination of ground water. Coordinated with state and local regulations to meet client needs while providing a biologically diverse habitat. The constructed wetland used natural processes involving wetland vegetation, soils, and microbial treatment to improve water quality, encourage wildlife, and create a centerpiece for the community.

Farm Creek Audubon Restoration, Maryland. 2020 – 2022

Coordinated the construction and monitoring of a tidal creek network extension in Dorchester County, Maryland. Provided expert advice and communication between state and federal regulators, and the Audubon Maryland-DC chapter to facilitate high salt marsh restoration. Project monitoring and expansion is ongoing to restore habitat to multiple threatened and endangered salt marsh bird species.

Homer Solar Energy Center, New York. 2020 – 2021

Served as the project manager for natural resources permitting and field lead for a 90 MW solar project located near Cortland, New York. Responsible for state and local permitting coordination, including United States Army Corps of Engineers (USACE) jurisdictional determinations, New York State Department of Environmental Conservation (NYDEC), and Optimum Risk Estimates (ORES) project review and completion. The facility is sited to generate clean, renewable electricity to power more than 20,000 New York households.

Tracy Solar Energy Center, New York. 2020 – 2021

Served as the project manager for natural resources permitting and field lead for a 119 MW solar project located near Watertown, New York. Responsible for state and local permitting coordination, including

USACE jurisdictional determinations, NYDEC, and ORES project review and completion. The facility will potentially generate enough clean, renewable electricity to power more than 27,000 New York households and is sited on approximately 600 acres of leased private land.

Rich Road Solar and Storage, New York. 2020 – 2021

The Rich Road Solar and Storage Project is a proposed 240 MW solar and energy storage facility, located in the Town of Canton, St. Lawrence County, New York. Served as the field lead and maintained responsibility for coordinating with federal, state, and local regulation. Completed the initial natural resources compliance including wetland and stream delineation, threatened and

endangered species, and invasive species surveys. Coordinated and completed initial ORES compliance.

Genesee Road Solar and Storage, New York. 2020 – 2021

The Genesee Road Solar Energy Center is a proposed 350 MW solar energy generation facility. Served as the field lead and maintained responsibility for coordinating with federal, state, and local regulation. Completed the initial natural resources compliance including wetland and stream delineation, threatened and endangered species, and invasive species surveys. Coordinated and completed initial ORES compliance.

Blue Heron Site Study, Washington. 2017 – 2019

Served as the field lead for an ornithological study of a blue heron nesting site in Gig Harbor, Washington. The yearlong study was completed to monitor the heron colony usage of the proposed development site. Coordinated with state and federal regulation regarding land use and monitoring. Communicated with local community.

Bremerton Marine Facility, Washington. 2016 – 2018

Served as the field lead for marine monitoring and coordination with state and federal regulation. Monitoring included multiple marine mammals, shorebirds, forage fish, and macro algae surveys. Completed surveys via desktop analysis, vessel, and prolonged dives.

Kevin Lash, MS

Manging Consultant, Scientist

Kevin Lash is a managing consultant based in Portland, Oregon USA in ERM's Capital Project Delivery (CPD) services team. Kevin has an MS degree in botany and he works on projects in relation to botanical resource inventories, ecological restoration, renewable energy permitting, carbon accounting, carbon crediting, natural capital, and GIS analysis. Prior to joining ERM, Kevin worked as an ecologist for the US Forest Service and the US National Park Service. Kevin has deep practical working knowledge of botany, ecology, and natural resources management and has applied this knowledge across diverse business lines.

EXPERIENCE: Ten years' experience in ecological research and monitoring

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EMAIL: kevin.lash@erm.com

EDUCATION

- MS. Botany and Forest Ecology, Miami University, USA, 2018
- BS. Zoology and Environmental Science, Miami University, USA, 2016

FIELDS OF COMPETENCE

- Plant ecology, primarily focused on shrub-steppe, grassland, forest, and alpine systems
- Botany and plant identification across North America (OR, WA, AK, CA, NM, NV, SD, OH, NC)
- Threatened, endangered, and rare plant surveys
- Vegetation community and habitat mapping
- Ecological monitoring
- Invasive plant management
- Habitat restoration, rehabilitation, and revegetation planning
- Vegetation and habitat management planning
- Statistical analysis (R and Excel)
- GIS spatial analysis and map production
- Agriculture, Forestry, and Other Land Use (AFOL) GHG accounting and carbon crediting

KEY PROJECTS

Botanical Survey Lead for Proposed Solar Development Sites in Oregon and Washington

Botanical field lead for rare plant presence surveys and vegetation community mapping across multiple sites in eastern and central Oregon and Washington, the largest site being over 10,000 acres. Lead teams of up to 3 other botanists to conduct federally and state listed plant presence/absence surveys and to map vegetation communities and habitat in accordance with the ODFW *Fish and Wildlife Habitat Mitigation Policy*, WDFW *Management Recommendations for Washington's Priority Habitats*, Washington EFSEC requirements, and Oregon EFSC requirements. Identified all plant species encountered within each site boundary, mapped any rare or listed species encountered, and mapped vegetation communities following state requirements. In Washington, implemented plot-based monitoring outlined in the WDFW *Management Recommendations for Washington's Priority Habitats: Shrubsteppe* to delineate functional vs degraded shrub-steppe communities for permitting and mitigation requirements. In Oregon, applied the ODFW *Fish and Wildlife Habitat Mitigation Policy* to mapped vegetation communities on-site to categorize them and determine mitigation goals and strategies. Synthesize field data and coordinate with state agencies to develop habitat mitigation plans, vegetation management plans, and noxious weeds management plans for proposed sites. A mitigation plan for a site in Grant County, WA has been approved by WDFW and accepted by Grant County planners.

Rare Plant Survey Lead for a Solar Development Client in Southern California

Botanical field lead for rare plant surveys across a 4,000-acre study area on BLM land near the Salton Sea in southern California. Lead a team of 5 – 16 people to conduct 100% visual coverage surveys for rare plants following BLM survey protocol to inform NEPA baseline conditions. Checked reference populations for target rare plant species, identified all plant species encountered along survey transects, and mapped any rare species encountered in the survey area.

Biological Baseline Reporting for a Mining Client in Southwestern Nevada

Technical Report Manager for the authoring of yearly large-scale NEPA baseline and biological refresh reports for two potential mine sites near Beatty, NV. In addition to coordinating report section completion and conducting senior reviews, summarized plant and wildlife data in compliance with BLM requirements and conducted a large-scale ecosystem health and community composition analysis.

Biological Constraints Reporting for an Energy Client in California

Conducted biological constraints reports associated with vegetation management and wood management activities for an energy client in California. Ensured biological analyses aligned with Federal Endangered Species Act (ESA), California Environmental Quality Act (CEQA), California Coastal Commission (CCC), and various Local Coastal Program (LCP) requirements. Developed tools to streamline the biological constraints analysis process and dramatically increased efficiency within the ERM team. Managed reporting for work associated with a Coastal Development Permit (CDP) in Santa Cruz County resulting in no comments or concerns from County officials and the approval of a rare CDP Addendum for additional work adjacent to the previously approved parcels.

Pre-Financing Carbon Project Technical Due Diligence

Lead multiple technical reviews of carbon project methodologies to identify critical risks to project implementation, yield, permanence, and reputation for finance clients considering financing proposed carbon projects. Worked within the Verra VCS, Gold Standard, and ACR registry methodologies on Improved Forest Management (IFM) and Afforestation, Reforestation, and Revegetation (ARR) carbon projects. Acted as the forestry subject matter expert to investigate forestry models, parameters, and assumptions to determine model validity and alignment with registry requirements. Benchmarked carbon yield curves against the literature and other projects within the primary carbon registries to flag risks of underperformance and greenwashing, where applicable.

On and Off Campus Sustainability Lead for Tech Client Data Center ESDD

Lead the on and off campus sustainability portion of environmental site due diligence projects for proposed data center sites for a large tech client. Combine proposed site master plan, site-specific field data, desktop natural resource data, and ecological knowledge to develop potential ecological restoration plans for data center sites post-construction. Also investigate opportunities for off campus restoration and conservation initiatives through direct client intervention or through strategic partnerships with local municipalities, non-profits, and other NGOs.

International Shipping Client with a Production Forestry Operation Greenhouse Gas Land Sector and Removals (LSR) Forestry Pilot Study and Biogenic Carbon Inventory for

Led a pilot study of data requirements and readiness for reporting against the new draft GHG LSR guidance for the forestry business line of a global agricultural client. Utilized site-specific data and emission factors from the IPC Emissions Factors Database to calculate a draft estimate of potential removals by client's managed forests. After the pilot study was completed, utilized the Draft Land Sector and Removals Guidance from the Greenhouse Gas Protocol in a pilot study to calculate biogenic carbon pools and fluxes for a production forestry operation in South Africa. Incorporated activity data and client-provided primary forestry data to track biogenic carbon through all components of the forestry operation. This project not only informed the client on the biogenic carbon pools and fluxes present in their operation, but also placed the client in a position to be an initial leader in reporting against the new LSR guidance once it is finalized.

APPLICABLE EXPERIENCE PRIOR TO ERM

Pecos National Historical Park Vegetation Monitoring, Northern New Mexico

As an ecologist for the United States National Park Service (NPS), developed and implemented monitoring protocols for native shortgrass prairie restoration, invasive plant removal efficacy, heritage apple orchard management, and beaver browse monitoring. Collaborated with University of Nevada, Las Vegas researchers on an invasive plant removal and native shortgrass prairie restoration study in the park. Provided botanical expertise to assist regional USNPS crews with monitoring of long-term fire effects and riparian health monitoring within the Park.

USFS Northeast Oregon Ecology Program Ecological Monitoring

Worked on a crew conducting ecological monitoring across the Wallowa-Whitman, Malheur, and Umatilla National Forests. Conducted week-long backpacking surveys for blister rust infection and tree health monitoring in remote, long-term whitebark pine monitoring plots in the Blue and Wallowa Mountains of NE Oregon. Additionally, conducted fire effects monitoring and ecosystem health monitoring in rangeland across NE Oregon and SE Washington, including NEPA mitigation compliance monitoring for internal USFS projects. Surveyed for federally threatened Spalding's catchfly and assessed disturbance extent in the vicinity of catchfly populations.

PUBLICATIONS

- Lassance E, Folts-Zettner T, Bennetts R, Moss J, Sosinski H, Lash K. 2024. Pecos National Historical Park Vegetation Management Plan. Pecos National Historical Park, National Park Service, Pecos New Mexico.
- Lash, Kevin, Eric Lassance, & Jeremy Moss. 2022, Pecos National Historical Park Natural Resource Management - FY 2021, National Park Service Internal Publication, Pecos, NM
- Lassance, Eric, Kevin Lash, & Jeremy Moss. 2021, Pecos National Historical Park Natural Resource Management - FY 2020, National Park Service Internal Publication, Pecos, NM
- Lash, Kevin D. and Upekala C. Wijayratne. 2019. Whitebark Pine (*Pinus albicaulis*) Survey, Wallowa Mountains, Oregon. Northeast Oregon Ecology Program, U.S. Forest Service Internal Publication, Baker City, OR
- Lash, Kevin D. 2018. Facilitative effects of dead Amur honeysuckle (*Lonicera maackii*) shrubs on native tree seedling growth and survival. MS Thesis, Oxford, OH

Samantha Bennett

Manging Consultant, Scientist

Samantha is a managing consultant based in Portland, Oregon USA in ERM's Capital Project Delivery (CPD) services team. Samantha has a bachelor's degree in environmental science and management with an emphasis of ecological restoration and works on projects in relation to wetlands and waters, wildlife and ornithology, ecological restoration, renewable energy permitting, GIS analysis, and project management. Prior to joining ERM, Samantha worked as a consultant scientist with Jacobs Engineering, Inc. and a remote sensing technician with NV5 (formerly Quantum Spatial). Samantha has deep practical working knowledge of aquatic resources, wildlife, ecology, and natural resources management and has applied this knowledge across diverse business lines.

EXPERIENCE: Six years' experience in power and transport sectors

LINKEDIN: Samantha Bennett - Portland, Oregon Metropolitan Area | LinkedIn

EMAIL: Samantha.Bennett@erm.com

EDUCATION

- BS. Environmental Science and Management: Ecological Restoration, Cal Poly University: Arcata, CA, USA, 2017
- Minor GIS, Cal Poly University: Arcata, CA, USA, 2017

FIELDS OF COMPETENCE

- Wetland and Waters Delineations in Oregon and Washington State
- Oregon Rapid Wetland Assessment Protocol (ORWAP)
- Stream Function Assessment Method (SFAM) in Oregon
- Threatened, endangered, and sensitive (wildlife, fish, avian, and botanical) species surveys and reporting
- Habitat restoration, rehabilitation, and revegetation planning
- Vegetation and habitat management planning
- Statistical analysis (Excel)
- GIS spatial analysis
- Agriculture, Forestry, and Other Land Use (AFOL) GHG accounting and carbon crediting

KEY PROJECTS

Southern California Vegetation Management Project

Managed and led the environmental coordination team across central and southern California. Used work management systems (AGOL, Arbora, and Fulcrum applications) to evaluate the need and type of biological support, prior to vegetation management activities. Client and contractor engagement and phase in planning during contract transitions.

Hydro Licensing Renewal Project

Deputy Project Manager for the Project. Tasks included monthly Project invoicing, health and safety documentation, scheduling and development of organizational tools. Provided support for technical study report sections associated with various subcontractors. Assisted in the development of the License Application for the renewal of the Project.

Battery Energy Storage System (BESS) Project in Oregon

Working with clients to delineate project boundaries of protected resources, which included identifying and mapping the extent of wetlands and other "waters of the United States" (WOTUS) within a specific area and submitting reports to agencies in accordance with (OAR 141-085 and 141-090). Preconstruction surveys for special status species and nesting raptors.

Multiple Solar Projects in Grant County Washington, Biological Support

Conducted baseline environmental field surveys and preconstruction surveys for special status species, nesting raptors, and habitat characterization of the site. Additionally, supported the habitat management plan.

Quality Technology Services (QTS) Data Centers, Environmental Support

Performed Wetland and biological field surveys, including the associated reporting and permitting (e.g., Joint Permit Application (JPA) and General Permit (GP)). Supported with fish exclusion, fish passage, mitigation and restoration plans. Provided environmental support for client planning and acquisition of new parcels for project expansion.

Pacific Gas & Electric Company (PG&E) Wood Management

Performed desktop assessments to determine potential impacts associated with wood management following vegetation activities. Provided support and communication to clients regarding the findings.

Pacific Gas & Electric Company (PG&E) Vegetation Management

Performed desktop assessments to determine potential impacts associated with vegetation management activities. Prepared environmental Permits, such as Coastal Development Permit applications (CDP). Provided support and communication to clients regarding the findings.

Goldendale Energy Storage Project

Performed Wetland and biological field surveys, including the associated reporting and permitting. Including agency and client consultation and site walk. Provided support for mitigation and planting plan, dam emergency action plan, and water diversion memorandum.

APPLICABLE EXPERIENCE PRIOR TO ERM

Multiple Oregon and Washington Energy and Transmission Projects, Wetland and Biological Support

Working with clients to delineate project boundaries of protected resources, which included identifying and mapping the extent of wetlands and other "waters of the United States" (WOTUS) within a specific area and submitting reports to agencies in accordance with (OAR 141-085 and 141-090). Preconstruction surveys for special status species and nesting raptors.

Multiple Oregon Solar Siting Energy Facility Projects, Biological and Permitting Support

Renewable energy facility in Lake County and Klamath County, OR. Supported the Project under the EFSC process to apply for a site certificate. Conducted preconstruction surveys for special status species, nesting raptors, and habitat characterization of the site.

Uranium Mine Decommissioning in Grand County, Utah, Biological Support

Conducted nesting bird and raptor nest surveys within Project Sites to locate, identify, and monitor raptor nests, providing valuable data for understanding raptor populations and informing permitting and mitigation efforts.

Sound Transit, Redmond Link Project, Arborist

Supported in inventorying trees along a light rail route in Washington State, which included tree risk assessments to identify potential hazards and health assessments to evaluate tree conditions and identify considerations for the Project.

Sagebrush and Sanborn Project, Biological Support

Ecological assessments conducted to inventory of Joshua tree populations, within potential development area.

Wyoming Wind Power Project, Deputy Project Manager

Supported with quarterly reporting for IDS compliance and ensuring compliance with regulations related to wind energy development, involving the environmental protection measures and permits.

Multiple Railway Projects (WA and CA), Biological Support

Washington State

Ensured that all local, state, and federal erosion and sediment control and water quality requirements are met during the project, including in-water work activities. Assisted in the development of the project's Stormwater Pollution Prevention Plan (SWPPP), which included oversight of best management practices (BMPs) for erosion and sediment control, including specific measures for working near or in water bodies.

California

Assisting with invoices, quarterly reports, and coordination with the California Regional Water Quality Control Board.

Stream Mitigation Plan

QTS Lenox Acres (HIL3)

PREPARED FOR
Quality Technology Services (QTS)

DATE
October 2023

REFERENCE
0661323

SIGNATURE PAGE

Preliminary Stream Mitigation Plan

QTS Lenox Acres (HIL3)

0661323

[Double click to insert signature]

Brendan Robinson
Partner-in-Charge

[Double click to insert signature]

Richard Peel
Senior Biologist

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CONTENTS

ACRONYMS AND ABREVIATIONS

DCMB	Dairy Creek Mitigation Bank
ERM	Environmental Resources Management, Inc.
ESH	Essential Indigenous Anadromous Salmonid Habitat
HUC	Hydrologic Unit Code
NRCS	Natural Resources Conservation Service
QTS	Quality Technology Services
USDA	United States Department of Agriculture

1. INTRODUCTION

This report summarizes the federal and state wetland and waterbody mitigation processes that are applicable to the Quality Technology Services (QTS) Lenox Acres (HIL3) Project (Project). It includes a brief analysis of the proposed Project impacts, applicable federal and state mitigation requirements, and the proposed methodology for the mitigation process.

QTS Lenox Acres (HIL3) (Lenox Acres) has implemented appropriate avoidance and minimization measures during the planning and design of the Project and will continue to do so in coordination with the state and federal resource agencies during the implementation of the Project. Based on field data, current Project design plans, and impact analyses, temporary and permanent impacts are anticipated.

This report documents the onsite mitigation of temporary impacts to waterbodies and the compensatory mitigation measures of the permanent impacts that may result from Project implementation. Compensatory mitigation credits are planned to be secured from the Dairy Creek Mitigation Bank in Banks, Oregon.

The Project will follow the federal process laid out by the United States Army Corps of Engineers and Oregon Department of State Lands to meet mitigation requirements.

1.1 PROJECT INFORMATION

The overall proposed project consists of two data centers (349,900 and 419,000 square feet), two stories tall each, parking spaces for 192 vehicles, new access roads within the site, utilities, stormwater management, and landscaping. In response to the anticipated increase in vehicle traffic, the road and associated culvert will be widened. The overall impervious surface area proposed for the project is 25.6 acres. A site layout is shown in Appendix A.

In-water work is limited to the replacement of an existing culvert under NE Pubols Street. The culvert replacement is integral to the process of raising NE Pubols Street out of the floodplain. Raising NE Pubols Street (1-foot above the 100-year Base Flood Elevation) is required by the City of Hillsboro Engineering and Fire Departments codes to provide safe access to the data centers in the case of a 100-year flood. The work to raise NE Pubols Street would be conducted within the road's right-of-way.

Offsite utility improvements will be confirmed during the City of Hillsboro Development Review process. However, based on preliminary discussion with the public utility providers, QTS anticipates the following offsite utility improvements. Sanitary sewer will be extended from a manhole south of the site in NE Schaaf Street west towards the Waible Creek tributary. The sanitary sewer will then run north, east of the Waible Creek tributary in a public utility easement located outside the delineated water and associated vegetated corridor to NE Pubols Street. Public water will be extended to the site from an existing main in NE Schaaf Street. The new water main will run west to NW Helvetia Road, north to NE Pubols Street, and then east and north again to NW West Union Road within the NE Pubols Street right-of-way.

1.2 PROJECT AREA DESCRIPTION

The culvert replacement mentioned above impacts 55.7 linear feet of an unnamed tributary underneath NE Pubols Street (Appendix B), as stated in the Joint Permit Application (NWP-2022-481-3). The unnamed tributary to Waible Creek runs through the west portion of the property and is a part of the Tualatin watershed (Hydrologic Unit Code [HUC] 17090010) (Appendix A). Hydrologically, the watershed is characterized by small tributaries that feed into the Tualatin River, which flows into the Willamette River. Snowpack in the watershed varies depending on elevation, with higher elevations typically experiencing more consistent snow accumulation. Surface water in the watershed is primarily used for municipal and agricultural purposes, with the Tualatin River serving as a water source for the Portland metro area (Tualatin River Watershed Council, n.d.). Onsite mitigation for the permanent impacts to the unnamed tributary is not feasible for the Project, due to available space and the developed nature of the area. However, mitigation at the Dairy Creek Mitigation Bank (DCMB) located in Banks, Oregon, is proposed.

2. AVOIDANCE AND MINIMIZATION

The proposed project location was selected due to the location within the City of Hillsboro's Helvetia Concept Plan. The area is proposed for industrial development in alignment of future employment growth in the area. Due to the specific needs of the location and preexisting infrastructure, alternative sites were not assessed for this project.

Within the project area, the project development features were designed and sited to avoid impacts to existing waters and wetlands. To the extent practicable, the project footprint also avoids the mapped Federal Emergency Management Agency (FEMA) floodplain. The data centers' layouts were intended to maximize data center size and functionality while avoiding impacts to critical areas.

Because the project area and features were sited with the intention to conform with the City's plan and avoid natural resources, an alternatives analysis is impractical.

In-water work will be temporary, for approximately 1 week, during culvert replacement activities. While the new culvert will result in permanent impact to the stream, it will also improve the stream crossing as it is significantly wider than the existing culvert and will provide enhanced aquatic habitat and fish passage when complete. The perennial stream will benefit from the larger culvert with improved water flow, including flood resilience, improved fish passage and habitat, and improved stream health. Any temporary effects that may result from construction activities (i.e. tool/equipment use) to the stream bank will be mitigated post construction through replanting with a native seed mixture.

Erosion control measures including silt fences would be temporarily installed around upland work areas during construction, to prevent sediment-laden water from reaching Waible Creek and its tributaries.

Horizontal directional drilling methods will be used to avoid impacts to the wetland, water, and vegetation corridors by installing the utility water main under the water way system . Both the entry and exit points of the horizontal directional drilling line would be outside of the water and wetland areas.

3. COMPENSATORY MITIGATION

3.1 GOALS

In accordance with Title 33 Code of Federal Regulations, Section 332.4(c)(2), the goals of the offsite stream mitigation are to offset the permanent loss of 55.7 linear feet of the unnamed tributary of Waible Creek, associated with the culvert replacement. The goal of the onsite stream restoration is to restore 55.7 linear feet of permanent impacts. The offsite natural resource mitigation area and onsite restoration areas are expected to provide the following function:

- Hydrologic function
- Geomorphic function
- Biologic function
- Water quality function

3.2 OBJECTIVES

The following list of objectives describes the proposed mitigation at the DCMB:

1. The same 4th Field (4th field HUC) of DCMB and Impact site.
2. Flow permeance match.
3. Stream size class match as defined by the Oregon Department of Forestry.
4. Essential Indigenous Anadromous Salmonid Habitat (ESH) designation if the impact is to an ESH stream.
5. Group-level function and value replacement. The applicant must demonstrate that impacted functions and values are replaced, at the group level, by functions and values at the mitigation site.

3.3 SITE SELECTION

The proposed mitigation at DCMB was evaluated using Stream Function Assessment Method (SFAM) (U.S. Environmental Protection Agency [EPA], 2020) to determine how it meets the objectives outlined above. The detailed evaluation is presented in Appendix C. The SFAM results are summarized below:

1. The DCMB and the Impact site are the same 4th Field HUC; the Tualatin Subbasin (HUC 17090010).
2. DCMB has perennial credit and impact stream is perennial.
3. DCMB stream credit is classified as “Medium”. The impact stream would also be classified as “Medium” due to it having an average annual flow of more than 2 and less than 10 cubic feet per second; the flow rate of the unnamed tributary to Waibel Creek would be in this size class based on visual assessment in the field and Stream Function Assessment Method data.
4. The DCMB has ESH designation, but the impact site stream does not. Thus, the mitigation credit exceeds the impact requirement.

5. Most of the function and value group ratings from the DCMB are equal to or higher than the impact site, except for Geomorphic Function Group Rating. The impact stream has a Function Group Rating of "Higher" for Geomorphic Function and the DCMB has "Moderate"; however, the Value Group rating for this function is "Higher" at the DCMB and "Moderate" for impact site. Due to the fact that the DCMB has higher function and value group ratings for 5 out of 8 group rating scores, we interpret this to be an "ecological match".

3.3.1 ONSITE ALTERNATIVES

Due to the high use of agriculture within the project area, onsite mitigation was unavailable and impractical. However, the stream banks will be reseeded with a native seed mix to maximize the potential for onsite mitigation.

3.3.2 REESTABLISHMENT AND REHABILITATION

The area is dominated by aggressive weedy and invasive species. The dominant species consists of Reed canary grass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus armeniacus*). During the culvert replacement, the invasive species will be removed from the construction area.

Any riparian vegetation temporarily impacted as a result of in-water work to replace the culvert and raise the NE Pubols St elevation out of the floodplain would be revegetated to the current condition or improved to CWS standards "good condition". This will be done by reseeding and planting with a native plant composition. Temporarily disturbed areas (i.e. impacted by equipment), such as the stream bank, will be hydroseeded following grading completion, as shown in the Planting Plan and Revegetation Plan (Appendix D). An estimated 4,800 sq feet of disturbed area will be hydroseeded. Shrub and tree installation will occur in the following growing season after grading completion: containerized stock shall be installed only from February 1 through May 1 and October 1 through November 15, bare root stock shall be installed only from December 15 through April 15. Grading is expected to begin in 2024 and continue into 2025.

Any riparian vegetation permanently impacted as a result of in-water work to replace the culvert and raise the NE Pubols St elevation out of the floodplain would be mitigated through the previously mentioned DCMB credits.

3.4 BASELINE INFORMATION

The DCMB is a 132-acre wetland and stream mitigation bank located in Banks, Oregon. The DCMB is located in a low-elevation floodplain area and includes approximately 2,000 feet of the West Fork of Dairy Creek, within the Dairy-McKay sub basin within the Tualatin River Watershed. The land use is primarily agriculture, zoned Exclusion Farm Use, and is compatible with mitigation banking.

The DCMB soil conditions include poorly drained, clay-loam to clay textured layer exists, starting within about 6 to 16 inches of the soil surface in the Wapato mapped soils (Natural Resources Conservation Service [NRCS], n.d.). The project area has been in agriculture for more than 100 years and some soil compaction and soil movement has occurred, likely due to farming practices.

The DCMB has three primary hydrology sources: surface water and high groundwater table associated with the West Fork of Dairy Creek, groundwater seeps from the gentle hillslopes along the eastern portion of the project area, and precipitation.

The dominant vegetation at the DCMB includes tall fescue (*Schedonorous arundinaceus*) and reed canary grass (*Phalaris arundinacea*). The historical vegetative communities within the project area likely consisted of deciduous wetland forest, emergent wetland, and mixed upland forest. Further information regarding the DCMB can be found at the website listed below.

DAIRY CREEK MITIGATION BANK | Green Banks LLC

3.5 DETERMINATION OF CREDITS

The culvert replacement is expected to create 56 feet of permanent stream impacts. The existing culvert is approximately 30 linear feet, and the replacement culvert is proposed at approximately 86 linear feet. As the existing culvert was mitigated at the time of installation, the United States Army Corps of Engineers has confirmed that the 56 linear foot difference will be regulated and requires mitigation. The DCMB has approximately 1,000 linear feet of perennial stream mitigation credits available for purchase. For the perennial stream mitigation, the DCMB has expressed the intent to provide the 56 available credits for complete mitigation of impacts.

3.6 FINANCIAL ASSURANCES

The Dairy Creek Bank has financial assurances in the form of Assignment of Deposit accounts.

4. REFERENCES

EPA (U.S. Environmental Protection Agency). 2020. Stream Function Assessment Method User Manual Version 1.1. Accessed October, 2023. Stream Function Assessment Method User Manual Version 1.1 (oregon.gov)

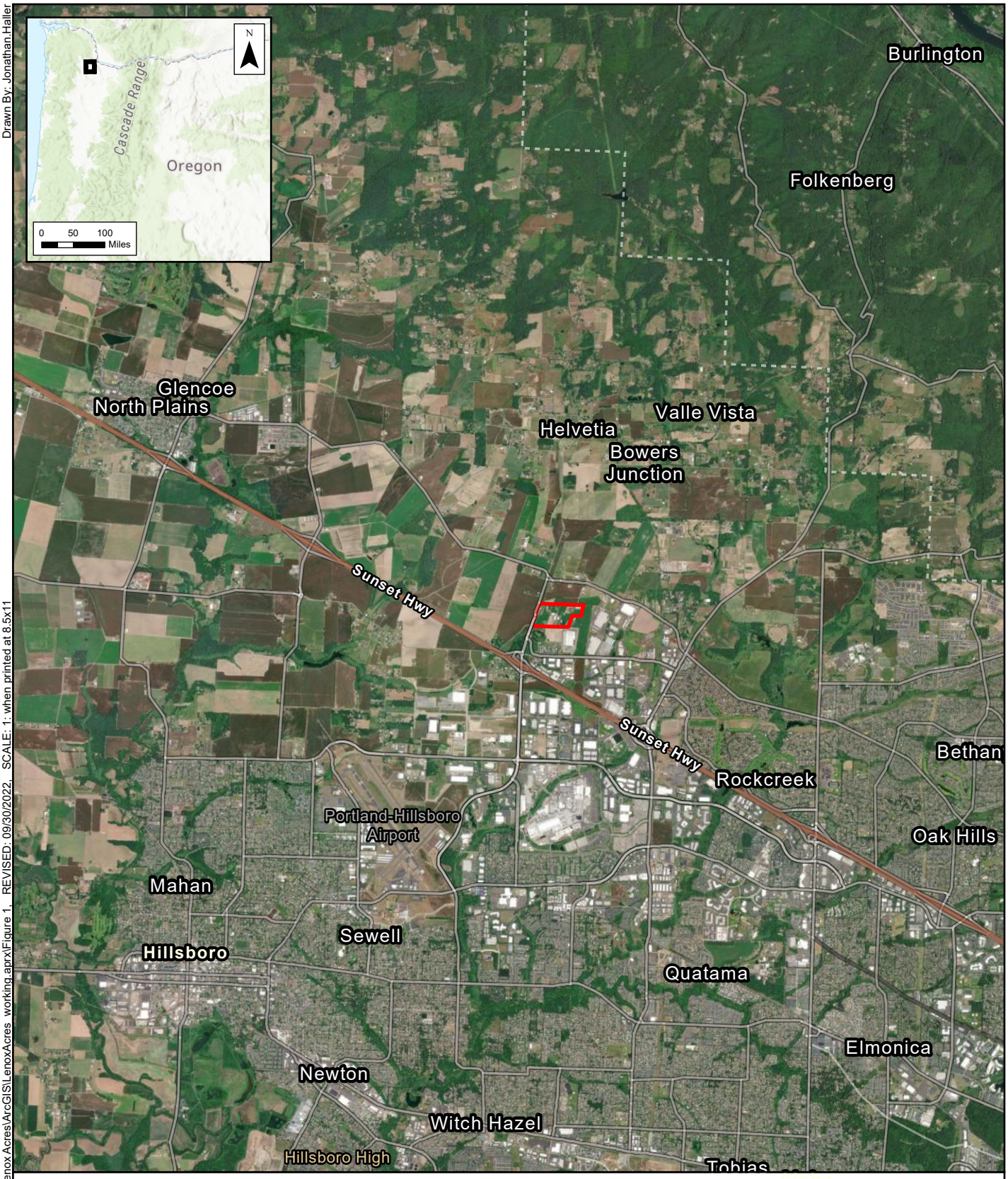
Moiel, Jonas C. Stream Credit for Quality Technology Services at Dairy Creek Bank. Received by Richard Peel. October 2023.

Tualatin River Watershed Council. N.d. Dairy – McKay. Watershed Analysis Summary. Accessed October 2023. https://trwc.org/assets/science-library/Dairy_summary.pdf

USDA/NRCS (U.S. Department of Agriculture, National Resource Conservation Service). N.d. Soil Survey Geographic (SSURGO) database for Banks, Oregon. Accessed October 2023. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053627

USDI/BLM (U.S. Department of Interior, Bureau of Land Management). March 1999. Dairy-McKay Watershed Analysis. Accessed October 2023. https://www.blm.gov/or/districts/salem/plans/files/watershed_analyses/sdo_dairy_mckay_wa/sdo_dairy_mckay_wachap_1.pdf

APPENDIX A GENERAL LOCATION MAP



Drawn By: Jonathan.Haller

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Legend

- Study Area
- -- HUC 17090010

N

0 3,500 7,000 14,000

Feet

Figure 1

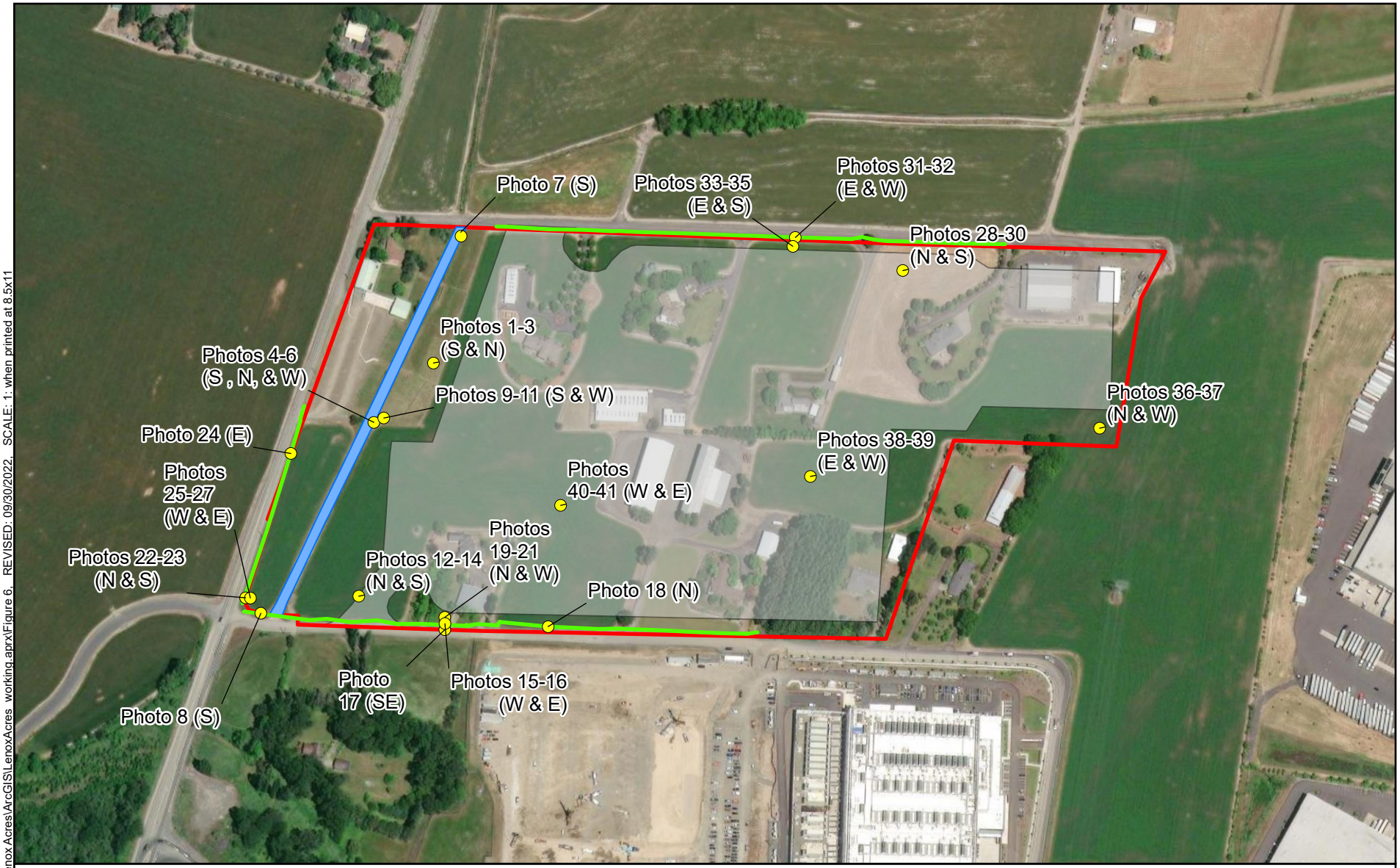
General Location Map

Compensatory Mitigation Plan
QTS Lenox Acres Washington County, OR

Environmental Resources Management
www.erm.com
ERM

Source: Esri - World Topoographic Map; NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl

APPENDIX B WETLAND DELINEATION REPORT



Legend

- Photo Point
- Roadside Ditch
- Perennial Stream
- Study Area
- Project Footprint

N

0 225 450 900

Feet

Figure 2
Wetland Determination
Wetland Delineation Report
QTS Lenox Acres
Washington County, OR

Environmental Resources Management
www.erm.com
ERM

Source: Esri - World Topoographic Map; NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl

Drawn By: Jonathan.Haller

M:\US\Projects\P-R\QTS\0646023 Lenox Acres\ArcGIS\LenoxAcres working.aprx\Figure 6, REVISED: 09/30/2022, SCALE: 1: when printed at 8.5x11

APPENDIX C STREAM FUNCTION ASSESSMENT METHOD

STREAM FUNCTION ASSESSMENT METHOD for OREGON

Version 1.1 (April 2020)

Name of Project Area:	QTS Lenox Acres Project	**Date of Field Assessment:**	1/13/2023	**Latitude*:**	45.5711 N
Data Collector:	C.Shoemaker & S.Bennett	**Elevation:** (SFAM Report)	202 feet	**Longitude*:**	-122.9195 W
				** near center of the project site*	
Project Number:	0661323	**Project Area Length (feet):**	2,100 feet	**Project Area (acres):**	61 acres
Assessment timing:	Current conditions	**Photo Numbers:**	See attached photo log		

What is the Oregon Stream Classification for the project area? Select from drop-down menu. Refer to the SFAM Report. If the project area spans more than one reach, describe the dominant stream classification.	Mountain Wet Rain/Valley Wet

What ratings does the Oregon Stream Classification identify for the following measures in the local hydrologic unit? Refer to the SFAM Report. If project area spans more than one reach, describe the dominant classification:

Aquifer Permeability (local)	High	Soil Permeability (local)	High	
Erodibility (local)	Easily Erodible	Gradient*	< 2%	*If EPA Classification is different from the gradient you observe in the local reach, select the gradient in the local reach.

Is the channel perennial, intermittent, or ephemeral? (Map Viewer-NHD Flowline)	Perennial	
Which Level III EPA Ecoregion is the site located in? (SFAM Report)	Willamette Valley	Western Mountains
Is the average width of the stream less than or greater than 50 feet? (User Input)	≤ 50 feet	Small
What is the 2 year peak flood (cfs)? (StreamStats Report)	64.7 ft^3/s	
What is the size of the drainage area (mi^2)? (StreamStats Report)	2.74 sq mi	

External Data: List below the persons and/or agencies that provided location information on rare wildlife species, and/or rare plants, and the date the information was gathered (if known).

None

Project Area History: Based on conversation with landowner/manager and other information, describe below the years and extent (% of project area) of past and present management actions (e.g., vegetation control), natural disturbances (e.g., fire, insect infestations), and human-associated disturbances (e.g., grazing regimes).

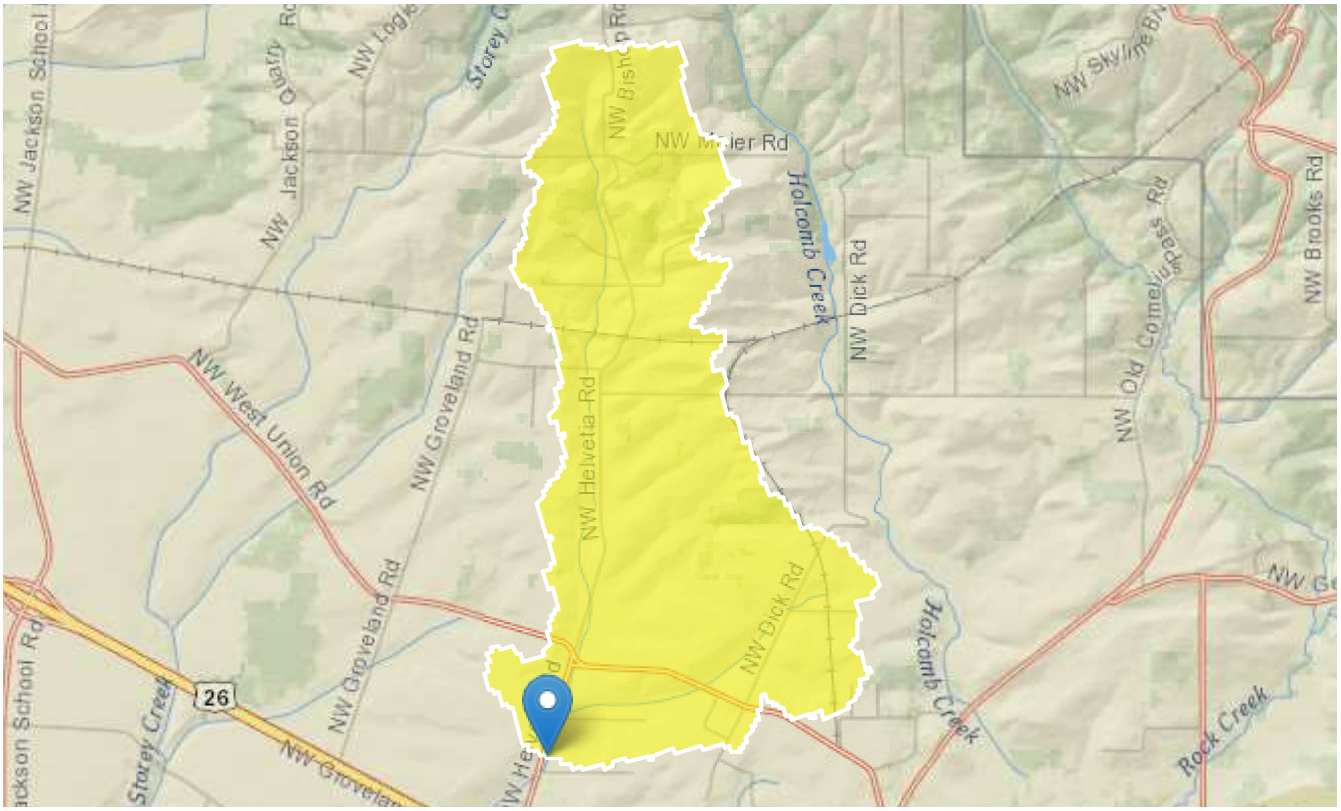
The properties have historically been used as farmland, as observed in aerial photographs dated back to 1936. The agricultural crop present on the properties is common wheat (Triticum aestivum, UPL).

Assessment Notes: Note any special features of the reach or landscape, problems with scoring, or other information that may be relevant.

At Transect A, the segment south/downstream of the PAA, the stream flows through a culvert under a three-lane road and intersection. Transect A was taken on a narrow ditch adjacent to (slightly south of) the culvert. The stream appears to have been routed under the road in late 2015 - early 2016 when NW Helvetia Rd was expanded, as seen in aerial images (Photos 2 and 3 in Photo Log).

StreamStats Report

Region ID: OR
Workspace ID: OR20230202010207745000
Clicked Point (Latitude, Longitude): 45.57043, -122.92373
Time: 2023-02-01 17:02:32 -0800



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	3.45	degrees
DRNAREA	Area that drains to a point on a stream	2.68	square miles
ELEV	Mean Basin Elevation	286	feet
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	1.78	inches
IMPERV	Percentage of impervious area	4.75	percent
JANMAXT2K	Mean Maximum January Temperature from 2K resolution PRISM 1961-1990 data	45.1	degrees F

Parameter Code	Parameter Description	Value	Unit
JANMINT2K	Mean Minimum January Temperature from 2K resolution PRISM PRISM 1961-1990 data	32.7	degrees F
ORREG2	Oregon Region Number	10001	dimensionless
SOILPERM	Average Soil Permeability	0.77	inches per hour
WATCAPORC	Available water capacity from STATSGO data using methods from SIR 2005-5116	0.16	inches

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Reg 2B Western Interior LT 3000 ft Cooper]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.68	square miles	0.37	7270
BSLOPD	Mean Basin Slope degrees	3.45	degrees	5.62	28.3
I24H2Y	24 Hour 2 Year Precipitation	1.78	inches	1.53	4.48
ELEV	Mean Basin Elevation	286	feet		
ORREG2	Oregon Region Number	10001	dimensionless		

Peak-Flow Statistics Disclaimers [Reg 2B Western Interior LT 3000 ft Cooper]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Peak-Flow Statistics Flow Report [Reg 2B Western Interior LT 3000 ft Cooper]

Statistic	Value	Unit
50-percent AEP flood	64.7	ft^3/s
20-percent AEP flood	97.4	ft^3/s
10-percent AEP flood	120	ft^3/s
4-percent AEP flood	150	ft^3/s
2-percent AEP flood	173	ft^3/s
1-percent AEP flood	196	ft^3/s

Statistic	Value	Unit
0.2-percent AEP flood	250	ft^3/s

Peak-Flow Statistics Citations

Cooper, R.M.,2005, Estimation of Peak Discharges for Rural, Unregulated Streams in Western Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5116, 76 p. (http://pubs.usgs.gov/sir/2005/5116/pdf/sir2005-5116.pdf)

Application Version: 4.12.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

OREGON EXPLORER

Stream Function Assessment Method (SFAM) Report

Report Generated: August 30, 2022 04:35 PM

Location Information

Latitude	45.5711 N	Longitude	-122.9195 W
Elevation	202 ft	Level III Ecoregion	Willamette Valley
HUC8	17090010 Tualatin		
HUC10	1709001003 Dairy Creek		
HUC12	170900100307 Lower McKay Creek		
Linear ft of stream in HUC8	2,548,889	Annual precipitation	38 in

Stream Type and Classifications

Stream Classification	Mountain Wet Rain / Valley Wet	Percent of project area	100.00%
Aquifer permeability	High	Soil permeability	High
Gradient	>6%	Erodibility	Easily_Erodible

Stream classifications and associated attributes are derived from a U.S. Environmental Protection Agency stream classification geospatial data layer developed for Oregon (2015). This layer provides a statewide stream/watershed classification system for streams and rivers of various sizes, based in part on a hydrologic landscape classification system.

OREGON EXPLORER

Stream Function Assessment Method (SFAM) Report

Report Generated: August 30, 2022 04:35 PM

Rare Species Scores and Special Habitat Designations

Rare Species Type	Maximum score	Sum Score	Rating
Non-anadromous Fish Species	0	0	None
Amphibian & Reptile Species	0.24	0.24	Intermediate
Feeding Waterbirds	0	0	None
Songbirds, Raptors, and Mammals	0	0	None
Invertebrate Species	0	0	None
Plant Species	0	0	None

Scores have taken into account several factors for each rare species record contained in the official database of the Oregon Biodiversity Information Center (ORBIC): (a) the regional rarity of the species, (b) their proximity to the point of interest, and (c) the "certainty" that ORBIC assigns to each of those records.

Within 300 ft of a Special Protected Area?	No
Within a HUC12 that has designated Essential Salmonid Habitat?	Yes
Within 2 miles of an Important Bird Area?	No

Water Quality Impairments

Water quality information is derived from Oregon's 2012 Integrated Report, including the list of water quality limited waters needing Total Maximum Daily Loads (303d List). Each record in the report is assigned an assessment category based on an evaluation of water quality information. Categories included in the SFAM Report are:

Category 5: *Water is water quality limited and a TMDL is needed; Section 303(d) list.*

Category 4: *Water is impaired or threatened but a TMDL is not needed because: (A) the TMDL is approved, (B) other pollution requirements are in place, or (C) the impairment (such as flow or lack of flow) is not caused by a pollutant.*

Category 3B: *Water quality is of potential concern; some data indicate non-attainment of a criterion, but*

Report Generated: August 30, 2022 04:35 PM

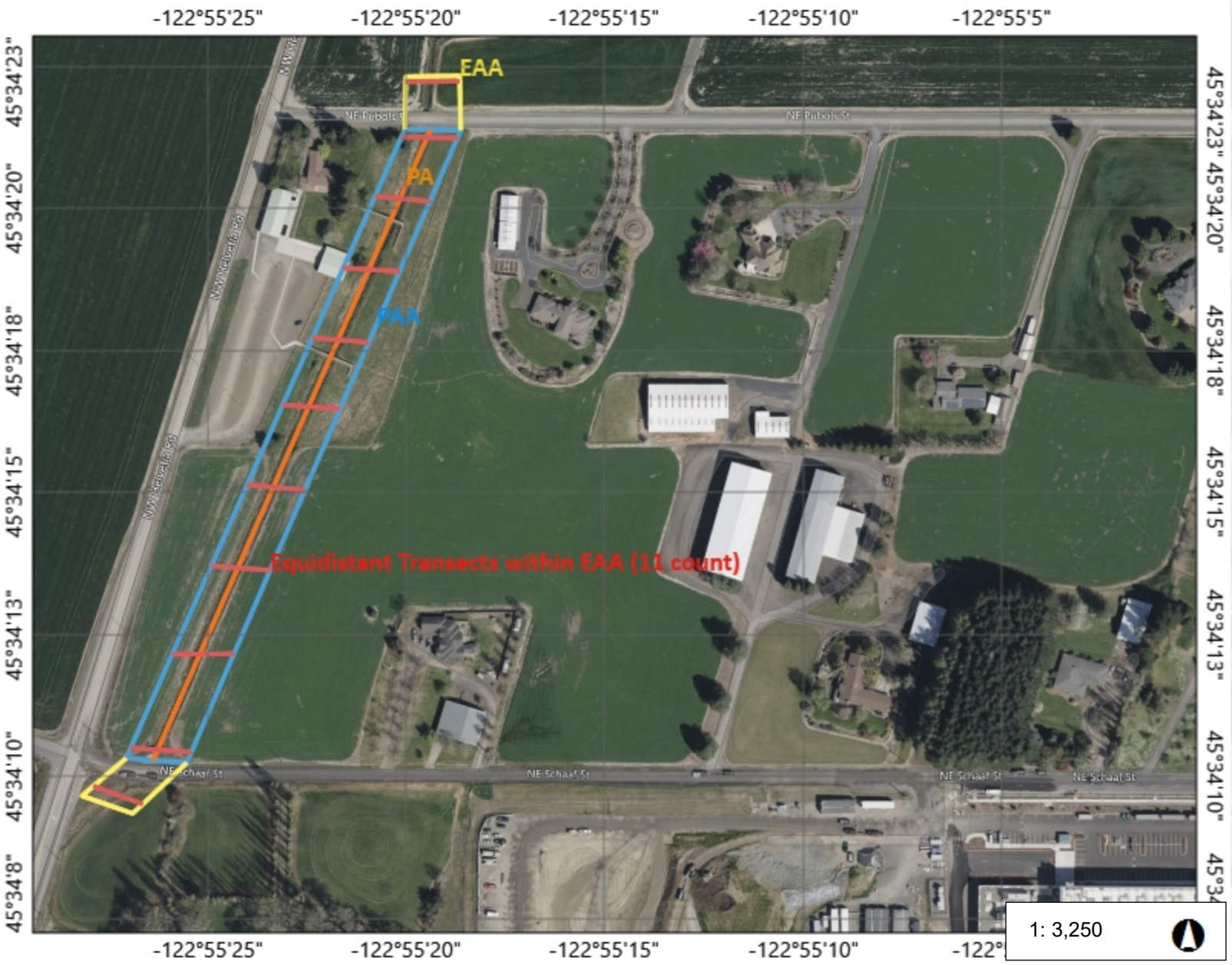
data are insufficient to assign another category.

Dominant soil type(s)			
Soil Type	Erosion Hazard Rating	Hydric Rating	Percent Area
Woodburn silt loam, 0 to 3 percent slopes	Slight	No	34.90%
Amity silt loam	Slight	No	21.04%
Verboort silty clay loam	Slight	Yes	17.04%
Willamette silt loam, 0 to 3 percent slopes	Slight	No	14.85%
Verboort silty clay loam	Slight	Yes	7.00%
Woodburn silt loam, 0 to 3 percent slopes	Slight	No	5.17%

This report contains both centroid-based and polygon-based data. The Location Information section of the report contains centroid-based data (determined by the center point of the polygon), while the remaining sections are polygon-based (determined from the entire polygon).

The rare species results in this report are based on a subset of the ORBIC rare species dataset. The SFAM tool only reports on rare species that meet the following criteria: wetland habitat species that are tracked by ORBIC, excluding historical or extirpated sites or those with low mapping accuracy. More information about specific sites and additional species can be obtained from ORBIC through data requests, see https://inr.oregonstate.edu/orbic/data-requests *for details.*

QTS Lenox SFAM Map



Legend

States & Provinces

- Other States and Provinces
- Oregon

Notes

Add your notes here

1: 3,250

0.1 0 0.05 0.1 Miles

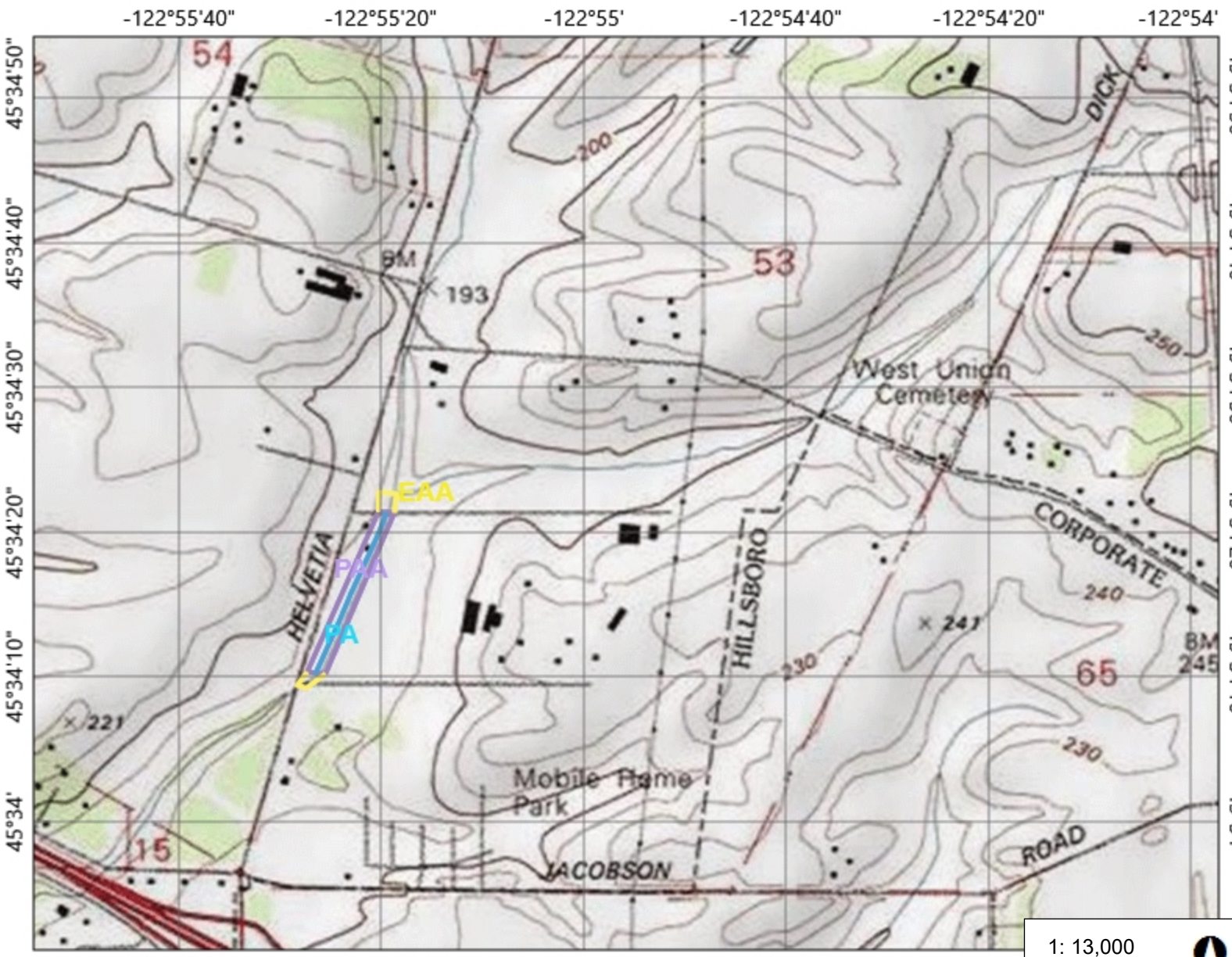
WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output for reference only from: ORWAP and SFAM Map Viewer

Data layers that appear on this map may or may not be accurate, current, or reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION.

SFAM QTS Lenox Topo Map



Legend

States & Provinces

- Other States and Provinces
- Oregon

1: 13,000

Notes

Add your notes here

0.4 0 0.21 0.4 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output for reference only from: ORWAP and SFAM Map Viewer

Data layers that appear on this map may or may not be accurate, current, or reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION.

SFAM PHOTOGRAPHIC LOG

QTS Lenox Acres Project
Washington County, Oregon
January 13, 2023

Photo 1. Transect A, looking northeast towards NE Schaaf St

Photo 2. 2015 aerial of Transect A area, before stream was culverted under intersection

Photo 3. 2016 aerial of Transect A area, after stream was culverted under intersection

Photo 4. Transect C / Vegetation Transect 1, looking west

Photo 5. Transect F / Vegetation Transect 2, looking west

Photo 6. Transect I / Vegetation Transect 3, looking west

Photo 7. Transect J, looking northwest towards NE Pubols St

Photo 8. Transect K, looking southwest toward NE Pubols St

STREAM FUNCTION ASSESSMENT METHOD for OREGON

Version 1.1 (April 2020)

Name of Project Area:	QTS Lenox Acres Project	**Date of Field Assessment:**	Post Construction	**Latitude*:**	45.5711 N
Data Collector:	S. Bennett & Richard Peel	**Elevation:** (SFAM Report)	202 feet	**Longitude*:**	-122.9195 W
				** near center of the project site*	
Project Number:	0661323	**Project Area Length (feet):**	2,100 feet	**Project Area (acres):**	61 acres
Assessment timing:	Predicted conditions	**Photo Numbers:**	See attached photo log		

What is the Oregon Stream Classification for the project area? Select from drop-down menu. Refer to the SFAM Report. If the project area spans more than one reach, describe the dominant stream classification.	Mountain Wet Rain/Valley Wet

What ratings does the Oregon Stream Classification identify for the following measures in the local hydrologic unit? Refer to the SFAM Report. If project area spans more than one reach, describe the dominant classification:

Aquifer Permeability (local)	High	Soil Permeability (local)	High	
Erodibility (local)	Easily Erodible	Gradient*	< 2%	*If EPA Classification is different from the gradient you observe in the local reach, select the gradient in the local reach.

Is the channel perennial, intermittent, or ephemeral? (Map Viewer-NHD Flowline)	Perennial	
Which Level III EPA Ecoregion is the site located in? (SFAM Report)	Willamette Valley	Western Mountains
Is the average width of the stream less than or greater than 50 feet? (User Input)	≤ 50 feet	Small
What is the 2 year peak flood (cfs)? (StreamStats Report)	64.7 ft^3/s	
What is the size of the drainage area (mi^2)? (StreamStats Report)	2.74 sq mi	

External Data: List below the persons and/or agencies that provided location information on rare wildlife species, and/or rare plants, and the date the information was gathered (if known).

None

Project Area History: Based on conversation with landowner/manager and other information, describe below the years and extent (% of project area) of past and present management actions (e.g., vegetation control), natural disturbances (e.g., fire, insect infestations), and human-associated disturbances (e.g., grazing regimes).

The properties have historically been used as farmland, as observed in aerial photographs dated back to 1936. The agricultural crop present on the properties is common wheat (Triticum aestivum, UPL).

Assessment Notes: Note any special features of the reach or landscape, problems with scoring, or other information that may be relevant.

Assessment will be tailored to capture the enhancement to the culvert crossing. Current data forms reflect the pre-construction assessment and are expected to remain largely unchanged.

STREAM FUNCTION ASSESSMENT METHOD for OREGON

Name of Project Area:	QTS Lenox Acres Project	Assessment Timing:	Predicted conditions	Enter Data in These Boxes ONLY Scores Automatically Calculated in Green Boxes

VALUES MEASURES TABLE

FILL IN THE YELLOW BOXES. Most questions contain drop-down menus in their respective answer box. Select an answer from the drop-down menus, when possible, instead of typing an answer.

Measure	Function Groups	Submeasure	Measure Abbreviation	Qualifiers		Data Entry			Measure Score
V1 **Rare Species Occurrence & Special Habitat Designations**	**Are there rare species or special habitat designations in the vicinity of the PA?** Answer each submeasure using information from the site's SFAM report (rare species scores & special habitat designations section), as well as any available survey data for the PA and its vicinity, or personal knowledge about the site. Note: The SFAM Report provides rankings of High, Intermediate, Low, or None for each category of rare species associated with aquatic and riparian habitat. Upgrade a ranking to High if there is a recent (within 5 years) onsite observation of any of these species by a qualified observer under conditions similar to what now occur. Provide references in the external notes section of the cover page. *Values informed: Surface Water Storage, Flow Variation, Substrate Mobility, Maintain Biodiversity, Sustain Trophic Structure, Nutrient Cycling, Chemical Regulation, Thermal Regulation* **Essential salmonid habitat or rare non-anadromous fish species:**								
	Hydrology, Geomorphology, Biology, Water Quality	Fish	Fish		Is the PA within a HUC12 that has designated Essential Salmonid Habitat (ESH)? Select yes or no.	Yes			1.00
					According to the site's SFAM Report, what is the "non-anadromous fish" score? Select an answer from the dropdown menu:	None/Not Known			
	Rare amphibian and reptile species:								
	Hydrology, Geomorphology, Biology, Water Quality	Rare Amphibians and Reptiles	RarAmRep		According to the site's SFAM Report, what is the "amphibian and reptile" score? Select an answer from the dropdown menu:	Intermediate			0.50
	Important Bird Areas or rare waterbirds:								
	Biology, Water Quality	Waterbirds	Waterbird		Is there an Important Bird Area (IBA) within a 2-mile radius of the PA?	No			0.00
					According to the site's SFAM Report, what is the "feeding waterbird" score? Select an answer from the dropdown menu:	None/Not Known			
	Rare songbirds, raptors, and mammals:								
	Biology, Water Quality	Rare Bird and Mammals	RarBdMm		According to the site's SFAM Report, what is the "songbird, raptor and mammal" score? Select an answer from the dropdown menu:	None/Not Known			0.00
	Rare invertebrate species:								
	Hydrology, Geomorphology, Biology, Water Quality	Rare Invertebrates	RarInvert		According to the site's SFAM Report, what is the "invertebrates" score? Select an answer from the dropdown menu:	None/Not Known			0.00
	Rare plant species:								
	Geomorphology, Biology, Water Quality	Rare Plants	RarPlant		According to the site's SFAM Report, what is the "plant" score? Select an answer from the dropdown menu:	None/Not Known			0.00
V2 **Water Quality Impairments**	**Is this reach on the 303(d) list or other TMDL (Categories 3B-5) for any of the following impairments: sediment, nutrient, metals & toxics, temperature, or flow modification?** Answer each submeasure using information from the site's SFAM Report (water quality impairments section). *Values informed: Flow Variation, Sediment Continuity, Create & Maintain Habitat, Sustain Trophic Structure, Nutrient Cycling, Chemical Regulation, Thermal Regulation* **Sediment impairment:** total suspended solids (TSS), sedimentation, or turbidity (note that some sedimentation can be naturally occurring and desirable therefore does not constitute a problem)								
	Geomorphology, Water Quality	Sedimentation	SedList		Select yes or no from the dropdown menu:	No			0.00
	Nutrient impairment: phosphorus, nitrate, ammonia, DO, aquatic weeds or algae, chlorophyll a, etc.; or untreated stormwater/wastewater discharge occurs within 500 feet of the reach								
	Biology, Water Quality	Nutrient Impairment	NutrImp		Select yes or no from the dropdown menu:	No			0.00
	Metals or other toxics impairment: toxics, dioxin, heavy metals (iron, manganese, lead, zinc, etc.); or untreated stormwater/wastewater discharge occurs within 500 feet of the reach								
	Water Quality	Metals & Toxics Impairment	ToxImp		Select yes or no from the dropdown menu:	No			0.00
	Temperature impairment:								
	Biology, Water Quality	Temperature Impairment	TempImp		Select yes or no from the dropdown menu:	No			0.00
	Flow modification:								
	Hydrology, Biology	Flow Modification	FlowMod		Select yes or no from the dropdown menu:	No			0.00
V3 **Protected Areas**	**Is the PA boundary within 300 feet of a special protected area?** Answer using information from the site's SFAM Report (Within 300 feet of a Special Protected Area) as well as other available data for the PA and its vicinity. Note: The SFAM Report evaluates whether BLM Areas of Critical Environmental Concern (ACEC) or Outstanding Natural Areas (ONA), federal Research Natural Areas (RNA) or Special Interest Areas (SIA), Natural Heritage Conservation Areas (NHCA), and Land Trust and Nature Conservancy Preserves are within 300 feet of the PA. If there are other lands within 300 feet of the site that are protected specifically for their high ecological significance, select yes and provide references in the assessment notes section of the cover page. *Values informed: Maintain Biodiversity, Sustain Trophic Structure*								

	Biology		Protect		Select yes or no from the dropdown menu:	No			0.00
V4 **Impervious Area**	**What is the percent impervious area in the drainage basin?** Answer using information from the site's StreamStats Report (IMPERV). *Values informed: Surface Water Storage, Flow Variation, Sediment Continuity, Substrate Mobility, Create & Maintain Habitat, Sustain Trophic Structure, Nutrient Cycling, Chemical Regulation, Thermal Regulation*								
	Hydrology, Geomorphology, Biology, Water Quality		ImpArea		<10%, select A; 10-25%, select B; >25-60%, select C; >60%, select D.	A			0.00
V5 **Riparian Area**	**What is the percentage of intact riparian area within 2 miles upstream of the PA?** Intact refers to a riparian area with forest or otherwise unmanaged (i.e. natural) perennial cover appropriate for the basin that is at least 15 ft wide on both sides of the channel. Unmanaged perennial cover is vegetation that includes wooded areas, native prairies, sagebrush, vegetated wetlands, as well as relatively unmanaged commercial lands in which the ground and vegetation is disturbed less than annually, such as lightly grazed pastures, timber harvest areas, and rangeland. It does not include water, pasture, row crops (e.g., vegetable, orchards, Christmas tree farms), lawns, residential areas, golf courses, recreational fields, pavement, bare soil, rock, bare sand, or gravel or dirt roads. *Values informed: Create & Maintain Habitat, Sustain Trophic Structure, Nutrient Cycling, Chemical Regulation, Thermal Regulation*								
	Biology, Water Quality		RipArea		If >50% select A. If >35-50%, select B. If 15-35%, select C. If <15%, select D.	D			0.00
V6 **Extent of Downstream Floodplain Infrastructure**	**What is the extent of infrastructure (buildings, bridges, utilities, row crops) in the floodplain?** Consider the floodplain area between the PA and either the next largest water body (large tributary, mainstem junction, lake, etc.) or 2 miles downstream, whichever is less. *Values informed: Surface Water Storage, Sediment Continuity, Create & Maintain Habitat, Sustain Trophic Structure*								
	Hydrology, Geomorphology, Biology		DwnFP		If >50% of total area, select A. If 1-50% of total area, select B. If none, select C. If not known or the downstream floodplain is not mapped, select D.	B			0.50
V7 **Zoning**	**What is the dominant zoned land use designation downstream of the PA?** Consider the floodplain area between the PA and either the next largest water body (larger tributary, mainstem junction, lake, etc.) or 2 miles downstream, whichever is less. *Values informed: Surface Water Storage, Create & Maintain Habitat, Sustain Trophic Structure*								
	Hydrology, Biology		Zoning		If developed (commercial, industrial, residential, etc.), select A. If agriculture or rural residential, select B. If forest, open space, or public lands, select C. If not zoned or no information, select D.	A			1.00
V8 **Frequency of Downstream Flooding**	**What is the frequency of downstream flooding?** Consider the floodplain area between the PA and either the next largest water body or 2 miles, whichever is less. Determine the frequency of flooding downstream of the PA that affects infrastructure (i.e. affects use of the site or causes economic loss). *Values informed: Surface Water Storage*								
	Hydrology		DwnFld		If frequent (several times a year), select A. If moderate (up to once a year), select B. If infrequent (only large events), select C. If never or not known, select D.	C			0.30

V9

Impoundments

What is the prevalence of impoundments within 2 miles upstream and downstream of the PA that are likely to cause shifts in timing or volume of water?

The shift may be by hours, days, or weeks, becoming either more muted (smaller or less frequent peaks spread over longer times, more temporal homogeneity of flow or water levels) or more flashy (larger or more frequent spikes but over shorter times). For each category, select yes or no from the dropdown menu.

Values informed: Surface Water Storage, Flow Variation, Sediment Continuity, Substrate Mobility, Create & Maintain Habitat; Functions informed: Flow Variation

Hydrology, Geomorphology, Biology		Impound		Are there 1-2 small dams or other impoundments **upstream** of the PA?	No	Upstream impoundments subscore:	1.00
				Are there >2 small impoundments, 1 or more large dams or other impoundments **upstream** of the PA?	No		
				Are there 1-2 small dams or other impoundments **downstream** of the PA?	No	Downstream impoundments subscore:	1.00
				Are there >2 small impoundments, 1 or more large dams or other impoundments **downstream** of the PA?	No		

V10

Fish Passage Barriers

Are there man-made fish passage barriers within 2 miles upstream and/or downstream of the PA?

Select an answer from the drop-down menu for each of the upstream and downstream directions. If more than one barrier is present, answer for the one with the most restricted level of passage (e.g. Blocked). Do not include natural barriers.

Values informed: Maintain Biodiversity, Sustain Trophic Structure

Biology		Passage	Slope barrier	Upstream	Blocked	0.00		0.00
				Downstream	Blocked	0.00		

V11

Water Source

Is there an area that is of special concern for drinking water sources or groundwater recharge within 2 miles downstream of the PA?

This includes any of the following: the source area for a surface-water drinking water source; the source area for a groundwater drinking water source; a designated Groundwater Management Area; a designated Sole Source Aquifer.

Values informed: Sub/Surface Transfer, Nutrient Cycling, Chemical Regulation

Hydrology, Water Quality		Source		Select yes or no from the dropdown menu:	No			0.00

V12

Surrounding Land Cover

What are the land cover types surrounding the PA?

Draw a 2 mile radius around the PA. Provide an estimate of the percentage of area within the resulting polygon that matches each land cover description. Enter 0% if none. Enter 1% if barely present. Must sum to 100%.

Values informed: Maintain Biodiversity, Sustain Trophic Structure

Biology		SurrLand		Unmanaged vegetation (wetland, native grassland, forest) or water	10	× 1.00	10.00	0.45
				Managed vegetation (pasture, regularly watered lawn (i.e. park), row crops, orchards)	70	× 0.50	35.00	
				None of the above (including bare areas [dirt, rock], roads, energy facilities, residential, commercial, industrial)	20	× 0.00	0.00	
				SUM	100			

V13

Riparian Continuity

What is the longitudinal extent of intact riparian area that is contiguous to the PA?

Select the longest length of contiguous riparian corridor in either the upstream or downstream direction, but do not include the PA length itself.

Intact refers to a riparian area with forest or otherwise managed (i.e. natural) perennial cover appropriate for the basin that is at least 15 ft wide on both sides of the channel. Contiguous means there are no > 100 ft gaps in forested cover or unmanaged perennial cover. Unmanaged perennial cover is vegetation that includes wooded areas, native prairies, sagebrush, vegetated wetlands, as well as relatively unmanaged commercial lands in which the ground and vegetation is disturbed less than annually, such as lightly grazed pastures, timber harvest areas, and rangeland. It does not include water, pasture, row crops (e.g., vegetable, orchards, Christmas tree farms), lawns, residential areas, golf courses, recreational fields, pavement, bare soil, rock, bare sand, or gravel or dirt roads.

Values informed: Maintain Biodiversity, Create & Maintain Habitat, Sustain Trophic Structure, Nutrient Cycling, Chemical Regulation, Thermal Regulation

Biology, Water Quality		RipCon		If <100 feet, select A. If 100-500 feet, select B. If >500 feet, select C.	C			1.00

V14

Watershed Position

What is the relative position of the PA in its HUC 8 watershed?

Answer this question looking at position of the PA releative to the 8-digit HUC layer.

- If the PA is (a) closer to the watershed's outlet than its upper end and (b) closer to the large stream/river exiting the watershed's outlet than it is to the boundary of the watershed, select "lower 1/3."
- If the PA is (a) closer to the watershed's upper end than its outlet and (b) closer to the watershed's boundary than its large stream/river, select "upper 1/3."
- If neither of the above conditions are met, select "middle 1/3."

Values informed: Sediment Continuity, Nutrient Cycling, Chemical Regulation

Geomorphology, Water Quality		Position		Select an answer from the dropdown menu:	Middle 1/3			0.50

V15 **Flow Restoration Needs**	**<u>What is the "streamflow restoration need" ranking of the watershed within which the PA is located?</u>** Answer this question using the Flow Restoration Needs layer in the SFAM Map Viewer. *Values informed: Flow Variation, Create & Maintain Habitat*								
	Hydrology, Biology		FlowRest		Select an answer from the dropdown menu:	Moderate			0.50
V16 **Unique Habitat Features**	**<u>Are there rare aquatic habitat features within the EAA that are not common to the rest of the drainage basin</u>?** For each feature type, select yes or no from the dropdown menu. This question must be answered in the field, but the user can check for any mapped wetlands or seeps, springs, or tributaries in the office using the Oregon Wetlands Cover, Springs, and the Flowline layers, respectively. *Values informed: Substrate Mobility, Maintain Biodiversity, Create & Maintain Habitat, Sustain Trophic Structure, Thermal Regulation*								
	Geomorphology, Biology		HabFeat		Large log jams that span 25% or more of the active channel width?	No		Overall HabFeat score	0.00
					Braided channel or otherwise multiple channels resulting in islands?	No			
					Large spatial extent (>30%) of wetlands in the floodplain?	No		Substrate subscore	0.00
					Seeps, springs, or tributaries contributing colder water?	No		Thermal subscore	0.00
Already in Stream Classification on Cover Page - NO DATA INPUT REQUIRED.									
Surface Water Runoff	**What is the level of surface water runoff (based on local water availability and local gradient)?** No data input necessary, information taken from EPA classification (stream type & gradient).								
	Hydrology		Runoff						0.75
Aquifer Permeability	**What is the permeability of the aquifer (determined by percent permeable bedrock based on hydraulic conductivity m/day)?** No data input necessary, information taken from EPA classification.								
	Hydrology		AqPerm			High			0.00
Soil Permeability	**What is the permeability of the soil (based on hydraulic conductivity in cm/hr)?** No data input necessary, information taken from EPA classification.								
	Hydrology		SoilPerm			High			0.00
Erodibility	**What is the erodibility of this reach?** No data input necessary, information taken from EPA classification.								
	Geomorphology		Erode			Easily Erodible			1.00

STREAM FUNCTION ASSESSMENT METHOD for OREGON

Name of Project Area:	QTS Lenox Acres Project	Assessment Timing:	Predicted conditions	Orange Boxes are linked to the PAA or EAA Field forms
				Scores Automatically Calculated in Green Boxes

FUNCTIONS MEASURES TABLE

Check the orange boxes to confirm all field entries have transferred appropriately. If necessary the orange box entries can be hand entered. However, hand entry into the orange boxes will remove the link to the Field Form. A #DIV/0! or 'FALSE' entry means that the Cover Page, PAA Field Form or EAA Field Form is not complete.

Measure	Function Groups		Measure Abbreviation	Qualifiers		Data Entry (linked to field forms)	Error Messages		Measure Score
F1 **Natural Cover**	**What is the percent natural cover above the stream within the PAA?** Measure the percentage of cover above the stream, including both overstory and understory vegetation and overhanging banks, by averaging spherical densiometer measurements taken at each transect within the PAA. *Functions informed: Sustain Trophic Structure, Nutrient Cycling, Thermal Regulation*								
	Biology, Water Quality		Cover	WMTsmall	**Enter a percentage**: *(round to nearest whole number)*	0			0.00
F2 **Invasive Vegetation**	**What is the percent cover of invasive vegetation within the PAA?** Consider the Oregon Department of Agriculture Noxious Weed list in Appendix 3 of the SFAM User Guide, and other sources of information, such as Oregon iMAPInvasives and iNaturalist. *Functions informed: Maintain Biodiversity, Sustain Trophic Structure*								
	Biology		InvVeg		**Enter a percentage**: *(round to nearest whole number)*	1			0.70
F3 **Native Woody Vegetation**	**What is the percent cover of native woody vegetation within the PAA**? *Functions informed: Maintain Biodiversity, Create & Maintain Habitat*								
	Biology		WoodyVeg		**Enter a percentage**: *(round to nearest whole number)*	2			0.03
F4 **Large Trees**	**What is the percent cover of large trees (dbh>20in) within the PAA?** *Functions informed: Maintain Biodiversity, Create & Maintain Habitat*								
	Biology		LgTree	West	**Enter a percentage**: *(round to nearest whole number)*	0			0.00

F5 **Vegetated Riparian Corridor Width**	**What is the average width of the vegetated riparian corridor within the PAA?** An intact vegetated riparian corridor is defined as one typified by largely undisturbed ground cover and dominated by "natural" species. Natural does not necessarily mean pristine and can include both upland plants and species with wetland indicator status, and native and non-native species. Natural does not include pasture or cropland, recreational fields, recently harvested forest, pavement, bare soil, gravel pits, or dirt roads. Note that relatively small features, such as a narrow walking trail, that likely have negligible effects on water quality can be included within the vegetated riparian corridor width. *Functions informed: Nutrient Cycling, Chemical Regulation*								
	Water Quality		RipWidth		**Enter the average width (feet):**	0			0.00
F6 **Fish Passage Barriers**	**Is there a man-made fish passage barrier in the PAA?** Select an answer from the drop-down menu. Man-made barriers to fish passage can include structures such as dams, culverts, weirs/sills, tide gates, bridges and fords that can block physical passage or can create unsuitable conditions for passage (e.g. high velocity). The level of passage provided can be researched in the office using the Man-made Fish Passage Barriers data layer (Fish Passage Barriers in the Habitat Group) in the SFAM Map Viewer, then confirmed in the field. Do not include natural barriers. If more than one barrier is present, answer for the one with the most restricted level of passage (e.g. Blocked). Not all barriers have been mapped. See the User Manual for more information. *Functions informed: Maintain Biodiversity, Create & Maintain Habitat*								
	Biology		Barriers		**Select Blocked, Partial, Passable, or Unknown in the PAA Field Form:**	Passable			1.00
F7 **Floodplain Exclusion**	**What percent of the floodplain has been disconnected within the PAA?** For alluvial rivers, the floodplain is defined by a distinct break in slope at valley margins, a change in geologic character from alluvium to other, indications of historical channel alignments within a valley, or as the 100-year flood limit. Disconnection refers to any portion of the flood area no longer inundated due to levees, channel entrenchment, roads or railroad grades, or other structures (including buildings and any associated fill) within the proximal assessment area. All barriers should be included when estimating disconnection, even if the barrier is not present during all flood stages; EXCEPT where the structure is expressly managed for floodplain function and inundation. *Functions informed: Surface Water Storage, Create & Maintain Habitat*								
	Hydrology, Biology		Exclusion		**Enter <= 20%, >20 - 40%, >40 - 80%, or >80%.**	<=20%			1.00
F8 **Bank Armoring**	**What percentage of the stream banks within the PAA are armored?** What percentage of the streambank has been stabilized using rigid methods to permanently prevent meandering processes? Examples of armoring include gabion baskets, sheet piles, rip rap, large woody debris that covers the entire bank height, and concrete. Bank stabilization methods that return bank erosion to natural rates and support meandering processes are not counted as armoring. Examples include many bioengineering practices, large woody debris placed along the bank toe, and in-stream structures that still use native vegetation cover on the streambanks. Percent armoring is calculated as the sum of the armored lengths of the left and right banks, divided by sum total lengths of both banks within PAA (i.e. twice the total PAA length). *Functions informed: Substrate Mobility*								

	Geomorphology		Armor		**Enter a percentage:** *(round to nearest whole number)*	1			0.97
F9 **Bank Erosion**	**What percentage of stream banks within the PAA are actively eroding or recently (within previous year or high flow) eroded?** Indications of active/recent erosion include vertical or near vertical bank stream banks that show exposed soil and rock, evidence of tension cracks, active sloughing, or that are largely void of vegetation or roots capable of holding soil together. The percent is calculated as the sum of lengths of left and right banks that are eroding, divided by the sum of total lengths of both banks within PAA. *Functions informed: Sediment Continuity*								
	Geomorphology		Erosion		**Enter a percentage:** *(round to nearest whole number)*	0			1.00
F10 **Overbank Flow**	**Does the stream interact with its floodplain within the PAA?** Is there evidence of fine sediment deposition (sand or silt) on the floodplain, organic litter wracked on the floodplain or in floodplain vegetation, or scour of floodplain surfaces, extending greater than 0.5xBFW onto either the right or left bank floodplain within the PAA? Do not include evidence from inset floodplains developing within entrenched channel systems. If the abutting land use limits the opportunity to observe evidence of overbank flow, is there other credible information that would indicate regular (at least every two years) overbank flow in the PAA? Examples of "other credible information" include first-hand knowledge, discharge/stream gauge measures, etc. Cite the evidence on the Cover Page. *Functions informed: Surface Water Storage, Sub/Surface Transfer, Sustain Trophic Structure, Nutrient Cycling, Chemical Regulation*								
	Hydrology, Biology, Water Quality		OBFlow		**Select yes or no from dropdown menu:** *(If there is no floodplain, leave blank)*	NO			0.00
F11 **Wetland Vegetation**	**Are there wetland indicator plants adjacent to the channel and/or in the floodplain within the PAA?** Determine if vegetation in the riparian area of the PAA has a wetland indicator status of obligate or facultative wet. *Functions informed: Sub/Surface Transfer, Maintain Biodiversity, Sustain Trophic Structure, Nutrient Cycling, Chemical Regulation*								
	Hydrology, Biology, Water Quality		WetVeg		Are there wetland indicator plant species within the PAA?	YES			0.50
					If yes, are any wetland indicator plants located greater than 0.5 x BFW from the bankfull edge on at least one side of the stream? (*Select N/A if you answered No above)*	YES			

					If yes, are the wetland indicator plants located beyond 0.5 x BFW distributed along >70% of the length of the PAA? *(Select N/A if you answered No above)*	NO			
F12 **Side Channels**	**What proportion of the EAA length has side channels?** Side channels include all open conveyances of water, even if the channel is plugged on one end. If both ends are plugged, do not count as a side channel. *Functions informed: Surface Water Storage, Sub/Surface Transfer, Maintain Biodiversity, Create & Maintain Habitat*								
	Hydrology, Biology		SideChan		**Enter a percentage**: *(round to nearest whole number)*	0			0.00
F13 **Lateral Migration**	**What percent of both sides of the channel within the EAA is constrained from lateral migration?** Constraints on lateral migration of the channel within 2 BFW or 50 feet (whichever is greater) include bank stabilization and armoring, bridges and culverts, diversions, roads paralleling the stream and any other intentional structures or features that limit lateral channel movement whether intentionally or not. For cross-channel structures (diversions, bridges, culverts, etc.), record 4x the BFW as the length constrained on both sides of the channel. For linear features, record the length on each side of the channel. For segmented bank features, such as bendway weirs or log jams acting in concert, record the effective length of stabilization on each side of the channel affected. It is acceptable to include relevant armoring that is recorded in the Bank Armoring question, below. *Functions informed: Sediment Continuity*								
	Geomorphology		LatMigr		**Enter a percentage:** *(round to nearest whole number)*	0			1.00
F14 **Wood**	**What is the frequency of large wood in the bankfull channel within the EAA?** Report the frequency (pieces per 328 feet [100m] of channel) of independent pieces of wood, defined here as woody material with a diameter of at least 4 inches (10cm) and a length of 5 feet (1.5m) within the EAA. This means that at least 5 feet of the piece of wood must be larger than 4 inches in diameter (i.e. a circumference > 12.5 inches). Independent pieces include all those individual pieces that meet size criteria either separate from or within log jams. To be counted, wood must have some part of its length within the bankfull channel. Exclude any wood that has been intentionally anchored to or within the channel banks (using spikes, cables, ballast, etc.) for the purpose of preventing bank erosion (armoring). *Functions informed: Surface Water Storage, Maintain Biodiversity, Create & Maintain Habitat*								
	Hydrology, Biology		Wood	WMTsmall	**Enter the frequency (pieces per 328 ft) of wood in the channel:** *(round to nearest hundredth)*	0.00			0.00
F15 **Incision**	**What is the degree of channel incision within the EAA?** As part of the longitudinal survey, at 11 evenly spaced locations along the stream within the EAA, measure the Bank Height Ratio (BHR). The BHR is the height from the stream thalweg to the lowest floodplain/terrace divided by the bankfull height. Do not consider inset floodplains. *Functions informed: Surface Water Storage, Sediment Continuity, Create & Maintain Habitat*								
	Hydrology, Geomorphology, Biology		Incision		**Enter the average incision:** *(round to nearest hundredth)*	1.00			1.00

F16 **Embeddedness**	**What is the degree of substrate embeddedness in the stream channel?** To what extent are larger stream substrate particles surrounded by finer sediments on the surface of the streambed? Measurements are taken at 11 transects within the EAA. *Functions informed: Flow Variation, Substrate Mobility, Create & Maintain Habitat*								
	Hydrology, Geomorphology, Biology		Embed		**Enter a percentage:** *(round to nearest whole number)*	100			0.00
F17 **Channel Bed Variability**	**Is the channel variable?** Channel bed variability indicators include variation in wetted channel width and stream thalweg depth along the EAA. *Functions informed: Surface Water Storage, Sub/Surface Transfer, Flow Variation, Sediment Continuity, Maintain Biodiversity, Create & Maintain Habitat, Nutrient Cycling, Chemical Regulation*								
	Hydrology, Geomorphology, Biology, Water Quality		BedVar		Enter the **wetted width** coefficient of variation:	0.35			0.62
					Enter the **thalweg depth** coefficient of variation:	0.40			0.43
							AVERAGE		0.52

FUNCTIONS				VALUES					
Function	**Measure Name**	**Measure Score**	**Function Score**	**Value**	**Measure Name**	**Measure Score**	**Opportunity Subscore**	**Significance Subscore**	**Value Score**
SWS	OBFlow	0.00		SWS	ImpArea	0.00			
	Incision	1.00			Runoff	0.75			
	Exclusion	1.00			ImpoundUS	1.00			
	BedVar	0.52	**4.29**		DwnFP	0.50	2.92	3.83	**6.75**
	Wood	0.00			Zoning	1.00			
	SideChan	0.00			DwnFld	0.30			
					Fish	1.00			
SST	OBFlow	0.00		SST	AqPerm	0.00			
	WetVeg	0.50	**2.56**		SoilPerm	0.00	0.00	0.00	**0.00**
	SideChan	0.00			Source	0.00			
	BedVar	0.52							
FV	BedVar	0.52		FV	ImpArea	0.00			
	Embed	0.00			FlowMod	0.00			
	ImpoundUS	1.00			1-ImpoundUS	0.00			
					FlowRest	0.50			
					AqPerm	0.00			
			5.08		SoilPerm	0.00	0.83	5.00	**5.83**
					ImpoundDS	1.00			
					RarInvert	0.00			
					RarAmRep	0.50			
					Fish	1.00			
SC	Incision	1.00		SC	SedList	0.00			
	Erosion	1.00			ImpArea	0.00			
	LatMigr	1.00			ImpoundUS	1.00			
			10.00		Postion	0.50	0.50	4.17	**4.67**
					1-DwnFP	0.50			
					Erode	1.00			
					ImpoundDS	1.00			
SM	Armor	0.97		SM	ImpArea	0.00			
	Embed	0.00			ImpoundUS	1.00			
	BedVar	0.52			SubFeat	0.00			
			5.00		Fish	1.00	2.50	2.50	**5.00**
					RarPlant	0.00			
					RarAmRep	0.50			
					RareInvert	0.00			

MB	Barriers	1.00		MB	Passage	0.00			
	BedVar	0.52			SurrLand	0.45			
	Wood	0.00			RipCon	1.00			
	SideChan	0.00			HabFeat	0.00			
	InvVeg	0.70			Protect	0.00			
	WoodyVeg	0.03	**2.41**		Fish	1.00	2.42	1.67	**4.08**
	LgTree	0.00			RarInvert	0.00			
	WetVeg	0.50			RarAmRep	0.50			
					Waterbird	0.00			
					RarBdMm	0.00			
					RarPlant	0.00			
CMH	Exclusion	1.00		CMH	1-ImpArea	1.00			
	Wood	0.00			ImpoundUS	1.00			
	Embed	0.00			RipArea	0.00			
	BedVar	0.52			RipCon	1.00			
	WoodyVeg	0.03			1-NutrImp	1.00			
	LgTree	0.00	**3.24**		1-FlowMod	1.00	4.00	2.50	**6.50**
	Incision	1.00			1-FlowRest	0.50			
	SideChan	0.00			1-DwnFP	0.50			
	Barriers	1			1-Zoning	0.00			
					ImpoundDS	1.00			
					HabFeat	0			
STS	OBFlow	0.00		STS	SurrLand	0.45			
	Cover	0.00			1-ImpArea	1.00			
	InvVeg	0.70			Passage	0.00			
	WoodyVeg	0.03			RipArea	0.00			
	WetVeg	0.50			RipCon	1.00			
					1-NutrImp	1.00			
					1-TempImp	1.00			
					Protect	0.00			
			2.78		1-DwnFP	0.50	3.18	1.88	**5.05**
					1-Zoning	0.00			
					Fish	1.00			
					RarInvert	0.00			
					RarAmRep	0.50			
					Waterbird	0.00			
					RarBdMm	0.00			
					RarPlant	0.00			

					HabFeat	0.00			
NC	OBFlow	0.00		NC	NutrImp	0.00			
	BedVar	0.52			ImpArea	0.00			
	RipWidth	0.00			1-RipArea	1.00			
	WetVeg	0.50			1-RipCon	0.00			
	Cover	0.00	**2.05**		SedList	0.00	0.30	2.50	**2.80**
					Position	0.50			
					Fish	1.00			
					RareInvert	0.00			
					RarAmRep	0.50			
					Source	0.00			
CR	RipWidth	0.00		CR	ToxImp	0.00			
	BedVar	0.52			ImpArea	0.00			
	WetVeg	0.50			1-RipArea	1.00			
	OBFlow	0.00			1-RipCon	0.00			
					SedList	0.00			
					Position	0.50			
			2.56		Fish	1.00	0.30	2.50	**2.80**
					RarInvert	0.00			
					RarAmRep	0.50			
					Waterbird	0.00			
					RarBdMm	0.00			
					RarPlant	0.00			
					Source	0.00			
TR	Cover	0.00		TR	1-TempImp	1.00			
					RipArea	0.00			
					RipCon	1.00			
					ImpArea	0.00			
			0.00		Fish	1.00	4.33	2.50	**6.83**
					RarInvert	0.00			
					RarAmRep	0.50			
					ThermFeat	0.00			

STREAM ASSESSMENT SCORES SHEET **Version 1.1** **Assessment Timing:** **Predicted conditions**

Project Area Name:	QTS Lenox Acres Project		
Investigator Name:	S. Bennett & Richard Peel		
Date of Field Assessment:	Post Construction		
Latitude (decimal degrees):	45.5711 N	Longitude (decimal degrees):	-122.9195 W

SPECIFIC FUNCTIONS	Function Score	Function Rating	Value Score	Value Rating
Surface Water Storage (SWS)	4.29	Moderate	6.75	Moderate
Sub/Surface Water Transfer (SST)	2.56	Lower	0.00	Lower
Flow Variation (FV)	5.08	Moderate	5.83	Moderate
Sediment Continuity (SC)	10.00	Higher	4.67	Moderate
Sediment Mobility (SM)	5.00	Moderate	5.00	Moderate
Maintain Biodiversity (MB)	2.41	Lower	4.08	Moderate
Create and Maintain Habitat (CMH)	3.24	Moderate	6.50	Moderate
Sustain Trophic Structure (STS)	2.78	Lower	5.05	Moderate
Nutrient Cycling (NC)	2.05	Lower	2.80	Lower
Chemical Regulation (CR)	2.56	Lower	2.80	Lower
Thermal Regulation (TR)	0.00	Lower	6.83	Moderate

GROUPED FUNCTIONS	REPRESENTATIVE FUNCTION	Function Group Rating	Value Group Rating
Hydrologic Function (SWS, SST, FV)	Flow Variation (FV)	Moderate	Moderate
Geomorphic Function (SC, SM)	Sediment Continuity (SC)	Higher	Moderate
Biologic Function (MB, CMH, STS)	Create and Maintain Habitat (CMH)	Moderate	Moderate
Water Quality Function (NC, CR, TR)	Chemical Regulation (CR)	Lower	Lower

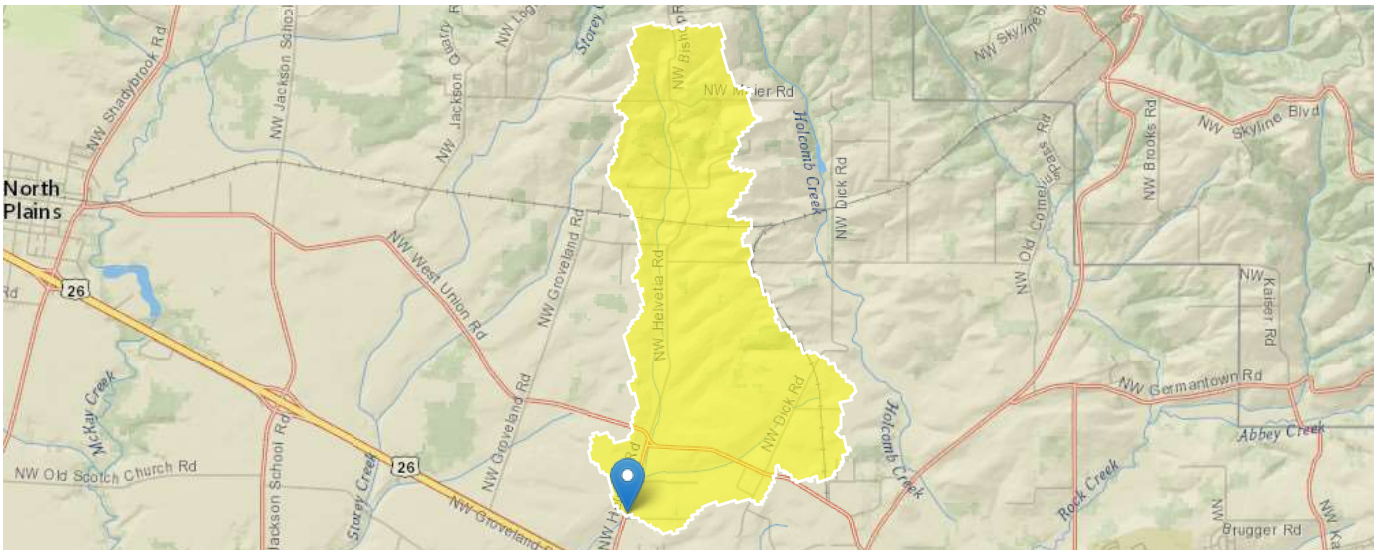
Formulas for each specific function and value (shown on Subscores tab) produce a numerical score between 0.0 and 10.0. For ecological functions, a score of 0.0 indicates that negligible function is being provided by the stream whereas a score of 10.0 indicates that the stream is providing maximum function (as defined) given certain contextual factors. For values, a score of 0.0 indicates that there is low opportunity for the site to provide a specific ecological function and that, even if it did, the specific function would not be of particular significance given the context of the site. Conversely, a value score of 10.0 indicates that a site has the opportunity to provide a specific function and that it would be highly significant in that particular location. For all function and value formulas, both extents of the scoring range (0.0 and 10.0) are mathematically possible.

To facilitate conceptual understanding, numerical scores are translated into ratings of Lower, Moderate, or Higher. The numerical thresholds for each of these rating categories are consistent across all functions and values such that scores of <3.0 are rated “Lower,” scores ≥3.0 but ≤7.0 are rated “Moderate,” and scores that are >7.0 are rated “Higher.” These thresholds are consistent with the standard scoring scheme applied to all individual measures.

Each specific function, and its associated value, is included in one of four thematic groups: hydrologic, geomorphic, biologic, and water quality functions. Group ratings provide an indication of the degree to which each group of processes is present at a site. Groups are represented by the highest-rated function with the highest-rated associated value among the 2-3 functions that comprise each group. This hierarchical selection system ensures that thematic functional groups are represented by the highest-performing and highest-valued ecological function.

StreamStats QTS Lenox Report

Region ID: OR
Workspace ID: OR20240111224924656000
Clicked Point (Latitude, Longitude): 45.56980, -122.92424
Time: 2024-01-11 14:49:53 -0800



Retrieved on 01/11/24.

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	3.42	degrees
DRNAREA	Area that drains to a point on a stream	2.72	square miles
ELEV	Mean Basin Elevation	285	feet
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	1.78	inches
IMPERV	Percentage of impervious area	4.83	percent
JANMAXT2K	Mean Maximum January Temperature from 2K resolution PRISM 1961-1990 data	45.1	degrees F
JANMINT2K	Mean Minimum January Temperature from 2K resolution PRISM PRISM 1961-1990 data	32.7	degrees F
ORREG2	Oregon Region Number	10001	dimensionless
SOILPERM	Average Soil Permeability	0.77	inches per hour
WATCAPORC	Available water capacity from STATSGO data using methods from SIR 2005-5116	0.16	inches

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Reg 2B Western Interior LT 3000 ft Cooper]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.72	square miles	0.37	7270
BSLOPD	Mean Basin Slope degrees	3.42	degrees	5.62	28.3
I24H2Y	24 Hour 2 Year Precipitation	1.78	inches	1.53	4.48
ELEV	Mean Basin Elevation	285	feet		
ORREG2	Oregon Region Number	10001	dimensionless		

Peak-Flow Statistics Disclaimers [Reg 2B Western Interior LT 3000 ft Cooper]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Peak-Flow Statistics Flow Report [Reg 2B Western Interior LT 3000 ft Cooper]

Statistic	Value	Unit
50-percent AEP flood	65.3	ft^3/s
20-percent AEP flood	98.3	ft^3/s
10-percent AEP flood	122	ft^3/s
4-percent AEP flood	152	ft^3/s
2-percent AEP flood	175	ft^3/s
1-percent AEP flood	198	ft^3/s
0.2-percent AEP flood	253	ft^3/s

Peak-Flow Statistics Citations

Cooper, R.M.,2005, Estimation of Peak Discharges for Rural, Unregulated Streams in Western Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5116, 76 p. (http://pubs.usgs.gov/sir/2005/5116/pdf/sir2005-5116.pdf)

Application Version: 4.19.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

OREGON EXPLORER

Stream Function Assessment Method (SFAM) Report

Report Generated: January 11, 2024 02:56 PM

Location Information

Latitude	45.5712 N	Longitude	-122.9229 W
Elevation	184 ft	Level III Ecoregion	Willamette Valley
HUC8	17090010 Tualatin		
HUC10	1709001003 Dairy Creek		
HUC12	170900100307 Lower McKay Creek		
Linear ft of stream in HUC8	511,811	Annual precipitation	41 in

Stream Type and Classifications

Stream Classification	Mountain Wet Rain / Valley Wet	Percent of project area	100.00%
Aquifer permeability	High	Soil permeability	High
Gradient	>6%	Erodibility	Easily_Erodible

Stream classifications and associated attributes are derived from a U.S. Environmental Protection Agency stream classification geospatial data layer developed for Oregon (2015). This layer provides a statewide stream/watershed classification system for streams and rivers of various sizes, based in part on a hydrologic landscape classification system.

OREGON EXPLORER

Stream Function Assessment Method (SFAM) Report

Report Generated: January 11, 2024 02:56 PM

Rare Species Scores and Special Habitat Designations

Rare Species Type	Maximum score	Sum Score	Rating
Non-anadromous Fish Species	0	0	None
Amphibian & Reptile Species	0.24	0.24	Intermediate
Feeding Waterbirds	0	0	None
Songbirds, Raptors, and Mammals	0	0	None
Invertebrate Species	0	0	None
Plant Species	0	0	None

Scores have taken into account several factors for each rare species record contained in the official database of the Oregon Biodiversity Information Center (ORBIC): (a) the regional rarity of the species, (b) their proximity to the point of interest, and (c) the “certainty” that ORBIC assigns to each of those records.

Within 300 ft of a Special Protected Area?	No
Within a HUC12 that has designated Essential Salmonid Habitat?	Yes
Within 2 miles of an Important Bird Area?	No

Water Quality Impairments

Water quality information is derived from Oregon’s 2022 Integrated Report, including the list of water quality limited waters needing Total Maximum Daily Loads (303d List). Each record in the report is assigned an assessment category based on an evaluation of water quality information. Categories included in the SFAM Report are:

Category 5: Water is water quality limited and a TMDL is needed; Section 303(d) list.

Category 4: Water is impaired or threatened but a TMDL is not needed because: (A) the TMDL is approved, (B) other pollution requirements are in place, or (C) the impairment (such as flow or lack of flow) is not caused by a pollutant.

Category 3B: Water quality is of potential concern; some data indicate non-attainment of a criterion, but

Report Generated: January 11, 2024 02:56 PM

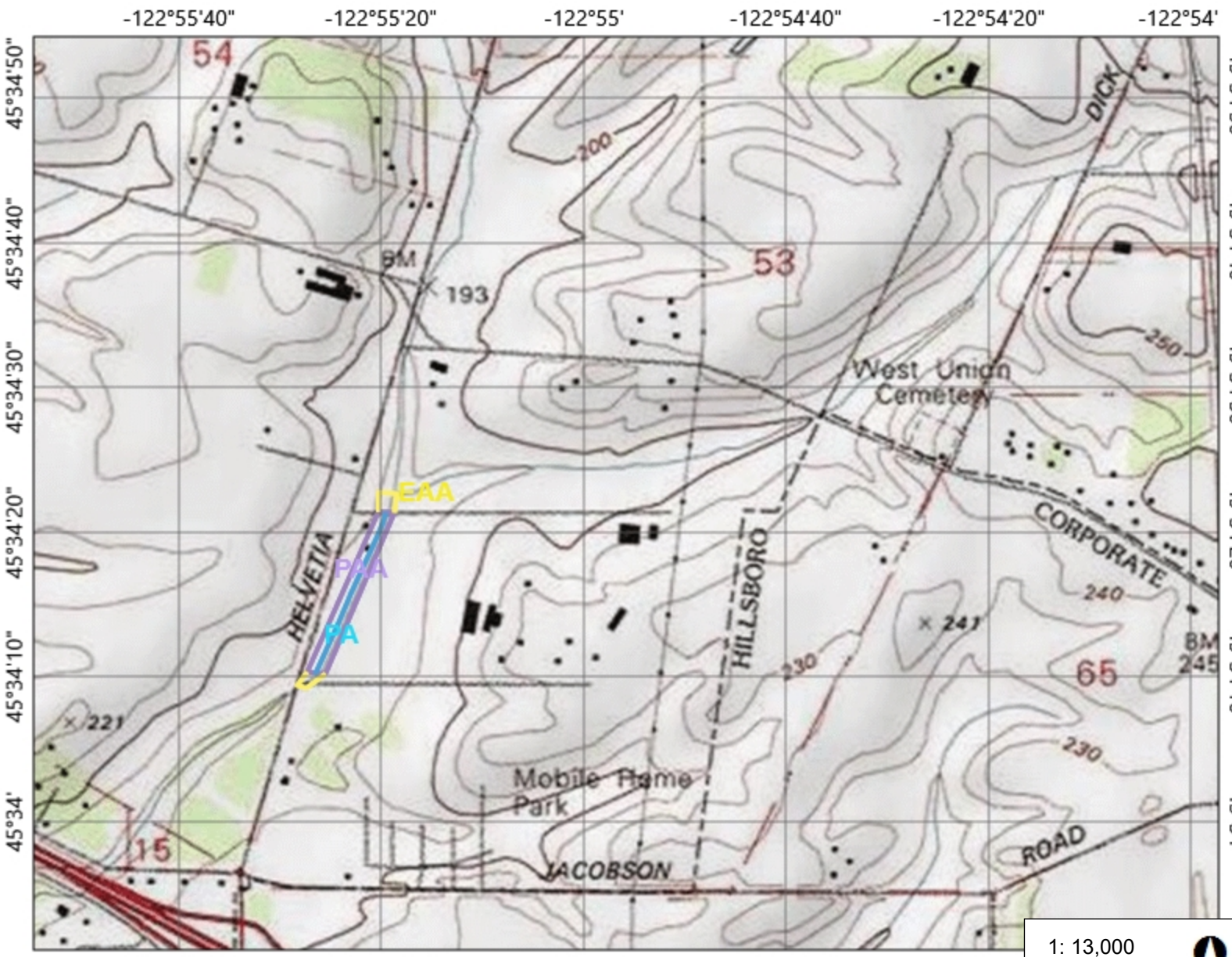
data are insufficient to assign another category.

Dominant soil type(s)			
Soil Type	Erosion Hazard Rating	Hydric Rating	Percent Area
Verboort silty clay loam	Slight	Yes	95.70%
Woodburn silt loam, 0 to 3 percent slopes	Slight	No	4.30%

This report contains both centroid-based and polygon-based data. The Location Information section of the report contains centroid-based data (determined by the center point of the polygon), while the remaining sections are polygon-based (determined from the entire polygon).

The rare species results in this report are based on a subset of the ORBIC rare species dataset. The SFAM tool only reports on rare species that meet the following criteria: wetland habitat species that are tracked by ORBIC, excluding historical or extirpated sites or those with low mapping accuracy. More information about specific sites and additional species can be obtained from ORBIC through data requests, see https://inr.oregonstate.edu/orbic/data-requests for details.

SFAM QTS Lenox Topo Map



Legend

States & Provinces

- Other States and Provinces
- Oregon

1: 13,000

Notes

Add your notes here

0.4 0 0.21 0.4 Miles

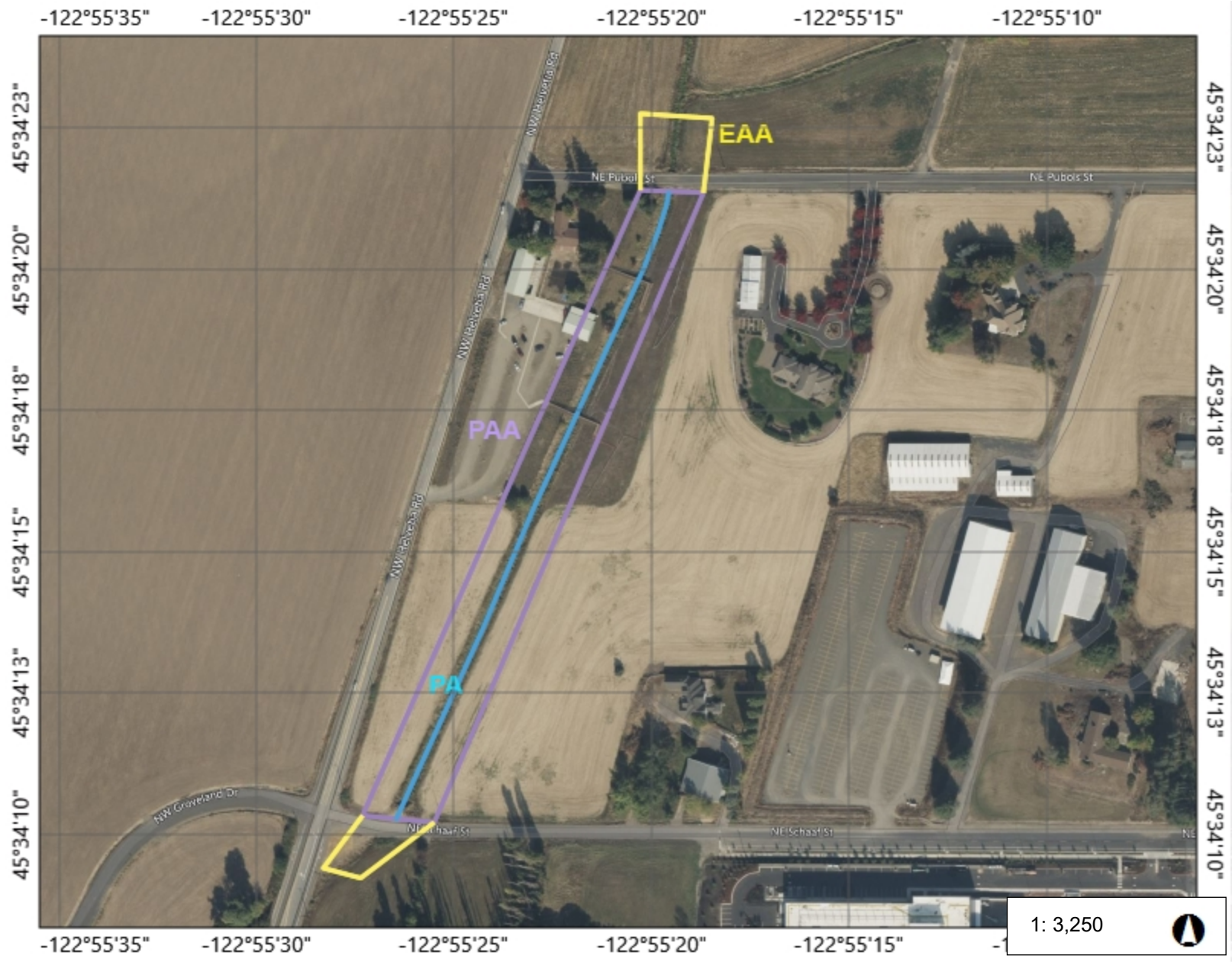
WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output for reference only from: ORWAP and SFAM Map Viewer

Data layers that appear on this map may or may not be accurate, current, or reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION.

SFAM QTS Lenox Map



Legend

States & Provinces

- Other States and Provinces
- Oregon

1: 3,250

Notes

Add your notes here

0.1 0 0.05 0.1 Miles

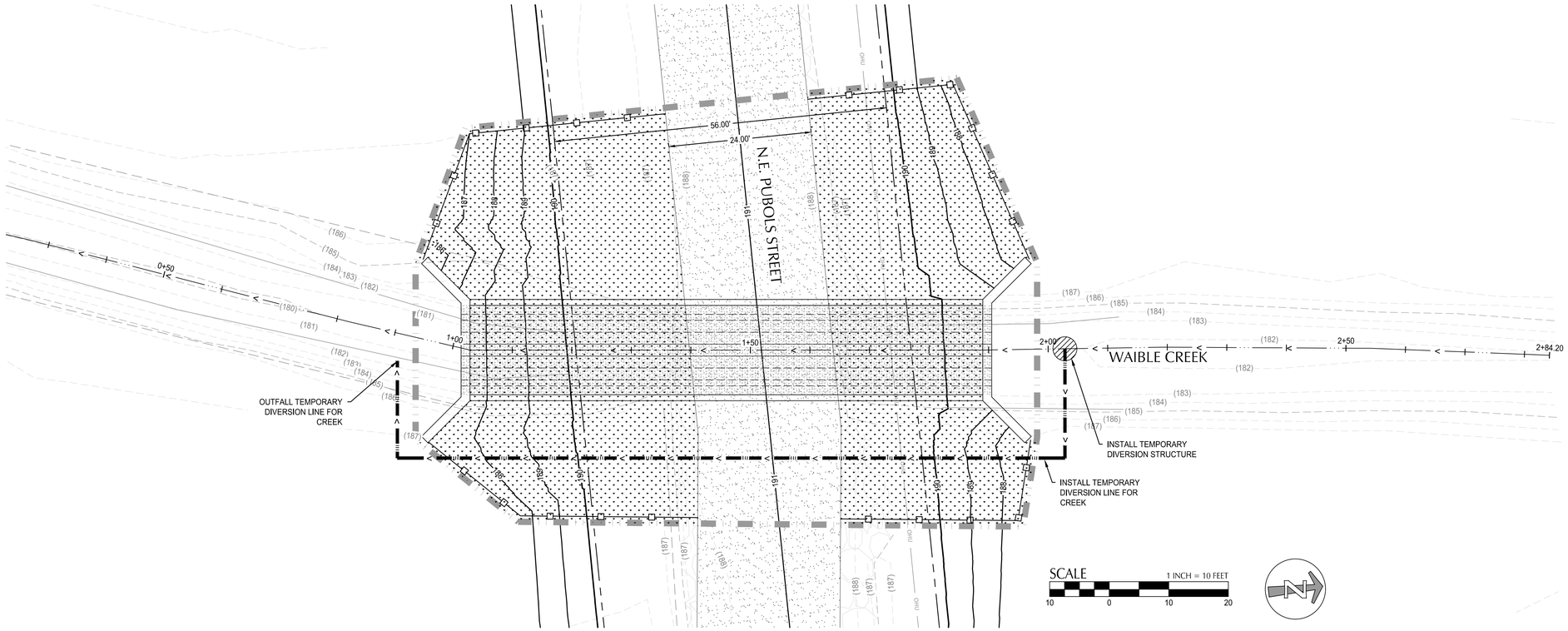
WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output for reference only from: ORWAP and SFAM Map Viewer

Data layers that appear on this map may or may not be accurate, current, or reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION.

APPENDIX D PLANTING PLAN AND REVEGETATION PLAN



SHEET LEGEND

- PROPERTY LINE
- (193) EXISTING CONTOUR MINOR
- (195) EXISTING CONTOUR MAJOR
- 193 PROPOSED CONTOUR MINOR
- 195 PROPOSED CONTOUR MAJOR
- WORK LIMITS (SHOWN OFFSET FOR CLARITY)
- SEDIMENT CONTROL FENCE. PLACE AT PROPERTY LINES, UNO (SHOWN OFFSET FOR CLARITY).
- GRASS SEED MIX FOR TEMPORARY AND PERMANENT SLOPE STABILIZATION

REVISION	DATE	DESCRIPTION	BY

FOR INFORMATION ONLY

JOB No.:	2200384
DESIGNED BY:	XXX
DRAWN BY:	XXX
CHECKED BY:	XXX
PLOT DATE:	6/9/23 12:59pm
PLOTTED BY:	rtakashima
DWG NAME:	CV3.0-CULV-ESC.dwg
TAB NAME:	CV3.0

QTS - HILLSBORO

QTS - HIL3 - LENNOX ACRES

N.E. PUBOLS STREET
WAIBLE CREEK CULVERT EROSION AND SEDIMENT CONTROL PLAN

SHEET NO.

CV3.0

SHEET 1 OF XX

RECORD NO. XXXXX-XX

File: N:\cip\2022\2200384-QTS-HIL3-Entitle\CAD\PLOT\03-Pubols-Culvert\CV3.0-CULV-ESC.dwg TAB:CV3.0
Plotted: 6/9/23 at 12:59pm By: rtakashima
24x36

GENERAL SITE NOTES

A. ALL WORK WITHIN EASEMENTS TO BE APPROVED BY RESPONSIBLE JURISDICTION PRIOR TO INSTALLATION. THIS INCLUDES CLEAN WATER SERVICES TO REVIEW AND APPROVE WAIBLE GULCH VEGETATED CORRIDOR ENHANCEMENTS.

B. REFERENCE CIVIL AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL SITEWORK INFORMATION. REVIEW COMMUNICATION AND UTILITIES PLANS PRIOR TO ANY DIGGING OR PLANTING. VERIFY LOCATIONS OF DUCTBANKS AND ADJUST PLANTINGS PRIOR TO WORK AND ADJUST AS DIRECTED BY PROJECT REPRESENTATIVE.

C. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL PLANTING QUANTITIES SHOWN IN DOCUMENTS. VERIFY PLANT LAYOUT AND COVERAGE. PLANT TOTALS SHOWN ON PLANTING SCHEDULE AREA SHOW FOR REFERENCE ONLY.

D. PROPOSED FRONTAGE IMPROVEMENTS IN RIGHT-OF-WAY SHOWN FOR REFERENCE ONLY. TO BE PERMITTED UNDER SEPARATE PUBLIC IMPROVEMENT PERMIT.

E. PROPOSED SUBSTATION PARCEL TO BE DEVELOPED UNDER SEPARATE PERMIT.

PLANTING NOTES

A. DO NOT WILLFULLY PROCEED WITH PLANTING OPERATIONS WHEN IT IS OBVIOUS THAT UNKNOWN OBSTRUCTIONS AND GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN PROCESS. BRING SUCH CONDITIONS IMMEDIATELY TO ATTENTION OF OWNER'S AUTHORIZED REPRESENTATIVE FOR RESOLUTION. ASSUME FULL RESPONSIBILITY FOR COSTS INCURRED AND REQUIRED MODIFICATIONS DUE TO LACK OF PROVIDING SUCH NOTIFICATION.

B. ENSURE THAT FINISH GRADE ELEVATIONS OF PLANTING AREAS ARE SET AT THE PROPER ELEVATIONS RELATIVE TO PAVING FINISH SURFACE ELEVATIONS, UTILITY COVERS AND CURBS. SHRUB PLANTING AREAS AT 2" BELOW AND LAWN 1" BELOW ADJACENT GRADE. NOTIFY OWNER OF ANY DISCREPANCIES.

C. ASSURE POSITIVE DRAINAGE IN ALL PLANTING AREAS TO DRAIN AWAY FROM THE BUILDING AT 2% MINIMUM.

D. PLANT MATERIAL, I.E. TREES, SHRUBS, VINES, ESPALIERS AND GROUNDCOVERS MUST BE APPROVED BY OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION. PLANT MATERIAL INSTALLED WITHOUT AUTHORIZED REPRESENTATIVE'S APPROVAL MAY BE SUBJECT TO REMOVAL AND REPLACEMENT WITH RELATED COSTS BORNE BY THE CONTRACTOR.

E. FINAL LOCATIONS OF PLANT MATERIALS ARE SUBJECT TO APPROVAL OF THE OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO INSTALLATION. PERFORM THE FOLLOWING BEFORE BEGINNING PLANTING PIT EXCAVATION: SHRUBS - PLACE ACTUAL SHRUBS IN CONTAINERS ON-SITE IN "FINAL" LOCATIONS - TREES - CHALK OR STAKE CENTER OF TREE.

F. PLANTING SHALL NOT BE PERFORMED UNTIL PRE-PLANTING SOIL AMENDMENTS AND PREPARATIONS ARE COMPLETE AND APPROVED BY THE OWNERS REPRESENTATIVE. SEE SOIL PREPARATION NOTES AND SPECIFICATIONS.

G. IF CONFLICTS ARISE BETWEEN ACTUAL SIZE OF PLANTING AREAS ON-SITE AND THOSE AREAS INDICATED ON DRAWINGS, CONTACT OWNER'S AUTHORIZED REPRESENTATIVE FOR RESOLUTION. FAILURE TO MAKE SUCH CONFLICTS KNOWN TO OWNER'S AUTHORIZED REPRESENTATIVE IN A TIMELY FASHION MAY RESULT IN CONTRACTOR'S LIABILITY TO RELOCATE PLANT MATERIALS OR BECOME UNABLE TO CHARGE OWNER FOR PLANT MATERIALS ALREADY PLANTED.

H. SHRUB AND AND GROUNDCOVER AREAS TO RECEIVE A 2-INCH DEEP LAYER OF MULCH TO BE SUBMITTED FOR APPROVAL FROM LANDSCAPE ARCHITECT.

I. AN AUTOMATIC IRRIGATION SYSTEM IS TO BE INSTALLED IN ALL AREAS OF PLANTING AND LAWN TO PROVIDE FULL COVERAGE.

J. PROVIDE ROOT BARRIERS FOR ALL TREES PLANTED WITHIN 5' OF A HARDSCAPE EDGE SUCH AS PAVING, WALLS, STEPS, ETC. AND WITHIN 5' OF ANY BURIED UTILITIES. REFER TO PLANTING DETAILS FOR ADDITIONAL INFORMATION.

K. INSTALL PLANT MATERIAL WITH IT'S BEST SIDE FACING PREDOMINANT VIEW FROM PUBLIC AREAS.

L. PROVIDED PROPER SETBACK BETWEEN UTILITIES AND TREES - CONTACT CITY INSPECTOR FOR REQUIRED SETBACKS IN THE CASE THAT THE DRAWINGS ARE NOT CLEAR.

STORMWATER FACILITY PLANT SIZING AND QUANTITY CALCULATIONS

PLANT STORMWATER FACILITY AS PER CWS LOW IMPACT DEVELOPMENT APPROACHES HANDBOOK FOR AN EXTENDED DRY BASIN TO THE FOLLOWING STANDARDS:

- EXTENDED DRY BASINS IN TRACTS OR EASEMENTS 30 FEETWIDE OR MORE ARE PLANTED AS FOLLOWINGS TO ACHIEVE THE SPECIFIED PER ACRE DENSITIES:
- I. TREATMENT AREA = 6 PLUGS PER SQUARE FOOT (MIN. 1-INCH DIAMETER BY 6-INCH TALL)
- II. TOTAL NUMBER OF TREES PER ACRE = AREA IN SQUARE FEET X 0.01
- III.TOTAL NUMBER OF SHRUBS PER ACRE = AREA IN SQUARE FEET X 0.05
- IV. GROUNDCOVER = PLANT AND SEED TO ACHIEVE 100% COVERAGE

SEE PLANT SCHEDULE 'STORMWATER FACILITY EXTENDED DRY BASIN' FOR PROPOSED PLANTING SPECIES AND LAYOUT DIAGRAM.

STORMWATER FACILITY GENERAL NOTES

A. EXTENDED DRY BASIN TO BE CONSTRUCTED AND PLANTED PER CLEAN WATER SERVICES (CWS) LOW IMPACT DEVELOPMENT APPROACHES HANDBOOK. SEE CWS WATER QUALITY STANDARD DETAILS AND CONSTRUCTION & MAINTENANCE NOTES FOR MORE INFORMATION.

B. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT THE REQUIRED CITY/COUNTY STORMWATER FACILITY INSPECTIONS HAVE BEEN PERFORMED AND APPROVED PRIOR TO PLACEMENT OF THE APPROVED AMENDED TOPSOIL, IRRIGATION AND PLANTING ABOVE DRAIN ROCK AND PIPING.

C. REFER TO CIVIL PLANS FOR CONSTRUCTION DETAILS, SOIL FINISH GRADE ELEVATION AND DEPTH PRIOR TO INSTALLING THE APPROVED PLANTING TOPSOIL, IRRIGATION AND PLANTING.

D. PLANTS SHALL BE INSTALLED BETWEEN FEB.1 AND MAY 1 OR BETWEEN OCT. 1 AND NOV. 15.

E. CLEAN WATER SERVICES SHALL BE NOTIFIED 72 HOURS PRIOR TO THE START AND COMPLETION OF STORMWATER FACILITY CONSTRUCTION ACTIVITIES.

F. PLANT MATERIALS SHALL BE PLACED IN ACCORDANCE WITH THE PLAN AND PLANT SCHEDULES AS SHOWN ON PLANS.

G. PLANT SIMILAR PLANTS IN CLUSTERS OF 3-7 UNLESS OTHERWISE NOTED.

H. PROTECT ALL INLETS TO STORMWATER FACILITY FROM EROSIVE FLOWS THROUGH THE USE OF AN ENERGY DISSIPATER AND TO DISTRIBUTE FLOW EVENLY ACROSS THE TREATMENT AREA.

I. THE PLANTINGS CAN BE CONSIDERED FOR "SUBSTANTIAL COMPLETION" ONCE ACTIVE GREEN GROWTH HAS OCCURRED TO AN AVERAGE GROWTH OF 3" AND PLANT DENSITY IS AN AVERAGE OF APPROXIMATELY 6 PLANTS PER SQUARE FOOT.

J. THE FACILITY SHALL BE DEEMED ACCEPTABLE TO BEGIN THE MAINTENANCE PERIOD WHEN PLANT GROWTH AND DENSITY MATCHES THE DESIGN AS SHOWN ON THE APPROVED PLANS AND ALL OTHER REQUIREMENTS HAVE BEEN MET. THE DESIGNER MUST CERTIFY THE FACILITY TO BE FUNCTIONAL, IN ACCORDANCE WITH THE APPROVED PLAN DESIGN TO BEGIN THE TWO-YEAR MAINTENANCE PERIOD.

STORMWATER FACILITY MAINTENANCE NOTES

A. THE PERMITTEE IS RESPONSIBLE FOR THE MAINTENANCE OF THIS FACILITY FOR A MINIMUM OF TWO YEARS FOLLOWING CONSTRUCTION AND ACCEPTANCE OF THIS FACILITY PER CHAPTER 2. CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ALL NEW PLANTING FROM DAMAGE BY ANIMALS DURING THE TWO YEAR MAINTENANCE PERIOD. INSTALL PROTECTIVE BARRIER AROUND ALL TREES AND SHRUBS AS NECESSARY.

B. ALL PLANTS IN THE STORMWATER FACILITY AREA SHALL BE IRRIGATED WITH A TEMPORARY IRRIGATION SYSTEM DURING THE 2-YEAR MAINTENANCE PERIOD. WATERING SHALL BE AT A MINIMUM RATE OF AT LEAST ONE INCH PER WEEK FROM JUNE 15 THROUGH OCTOBER 15. NOTE: IRRIGATION NEEDS ARE TO BE MET USING A TEMPORARY IRRIGATION SYSTEM WITH A TIMER DURING THE DRY SEASON. SYSTEMS SHOULD BE WINTERIZED DURING THE WET SEASON TO ASSURE LONGEVITY AND GUARD AGAINST DAMAGE FROM FREEZING TEMPERATURES. WATER SOURCE SHALL BE AS SHOWN ON THE APPROVED PLANS.

C. THE PERMITTEE IS RESPONSIBLE FOR MAINTENANCE OF THE FACILITY FOR A MINIMUM OR LANDSCAPE CONTRACTOR (OWNERS REP) IS TO VISIT AND EVALUATE THE SITE A MINIMUM OF TWICE ANNUALLY (SPRING AND FALL). THE LANDSCAPING SHALL BE EVALUATED AND REPLANTED AS NECESSARY TO ENSURE A MINIMUM OF 80% SURVIVAL RATE OF THE REQUIRED VEGETATION AND 90% AERIAL COVERAGE. NON-NATIVE, INVASIVE PLANT SPECIES SHALL BE REMOVED WHEN OCCUPYING MORE THAN 20% OF THE SITE.

D. THE FACILITY SHALL BE RE-EXCAVATED AND PLANTED IF SILTATION GREATER THAN 3-INCHES IN OCCURS WITH THE TWO-YEAR MAINTENANCE PERIOD.

WAIBLE GULCH VEGETATED CORRIDOR ENHANCEMENT NOTES

A. SEE PLANS FOR LOCATION OF WAIBLE GULCH VEGETATED CORRIDOR ENHANCEMENT AND PLANT SCHEDULES FOR PLANT SPECIES, DENSITIES AND LAYOUT DIAGRAM.
B. WAIBLE GULCH ENHANCEMENT AREA TO BE PLANTED TO MEET CWS REQUIREMENTS. ADJACENT FLOODPLAIN IS PROPOSED TO BE PLANTED IN A NATURALISTIC MANNER, BUT IS NOT SUBJECT TO ENHANCEMENT REQUIREMENTS.
C. PLANT QUANTITIES ARE CALCULATED AS FOLLOWS: # OF TREES = SQUARE FOOTAGE X .01, # OF SHRUBS = SQUARE FOOTAGE X .05.

THE SITE WILL BE PREPARED AS FOLLOWS:
D. AN ORANGE CONSTRUCTION FENCE SHALL BE INSTALLED AT ALL VEGETATIVE CORRIDOR LIMITS AS SHOWN ON PLANS.
E. WITHIN THE 50' VEGETATED CORRIDOR, NON-NATIVE SPECIES AND INVASIVE SPECIES WILL BE REMOVE BY A COMBINATION MOWING AND HERBICIDE APPLICATION AS NEEDED. HERBICIDE SHOULD ONLY BE APPLIED IF INVASIVE SPECIES RECUR ON SITE AFTER INITIAL REMOVAL. HERBICIDES SHALL BE APPLIED BY A LICENSED APPLICATOR AND ONLY DURING WINDLESS CONDITIONS TO MINIMIZE OVER SPRAY AND PROTECT ADJACENT VEGETATION. NATIVE VEGETATION ALONG SENSITIVE AREAS AND VEGETATED CORRIDORS WILL BE RETAINED TO THE MAXIMUM EXTENT POSSIBLE.
F. PRIOR TO PLANTING NATIVE SPECIES, THE SITE WILL BE PREPARED TO IMPROVE PLANTING EFFECTIVENESS. PREPARATION WILL INCLUDE SOIL DECOMPACTION AND TOPSOIL APPLICATION. SOIL WILL BE PREPARED WITH AT LEAST 12 INCHES OF CLEAN COMPOS AMENDED TOPSOIL ADDED TO THE DISTURBED AREA OR IN PLANTING HOLES. THE TOPSOIL WILL HAVE A TEXTURE THAT PASSES THROUGH A 1-INCH SCREEN AND IT WILL CONTAIN APPROXIMATELY 35% IN ORGANIC MATTER. DISTURBANCE IN GROUNDCOVER AREAS SHOULD BE MINIMIZED PRIOR TO INSTALLING NATIVE TREES AND SHRUBS. WHERE GROUNDCOVER AREAS GREATER THAN 25 S.F. ARE DISTURBED DUE TO REMOVAL OF INVASIVE SPECIES, THESE AREAS SHOULD BE SEEDED WITH A NATIVE SEED MIX.

THE SITE WILL BE PLANTED AS FOLLOWS:
G. A LAYER OF HYDROSEED WILL BE APPLIED TO ALL BARE SOIL AREAS GREATER THAN 25 S.F. T INITIATE THE ESTABLISHMENT OF AN HERBACEOUS UNDERSTORY AND MINIMIZE EROSION. THE VEGETATED CORRIDOR AROUND WAIBLE GULCH WILL RECEIVE THE SPECIES ELYMUS GLAUCUS 50% AND BROMUS CARINATUS 50%.
H. TREES AND SHRUBS WILL BE PLANTED AS SHOWN IN THE PLANTING SCHEDULE "WAIBLE GULCH VEGETATED CORRIDOR ENHANCEMENT" AND PLACED ACCORDING TO THE LAYOUT DIAGRAM.

PLANT INSTALLATION REQUIREMENTS:
I. SIZE: POTTED PLANTS SHALL FOLLOW SIZE REQUIREMENTS OUTLINED IN PLANT SCHEDULE. BARE ROOT PLANTS SHALL BE 12 TO 16 INCHES LONG UNLESS OTHERWISE NOTED.
J. PLACEMENT: PLANT PLACEMENT SHALL BE CONSISTENT WITH NATURALLY OCCURRING PLANT COMMUNITIES. TREES AND SHRUBS SHALL BE PLACED IN SINGLES OR CLUSTERS OF THE SAME SPECIES TO PROVIDE A NATURAL PLANTING SCHEME.
K. DISTRIBUTION AND RELATIVE ABUNDANCE SHALL BE DEPENDED ON THE PLANT SPECIES AND ON THE SIZE OF THE REVEGETATION AREA. PLANT PLACEMENT AND SEEDING SHALL PROMOTE MAXIMUM VEGETATIVE COVER TO MINIMIZE WEED ESTABLISHMENT.
L. TIMING: CONTAINERIZED STOCK SHALL BE INSTALLED ONLY FROM FEB. 1 THROUGH MAY 1 AND OCT. 1 THROUGH NOV. 15. BARE ROOT STOCK SHALL BE INSTALLED ONL FROM DEC. 15 THROUGH APR. 15.
M. EROSION CONTROL: GRADING, SOIL PREP, AND SEEDING SHALL BE PERFORMED DURING OPTIMAL WEATHER CONDITIONS AND AT LOW FLOW LEVELS TO TO MINIMIZE SEDIMENT IMPACTS. SITE DISTURBANCE SHALL BE MINIMIZED AND DESIRABLE VEGETATION RETAINED WHERE POSSIBLE. WHERE SEEDING IS USED FOR EROSION CONTROL, AN APPROPRIATE NATIVE GRASS, REGREEN OR STERILE WHEAT SHALL BE USED TO STABILIZE SLOPES UNTIL PERMANENT VEGETATION IS ESTABLISHED. BIODEGRADEABLE FABRIC OR APPROVED JUTE MATTING MAY BE USED TO STABILIZE SLOPES AND CHANNELS OR TO PREVENT FLOATING. NO PLASTIC MESH THAT CAN ENTANGLE WILDLIFE IS PERMITTED.
N. MULCHING: TREE SHRUBS AND GROUNDCOVERS PLANTED IN UPLAND AREAS SHALL BE MULCHED A MINIMUM OF THREE INCHES IN DEPTH AND 18 INCHES IN DIAMETER. APPROPRIATE MULCHES ARE MADE FROM COMPOSTED BARK OR LEAVES THAT HAS NOTE BEEN CHEMICALLY TREATED. THE USE OF MULCH IN FREQUENTLY INUNDATED AREAS SHALL BE LIMITED TO REDUCE POSSIBLE WATER QUALITY IMPACTS.
O. PLANT PROTECTION FROM WILDLIFE: DEPENDING ON SITE CONDITIONS, APPROPRIATE MEASURE SHALL BE TAKEN TO LIMIT WILDLIFE RELATED DAMAGE. (SEE CLEAN WATER SERVICES INTEGRATED VEGETATION AND ANIMAL MANAGEMENT GUIDANCE.)
P. IRRIGATION: APPROPRIATE PLANT SELECTION, ALONG WITH ADEQUATE SITE PREP AND MAINTENANCE REDUCES THE NEED FOR IRRIGATION. HOWEVER, AN APPROVED TEMPORARY ESTABLISHMENT IRRIGATION SYSTEM SHALL BE INSTALLED AND USED DURING THE TWO-YEAR ESTABLISHMENT PERIOD. WATERING SHALL BE AT A MINIMUM RATE OF AT LEAST ONE INCHE PER WEEK FROM JUNE 15 THROUGH OCTOBER 15.
Q. ACCESS: MAINTENANCE ACCESS FOR PLANT MAINTENANCE SHALL BE PROVIDED FOR SENSITIVE AREAS AND VEGETATED CORRIDORS. WAIBLE GULCH VEGETATED CORRIDOR ENHANCEMENT AREA IS ACCESSIBLE FROM AN ADJACENT ROW OFF OF SCHAAF RD.

SITE MAINTENANCE
R. SITE MONITORING AND MAINTENANCE WILL BE CONDUCTED FOR THREE YEARS AFTER PLANTING IS COMPLETED TO ENSURE THAT THE VEGETATED CORRIDOR ENHANCEMENT GOAL IS ACHIEVED. MONITORING AND MAINTENANCE WILL OCCUR IN THE SPRING AND SUMMER MONTHS. THE ESTABLISHMENT OF NON-NATIVE AND INVASIVE PLANTS WILL BE CONTROLLED BY A COMBINATION OF METHODS WHICH WILL BE SPECIES DEPENDENT. PLANTINGS THAT FAIL WILL BE REPLACED ANNUALLY DURING THE MONITORING AND MAINTENANCE PERIOD. THE CAUSE OF LOSS WILL BE DOCUMENTED WITH A DESCRIPTION OF THE CORRECTIVE ACTIONS TAKEN. IF THE GOAL OF 'GOOD CORRIDOR CONDITION' IS NOT MET AFTER THE 3 YEAR MONITORING PERIOD, ADDITIONAL SITE TREATMENTS MAY BE APPLIED. BARE GROUND WILL BE RESEEDED AS NEEDED.

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CORGAN

AG&E Structural Engenuity

kpff

kW mission critical engineering

NNA Landscape Architecture

	ISSUES	
1	03.03.2023	DEVELOPMENT REVIEW
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	REVISIONS	

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Jason Hirst

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QTS-HIL3

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PLANTING NOTES

JOB 23017.0000
DATE 03.20.2023
SHEET

L302

HIL3 FACILITY SITE PLANTINGS SCHEDULE

ROW PLANTING

SYMBOL	CODE	CURRENT PLANTING STRIPS ALL 5-6' WIDTHS	SIZE	SPACING
	ULM SUN	*ULMUS 'EMERALD SUNSHINE'* EMERALD SUNSHINE ELM	2.5" CAL.	25' SPACING
	ZEL SER	*ZELKOVA SERRATA 'GREEN VASE'* GREEN VASE ZELKOVA	2.5" CAL.	40' SPACING
	GIN PRI	*GINKGO 'PRINCETON SENTRY'* PRINCETON SENTRY GINKGO	2.5" CAL.	15' SPACING
	LAWN	LAWN	SIZE/RATE	
		SUNMARK SEEDS - NORTHWEST SUPREME MIX	SEED - 10 LBS. / 1,000 S.F.	

SITE TREES

SYMBOL	CODE	BOTANICAL/COMMON NAME	SIZE	SPACING
	COR WHI	*CORNUS 'EDDIES WHITE WONDER'* EDDIES WHITE WONDER DOGWOOD	2"	SEE PLANS
	THU HOG	*THUJA PLICATA 'HOGAN'* HOGAN CEDAR	8' HT.	
	ZEL SER	*ZELKOVA SERRATA 'VILLAGE GREEN'* VILLAGE GREEN ZELKOVA	2" CAL.	
	CAL DEC	*CALOCEDRUS DECURRENS* INCENSE CEDAR	8' HT.	
	QUE GAR	*QUERCUS GARRYANA* OREGON OAK	2" CAL.	
	CHA NOO	*CHAMAECYPARIS NOOTKATENSIS 'PENDULA'* WEEPING NOOTKA CYPRESS	8' HT.	
	PIN PON	*PINUS PONDEROSA SSP. BENTHIAMA* WILLAMETTE VALLEY PONDEROSA PINE	8' HT.	

PARKING LOT TREES

SYMBOL	CODE	BOTANICAL/COMMON NAME	SIZE	SPACING
	ULM SUN	*ULMUS 'EMERALD SUNSHINE'* EMERALD SUNSHINE ELM	2.5" CAL.	25' SPACING
	ACE PAC	*ACER 'PACIFIC SUNSET'* PACIFIC SUNSET MAPLE	2.5" CAL.	25' SPACING
	QUE CRI	*QUERCUS 'CRIMSON SPIRE'* CRIMSON SPIRE OAK	2.5" CAL.	15' SPACING
	ZEL SER	*ZELKOVA SERRATA 'GREEN VASE'* GREEN VASE ZELKOVA	2.5" CAL.	40' SPACING
	GIN PRI	*GINKGO 'PRINCETON SENTRY'* PRINCETON SENTRY GINKGO	2.5" CAL.	15' SPACING

SHRUBS

SYMBOL	CODE	BOTANICAL/COMMON NAME	SIZE	SPACING
	MON MAN	*MONICA MANZANITA* ARCTOSTAPHYLOS 'MONICA'	5 GAL.	SEE PLANS
	CIS HYB	*CISTUS X HYBRIDUS* WHITE ROCKROSE	5 GAL.	
	COR MID	*CORNUS 'MIDWINTER FIRE'* MIDWINTER FIRE DOGWOOD	1 GAL.	
	JUN COL	*JUNIPERUS SCOPULORUM 'COLOGREEN'* COLOGREEN JUNIPER	8' HT.	
	CAL ACT	*CALAMAGROSTIS X ACUTIFLORA 'KARL FOERESTER'* KARL FOERSTER GRASS	1 GAL.	
	MAH AQU	*MAHONIA AQUIFOLIUM* OREGON GRAPE	1 GAL.	
	MYR CAL	*MYRICA CALIFORNICA* PACIFIC WAX MYRTLE	5 GAL.	
	PRU LAU	*PRUNUS LAUROCEACUS 'OTTO LEUYKEN'* OTTO LUYKEN LAUREL	3 GAL.	
	PEN HAM	*PENNISETUM 'HAMELN'* HAMELN GRASS	1 GAL.	
	JUN SKY	*JUNIPERUS SCOPULORUM 'SKYROCKET'* SKYROCKET JUNIPER	8' HT.	
	SPI BET	*SPIRAEA BETULIFOLIA VAR. LUCIDA* SHINYLEAF SPIRAEA	2 GAL.	
	ACE CIR	*ACER CIRCINATUM* VINE MAPLE	15 GAL.	
	LON NIT	*LONICERA NITIDA* BOXLEAF HONEYSUCKLE	2 GAL.	

GROUNDCOVERS

SYMBOL	CODE	BOTANICAL/COMMON NAME	SIZE	SPACING
	CEA POI	*CEANOTHUS 'POINT REYES'* POINT REYES CEANOTHUS	1 GAL.	36"
	MAH REP	*MAHONIA REPENS* CREEPING OREGON GRAPE	1 GAL.	18"
	COR KEL	*CORNUS 'KELSYEI'* KELSYEI'S DOGWOOD	1 GAL.	30"
	ARC PAC	*ARCTOSTAPHYLOS 'PACIFIC MIST'* PACIFIC MIST MANZANITA	1 GAL.	36"

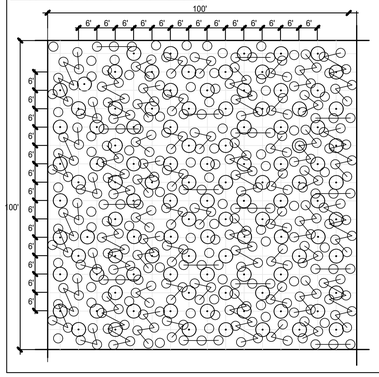
SEEDED MIXES

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE/RATE
	LAWN	LAWN	SEED - 10 LBS. / 1,000 S.F.
		SUNMARK SEEDS - NORTHWEST SUPREME MIX	
	PRAR	PRAIRIE MIX	SEED - 2 LBS. /1,000 S.F.
		PRAIRIE MEADOW MIX	
		FESTUCA RUBRA RUBRA - 25%	
		FESTUCA SP. - 25%	
		FESTUCA OVINA - 25%	
		FESTUCA BREVIPILA 'OXFORD' - 25%	

WAIBLE GULCH VEGETATED CORRIDOR ENHANCEMENTS

SYMBOL	CODE	NAME	SIZE / MIX	SPACING	MIN. HT
		TREES			
	AG	*ABIES GRANDIS* GRAND FIR	3' HEIGHT	6' O.C.	36"
	AM	*ACER MACROPHYLLUM* BIG LEAF MAPLE	3' HEIGHT	6' O.C.	36"
	PP	*PSEUDOTSUGA MENZIESII* DOUGLAS FIR	3' HEIGHT	6' O.C.	36"
		SHRUBS			
	HD	*HOLODISCUS DISCOLOR* OCEANSPRAY - PLANT SINGLES	1 GAL.	4' O.C.	18"
	RS	*RIBES SANGUINEUM* RED FLOWERING CURRANT - PLANT SINGLES	1 GAL.	4' O.C.	18"
	RG	*ROSA GYMNOCARPA* DWARF ROSE - PLANT IN CLUSTERS	1 GAL.	4' O.C.	18"
	SA	*SYMPHORICARPUS ALBUS* COMMON WHITE SNOWBERRY - PLANT IN CLUSTERS	1 GAL.	4' O.C.	18"
	HYD	**HYDROSEED**			
		ELYMUS GLAUCUS	50% MIX	10 LBS / 1,000 SQ. FT	
		BROMUS CARINATUS	50% MIX	10 LBS / 1,000 SQ. FT	

LAYOUT / SPACING DIAGRAM - NOT TO SCALE



NOTES:
1. PRIOR TO INSTALLING PLANTS, APPLY HYDROSEED..
2. INSTALL TREES AT AN OVERALL DENSITY OF 100 TREES/10,000 S.F.
3. INSTALL TREES 10'-9" O.C. MIN.
4. INSTALL SHRUBS AT AN OVERALL DENSITY OF 500 SHRUBS/10,000 S.F.
5. INSTALL SHRUBS 5'-6" O.C. MIN.
6. INSTALL SHRUBS IN SINGLES OR CLUSTERS, AS OUTLINED IN PLANT SCHEDULE.
7. SPREAD SPECIES THROUGHOUT THE GIVEN PLANTING AREA TO AVOID MONOCULTURES. A RANDOM 10,000 S.F. SAMPLE SHOULD CONTAIN ALL SPECIES.
8. MAINTAIN A 1' DIAMETER PLANT-FREE AREA AROUND ALL STEMS AND MULCH PER SPECIFICATION.

LEGEND

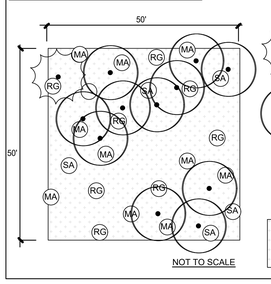
TREE

SHRUBS

OAK CLUSTER PLANTING AREA

SYMBOL	CODE	NAME	CONT	SIZE
		TREE		
	PP	*PINUS PONDEROSA SSP. BENTHIAMA* WILLAMETTE VALLEY PONDEROSA PINE	1 GAL.	4'-5' HT.
	QG	*QUERCUS GARRYANA* OREGON OAK	1 GAL.	4'-5' HT.
		SHRUB		
	MA	*MAHONIA AQUIFOLIUM* OREGON GRAPE	1 GAL.	
	RG	*ROSA GYMNOCARPA* DWARF ROSE	1 GAL.	
	SA	*SYMPHORICARPUS ALBUS* COMMON WHITE SNOWBERRY	1 GAL.	
				TOTAL
		HYDROSEEDING		
	NASM	NATIVE PACIFIC NW SEED MIX VARIOUS GRASS AND WILDFLOWER SEEDS	HYDROSEED	44 LBS / ACRE

LAYOUT / SPACING DIAGRAM - NOT TO SCALE



LEGEND

PINUS PONDEROSA SSP. BENTHIAMA

QUERCUS GARRYANA

MA MAHONIA AQUIFOLIUM

RG ROSA GYMNOCARPA

SA SYMPHORICARPOS ALBUS

HYDROSEED

NOTES:
1. PRIOR TO INSTALLING PLANTS, APPLY HYDROSEED..
2. INSTALL TREES AT AN OVERALL DENSITY OF 50 TREES/10,000 S.F.
3. INSTALL TREES 10' O.C. MIN.
4. INSTALL SHRUBS AT AN OVERALL DENSITY OF 100 SHRUBS/10,000 S.F.
5. INSTALL SHRUBS 5'-6" O.C. MIN.
6. INSTALL SHRUBS IN SINGLE LOCATIONS.
7. SPREAD SPECIES THROUGHOUT THE GIVEN PLANTING AREA TO AVOID MONOCULTURES. A RANDOM 10,000 S.F. SAMPLE SHOULD CONTAIN ALL SPECIES.
8. MAINTAIN A 1' DIAMETER PLANT-FREE AREA AROUND ALL STEMS AND MULCH PER SPECIFICATION.

STORMWATER FACILITY - EXTENDED DRY BASIN

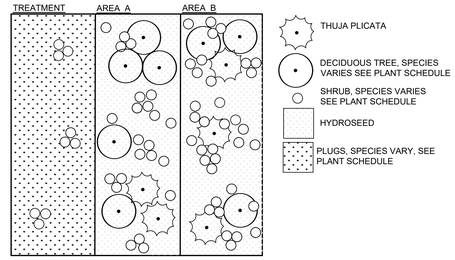
		BOTTOM	SIDES	TOTAL
	FACILITY AREA FOOTAGES	28603 S.F.	16924 S.F.	45527 S.F.

SYMBOL	TREATMENT AREA / SATURATED BOTTOM 171,618 S.F.			
	PLUGS - 6 PER SQ FOOT	**SIZE**	**PERCENTAGE**	**NUMBER**
	CAREX DENSA	6 C.I. PLUG	25%	
	CAREX OBNUPTA	6 C.I. PLUG	20%	
	JUNCUS EFFUSUS VAR. PACIFICUS	6 C.I. PLUG	25%	
	JUNCUS PATENS	6 C.I. PLUG	20%	
	SCIRPUS MICROCARPUS	6 C.I. PLUG	10%	
	SHRUBS			135
	CORNUS SERICEA	1 GAL.		85
	SPIRAEA DOUGLASII	1 GAL.		50

SYMBOL	AREA A - LOW SIDES - BOTTOM 4'	5925 S.F.		
	SHRUBS		**TOTAL**	**296**
	CORNUS SERICEA	1 GAL.	20%	60
	PHYSOCARPUS CAPITATUS	1 GAL.	20%	60
	ROSA PISOCARPA	1 GAL.	25%	74
	RUBUS SPECTABILIS	1 GAL.	25%	74
	SPIRAEA DOUGLASII	1 GAL.	10%	28
	TREES			60
	ALNUS RUBRA	1.5" CAL		40
	THUJA PLICATA	6' HT.		20
	HYDROSEEDING			
	PT 498 CLEAN WATER SERVICES NATIVE RIPARIAN / ZONE 2 MIX			
	ELYMUS GLAUCUS			
	AGROSTIS EXARATA			
	DESCHAMPSIA ELONGATA			
	LUPINUS POLYPHYLLUS			

SYMBOL	AREA B - HIGH SIDES - TOP 10'	10998 S.F.		
	SHRUBS		**TOTAL**	**550**
	AMELANCHIER ANLIFOLIA	1 GAL.	10%	55
	CEANOTHUS SANGUINEUS	1 GAL.	5%	28
	PHYSOCARPUS CAPITATUS	1 GAL.	10%	55
	SAMBUCUS CERULEA	1 GAL.	5%	28
	PHILADELPHUS LEWISII	1 GAL.	10%	55
	MAHONIA AQUIFOLIUM	1 GAL	5%	28
	SYMPHORICARPOS ALBA	1 GAL.	10%	55
	ROSA PISOCARPA	1 GAL.	15%	82
	RUBUS SPECTABILIS	1 GAL.	15%	82
	ACER CIRCINATUM	2 GAL.	15%	82
	TREES		**TOTAL**	**110**
	PRUNUS EMARGINATA VAR. MOLLIS	1.5" CAL		30
	RHAMNUS PURSHIANA	1.5" CAL		30
	THUJA PLICATA	6' HT.		30
	SALIX SCOULERIANA	1.5" CAL		20
	HYDROSEEDING			
	PT 498 CLEAN WATER SERVICES NATIVE RIPARIAN / ZONE 2 MIX			
	ELYMUS GLAUCUS			
	AGROSTIS EXARATA			
	DESCHAMPSIA ELONGATA			
	LUPINUS POLYPHYLLUS			

LAYOUT DIAGRAM - NOT TO SCALE



NOTES TREATMENT AREA :
1. INSTALL PLUGS 6 PER SQUARE FOOT.
2. INSTALL PLUGS IN CLUSTERS OF VARIED SIZES BETWEEN 8 AND 16 SQUARE FEET.
3. INSTALL SHRUBS 5'-6" O.C. MIN.
4. INSTALL SHRUBS IN CLUSTERS.
5. SPREAD SHRUB SPECIES THROUGHOUT THE GIVEN PLANTING AREA TO AVOID MONOCULTURES.
6. MAINTAIN A 1' DIAMETER PLANT-FREE AREA AROUND ALL STEMS AND MULCH PER SPECIFICATION.

NOTES AREA A AND B:
1. PRIOR TO INSTALLING PLANTS, APPLY HYDROSEED..
2. INSTALL TREES 10'-9" O.C. MIN.
3. INSTALL TREES IN SINGLES OR CLUSTERS
4. INSTALL SHRUBS 5'-6" O.C. MIN.
5. INSTALL SHRUBS IN SINGLES OR CLUSTERS. PLANT CLUSTER SHOULD BE PLANTED DIAGONALLY ACROSS SLOPE.
6. SPREAD SPECIES THROUGHOUT THE GIVEN PLANTING AREA TO AVOID MONOCULTURES..
7. MAINTAIN A 1' DIAMETER PLANT-FREE AREA AROUND ALL STEMS AND MULCH PER SPECIFICATION.

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CORGAN

AG&E Structural Engenuity

kpff

kW mission critical engineering

NNA Landscape Architecture

	ISSUES	
1	03.03.2023	DEVELOPMENT REVIEW
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△	REVISIONS	

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PLANT SCHEDULES

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ERM's Porland Office
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Portland, OR 97204

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F: +1 503 488 5142

www.erm.com

Habitat Management Plan

Quincy Valley Renewables Solar Project

PREPARED FOR

Silicon Ranch Corporation

DATE

18 February 2024

REFERENCE

0670568

CONTENTS

LIST OF FIGURES

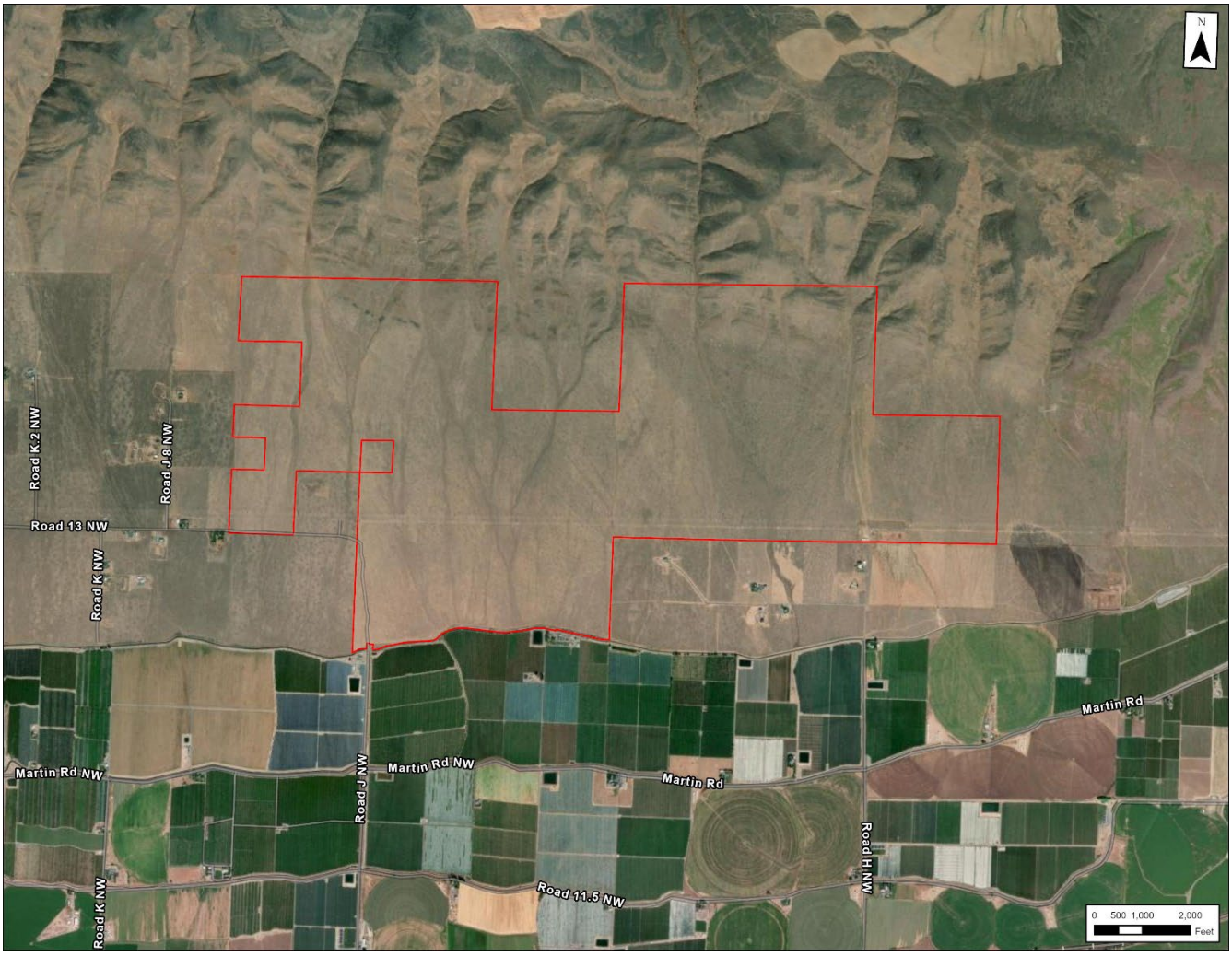
ACRONYMS AND ABBREVIATIONS

Applicant	Silicon Ranch Corporation
BESS	Battery Energy Storage System
ERM	Environmental Resources Management, Inc.
GCC	Grant County Code
HCA	Habitat Conservation Area
Project	Quincy Valley Renewables Solar Project
site	1,773 acres of land north of State Route 28 West, northeast of Quincy, and west of Ephrata in Sections 26-29 and 33, Township 21 North, Range 25 East, Western Meridian
WDFW	Washington Department of Fish and Wildlife

1. INTRODUCTION

Environmental Resources Management, Inc. (ERM) has prepared this *Habitat Management Plan* on behalf of Silicon Ranch Corporation (Applicant) for the proposed Quincy Valley Renewables Solar Project (Project), which will include the construction of a photovoltaic solar facility in Grant County, Washington. The Project area consists of about 1,773 acres of land north of State Route 28 West, northeast of Quincy, and west of Ephrata in Sections 26-29 and 33, Township 21 North, Range 25 East, Western Meridian (site; Figure 1). ERM prepared this *Habitat Management Plan* to provide an outline of proposed impacts, mitigation, and revegetation to the Habitat Conservation Area (HCA) identified on the site that is regulated under Grant County Code (GCC) 24.08.300(a).

FIGURE 1 PROJECT SITE AND AREA



Source: ERM

1.1 BACKGROUND

ERM completed a series of biological surveys on the site in June of 2023. ERM completed the surveys in coordination and compliance with the Washington Department of Fish and

Wildlife (WDFW) solar protocol. ERM followed *Management Recommendations for Washington's Priority Habitats: Managing Shrub-steppe in Developing Landscapes* (Azerrad et al. 2011a) methodology for identifying, mapping, and assessing quality of shrub-steppe habitats on individual parcels. ERM observed four major vegetation communities at the site: bluebunch wheatgrass *(Pseudoroegneria spicata) /* Idaho fescue *(Festuca idahoensis)* grasslands, big sagebrush (*Artemisia tridentata)* shrublands, three-tip sagebrush (*Artemisia tripartita)* scabland shrublands, and spineless horsebrush (*Tetradymia canescens)* shrublands. Of these, the two *Artemisia* shrublands are considered shrub-steppe habitat. The western half of the site experienced fire disturbance in recent years whereas the eastern portion of the site is unburned (Figure 2).

Working in coordination with WDFW, ERM determined that the portion of shrub-steppe that was burned on the northwest portion of the site is still considered shrub-steppe habitat despite the lack of regeneration observed. Our biological surveys identified approximately 312 acres of unburned shrub-steppe and 1,094 acres of burned shrub-steppe, for a total of 1,406 acres of shrub-steppe habitat, comprising 79 percent of the 1,773-acre site. Approximately 97 acres of unburned shrub-steppe and 745 acres of burned shrub-steppe (842 acres total) on the flatter portions of the site will be impacted by the Project (see Section 2.2 for further impact descriptions). As a WDFW priority habitat, shrub-steppe habitat (burned or unburned) is considered a regulated HCA per GCC 24.08.300(a) that requires avoidance and minimization of impacts.

FIGURE 2 UNBURNED SHRUB-STEPPE HABITAT ON SITE

Source: ERM

The rare plant survey identified one rare plant species on the site: dark-spine ball cactus (*Pediocactus nigrispinus*). The wetland and waters survey identified two ephemeral streams throughout the site in addition to several unregulated drainages. The cultural resource survey completed by ERM identified 43 cultural resources within three areas on the northwest corner of the site; these areas are classified as different types of critical areas under GCC 24.08 and were also considered for avoidance and minimization of impacts during the Project design process. The Existing Conditions Exhibit in Appendix A depicts the identified critical areas.

1.2 PROJECT DESCRIPTION

The Applicant proposes to construct, operate, and decommission the Quincy Valley Solar Photovoltaic and potential future Battery Energy Storage System (BESS) at the site, which will include solar arrays, Project and utility substations, laydown yards, and a potential future BESS. The solar facility will be capable of generating up to 130 megawatts of photovoltaic solar energy. The proposed Project consists of ground-mounted solar arrays and associated infrastructure, and a potential future BESS capable of producing up to 20 megawatts of energy for 4 hours. The Applicant designed the Project to avoid and minimize the identified critical areas to the extent practicable as discussed below in Section 2. The Site Plan in Appendix B depicts the Project layout, the location of identified critical areas, and unavoidable impacts to shrub-steppe habitat (also outlined in Section 2.2).

2. HABITAT MANAGEMENT PLAN

2.1 REGULATORY CONSIDERATIONS

According to the *WDFW Guidelines for Industrial Solar and Wind Power Development*, policy POL-M5002 (effective 1999) states that developers must implement mitigation strategies recommended by WDFW for any unavoidable impacts to wildlife and habitats (WDFW n.d.). WDFW will support county codes or local regulations that prescribe stricter mitigation requirements than outlined in these guidelines. The Project mitigation strategies were developed in accordance with WDFW and Grant County policies.

Under GCC 24.08.360 (Grant County 2018), the development of a Habitat Management Plan is required to assess unavoidable critical area impacts and required mitigation for a proposed development, land use action, or activity. The proposed solar facility will result in unavoidable impacts to the identified shrub-steppe HCA.

2.1.1 MITIGATION SEQUENCING

All proposed alterations to critical areas or associated buffers will require mitigation sufficient to provide for and maintain the functions and values of the critical area or to prevent risk from a critical area hazard. The mitigation will also give adequate consideration to the reasonable economically viable use of the property. Per the mitigation standards outlined under GCC 24.08.160, GCC 24.08.360(4)(D), and by Azerrad et al. (2011b), mitigation sequencing includes avoiding, minimizing, or compensating for adverse impacts to regulated critical areas or their buffers. The preferred sequence of mitigation as outlined in GCC 24.08.160 is defined in the list below.

1. *Avoid the impact altogether by not taking a certain action or parts of an action. Where impact on critical areas or their buffers will not be avoided, the applicant shall demonstrate that the impact meets the applicable mitigation requirements for granting an administratively approved alteration.*

   Large-scale solar energy production requires expansive geographic areas to facilitate energy output. The Applicant selected this specific site location because it is expansive, relatively flat, and contains low-sloping areas that are currently undeveloped. Other benefits of the site's location are:

   - the nearby cities of Ephrata to the east and Quincy to the west will directly benefit from solar energy production through enhancement of local power grid resiliency, creation of local utility and construction jobs, and increased business for local hotels and restaurants;
   - the area surrounding the site contains few single-family residences, and the proposed facility would likely result in few direct aesthetic impacts; and
   - the selected land is outside of active farmland areas situated to the south of the site.

   The Applicant also considered various properties in the site vicinity during the Project's planning stage. The adjacent undeveloped properties are similarly situated and potentially encumbered by mapped critical areas regulated by local, state, and federal agencies. These critical areas include regulated shrub-steppe habitat, waters, and rare plant species.

Therefore, there does not appear to be available sites in the immediate area that would result in less impacts to critical areas.

The Project design considered the identified critical areas present throughout the site. The Project scope was reduced to avoid impacts to observed rare species (i.e., dark-spine ball cactus), the two ephemeral streams and associated protective buffers that bisect the site, the steeper slopes (greater than 7 percent) on the northern portion of the site, and cultural resources on the northwest corner of the site. However, shrub-steppe habitat covers 79 percent of the total site area. Given the above-cited avoidance of rare species, waters, and steeper slopes, and the widespread occurrence of the shrub-steppe habitat, complete avoidance of the shrub-steppe HCA is not possible.

2. *Minimize the impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts.*

   The Project cannot avoid the identified shrub-steppe HCA as discussed above in criterion 1. The Applicant considered not clearing the shrub-steppe vegetation beneath the proposed solar arrays to the extent practicable; however, Grant County noted during consultation that leaving the vegetation in place would pose a fire hazard. Nevertheless, the solar arrays will be between 8 to 10 feet tall to allow sufficient light penetration beneath the arrays to facilitate regeneration of vegetation that will not interfere with panels or pose a fire risk. Site clearing will be limited to the extent needed for the solar development. The Project construction will occur during the dry season to the extent practicable to minimize erosion potential (GCC.24.08.360(c)). In addition, the Applicant will use applicable best management practices and temporary erosion and sediment control measures during construction, including silt fencing and/or regular water spraying in the active construction area(s) to limit dust (discussed in the *Vegetation and Weed Management Plan*).

3. *Rectify the impact by repairing, rehabilitating or restoring the affected environment to the conditions existing at the time of the initiation of the project or activity.*

   The impacts to the shrub-steppe HCA will be rectified on the site to the extent practicable through grassland restoration. The Applicant will also establish biodiversity corridors on site to help restore habitat affected by the Project. While the WDFW has designated 79 percent of the site area as priority shrub-steppe habitat, most of the site is composed of disturbed grasslands consisting of non-native annual plants such as cheatgrass (*Bromus tectorum*) and perfoliate pepperweed (*Lepidium perfoliatum*) with spineless horsebrush (*Tetradymia canescens)* shrubs present in low abundance. Therefore, Project development will result in the removal of limited quality habitat. The proposed grassland restoration actions will establish native grasses and forbs to increase habitat quality, which will inhibit growth of non-native invasive vegetation and noxious weeds, thus allowing the reestablishment of a sagebrush community over time (discussed in the *Vegetation and Weed Management Plan*).

4. *Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action.*

   The Applicant proposes maintenance and monitoring of the on-site grassland restoration for five years per coordination with Grant County (discussed in the *Vegetation and Weed Management Plan*). Continued maintenance and monitoring will ensure that the post-

construction restoration is successful. The Applicant will use the WDFW's preferred 6-inch by 6-inch gap fencing to allow site security and limit disturbance to the site, while allowing the movement of small- and medium-sized animals.

5. *Compensate for the impact by replacing, enhancing, or providing substitute resources or environments.*

   As described in criterion 3 above, on-site habitat restoration actions will include the establishment of unfenced biodiversity corridors along riparian channels, and grassland restoration efforts (discussed in the *Vegetation and Weed Management Plan*). The Applicant will complete required compensation through an in-lieu fee contract with WDFW; thus, the proposed mitigation strategies will fully compensate for the Project's impacts to shrub-steppe HCA.

6. *Monitoring the impact and taking appropriate corrective measures.*

   As mentioned under criterion 4 above, the Applicant proposes maintenance and monitoring of the on-site grassland restoration for five years per coordination with Grant County. Continued maintenance and monitoring will ensure that the mitigation is successful and meeting performance standards (discussed in the *Vegetation and Weed Management Plan*).

2.1.2 ALLOWED USES

Per GCC 24.08.340(h)(1), road, bridge, and utility maintenance, repair, and construction may be permitted within an identified HCA. The proposed Project is a utility-scale power generation facility for which impacts to the identified shrub-steppe HCA cannot be avoided. Therefore, the following conditions outlined in GCC 24.08.340 (h)(1) must be considered:

a) *It is demonstrated to the Administrative Official that there are no alternative routes that can be reasonably used to achieve the proposed development.*

   The Applicant considered potential alternative sites before selecting the site and has avoided impacts to the extent practicable. In general, utility-scale solar siting requires a large geographic area to provide enough solar arrays to facilitate the energy output needed to meet local energy demand. Additionally, utility-scale solar siting requires close proximity or adjacency to existing utility infrastructure. The specific site location was selected due to ideal site characteristics: expansive, relatively flat, and low-sloping areas that are currently undeveloped and direct adjacency to the 230-kilovolt Grant PUD line. In addition, the proximity to the cities of Ephrata to the east and Quincy to the west will directly benefit from the solar energy production through enhancement of local power grid resiliency, creation of local utility and construction jobs, and increased business for local hotels and restaurants. Further, the surrounding land use contains few single-family residences likely resulting in less direct aesthetic impacts, and the selected land is outside of active farmland areas situated to the south of the site.

   The Applicant also considered various properties in the site vicinity during the Project's planning stage. The adjacent undeveloped properties are similarly situated and potentially encumbered by mapped critical areas regulated by local, state, and federal agencies, including

HABITAT MANAGEMENT PLAN

regulated shrub-steppe habitat and waters. Therefore, there do not appear to be available sites in the immediate area that would require less impacts to critical areas.

The Project design considered the identified critical areas present throughout the site. The Applicant reduced the Project scope to avoid the occurrences of rare species on the site (i.e., dark-spine ball cactus), the two ephemeral streams and associated protective buffers that bisect the site, the steeper slopes (greater than 7 percent) on the northern portion of the site, and cultural resources on the northwest corner of the site. However, shrub-steppe habitat covers 79 percent of the total site area. Given the avoidance of rare species, waters, and steeper slopes and the widespread occurrence of the shrub-steppe habitat, complete avoidance of the shrub-steppe HCA is not possible.

b) *The activity will have minimum adverse impact to the Fish and Wildlife Habitat Conservation Area.*

Given the extensive presence of critical areas throughout the site—shrub-steppe habitat, waters, rare plants, and steep slopes—impacts are unavoidable; however, the Applicant has designed the Project so that it has the least impacts to the site while still allowing for the practical implementation and efficacy of the Project. The waters, rare plants, and steep slopes are completely avoided, with impacts limited only to the identified shrub-steppe HCA on the flatter areas of the site (discussed in the *Vegetation and Weed Management Plan*).

c) *The activity will not significantly degrade surface or groundwater.*

The proposed solar development will not significantly degrade surface or groundwater. Construction activities will occur during the dry months to the extent practicable and appropriate best management practices and temporary erosion and sediment control measures will be in place during construction to minimize potential erosion (GCC.24.08.360(c)). According to the Grant County Source Water Assessment Program mapping application,[1] no critical aquifer recharge areas are identified within 100 feet of the site, and no wellhead protection areas (based on 10-year time of travel) overlap the site. The closest groundwater well is located greater than 500 feet south of the site between Road J Northwest and Road H Northwest and north of Martin Road Northwest.

d) *The intrusion into the Fish and Wildlife Habitat Conservation Area and its buffers is fully mitigated.*

The Applicant will rectify the impacts to the shrub-steppe HCA on site to the extent practicable through grassland restoration in coordination with WDFW (discussed in the *Vegetation and Weed Management Plan*). The Applicant will complete required mitigation through an in-lieu fee contract with WDFW; thus, the Applicant anticipates that the proposed mitigation strategies will fully compensate for the Project's impacts to shrub-steppe HCA.

[1] Grant County Source Water Assessment Program mapping application: References to other content providers - Interactive | Open GIS Data - Grant County, Washington (arcgis.com)

2.2 DESCRIPTION OF IMPACTS

Per GCC 24.08.360(b)(1) and GCC 24.08.360 (4)(A), a detailed Project narrative is necessary to describe the proposed activity and anticipated impacts to the identified critical area(s). The solar facility Project design considered the location of identified critical areas present throughout the site during the planning process to avoid and minimize impacts to the extent practicable, as required per GCC 24.08.160 and outlined by Azerrad et al. (2011b). The Applicant reduced the Project scope to avoid the occurrences of rare species on the site (i.e., dark-spine ball cactus), the two ephemeral streams and associated protective buffers that bisect the site, the steeper slopes (greater than 7 percent) on the northern portion of the site where possible, and cultural resources on the northwest corner of the site. However, shrub-steppe habitat covers 79 percent of the total site area. Given the avoidance of rare species, waters, and steeper slopes and the widespread occurrence of the shrub-steppe habitat, complete avoidance of the shrub-steppe HCA is not possible. Approximately 97 acres of unburned shrub-steppe and 745 acres of burned shrub-steppe (842 acres total) on the flatter portions of the site will be impacted by the Project. The Applicant designed the Project in a way that would have the least impact while providing enough solar arrays to facilitate the effective operation of the Project; however, the construction of the solar facility will result in permanent impacts to the HCA through the life of the Project.

Per GCC 24.08.360(4)(B), the Project proposal must analyze the effects of the development, activity, or land use change on the designated HCA. The Project will directly impact approximately 842 acres of primarily burned shrub-steppe habitat that lacks active indications of regeneration. While the WDFW has designated 79 percent of the site area as priority shrub-steppe habitat, most of the site is composed of disturbed grasslands consisting of non-native annual plants such as cheatgrass and perfoliate pepperweed with spineless horsebrush shrubs present in low abundance. Dead, burned sagebrush shrubs are prevalent in these areas; and in some patches, lone big sagebrush (*Artemisia tridentata)* shrubs remain. Given the sparse distribution and low stature of the spineless horsebrush shrubs, these systems do not represent quality shrub-steppe habitat. Therefore, while the area of impact (approximately 842 acres) is large, the biological impact is considered small especially when considering the proposed grassland restoration to improve native habitat conditions on the site. The proposed grassland restoration and weed management actions outlined in the *Vegetation and Weed Management Plan* (Appendix C) will establish native grasses and forbs to increase habitat quality, which will inhibit growth of non-native invasive vegetation and noxious weeds, thus allowing the reestablishment of a sagebrush community over time. Grassland restoration and weed management is proposed not only in areas temporarily impacted by construction, but across the site to increase the habitat quality of the shrub-steppe HCA and provide biodiversity corridors within the site.

Per GCC 24.08.360(4)(C), the Project proposal must discuss any federal, state, or local management recommendations that have been developed for the area. The Applicant has worked with WDFW and Grant County to develop mitigation standards per GCC 24.08.160 requirements, a *Vegetation and Weed Management Plan*, and the implementation of a Storm Water Management Prevention Plan.

Per GCC.24.08.360(4)(D-F) and GCC.24.08.360(2), the Project proposal must include a plan for the mitigation of any adverse impacts to designated HCAs, a detailed discussion of ongoing

management and monitoring practices, and an evaluation of the effectiveness of proposed mitigation measures. Through correspondence with WDFW and Grant County, the Applicant has agreed to the in-lieu fee contract and mitigation plan described in Section 2.3 through Section 2.9 below.

2.3 MITIGATION STRATEGY

Per GCC Chapter 24.08, the Applicant must mitigate any loss of area or function and value of fish and wildlife habitat caused by Project implementation. Mitigation actions by an applicant or property owner will occur in the preferred sequence specified in GCC 24.08.160(a) (mitigation sequencing) and in compliance with GCC.24.08.360(4)(D-F), as discussed in Section 2.1.1 above. Where impacts cannot be avoided, the Applicant will seek to implement other appropriate mitigation actions in compliance with the intent, standards, and criteria of GCC 24.08.

The Applicant's on-site habitat restoration actions will also include the establishment of biodiversity corridors, given that lack of connectivity to other habitats is an issue identified by Azerrad et al (2011a). The two identified stream corridors will be preserved beyond the required 50-foot buffer widths on each side of the delineated ordinary high-water mark to provide connectivity corridors across the site from the farm fields to the south to the foothill areas to the north. The Project will also avoid several other drainages across the site and the steeper slopes (greater than 7 percent) on the northern portion of the site where possible, and will provide further habitat corridors. The Applicant will maintain site control of these areas to maintain the vegetation (i.e., fuel load) over time to minimize fire hazard. Maintenance actions may include chemical methods (spraying using an approved herbicide), mechanical methods (mowing or cutting vegetation), and/or biological methods (sheep grazing) in coordination with WDFW and Grant County. Further wildlife-friendly design will include the use of 6-inch by 6-inch gap fencing as preferred by WDFW to promote wildlife movement for small- to medium-sized animals while also securing the solar facility. The *Vegetation and Weed Management Plan* (Appendix C) further outlines planned vegetation management activities and goals after construction is complete.

In April 2024, WDFW agreed to an in-lieu fee contract and determined on-site mitigation is not feasible for this Project due to the site being fenced and vegetation height needing to be managed to reduce fire risk. For in-lieu fee calculations, WDFW uses a formula based on recent land sales to determine cost per acre. The total financial obligation of the Applicant is determined by the cost per acre multiplied by total compensatory mitigation acres and includes a 15 percent premium to cover administration and management costs for land. Grant County requires the in-lieu fee to be sufficient to allow the county to purchase 2 acres of shrub-steppe habitat for each acre of shrub-steppe impacted. The 842 acres of shrub-steppe estimated to be impacted brings the estimated in-lieu mitigation fee to $3,292,212. These funds will be used at the discretion of WDFW to administer habitat restoration activities on priority lands within the Columbia Basin region to increase habitat quality for wildlife.

2.4 GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

Pursuant to GCC 24.08.160, the Applicant will pursue an in-lieu fee contract. However, the Project goals and objectives will include grassland restoration activities to improve soil quality, limit the

growth of invasive species, limit the erosion potential on the site, and improve habitat quality within the Columbia Basin region (Appendix C). Monitoring will focus on evaluating the basic effectiveness of the prescribed restoration actions (Benson et al. 2011). Goals are discussed in greater detail in Section 4.2 and the *Vegetation and Weed Management Plan* (Appendix C), and an overview is provided in the list below:

- **Goal 1** – Revegetate areas disturbed during construction activities to the extent feasible (based on final site design) to improve habitat functions.
- **Goal 2** – Manage undisturbed big sagebrush shrub-steppe for promotion of native species, and wildlife habitat, etc.
- **Goal 3** – Preserve existing three-tip sagebrush (*Artemisia tripartita*) scabland habitats in an undisturbed state.
- **Goal 4** – Preserve dark-spine ball cactus (*Pediocactus nigrispinus*) and its habitat within the site, where possible.
- **Goal 5** – Convert undisturbed existing grasslands dominated by non-native annual grasses and forbs to native bunchgrass grasslands.

2.5 MAINTENANCE AND MONITORING

Per GCC 24.08.160(g), maintenance and monitoring actions are required as part of a mitigation plan. The Applicant will be responsible for maintenance and monitoring of the site for a period of 5 years per discussions with Grant County. Formal monitoring events will occur in Years 1, 3, and 5, with the closeout monitoring event occurring in Year 5, or earlier in coordination with WDFW and Grant County if the restoration areas are consistently meeting and/or exceeding performance standards (Appendix C). Per GCC 24.08.160(h), if monitoring reveals a significant deviation from predicted impacts or a failure of mitigation measures, the Applicant will be responsible for appropriate corrective action. Contingency plans developed as part of the original mitigation plan will apply, but may be modified to address a specific deviation or failure. Contingency plan measures will be subject to the monitoring requirement to the same extent as the original mitigation measures.

Monitoring of the restoration areas will follow the methodology outlined in management recommendations for *Washington's Priority Habitats: Managing Shrub-steppe in Developing Landscapes* (Azerrad et al. 2011a). The Applicant will distribute rectangular 50-meter by 10-meter vegetation monitoring plots throughout the restoration areas. In the field, the Applicant will choose plots to best represent the restoration areas present on the site. Formal monitoring plots will be chosen in Year 1 and utilized throughout the monitoring period to assess success of the restoration actions. At each plot, two parallel 50 meter transects will be established. Along the inside edge of each transect, 1-square meter cover frames will be placed at 5-meter intervals. Percent cover will be recorded for all plant species, bare ground, and biological soil crust present within each frame.

2.6 PROTECTION OF CRITICAL AREAS

Per GCC 24.08.190, development actions will be subject to the identification and designation of all critical areas and their buffers identified in the assessment process. The Administrative Official will require of the Applicant that such designated critical areas be recorded on the final site plan clearly showing the locations of critical areas, existing vegetation, and buffers. During construction, the Applicant will install and maintain clearly visible, temporary marking such as flagging and staking along the outer limits of the proposed site disturbance outside of the critical area. The Applicant will maintain markings throughout the duration of any construction activities. The Administrative Official may require permanent signing and/or fencing where it is determined a necessary component of a mitigation plan. The intent of these critical area designation, marking, and buffering requirements is to provide clear and sufficient notice, identification, and protection of critical areas on site where damage to a critical area or buffer by humans or livestock is probable due to the proximity of the adjacent activity. The Project will utilize 6-inch by 6-inch gap fencing to promote wildlife movement as recommended by WDFW, while also securing the solar facility. The Applicant will be responsible for maintaining fencing, signage, and markers throughout the life of the Project.

2.7 ADAPTIVE MANGEMENT

If monitoring results indicate that unexpected and unaccounted for negative impacts to habitat or wildlife have occurred that have not been mitigated during the permitting process, adaptive management techniques may be implemented. The goal of the specific adaptive management technique will vary based on species or habitat impacted and will be determined through conversations between WDFW, the permitting authority, and the Applicant.

2.8 REPORTING

Formal monitoring events will occur in Years 1, 3, and 5, with the closeout monitoring event occurring in Year 5. If monitoring reveals a significant deviation from predicted impacts or a failure of vegetation or weed management measures, the Applicant will be responsible for appropriate corrective action. This monitoring schedule may be adjusted based on feedback from WDFW and Grant County.

2.9 FINANCIAL ASSURANCES

In April 2024, WDFW agreed to an in-lieu fee contract for off-site mitigation. As of October 2024, the anticipated timing of purchase is still being established.

3. REFERENCES

Azerrad, J. M., K. A. Divens, M. F. Livingston, M. S. Teske, H. L. Ferguson, and J. L. Davis. 2011a. *Management Recommendations for Washington's Priority Habitats: Managing Shrub-steppe in Developing Landscapes*. Washington Department of Fish and Wildlife, Olympia, Washington.

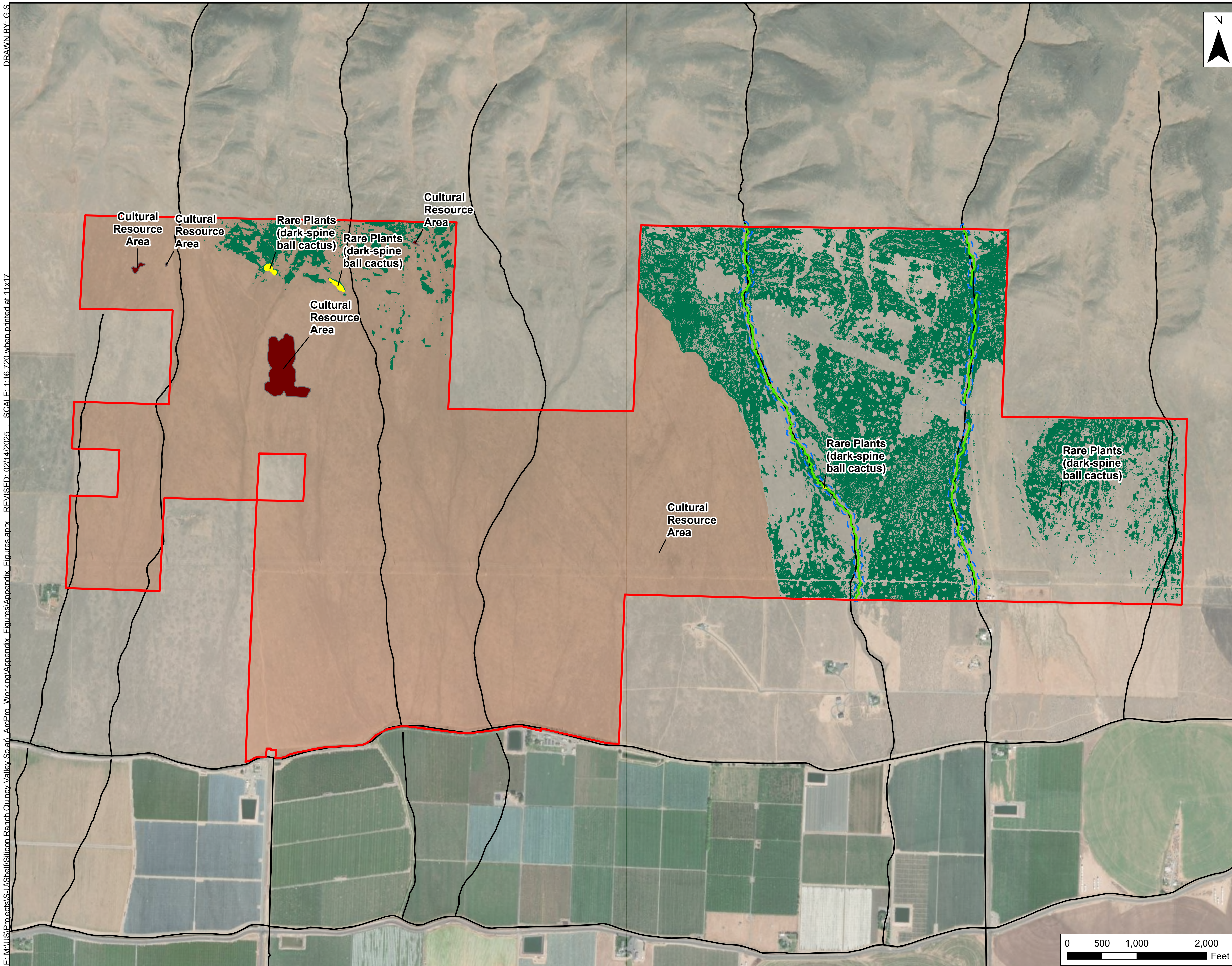
Azerrad, J. M., K. A. Divens, M. F. Livingston, M. S. Teske, H. L. Ferguson, and J. L. Davis. 2011b. *Site-specific Management: How to Avoid and Minimize Impacts of Development to Shrub-steppe*. Washington Department of Fish and Wildlife, Olympia, Washington.

Benson, J. E., R.T. Tveten, M. G. Asher and P.W. Dunwiddie. 2011. *Shrub-Steppe and Grassland Restoration Manual for the Columbia River Basin*.

Grant County. 2018. *Critical Areas and Cultural Resources*, Chapter 24.08. Retrieved from: https://www.grantcountywa.gov/

WDFW (Washington Department of Fish and Wildlife). N.d. *Guidelines for Industrial Solar and Wind Power Development (Draft for Review).*

APPENDIX A EXISTING CONDITIONS EXHIBIT



Legend

- Site Boundary (1,773 acres)
- Ephemeral Stream
- Ephemeral Stream 50-foot Buffer
- Cultural Resource Area
- Rare Plants (dark-spine ball cactus)
- Mapped NHD

Habitat (1406 acres)

- Unburned Shrubsteppe Habitat (312 acres)
- Burned Shrubsteppe Habitat Area (1,094 acres)

Appendix A
Existing Conditions Exhibit
Quincy Valley Solar
Silicon Ranch
Quincy, WA

ERM

Source: Esri - World Imagery Map; NAD 1983 UTM Zone 11N

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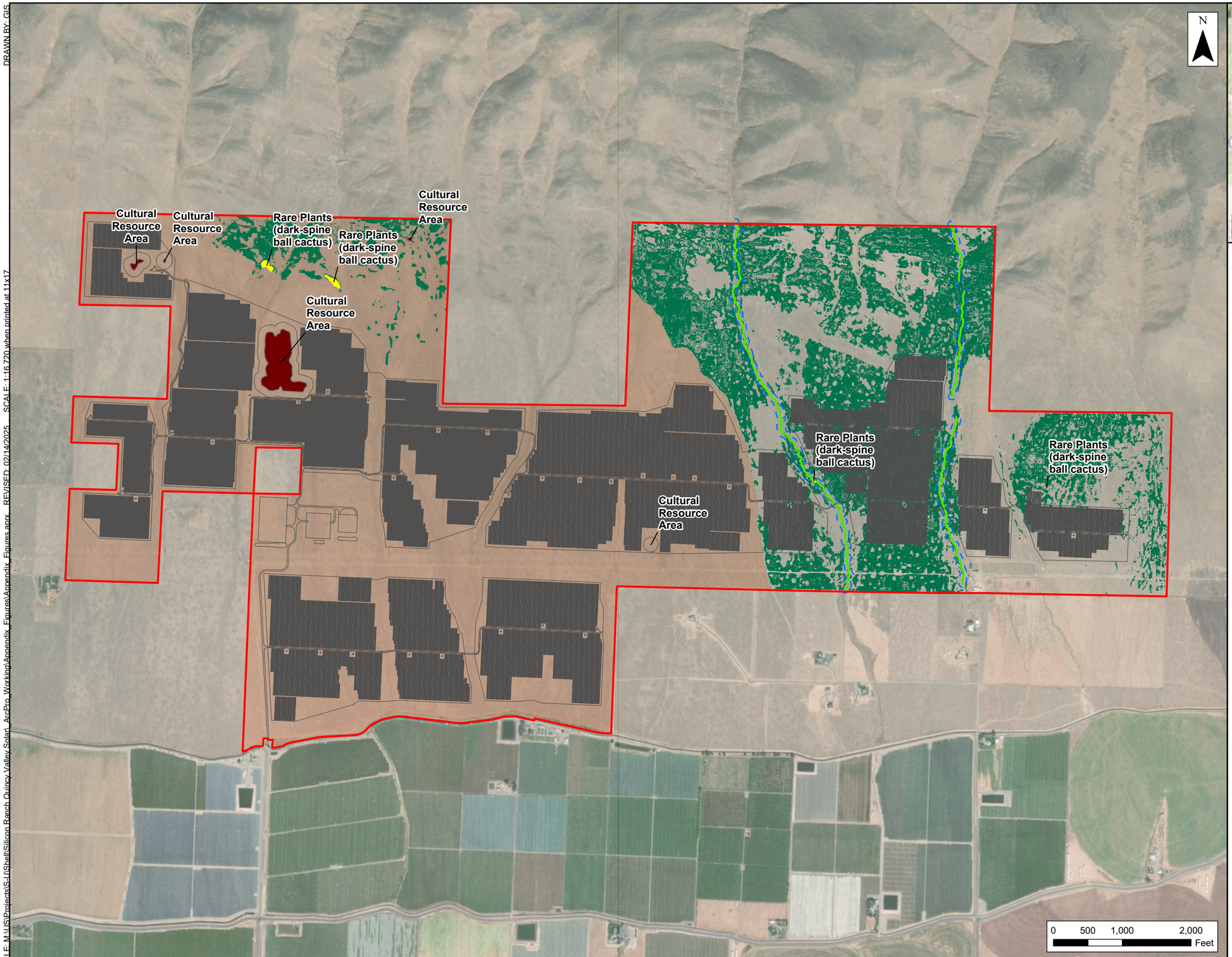
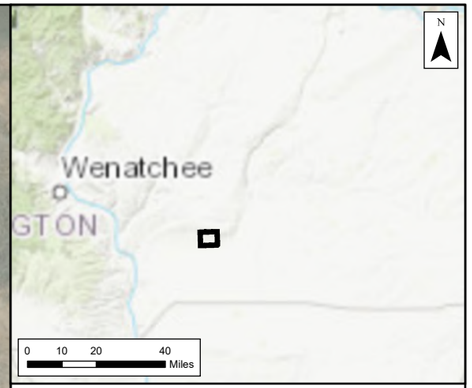
APPENDIX B SITE PLAN





Legend

- Site Boundary (1,773 acres)
- Site Layout
- Ephemeral Stream
- Ephemeral Stream 50-foot Buffer
- Cultural Resource Area
- Rare Plants (dark-spine ball cactus)

Habitat (1406 acres)

- Unburned Shrubsteppe Habitat (312 acres)
- Burned Shrubsteppe Habitat Area (1,094 acres)

~97 acres of unburned shrub-steppe impacts
~745 acres of burned shrub-steppe impacts

Appendix B
Site Plan
Quincy Valley Solar
Silicon Ranch
Quincy, WA

ERM

Source: Esri - World Imagery Map; NAD 1983 UTM Zone 11N

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APPENDIX C VEGETATION AND WEED MANAGEMENT PLAN

Vegetation and Weed Management Plan

Quincy Valley Renewables Solar Project

PREPARED FOR
Silicon Ranch Corporation

DATE
18 February 2025

REFERENCE
0670568

CONTENTS

LIST OF TABLES

LIST OF FIGURES

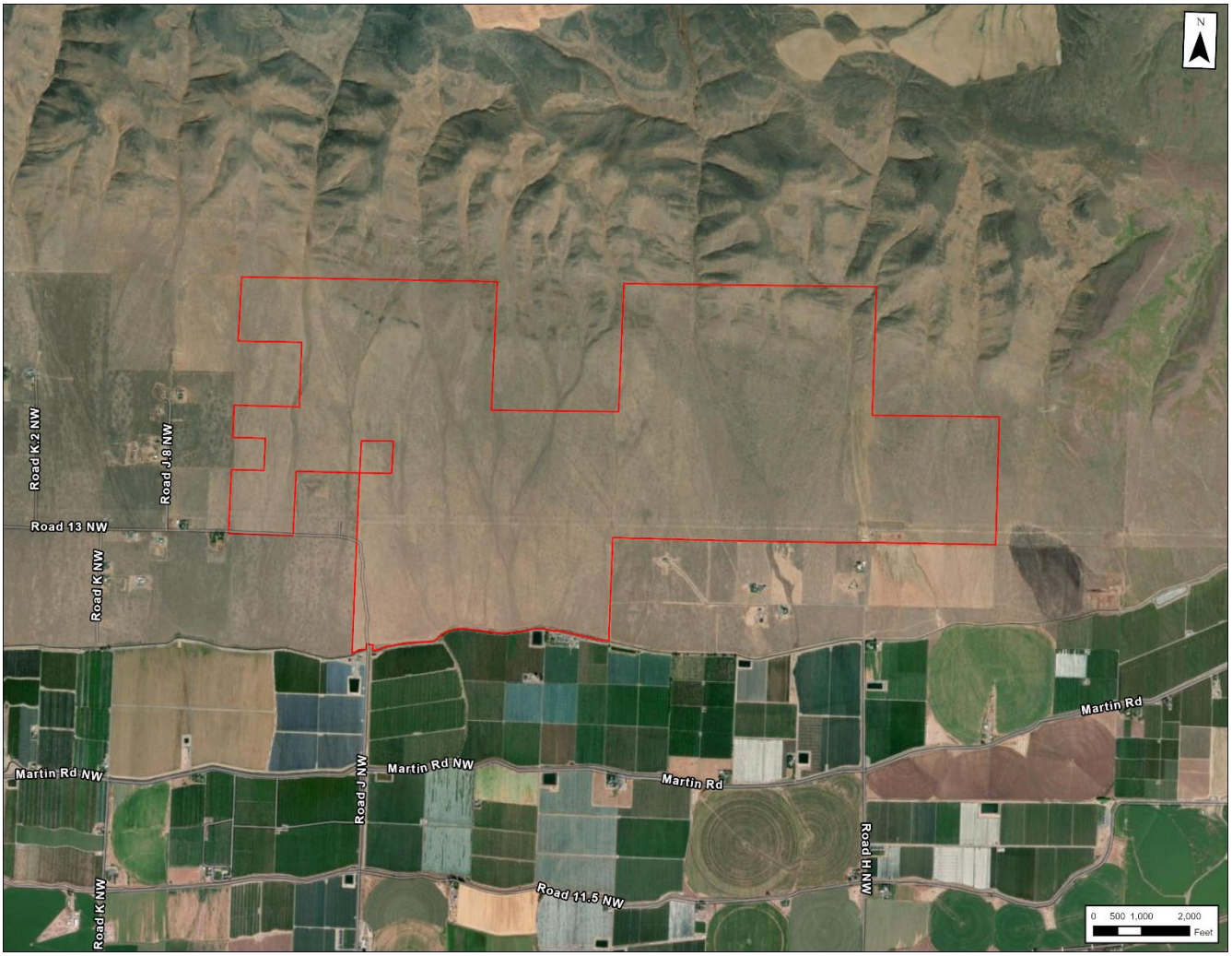
ACRONYMS AND ABBREVIATIONS

Acronym	Description
Applicant	Silicon Ranch Corporation
BESS	Battery Energy Storage System
ERM	Environmental Resources Management, Inc.
LOD	Limit of disturbance
Project	Quincy Valley Renewables Solar Project
RCW	Revised Code of Washington
site	1,773 acres of land north of State Route 28 West, northeast of Quincy, and west of Ephrata in Sections 26-29 and 33, Township 21 North, Range 25 East, Western Meridian
WDFW	Washington Department of Fish and Wildlife

1. INTRODUCTION

Environmental Resources Management, Inc. (ERM) has prepared this *Vegetation and Weed Management Plan* on behalf of Silicon Ranch Corporation (Applicant) for the proposed Quincy Valley Renewables Solar Project (Project), which will include the construction of a photovoltaic solar facility in Grant County, Washington. The Project area consists of about 1,773 acres of land north of State Route 28 West, northeast of Quincy, and west of Ephrata in Sections 26-29 and 33, Township 21 North, Range 25 East, Western Meridian (site; Figure 1). ERM prepared this *Vegetation and Weed Management Plan* to outline vegetation communities on site, provide management strategies for vegetation communities post-construction, and outline the management strategies for noxious weeds and invasive plant species.

FIGURE 1 PROJECT SITE AND AREA



Source: ERM

1.1 BACKGROUND

ERM completed a series of biological surveys on the site in June of 2023. ERM completed the surveys in coordination and compliance with the Washington Department of Fish and Wildlife (WDFW) solar protocol. ERM followed *Management Recommendations for Washington's Priority Habitats: Managing Shrub-steppe in Developing Landscapes* (Azerrad et al. 2011) methodology for identifying, mapping, and assessing quality of shrub-steppe habitats on individual parcels. ERM observed four major vegetation communities at the Project site: bluebunch wheatgrass *(Pseudoroegneria spicata) /* Idaho fescue *(Festuca idahoensis)* grasslands, big sagebrush (*Artemisia tridentata)* shrublands, three-tip sagebrush (*Artemisia tripartita)* scabland shrublands, and gray horsebrush (*Tetradymia canescens)* shrublands. Of these, the two *Artemisia* shrublands are considered shrub-steppe habitat. The western half of the site experienced fire disturbance in recent years whereas the eastern portion of the site remained unburned (Figure 2).

Working in coordination with WDFW, ERM determined that the portion of shrub-steppe that was burned on the northwest portion of the site is still considered shrub-steppe habitat despite the lack of regeneration observed. Our biological surveys identified approximately 312 acres of unburned shrub-steppe and 1,094 acres of burned shrub-steppe, for a total of 1,406 acres of shrub-steppe habitat, comprising 79 percent of the 1,773-acre site. Approximately 97 acres of unburned shrub-steppe and 745 acres of burned shrub-steppe (842 acres total) on the flatter portions of the site will be impacted by the Project (see the *Habitat Management Plan* for further impact descriptions). As a WDFW priority habitat, shrub-steppe habitat (burned or unburned) is considered a regulated Habitat Conservation Area per Grant County Code 24.08.300(a) that requires avoidance and minimization of impacts.

FIGURE 2 UNBURNED BIG SAGEBRUSH SHRUB-STEPPE HABITAT ON SITE

Source: ERM

The rare plant survey identified one rare plant species on the site: dark-spine ball cactus (*Pediocactus nigrispinus*) and the wetland and waters survey identified two ephemeral streams throughout the site in addition to several unregulated drainages. The cultural resource survey completed by ERM identified 43 cultural resources within three areas on the northwest corner of the site; these areas are classified as different types of critical areas under Grant County Code 24.08 and were also considered for avoidance and minimization of impacts during the Project design process. The Existing Conditions Exhibit in Appendix A depicts the identified critical areas.

1.2 PROJECT DESCRIPTION

The Applicant proposes to construct, operate, and decommission the proposed Quincy Valley Solar Photovoltaic and potential future Battery Energy Storage System (BESS) at the site, which will include solar arrays, Project and utility substations, laydown yards, and potential future BESS. The solar facility will be capable of generating up to 130 megawatts of photovoltaic solar energy. The proposed Project consists of ground-mounted solar arrays and associated infrastructure, and a potential future BESS capable of producing up to 20 megawatts of energy for 4 hours. The Applicant designed the Project to avoid and minimize the identified critical areas to the extent practicable. The Site Plan in Appendix B depicts the Project layout, the location of identified critical areas, and impacts to unavoidable shrub-steppe habitat.

2. VEGETATION MANAGEMENT PLAN

This section describes the proposed vegetation and weed management plan for the Project site. The applicant proposes a seed mix that contains native grassland species and is compatible with the presence of solar arrays to revegetate disturbed habitat. The Project will follow applicable best practices presented by the Washington State Noxious Weed Control Board and *Shrub-Steppe and Grassland Restoration Manual for the Columbia River Basin* (Benson et al. 2011) to minimize the spread of invasive species during and after construction.

2.1 PRE-DISTURBANCE VEGETATION SURVEY

In summer 2023, ERM conducted rare plant and habitat surveys at the site. The results, described in Section 2.1.2 below, aided in planning the Project scope which was reduced to the extent possible to avoid the occurrences of rare species on the site (i.e., dark-spine ball cactus). The Project will impact approximately 97 acres of unburned shrub-steppe and 745 acres of burned shrub-steppe (842 acres total) on the flatter portions of the site.

2.1.1 SURVEY METHODS

ERM followed *Management Recommendations for Washington's Priority Habitats: Managing Shrub-steppe in Developing Landscapes* (Azerrad et al. 2011) methodology for identifying, mapping, and assessing quality of shrub-steppe habitats on individual parcels. Prior to field surveys, ERM conducted a desktop review to determine areas of likely shrub-steppe habitat. Rectangular 50-meter by 10-meter vegetation monitoring plots were distributed throughout areas identified as likely shrub-steppe habitat and throughout the areas of non-shrub-steppe vegetation. Habitat/vegetation surveys were conducted from 20 to 23 June 2023. In the field, ERM chose four plots to best represent the different habitat types/vegetation communities present in the site.

ERM established two parallel 50 meter transects at each plot and placed 1-square meter cover frames at 5-meter intervals along the inside edge of each transect. ERM recorded percent cover for all plant species, bare ground, and biological soil crust present within each frame, and took line-intercept readings of shrub foliar cover on each transect.

ERM used ESRI Field Maps and Trimble R1 GNSS receivers, which provide sub-meter mapping accuracy, to conduct habitat mapping. We used the Washington Department of Natural Resources and Washington Natural Heritage Program's *Ecological Systems of Washington State: A Guide to Identification* (Rocchio and Crawford 2015) to identify shrub communities to the association level. Once shrub communities were identified to the association level, the surveyors walked the outside boundary of the shrub communities to map them. The extent of the site was surveyed to ensure complete mapping coverage of shrub-steppe.

2.1.2 SURVEY RESULTS

One rare plant species was observed within the Project site: dark-spine ball cactus (*Pediocactus nigrispinus*). Dark-spine ball cactus is a Washington state sensitive species, a Bureau of Land Management sensitive species, and NatureServe rank S2 (imperiled) in Washington. This species is found from southeastern Oregon through central Washington and is associated with Great Basin Desert shrub/scrub systems. In Washington state it is primarily found in scabland shrublands.

The distribution of dark-spine ball cactus within the site was primarily constrained to rocky, scabland communities dominated by three-tip sagebrush (*Artemisia tripartita*) at higher elevations in the northwest corner of the site. Surveyors observed one large individual cactus in the southeastern corner of the site and a small, sparse patch of cacti in dry, rocky soil at the top of a steep bank of a large, ephemeral drainage in the eastern third of the site. Surveyors did not observe any individuals in areas mapped with fire disturbance.

Surveyors observed four major vegetation communities at the site: bluebunch wheatgrass *(Pseudoroegneria spicata) /* Idaho fescue *(Festuca idahoensis)* grasslands, big sagebrush (*Artemisia tridentata)* shrublands, three-tip sagebrush (*Artemisia tripartita)* scabland shrublands, and gray horsebrush (*Tetradymia canescens)* shrublands. Of these, the two *Artemisia* shrublands are considered shrub-steppe habitat according to the *Ecological Systems of Washington State: A Guide to Identification* (Rocchio and Crawford 2015). The gray horsebrush shrublands and grasslands are systems that appear to have previously been shrub-steppe habitat but have transitioned into a new state by fire disturbance. Dead, burned sagebrush shrubs are prevalent within these non-shrub-steppe systems and there is no observed, evident regeneration.

The majority of the site is composed of disturbed grasslands. The species composition of this system is highly variable across the site and non-native annual plants such as cheatgrass (*Bromus tectorum*) and perfoliate pepperweed (*Lepidium perfoliatum*) are prevalent. Surveyors observed biological soil crusts to be rare to absent.

Within the burn footprint in the western portion of the Project site, there are patches of gray horsebrush shrublands covering a total of 25.104 acres (Table 1). These systems are similar in community composition to the grasslands, but with gray horsebrush shrubs present in low abundance. Dead, burned sagebrush shrubs are prevalent in these areas, and in some patches, lone big sagebrush shrubs remain. Because of the sparse distribution and low stature of the gray horsebrush shrubs, these systems do not represent quality shrub-steppe habitat.

The three-tip sagebrush scabland shrublands are restricted to areas of dry, rocky soils in the higher elevations of the site and cover an area of 1.193 acres (Table 1). These communities have substantially less vegetation cover than surrounding communities, but biological soil crusts are present between rocks. Three-tip sagebrush is the only dominant shrub in these systems and mature shrubs are present in low abundance. Dark-spine ball cactus is common in the open, rocky areas between shrubs.

The big sagebrush shrubland (*Artemisia tridentata* / *Festuca idahoensis* Shrub Herbaceous Vegetation and *Artemisia tridentata* / *Pseudoroegneria spicata* Shrub Herbaceous Vegetation) is the most abundant shrub-steppe system in the site and is prevalent in the unburned, eastern section. This system was mapped across a total of 222.64 acres within the site during the 2023 field surveys (Table 1). In the area mapped as unburned, there are large, continuous patches of mature shrubs. Within these patches, non-native plants, such as cheatgrass and perfoliate pepperweed, have limited distribution and the herbaceous community is dominated by a diverse assemblage of native bunchgrasses and forbs. Biological soil crusts are prevalent. There are remnant patches of big sagebrush shrublands within the footprint of the mapped burn, but they

are restricted to narrow, discontinuous, linear strips. Despite the narrow, discontinuous nature of these remnant patches, there appears to be regeneration.

TABLE 1: ACREAGE OF PLANT ASSOCIATIONS MAPPED IN THE PROJECT SITE

Association	Area (acres)
Artemisia tridentata / Festuca idahoensis Shrub Herbaceous Vegetation	1.94
Artemisia tridentata / Pseudoroegneria spicata Shrub Herbaceous Vegetation	220.70
Artemisia tripartita / Festuca idahoensis Shrub Herbaceous Vegetation	1.19
Tetradymia canescens / Festuca idahoensis Shrub Herbaceous Vegetation	25.10

2.2 GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

The goals and objectives for the vegetation and weed management actions are based on native grassland restoration activities and invasive weed management. The proposed actions will create habitat connectivity corridors, improve soil quality, limit the growth of invasive species, and limit the erosion potential on the site. The monitoring will focus on evaluating the basic effectiveness of the prescribed restoration and management actions using the general abundance categories presented in *Shrub-Steppe and Grassland Restoration Manual for the Columbia River Basin* (Table 2; Benson et al. 2011). Figure 3 outlines proposed vegetation management units, which consist of approximately 819 acres of construction area revegetation, 374 acres of non-native grassland restoration, 311 acres of big sagebrush shrub-steppe management, and 5 acres of three-tip sagebrush scabland habitat management**.** The big sagebrush shrub-steppe and three-tip sagebrush scabland management units include the areas mapped during 2023 field surveys as well as areas within construction exclusion zones that were not mapped in the field but were delineated in geographic information system after the fact. See Figure 3 for the delineation between field mapped sagebrush habitats and desktop mapped sagebrush habitats.

FIGURE 3 PROPOSED VEGETATION MANAGEMENT UNITS WITHIN THE PROJECT AREA

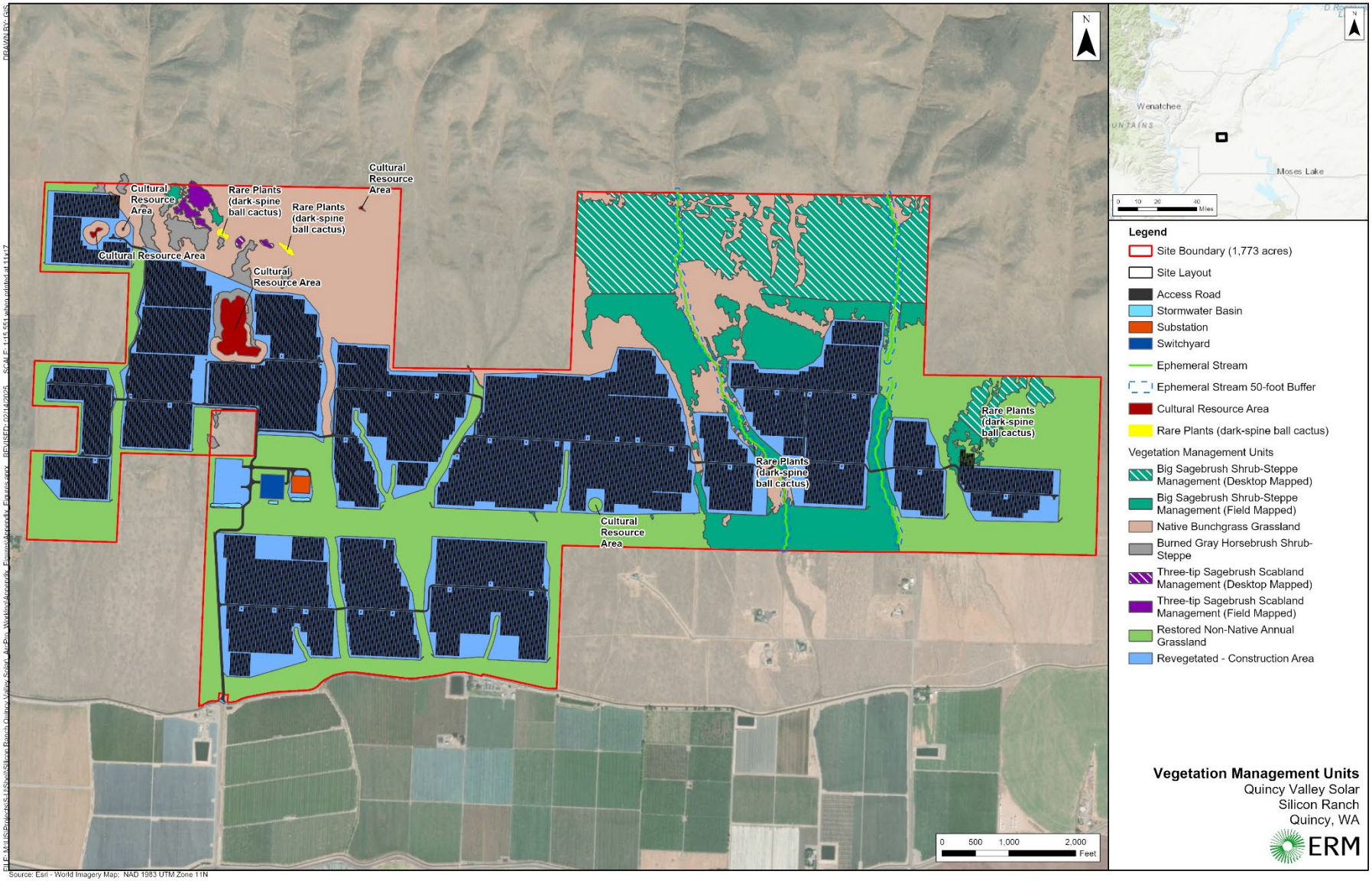


TABLE 2: GENERAL ABUNDANCE CATEGORIES

General Abundance Category	Description
1	Rare (only a few plants encountered)
2	Occasional (Widely scattered individuals, or only a few patches that locally can include many individuals)
3	Frequent (Widely distributed, or more than a few patches)
4	Common (Well distributed in most areas, or many patches)
5	Abundant (Large numbers of plants across entire unit, and often many patches as well)

Source: Benson et al. 2011

The vegetation and weed management plan's goals and objectives are as follows:

- **Goal 1** – Revegetate areas disturbed during construction activities to the extent feasible (based on final site design) to improve habitat functions.
  - **Objective 1.1** – Establish native grass and forb cover within the construction footprint using approved seed mix (Table 3) to create additional wildlife habitat.
    - **Performance Standard 1.1.1** – By the end of Year 3, seeded species will be at least abundance level 4 in restoration areas.
  - **Objective 1.2** – Effectively control and/or eliminate non-native invasive and noxious species from the revegetation areas. Control spread of noxious weeds from off-site through inspection of construction equipment (including tires) before they are brought on site.
    - **Performance Standard 1.2.1** – Non-native invasive plants will not make up more than abundance level 2 in any growing season during the monitoring period following Year 1. Any state-listed noxious weeds observed at any time during construction, monitoring, and maintenance activities within the restoration areas will be marked for immediate treatment and/or removal.
- **Goal 2** – Manage undisturbed big sagebrush shrub-steppe for promotion of native species and wildlife habitat.
  - **Objective 2.1** – Effectively control and/or eliminate non-native invasive and noxious species in undisturbed big sagebrush shrub-steppe areas. Control spread of noxious weeds from off-site through inspection of construction equipment (including tires) before they are brought on site.
    - **Performance Standard 2.1.1** – Non-native invasive plants and noxious weeds will not make up more than abundance level 2 in any growing season during the monitoring period following Year 3. Any state-listed noxious weeds observed at any time during construction, monitoring, and maintenance activities within the restoration areas will be marked for immediate treatment and/or removal.
  - **Objective 2.2** – To the extent possible, limit the removal of big sagebrush present outside of the project limit of disturbance (LOD) during construction. Allow big sagebrush

to naturally re-generate post-construction in areas not under solar arrays. Vegetation height within the project LOD, including 20 feet outside of the solar arrays, must be managed to reduce fire risk and impacts to solar array efficiency.

- **Goal 3** – Preserve existing three-tip sagebrush scabland habitats in an undisturbed state. Manage undisturbed three-tip sagebrush scablands for promotion of native species and wildlife habitat.
  - **Objective 3.1** – Effectively control and/or eliminate non-native invasive and noxious species in undisturbed three-tip sagebrush scabland habitats.
    - **Performance Standard 3.1.1** – Non-native invasive plants and noxious weeds will not make up more than abundance level 2 in any growing season during the monitoring period following Year 3. Any state-listed noxious weeds observed at any time during construction, monitoring, and maintenance activities within the restoration areas will be marked for immediate treatment and/or removal.
- **Goal 4** – Preserve dark-spine ball cactus (*Pediocactus nigrispinus*) and its habitat within the site, where possible.
  - **Objective 4.1** – If occurrences are found within the construction footprint, consider coordinating with WDFW to transplant individual cacti to suitable habitat outside of the construction footprint.
- **Goal 5** – Convert undisturbed existing grasslands dominated by non-native annual grasses and forbs to native bunchgrass grasslands.
  - **Objective 5.1** – Establish native grass and forb cover within burned, non-native annual grass dominated areas using approved seed mix (Table 3) to create additional wildlife habitat.
    - **Performance Standard 5.1.1** – By the end of Year 3, seeded species will be abundance level 3 in seeded areas. The current abundance of non-native annual species, such as cheatgrass, in these areas may make restoration difficult. Because eradication of these non-native species is unlikely, establishment and survival of seeded species at abundance level 3 will be considered a success.
  - **Objective 5.2** – Effectively control and/or eliminate non-native invasive and noxious species from the restored grassland areas. Control spread of noxious weeds from off-site through inspection of construction equipment (including tires) before bringing them on site.
    - **Performance Standard 5.2.1** – Non-native invasive plants and noxious weeds will not make up more than abundance level 4 in any growing season during the monitoring period following Year 3. Any state-listed noxious weeds observed at any time during construction, monitoring, and maintenance activities within the undisturbed areas will be marked for immediate treatment and/or removal. The current abundance of non-native annual species, such as cheatgrass, in these areas may make control difficult. Because eradication is unlikely, a reduction in abundance of these species will be considered a success.

The Applicant estimates that performance standards will be achieved within the 5-year monitoring and maintenance period following the initial planting. If vegetation does not appear to be establishing progressively by Year 3, the Applicant may reevaluate planting or seeding methodologies.

2.3 REVEGETATION METHODS

This section describes the proposed process for permanent revegetation within the construction footprint. The Applicant will revegetate disturbed, bare soils for the purpose of slope and soil stabilization and to restore the vegetation to a natural condition. The Applicant will use a broadcast seeder to seed rehabilitation and re-establishment areas with a native seed mix representing the native grasses/forbs identified in the site and/or abundant in the region (Table 3); these species have a relatively low mature stature and will require minimal maintenance around panels. This seed mix may be adjusted as needed based on vendor availability of component species.

TABLE 3: PROPOSED SEED MIX FOR PROJECT SITE

Growth Habit	Scientific Name	Common Name	Maximum Height	Percent of Mix
Grasses	*Festuca idahoensis*	Idaho fescue	24 inches	40
	Poa secunda	Sandberg's bluegrass	16 inches	25
	Koeleria macrantha	Prairie junegrass	18 inches	15
	Elymus elymoides	Bottlebrush squirreltail	18 inches	10
Forbs	*Eriophyllum lanatum*	Oregon sunshine	24 inches	3
	Balsamorhiza sagittata	Arrowleaf balsamroot	24 inches	3
	Eriogonum heracleoides	Parsnip-flowered buckwheat	24 inches	2
	Linum lewisii	Wild blue flax	24 inches	2
Optional Additions, if Commercially Available/Feasible				
Forbs	*Astragalus filipes*	Basalt milkvetch	24 inches	<1
	Dalea ornata	Blue Mountain prairie clover	24 inches	<1
	Erigeron pumilus	Shaggy fleabane	24 inches	<1

Revegetation will occur as soon as practical after construction is complete, and the Applicant will evaluate each area for seeding based on the amount of native plant community rehabilitation and soil stabilization needed. Grassland areas of the site not impacted by construction but highly invaded by non-native weeds will be seeded to increase the native plant habitat and limit noxious

weed growth. Site preparation will occur after construction activities cease and before the first planting or seeding is planned. For seeding areas undisturbed by construction activities, the site will be mowed prior to seed set to remove the standing crop of non-native annual plants. The site should then be tilled, to the extent possible, to reduce germination of cheatgrass and perfoliate pepperweed seeds present in the soil seedbank. Late fall seeding, or dormant seeding, of native perennial grasses and forbs is ideal (late September through November) as it allows seeds to overwinter on site and germinate the following spring when conditions are optimal. Seeding should not occur during hot, dry, summer conditions, immediately following a significant amount of snowfall, or after the soil surface has frozen for the season.

The selected seed mix contains native species that are drought-tolerant, making them more resilient to the effects of climate change. Once established, these species will be able to tolerate summer drought conditions better than traditional non-native forage grasses.

Construction activities will be timed and coordinated such that heavy equipment will not be driven on the reclaimed surface after siter preparation. Seeded areas will be monitored for germination in both the spring and fall after seeding. Any areas that appear to have reduced germination will be reseeded. The Applicant may maintain the vegetation (i.e., fuel load) under solar arrays over time to minimize fire hazard. Maintenance actions may include chemical methods (spraying using an approved herbicide), mechanical methods (mowing or cutting vegetation), and/or biological methods (sheep grazing) in coordination with WDFW and Grant County.

2.4 VEGETATION MONITORING

Revegetated areas will be monitored for compliance with measurable performance standards for a minimum of five years. If performance standards are not achieved in that time, monitoring and maintenance activities will continue until standards are met. The Applicant estimates that performance standards will be achieved within the 5-year monitoring and maintenance period following the initial planting. In the event that vegetation does not appear to be establishing progressively by Year 5, adaptive management will be implemented and planting or seeding methodologies may be reevaluated. Noxious weed and invasive plant infestations will be documented during vegetation monitoring efforts or recorded by the Applicants operations staff as a part of normal operations and maintenance activities.

2.4.1 MONITORING METHODS

Monitoring of the restoration areas will follow the methodology outlined in *Management Recommendations for Washington's Priority Habitats: Managing Shrub-steppe in Developing Landscapes* (Azerrad et al. 2011). Rectangular 50-meter by 10-meter vegetation monitoring plots will be distributed throughout the restoration areas. In the field, plots will be chosen to best represent the restoration areas present on the site. Formal monitoring plots will be chosen in Year 1 and utilized throughout the monitoring period to assess success of the restoration actions. The Applicant will establish two parallel 50 meter transects at each plot; along the inside edge of each transect, 1 square meter cover frames will be placed at 5-meter intervals. Percent cover will be recorded for all plant species, bare ground, and biological soil crust present within each frame.

2.4.2 MONITORING SCHEDULE

Formal monitoring events will occur in Years 1, 3, and 5, with the closeout monitoring event occurring in Year 5. If monitoring reveals a significant deviation from predicted impacts or a failure of vegetation or weed management measures, Applicant will be responsible for appropriate corrective action. This monitoring schedule may be adjusted based on feedback from WDFW and Grant County.

2.5 REPORTING

Following each monitoring period in Years 1, 3, and 5, the Applicant will prepare a memo detailing the current status of the revegetation and weed management actions, measurement of performance standards, and management recommendations, and submit it to Grant County within 90 days of each monitoring event.

3. NOXIOUS WEED AND INVASIVE PLANT MANAGEMENT PLAN

3.1 INTRODUCTION

This *Noxious Weed and Invasive Plant Management Plan* was prepared to identify noxious weed control practices that the Applicant will implement for the Project. Pursuant to Revised Code of Washington (RCW) § 17.10, Washington law requires that measures be taken to control the effects and spread of noxious weeds. Noxious weeds have the potential to invade areas disturbed by construction and may spread along the edges of construction areas and along access roads. Soil disturbance may also allow noxious weed seed already present to germinate and grow.

Invasive plants are broadly defined as non-native aggressive plants that have the potential to cause ecological, societal, or economic damage (James et al. 1991). A noxious weed is a subset of invasive plants that is defined as any plant legally designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley et al. 1999). RCW § 17-10 requires all landowners to control the spread of noxious weeds. Violations of RCW § 17-10 may incur monetary penalties per parcel, per noxious weed species, per day as outlined in Washington Administrative Code § 16-750-020. Under Washington Administrative Code § 16-750, 159 plant species have been designated as noxious weeds. Of these 159 listed noxious weeds, 38 are listed as Class A, 70 are listed as Class B, and 51 are listed as Class C.

Class A weeds are non-native species whose distribution in Washington State is still limited. Preventing new infestations and eradicating existing infestations of Class A species is the highest priority for control and eradication of all Class A species and is required by law. Class B weeds are non-native species presently limited to specific portions of Washington State and are designated for required control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the county level, with containment as the primary goal. Class C weeds are noxious weeds that are typically widespread in Washington State or are of special interest to the state's agricultural industry. The Class C status allows county weed boards to require control if locally desired, or they may choose to provide education or technical consultation. The Grant County Noxious Weed Control Board lists 68 Class B and 21 Class C weed species of concern within the county.

Most of the site is composed of disturbed grasslands consisting of non-native annual plants such as cheatgrass and perfoliate pepperweed. One Class B noxious weed, rush skeletonweed (*Chondrilla juncea*), was observed on site. One individual plant was observed within a drainage dominated by cheatgrass. No Class A or Class C noxious weeds were observed on site during biological surveys in 2023.

Revegetation and weed control measures will follow applicable guidelines and best management practices as recommended by the Grant County Noxious Weed Control Board and *Shrub-Steppe and Grassland Restoration Manual for the Columbia River Basin* (Benson et al. 2011).

3.1.1 PURPOSE AND GOALS

The purpose of this plan is to prescribe methods to prevent and control the spread of noxious weeds during and following construction. Applicant and its contractors will be responsible for carrying out the methods described in this plan.

The goals of this plan are to implement preventative measures to control the spread of weeds during construction and prevent, to the extent possible, the invasion of weeds from surrounding lands. The Applicant will conduct monitoring during construction and operation of the Project to help achieve these goals.

3.2 WEED MANAGEMENT MEASURES

3.2.1 EDUCATION

The Applicant will train Project and contractor staff on weed awareness and prevention efforts. Training will include distribution of noxious weed identification materials. The materials will include a manual of procedures for reporting and confirming any new noxious weed infestation and will be designed to be easily carried in a field vest or vehicle. The Applicant will give the manual to all staff and contractors who patrol or inspect Project features and/or perform vegetation maintenance in the site, as well as any personnel involved in any ground-disturbing activity.

Project and contractor staff will receive training on controlling spread of noxious weeds from off-site through requirements to clean and inspect construction equipment (including tires and shoes) before they are brought on site.

3.2.2 PREVENTATIVE MEASURES

The Applicant will use the following preventive measures to prevent the spread of weeds from off-site and from one area of the site to another:

- Prior to construction, areas of known noxious weed infestation will be marked using color-coded flagging, staking, and/or signs to alert construction personnel to implement weed control measures during construction.
- Machinery and other equipment will be cleaned prior to use to remove seeds and prevent new noxious weed introductions. At a minimum, cleaning will occur prior to equipment transfer on- and off-site.
- Construction planning will minimize vegetation and ground disturbance to the extent possible, especially in sensitive areas.

3.2.3 NOXIOUS WEEDS TREATMENT MEASURES

The Applicant will implement the following noxious weed treatment measures in areas where weed infestations are identified:

- Prior to clearing and grading operations, pre-treatment of noxious weed infestations may be conducted if it is determined that pre-treatment will aid in controlling the spread of weeds during construction. The weed control measures implemented at these locations may include

the application of herbicide or mechanical measures. The weed control measure chosen will be the best method available for the time, location, and species of weed.

- The site will be revegetating with a native seed mix after ground disturbing activities conclude. Areas of the site not impacted by construction will also be planted to increase habitat quality. The proposed seed mix is discussed in Section 2.3 and will limit the ability for noxious/invasive species to grow once the native community is established.
- Recorded noxious weed infestations in the site will be marked for immediate treatment or removal. Operations staff will document noxious weed infestations during normal operations and maintenance activities or during the vegetation monitoring efforts outlined in Section 2.4.

3.2.4 HERBICIDE APPLICATION, HANDLING, SPILLS, AND CLEANUP

The Applicant will select herbicides, if used, based on information gathered from the Grant County Noxious Weed Control Board and/or the Washington State Department of Agriculture.

3.2.4.1 HERBICIDE APPLICATION AND HANDLING (IF USED)

Prior to herbicide application, Applicant's contractor will obtain any required permits or approvals from the Grant County Noxious Weed Control Board and landowner. A licensed contractor will perform the chemical application in accordance with all applicable laws and regulations, strictly adhering to herbicide label instructions and manufacturer's guidelines. For example, manufacturer's guidelines recommend that herbicides only be applied under appropriate weather conditions (e.g., periods of low wind speeds, when precipitation is not imminent, etc.), that application sprayers be mounted low to the ground, and that sprayer booms incorporate specialized nozzles designed to produce large droplet sizes with limited drift potential. Adherence to these specifications and manufacturer label directions would minimize the potential for drift or transport of herbicides to off-site areas.

Vehicle-mounted sprayers (e.g., handgun, boom, and injector) may be used primarily in open areas that are readily accessible by vehicle. Hand application methods (e.g., backpack spraying) that target individual plants will be used to treat small, scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically thereafter to ensure proper application rates are being achieved.

Herbicides will be transported daily to the site with the following provisions:

- Herbicides will be premixed and delivered in returnable/refillable containers and transferred by closed system to application tanks to limit worker and environmental exposure and eliminate the need for disposal of herbicide containers in area landfills.
- Herbicides will be transported in a manner that will prevent tipping or spilling.
- Mixing of surfactants or other additives with water or other carriers and refilling of containers will typically be conducted at road crossings, and no mixing or filling will occur within 100 feet of open or flowing water, wetlands, or other sensitive resources; within 200 feet of private wells; or within 400 feet of public wells.

- Mixing and application procedures will be supervised by a licensed commercial applicator, and monitoring will be conducted to ensure that proper mixing, application, cleanup, personal protection, and safety procedures are followed.
- All herbicide equipment and containers will be inspected daily for leaks.

3.2.4.2 HERBICIDE SPILLS AND CLEANUP

Applicant will develop a Spill Prevention, Control, and Countermeasure Plan that incorporates reasonable precautions to be taken to avoid spills of potentially hazardous materials. In the event of a spill, cleanup will be immediate. Herbicide contractors will be responsible for keeping spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills.

Response to an herbicide spill will vary depending on the material spilled and the size/location of the spill. The order of priorities after discovering a spill are first to protect the safety of personnel and the public, to second minimize damage to the environment, and last to conduct cleanup and remediation activities.

3.2.4.3 WORKER SAFETY AND SPILL REPORTING

Herbicide contractors will obtain and have readily available copies of the appropriate Safety Data Sheets and the product labels for the herbicides used. Herbicide spills will be reported in accordance with applicable laws and requirements. Further information regarding spill response and reporting will be provided in Applicant's Spill Prevention, Control, and Countermeasure Plan.

3.2.5 MONITORING AND OPERATION

Following construction, Applicant will monitor weed infestations as part of restoration monitoring activities. Applicant's operations staff will monitor and treat noxious weeds as a part of its normal operations and maintenance activities in accordance with state regulations.

Weed control measures will be implemented at those locations where noxious weed populations are present. The Applicant may implement post-construction application of herbicides or mechanical measures to control noxious weeds. The weed control measure chosen will be the best method available for the time, location, and species of weed.

Herbicide application is an effective means of reducing the size of weed populations. Herbicide application and handling methods are described in Section 3.2.4 above. Mechanical methods such as mowing or disking are reliant on the use of equipment to cut or excavate weed populations. Mechanical treatments will be conducted prior to seed maturation if needed. In addition, subsequent reseeding will be conducted, where necessary, to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential of reinvasion of noxious weeds.

Where appropriate, Applicant will further consult with the Grant County Noxious Weed Control Board regarding the use of biological and other alternate noxious weed control methods. The alternate methods may be implemented after consultation with and approval of Grant County Noxious Weed Control Board and the Washington State Department of Agriculture.

4. REFERENCES

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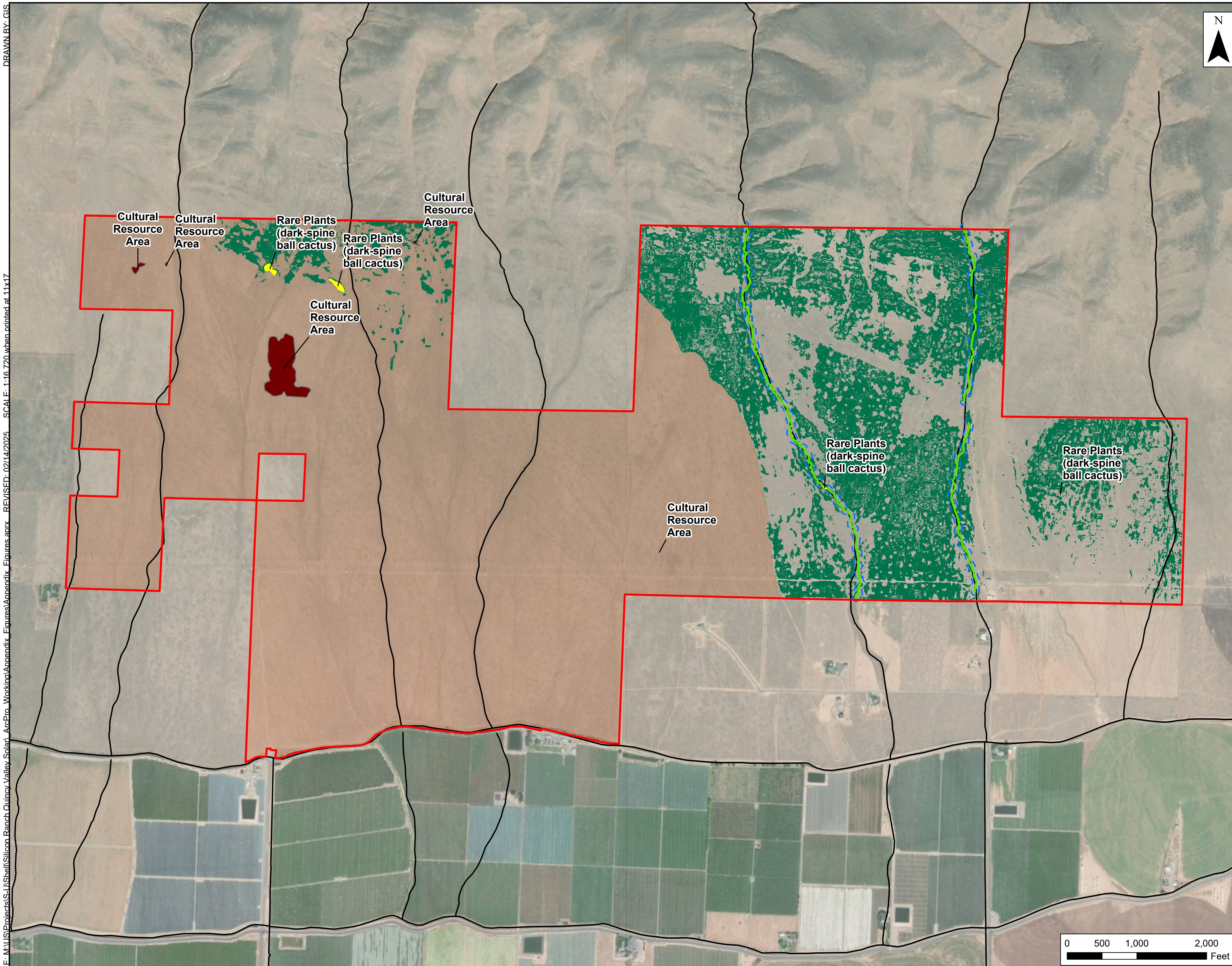
APPENDIX A EXISTING CONDITIONS EXHIBIT



Legend

- Site Boundary (1,773 acres)
- Ephemeral Stream
- Ephemeral Stream 50-foot Buffer
- Cultural Resource Area
- Rare Plants (dark-spine ball cactus)
- Mapped NHD

Habitat (1406 acres)

- Unburned Shrubsteppe Habitat (312 acres)
- Burned Shrubsteppe Habitat Area (1,094 acres)

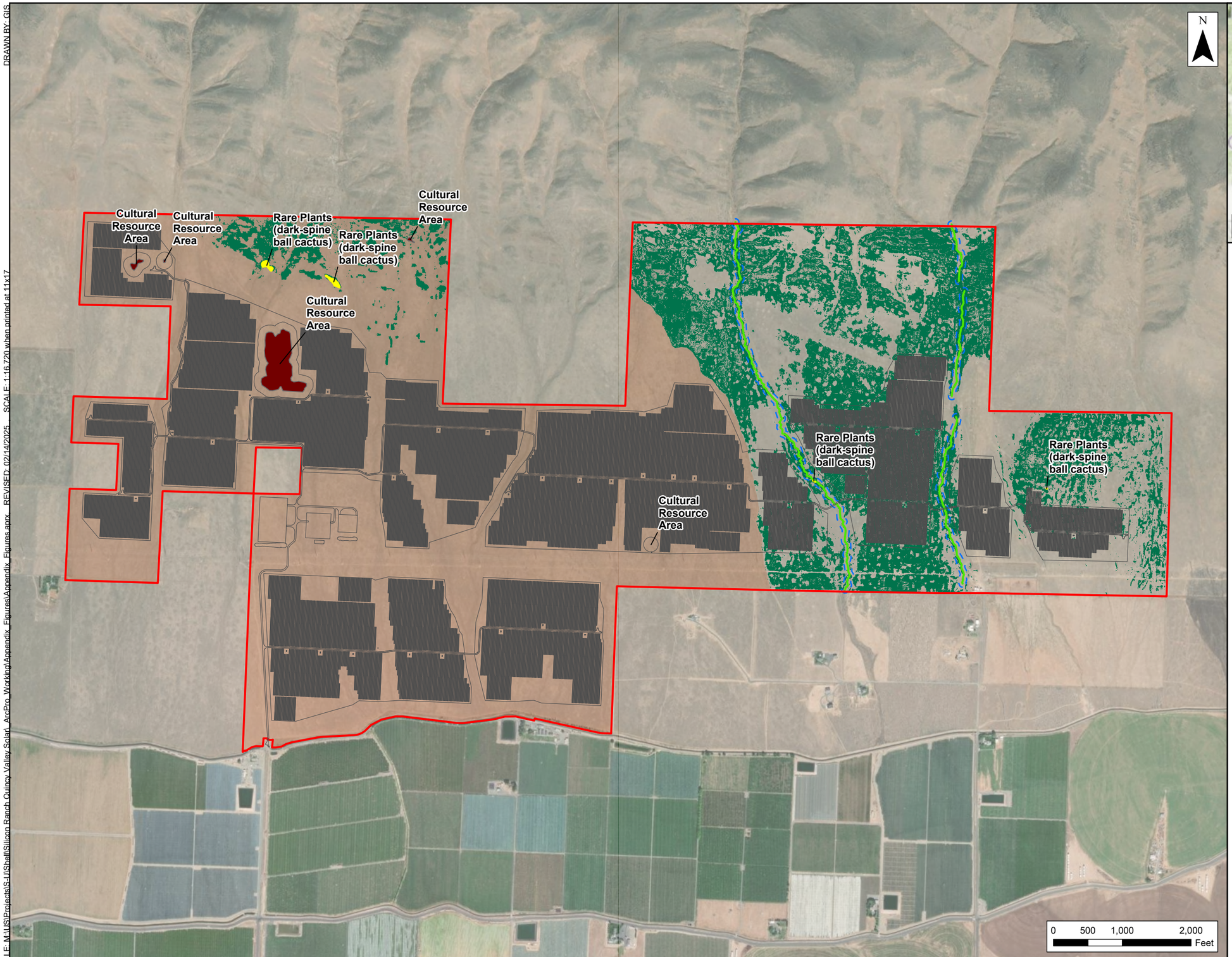
Appendix A
Existing Conditions Exhibit
Quincy Valley Solar
Silicon Ranch
Quincy, WA

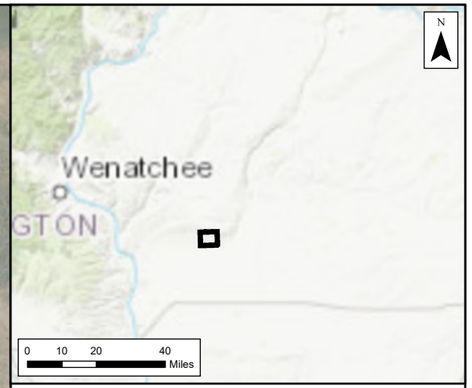
ERM

Source: Esri - World Imagery Map; NAD 1983 UTM Zone 11N

FILE: M:\US\Projects\S-U\Shell\Silicon Ranch Quincy Valley Solar_ArcPro_Working\Appendix_Figures\Appendix_Figures.aprx REVISED: 02/14/2025 SCALE: 1:16,720 when printed at 11x17 DRAWN BY: GIS

APPENDIX B SITE PLAN





Legend

- Site Boundary (1,773 acres)
- Site Layout
- Ephemeral Stream
- Ephemeral Stream 50-foot Buffer
- Cultural Resource Area
- Rare Plants (dark-spine ball cactus)

Habitat (1406 acres)

- Unburned Shrubsteppe Habitat (312 acres)
- Burned Shrubsteppe Habitat Area (1,094 acres)

~97 acres of unburned shrub-steppe impacts
~745 acres of burned shrub-steppe impacts

Appendix B
Site Plan
Quincy Valley Solar
Silicon Ranch
Quincy, WA

ERM

Source: Esri - World Imagery Map; NAD 1983 UTM Zone 11N

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APPENDIX C EXAMPLE WDFW-APPROVED SEED MIXES

WDFW supports the following seed mixes from 3 different solar projects in the Moxee Valley (hwy 24) near the intersection of Benton/Yakima County line.

Two separate projects proposed the following two grassland seed mixes

Grassland Seed Mix #1 would be appropriate for use to revegetate all temporarily disturbed areas outside the solar arrays, with the exception of temporarily disturbed rabbitbrush shrubland and shrub-steppe habitat types and areas that would be returned to agricultural production following construction (as noted in Section 2.3). The example grassland seed mix is presented in Table 2 and contains a mixture of native grasses and pollinator-friendly forbs.

Table 2. Example Grassland Seed Mix #1

Growth Habit	Scientific Name	Common Name	Percent of Mix
Grasses	*Pseudoroegneria spicata*	Bluebunch wheatgrass	42
	Poa secunda	Sandberg bluegrass	24
	Elymus elymoides	Bottlebrush squirreltail	15
	Hesperostipa comata	Needle-and-thread grass	10
Forbs	*Achillea millefolium*	Yarrow	3
	Dieteria (Machaeranthera) canescens	Hoary-aster	2
	Erigeron pumilus	Shaggy fleabane	2
	Linum lewisii	Wild blue flax	2

A second grassland seed mix, Grassland Seed Mix #2, is suggested for active revegetation under the solar arrays, including areas that previously consisted of agricultural lands or areas at high risk of noxious weed invasion (see Section 3.2). The example seed mix presented in Table 3 contains a mixture of low-growing grasses and forbs which would be compatible with desired vegetation conditions under the solar arrays (i.e., species whose mature height would not interfere with or shade the solar array). Forb species for each grassland seed mix were also chosen because they support native pollinators.

Table 3. Example Grassland Seed Mix #2

Growth Habit	Scientific Name	Common Name	Percent of Mix
Grasses	*Poa secunda*	Sandberg bluegrass	30
	Elymus elymoides	Bottlebrush squirreltail	30
	Koeleria macrantha	Prairie Junegrass	15
	Achnatherum thurberiana	Thurber's needlegrass	15
Forbs	*Achillea millefolium*	Yarrow	2
	Astragalus spp.	Milkvetch	2

Growth Habit	Scientific Name	Common Name	Percent of Mix
	(*A. caricinus, A. purshii, A. spaldingii*, or *A. succumbens*)		
	Erigeron pumilus	Shaggy fleabane	2
	Eriophyllum lanatum	Oregon sunshine	2
	Linum lewisii	Wild blue flax	2

A third project proposed the following for non-irrigated lands.

Species	Application rate (lb/acre)	Percent of mix
Sandberg bluegrass	6	25%
Secar Snake River Wheatgrass	7	29%
Bluebunch wheatgrass v. Goldar	7	29%
Candy bluegrass	4	17%

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