



COUNCIL WORK SESSION

Wednesday, December 17, 2025 at 3:00 PM

COUNCIL MEMBERS:

Mayor Jennifer Massey
Council President Jessica Chilton
Councilor Mark Gundersen
Councilor Russell Hubbard
Councilor Brandon Sundeen

LOCATION & CONTACT:

HYBRID: Council Chambers & Zoom (details below)

Website | www.sthelensoregon.gov

Email | kpayne@sthelensoregon.gov

Phone | 503-397-6272

Fax | 503-397-4016

UPDATED AGENDA

CALL WORK SESSION TO ORDER

CLEARING CONFUSION AND SETTING THE FACTS STRAIGHT

1. Response to December 3 Visitor Comments

VISITOR COMMENTS - *Limited to three (3) minutes per speaker*

DISCUSSION TOPICS

2. 3:10PM - Employee Length of Service Recognition - Matt Smith (5 years) and Doug Treat (5 years)
3. 3:15PM - Report from Events Management Contractor Treadway Events & Entertainment - *Brandon Treadway*
4. 3:35PM - Presentation by Keller Associates on St. Helens Reservoir Siting Study Update - *Keller Consultants Peter Olsen and Alexis Krupa*
5. 3:55PM - Quarterly Reports from City Departments/Divisions - Communications & Recreation (Informational)
6. 4:05PM - Review New Proposed Job Description for Public Works Operations Manager - *Public Works Director Mouhamad Zaher*
7. 4:15PM - Review Request for Leak Adjustment at 135 N. 7th Street - *City Administrator John Walsh*
8. 4:25PM - Review AFFF Nationwide Class Action Settlement Contingent Fee Agreement - *City Attorney Ashley Wigod*
9. 4:40PM - Review Amendment No. 3 to the Purchase and Sale Agreement for property located at 1300 Kaster Road between the City of St. Helens and Arcadia Holdings, LLC
10. 4:55PM - Report from City Administrator John Walsh

ADJOURN

EXECUTIVE SESSION

Following the conclusion of the Council Work Session, an Executive Session is scheduled to take place to discuss:

- *Labor Negotiations, under ORS 192.660(2)(d);*
- *Real Property Transactions, under ORS 192.660(2)(e);*
- *Exempt Records/Confidential Attorney-Client Privileged Memo, under ORS 192.660(2)(f); and*
- *Consult with Counsel/Potential Litigation, under ORS 192.660(2)(h).*

Representatives of the news media, staff and other persons as approved, shall be allowed to attend the Executive Session. All other members of the audience are asked to leave the Council Chambers.

FOR YOUR INFORMATION

Upcoming Dates to Remember:

- December 17, 3:00PM, Council Work Session, Council Chambers/Zoom
- December 17, 7:00PM, Council Regular Session, Council Chambers/Zoom
- December 24 & 25, Christmas Holiday, City Offices Closed
- January 1, New Years Holiday, City Offices Closed

Future Public Hearing(s)/Forum(s):

- PH: January 21, 6:40PM, Annexation of Approximately 6.57 Acres (Stutzman)

VIRTUAL MEETING DETAILS

Join: <https://us02web.zoom.us/j/89287191237?pwd=GIrpfF95NqHLUWPb6wyYUIxPP56qjQ.1>

Passcode: 832228

Phone one-tap: +16694449171

The meeting location is accessible to persons with disabilities. A request for an interpreter for the hearing impaired or for other accommodations for persons with disabilities should be made at least 48 hours before the meeting to City Hall at 503-397-6272.

Be a part of the vision and get involved...volunteer for a City Board or Commission! For more information or for an application, go to www.sthelensoregon.gov or call 503-366-8217.

CLARIFICATION MEMO TO PUBLIC COMMENT

For City Council Meetings held on December 3, 2025

There are no responses to visitor comments for the December 3, 2025, City Council meetings.



LENGTH OF SERVICE RECOGNITION



To: Mayor and City Council

From: Kathy Payne, Human Resources Coordinator/City Recorder

Date: December 17, 2025

We have two employees who reached a milestone in their employment with the City of St. Helens back in July, but I overlooked it. The following individuals will be recognized at the December 17 Work Session.

5 Years!

Matt Smith started working with the City on July 20, 2020 as a Police Officer. With his extensive experience in investigations and law enforcement, he became a Detective the following month. He then quickly rose up through the ranks from Corporal to Sergeant, becoming Police Chief in August of this year!!

Doug Treat started working with the City on July 20, 2020 as a Police Officer. With his extensive experience in law enforcement, he became Corporal the following month, then Sergeant two months later. In August of this year, he became Lieutenant!!

Matt and Doug have brought a wealth of law enforcement and organizational experience to the City of St. Helens, and we appreciate all they do!!

Congratulations Matt and Doug and **thank you** for your service to our community!



SEPTEMBER 27TH-OCTOBER 31ST 2025 - ST. HELENS, OREGON

POST EVENT REPORT



Item #3.



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EXECUTIVE SUMMARY:

The 2025 Spirit of Halloweentown continued its role as St. Helens' largest annual tourism driver, welcoming an estimated 50,000+ attendees across five weekends and featuring a robust marketplace of 70 vendors from across the region.

The event also showcased an expanded celebrity lineup, including Kimberly J. Brown, Daniel Kountz, Emily Roeske, Phillip Van Dyke, J. Paul Zimmerman, and Jackson Rathbone, which significantly increased media interest and drew dedicated fans to St. Helens.

Despite strong programming, 2025 attendance trends were shaped by several notable external factors. Repeated rainstorms on peak weekends, regional ICE-related concerns affecting family travel to public events, and the federal government shutdown, which likely reduced discretionary household spending for some, collectively contributed to softer free-flow attendance compared to prior years affecting vendors and local businesses the most. Paid attendance, however, remained decent, demonstrating the continued strength of the event's core ticketed offerings.

Importantly, 2025 represented a planned reinvestment year for Spirit of Halloweentown. Major upgrades were implemented to enhance the guest experience and improve long-term tourism value. These investments included:

- Expansion of the event footprint across new areas;
- Installation of the Pirate Encampment and the Reptile Exhibit;
- A full revamp of the Haunted House attraction;
- Expansion of the Trolley Film Tour, Alien Museum activation and themed bar;
- Relocation and enhancement of the Boo Bash Pavilion with waterfront DJs;
- Construction of a permanent, fully themed Gift Shop retail space.

These improvements significantly enhanced the quality of the guest experience, boosted satisfaction, and positioned Spirit of Halloweentown for increased economic impact in future years.

The event achieved its highest level of earned media engagement to date during Treadway Events' tenure. Guest, vendor, and business feedback continues to show strong support for the event and a positive outlook for the seasons ahead.

EVENT OVERVIEW

Estimated Free Event Day Attendance: 25,222 (added 35% conservative decline due to rain)

Paid Event Day Attendance: 27,520

Duration: September 27-28, October 4-5, 11-12, 18-19, 25-26, 2025.

Times: Saturdays 11am to 9pm, Sundays 11am to 9pm, Halloween 4pm to 8pm

Primary Locations: Plaza Square, 1st Street, Columbia View Park & Public Parking Lot

Key Attractions:

- **Pumpkin Plaza:** The ultimate photo destination! Guests posed with Jack The Pumpkin and displays.
- **Main Stage:** The event's entertainment epicenter featured live performances, costume contests, and appearances by special guests.
- **Boo Bash Pavilion:** A family-friendly area offering kid-focused activities, hay maze, pumpkin bowling, a lively bar for the adults with live DJs and bands.
- **Film Tour Trolley:** An informational and fun ride around St. Helens TV and Movie filming locations.
- **Haunted House:** A highlight for all ages, this animated walkthrough attraction delivered frights and fun.
- **Alien Experience/Bar:** A self-guided exhibit that invited visitors to explore extraterrestrial mysteries and an all ages cocktail/mocktail bar that makes you feel like you are on an alien space ship!
- **Reptile Exhibit:** For fans of the creepy crawly or unusual, we featured snakes, reptiles, spiders, and so much more!
- **Pirate Encampment:** For the last three weekends of the event, guests could experience pirates, cannons, and even a mermaid.
- **Market Vendors:** Featuring local businesses, artisans, and food vendors, offering unique treasures and festive treats to complete the Halloweentown experience.

Celebrity Appearances:

- Kimberly J. Brown: Played Marnie Piper in "Halloweentown"
- Daniel Kountz: Played Kal in "Halloweentown II"
- Emily Roeske: Played Sophie Piper in "Halloweentown"
- Phillip Van Dyke: Played Luke in "Halloweentown."
- J. Paul Zimmerman: Portrayed Dylan Piper in "Halloweentown."
- Jackson Rathbone: Played Jasper Hale in "Twilight."





VENDOR FEEDBACK:

VENDOR EXPERIENCE

- Several long-time vendors noted that 2025 had lower sales than previous years, often attributing this to weather issues.
- Multiple vendors expressed deep appreciation for staff, describing Spirit of Halloweentown as their favorite event to vend at.
- Some vendors struggled with Wi-Fi connectivity issues, especially those placed near brick buildings.

FAVORITE ATTRACTIONS

- Popular attractions included Pumpkin Plaza, main stage performances, roaming performers, celebrity photo ops, and costume contests.
- Food vendors specifically praised the high energy and variety of attractions drawing consistent crowds.
- Vendors enjoyed being surrounded by local businesses and other artisans, creating a community feel.

FEEDBACK GATHERED

- Vendors shared thoughtful insights about optimizing the food vendor mix, noting that a more curated selection could help everyone succeed.
- Several vendors were excited about the possibility of adding Friday vending, whether as a full-day option or a special after-hours activation.
- Vendors showed strong interest in the opportunity to vend on Halloween Day, believing it would elevate both sales and the guest experience.

BUSINESS IMPACT:

- Vendors shared a wide range of business outcomes, with many reporting strong sales and some even giving the event a 10/10 business impact rating.
- While a portion of returning vendors noted lower revenue this year, they also offered valuable insights that can help strengthen future event performance.
- Several vendors highlighted opportunities to refine vendor placement and product mix, noting that improved traffic flow and balanced categories could increase sales for everyone.

OVERALL FEEDBACK:

- Most vendors expressed strong appreciation, saying they love the event, its staff, and the overall spirit of Halloweentown.
- Many said the event was well-organized, fun, and professionally run, and that they enjoyed the atmosphere and crowds.
- Many stated they would absolutely return, even if they offered suggestions for improvement.

LOCAL BUSINESS FEEDBACK:

ACTION TAKEN:

- Collected feedback, concerns, and ideas based on 2024 Spirit of Halloweentown experiences and reviewed the responses prior to planning the event.
- Provided “Event Information Packets” to each business in the event area via email.
- Provided businesses with parking passes for the lots behind the theater and Masonic building as well as the gravel lot on the waterfront.
- Created a staggered street closure on Friday nights to reduce the negative impact to the local businesses.
- Created multiple social media posts and videos to promote local businesses to our followers and event attendees.
- Shared tagged posts from local businesses as well as accepted any requests to collaborate on social media posts to help promote them to our followers and event attendees.

FEEDBACK GATHERED:

Event Experience:

- Businesses shared ideas on how to enhance visitor navigation, noting that simplified information could help guests better enjoy everything the event offers.
- Many shared suggestions on how to fine-tune vendor placement to maintain a strong balance between local shops and visiting vendors.

Suggestions:

- Provide earlier communication about closures, celebrity schedules, and activities so businesses can plan ahead.
- Expanding entertainment—such as street performers or small stages—could help distribute crowds, benefiting all storefronts.

POSITIVE OUTCOMES:

- Some businesses observed that visitors were more engaged and curious about exploring storefronts, especially when activities or vendors were positioned nearby.
- Overall coordination was praised, with a request for continued real-time updates on weekends when weather, traffic, or operational changes occur.
- Several businesses noted that visitor behavior was generally positive, with guests being polite, patient, and excited to explore the area.
- A few businesses noted increased sales, while others noted lower sales this season. They attribute this to the rain and government shutdown.





CONSUMER EXPERIENCE:

EVENT AWARENESS:

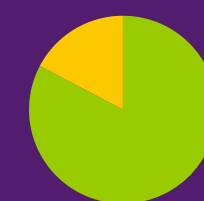
- Primary channels: Word of mouth, Google Search, Facebook, Tiktok, Instagram and OOH.

POSITIVE OUTCOMES:

- Food vendors and local businesses, noting variety and quality.
- Enhanced decorations, which contributed significantly to the “movie-quality” Halloween feel around the plaza and event zones.
- Stage performances and roaming characters, with interest in even more costumed characters and interactive performers in future years.

FEEDBACK GATHERED:

- Attendees feel pricing needs to be more accessible and many mentioned above average fees.
- Guests loved the overall atmosphere, especially Pumpkin Plaza, roaming performers, and local vendors, and many shared their excitement about returning if a few enhancements are made.
- Visitors consistently expressed interest in even more interactive and themed experiences, showing strong enthusiasm for expanding attractions, characters, and photo opportunities.
- Many guests appreciated the charm of St. Helens and noted they would benefit from clearer guidance and signage to help them experience more of what the event offers.
- Guests showed eagerness for the event to grow, frequently suggesting additional entertainment, weather-friendly spaces, and expanded activity options to make their visit even better.



FIRST TIME VISITORS: 77.8%
RETURNING VISITORS: 22.2%

This mix confirms that Spirit of Halloweentown continues to attract a high volume of new tourists, while still drawing a loyal returning base.

MARKETING & PRESS PERFORMANCE:

290+ PRESS MENTIONS

- **Oregon Live** - “How this small Oregon town transforms into ‘Halloweentown’ each fall”
- **Portland Tribune** - “Your guide to St. Helens’ 2025 Spirit of Halloweentown”
- **KOIN 6** - “‘Spirit of Halloweentown’ returns to St. Helens with star-studded welcome”
- **The Washington Post** - “11 peak fall trips to sneak in before the holidays”
- **Architectural Digest**- “In These Real-Life Halloweentowns, October Is Both Scary and Sweet”
- **The Oregonian** - “These ‘Halloweentown’ stars fell in love in real life. Now they’re coming to St. Helens”
- **Good Housekeeping** - “These 13 Halloween Towns Have the Ultimate Spooky Season Vibes, According to Zillow.”

AND MANY MORE!



2025 MEDIA IMPRESSIONS
1,312,708,950+
VS. PREVIOUS PERIOD 2024 232,615,644+



MARKETING & PRESS PERFORMANCE (CONTINUED):

MARKETING & PROMOTION EFFORTS



OUTFRONT/

LAMAR

We implemented a multi-channel promotional strategy combining Facebook ads and organic posts, TikTok organic content, Google Ads, radio spots, billboards, email campaigns, organic PR, print posters & more. This comprehensive approach ensured maximum reach and engagement across digital and traditional platforms.



MARKETING & PRESS PERFORMANCE (CONTINUED):

SOCIAL MEDIA ANALYTICS

3.3M

GOOGLE IMPRESSIONS

646K

META REACH

3.9M


META IMPRESSIONS

Combined Totals

- Reach: 646K (from Meta only)
- Impressions: 7.2M (Meta: 3.9M + Google: 3.3M)

Key Insights

- Meta remained the primary engine for awareness, community updates, and last-minute decision-making.
- Expanded investment in Google Search and Performance Max in 2025 significantly increased visibility for “Halloweentown,” “St. Helens Halloween,” and celebrity-driven search terms promoting local tourism.
- Compared to 2024, impressions across both platforms increased considerably, reflecting both increased spend and stronger organic sharing.

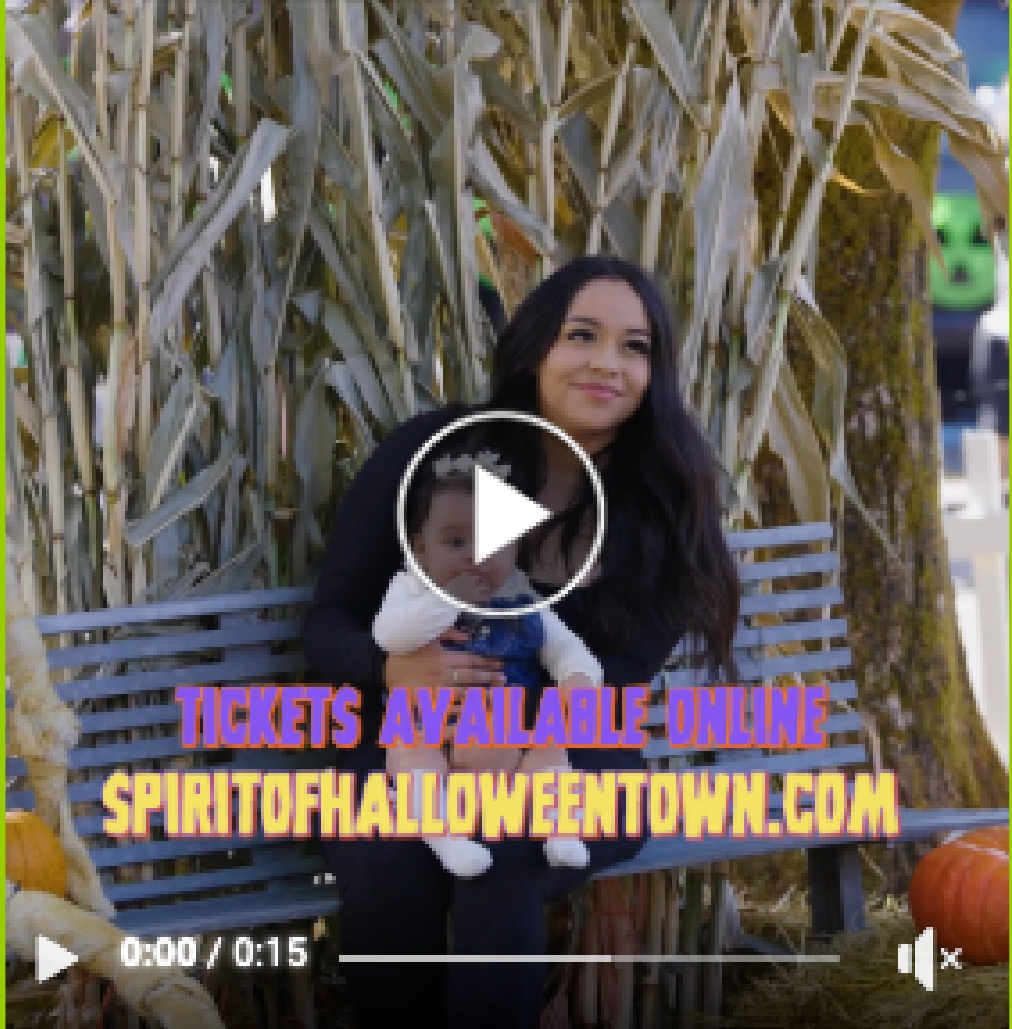


Spirit of Halloweentown
Sponsored · 🌐

⋮


✕

One of the Pacific Northwest's most iconic Halloween experiences is back for the Halloween season! 🎃



TICKETS AVAILABLE ONLINE
SPIRITOFHALLOWEENTOWN.COM

0:00 / 0:15



spiritofhalloweentown...

Book Your Tickets
Now 🎟️

Book now

👍 Like

💬 Comment

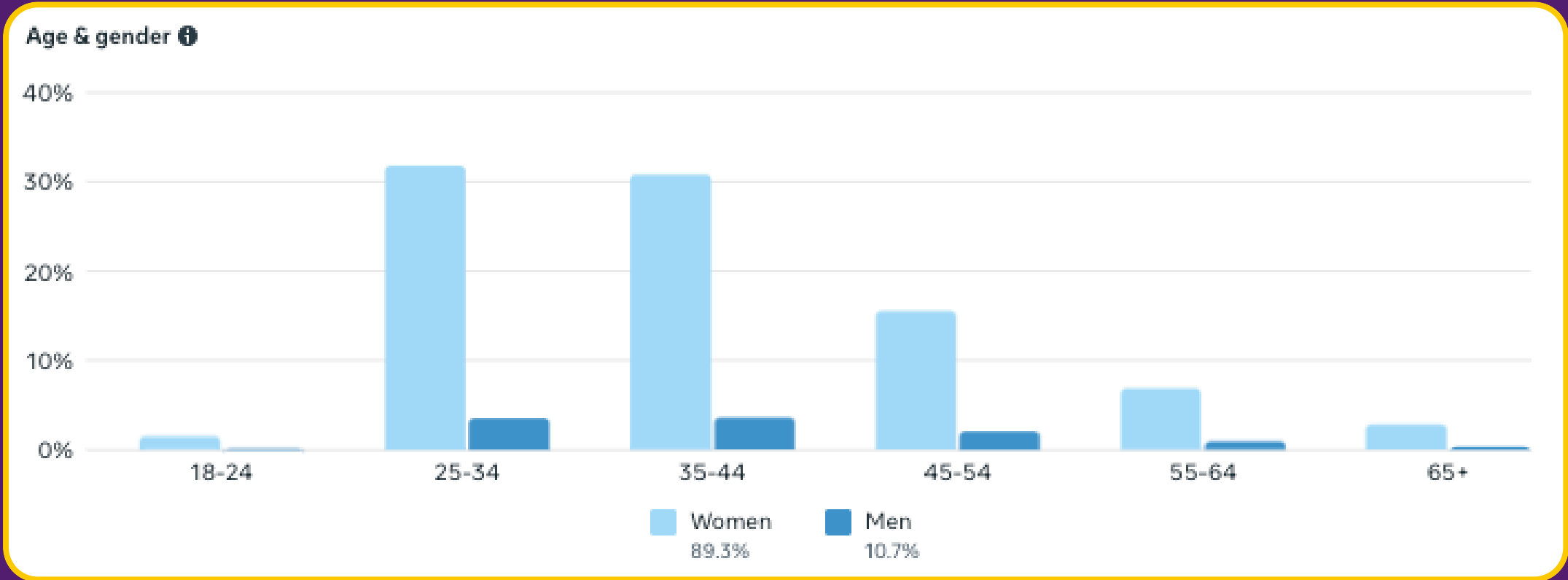
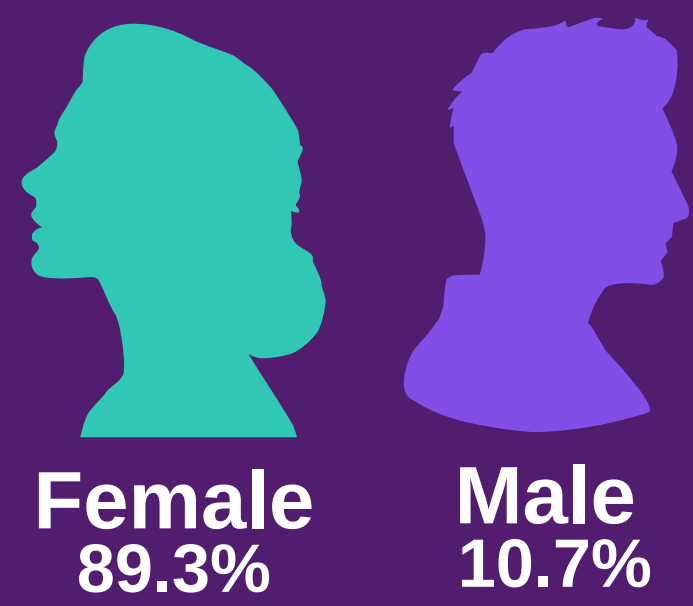
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MARKETING & PRESS PERFORMANCE (CONTINUED):

DEMOGRAPHIC DATA:



TOP LOCAL CITIES:

PORTLAND • VANCOUVER • SALEM • ST HELENS • EUGENE
LONGVIEW • GRESHAM • BEAVERTON • HILLSBORO • ALBANY

AVERAGE AGE RANGES OF INTERESTED BUYERS

COUNTRIES REPRESENTED THROUGH INTENT & PURCHASE:





TOURISM HIGHLIGHTS:

50,000+ ESTIMATED EVENT DAY ATTENDEES

TRAVEL DISTANCE:

- Less than 10 miles: 2.8%
- 10–50 Miles: 25.8%
- 51–100 Miles: 32.3%
- 101–500 Miles: 32.3%
- 1,000+ Miles: 9.7%

ACCOMMODATION STATS:

- Day Trips: 73.5% of attendees.
- Overnight Stays: 26.5% stayed at hotels, vacation rentals, or with friends/family in and around St. Helens.
- **Top Locations for Stays:**
 - Longview, WA
 - Portland, OR
 - St. Helens, OR

SPENDING HABITS:

- Most attendees reported spending between \$51–\$200 during their visit, with a smaller number spending \$201–\$500, especially those traveling from farther away or staying overnight.
- Guests who visited local businesses most commonly spent money at restaurants, antique shops, bookstores, and specialty shops, showing strong support for downtown merchants.
- Day-trip visitors typically spent on tickets, food, and small merchandise, while overnight travelers tended to have higher overall trip spending, including lodging and dining.

GUEST MOTIVATIONS:

- Primary Reasons for Attending:
 - Fans of Films: 37.1% attended due to connections with Halloweentown or Twilight.
 - Halloween Enthusiasts: 28.6%.
 - Family Outings: 22.9%.

LOCAL BUSINESS ENGAGEMENT:


63.9% of surveyed attendees visited local businesses, including cafes, breweries, restaurants, antique shops, and more.

SERVICE MEMBER & FIRST RESPONDER APPRECIATION




2,000


DONATED TICKETS FOR
MILITARY AND FIRST
RESPONDERS VIA VETTIX



The Spirit of Halloweentown
Donated by: Treadway Events & Entertainment
📅 11 Oct, 2025 📍 Saint Helens , OR


"Thank you so very much for the donation of tickets to Spirit of Halloweentown this past Saturday. I took my daughter and some of her friends to the event and they absolutely loved it. I think her favorite part was getting to ride the trolley around town and learn about all the Halloweentown and Twilight film history and how the town really leans into the holiday as a whole. Again, thank you, you made this veteran's daughter a happy little girl and we're so very blessed to have had the opportunity to go the Spirit of Halloweentown!"


 Joshua, U.S. Navy (Veteran)
2009 - 2014



The Spirit of Halloweentown
Donated by: Treadway Events & Entertainment
📅 11 Oct, 2025 📍 Saint Helens , OR

"Thank you VetTix so much for this opportunity to take my family to the Spirit of Halloween Town! It is such a fun event for all! My daughters both love this movie and to be able to see the town square where it was originally filmed really made their day! Mine too!"


 James, U.S. Navy (Veteran)
1985 - 1991



The Spirit of Halloweentown
Donated by: Treadway Events & Entertainment
📅 11 Oct, 2025 📍 Saint Helens , OR


"Thank you so much, my family had a wonderful time! We wouldn't have even able to afford it without your generous donation!! <3"

 mindy, U.S. Navy (Veteran)
2002 - 2009



The Spirit of Halloweentown
Donated by: Treadway Events & Entertainment
📅 11 Oct, 2025 📍 Saint Helens , OR

"Thank you very much. They turn the town into Nostalgic movie magic. Love all the effort, it doesn't go unnoticed. We learned a lot on trolley tour. Loved the whole experience."

 Aaron, U.S. Army (Currently Serving)

OPPORTUNITIES FOR IMPROVEMENT

Survey responses from guests, vendors, and local businesses in 2025 highlighted several targeted opportunities to enhance the Spirit of Halloweentown experience in future years. These insights reflect both operational considerations and experience-based expectations that will help guide improvements for 2026.

Offer Advance Tiered Ticket Sales

- Open sales earlier to extend the buying window, improve forecasting, and support stronger early-season momentum.

Make Tickets More Accessible Through Added Discounts and Cost-Savings Opportunities

- Expand included experiences, introduce additional discount windows, add more interactive elements and atmosphere entertainment, and clearly communicate what each ticket level includes.

Address Crowding at Peak Times

- Continue spreading attractions across a wider footprint, increase performance zones and secondary activity hubs, and improve traffic flow between major installations.

Enhance Vendor Category Balance & Placement

- Further curate vendor categories and distribute food and merchandise vendors more strategically to improve marketplace performance.

Extend Vending Opportunities

- Introduce Friday vending, offer select after-hours activations, and allow vending on Halloween Day.

Improve Wi-Fi & Connectivity

- Strengthen Wi-Fi infrastructure and provide dedicated connectivity support in vendor-heavy zones.

Increase Business Directional Signage

- Produce a clear event-branded business map, add directional arrows or “Explore More Shops This Way” signage, and expand cross-promotion opportunities.

Refine Staff Access During Street Closures

- Improve communication around closure timing, establish dedicated staff access points, and enforce parking passes.

Improve ADA Accessibility

- Add ADA-accessible entry routes into the plaza using curb ramps and ensure smoother navigation across the event footprint.





FINANCIAL SUMMARY:

AT A GLANCE

ADMISSIONS	\$1,030,484.89
PARKING REVENUE	—
SPONSORSHIP	\$21,500.00
ALCOHOL SERVICE	\$41,846.10
VENDOR FEES	\$151,679.94
MERCHANDISE	\$113,455.23
TOTAL GROSS REVENUE	\$1,358,966.16

COMBINED EXPENDITURES:	\$1,059,198.38
------------------------	----------------

ADJUSTED NET PROCEEDS: \$419,033.08
INCLUDING EVENT IMPACT FEE OF \$119,265.30

Revenue figures are accurate as of the current reporting date but remain subject to final adjustments, including any chargebacks or outstanding minor expenses. A final profit & loss report will be provided.



Item #3.



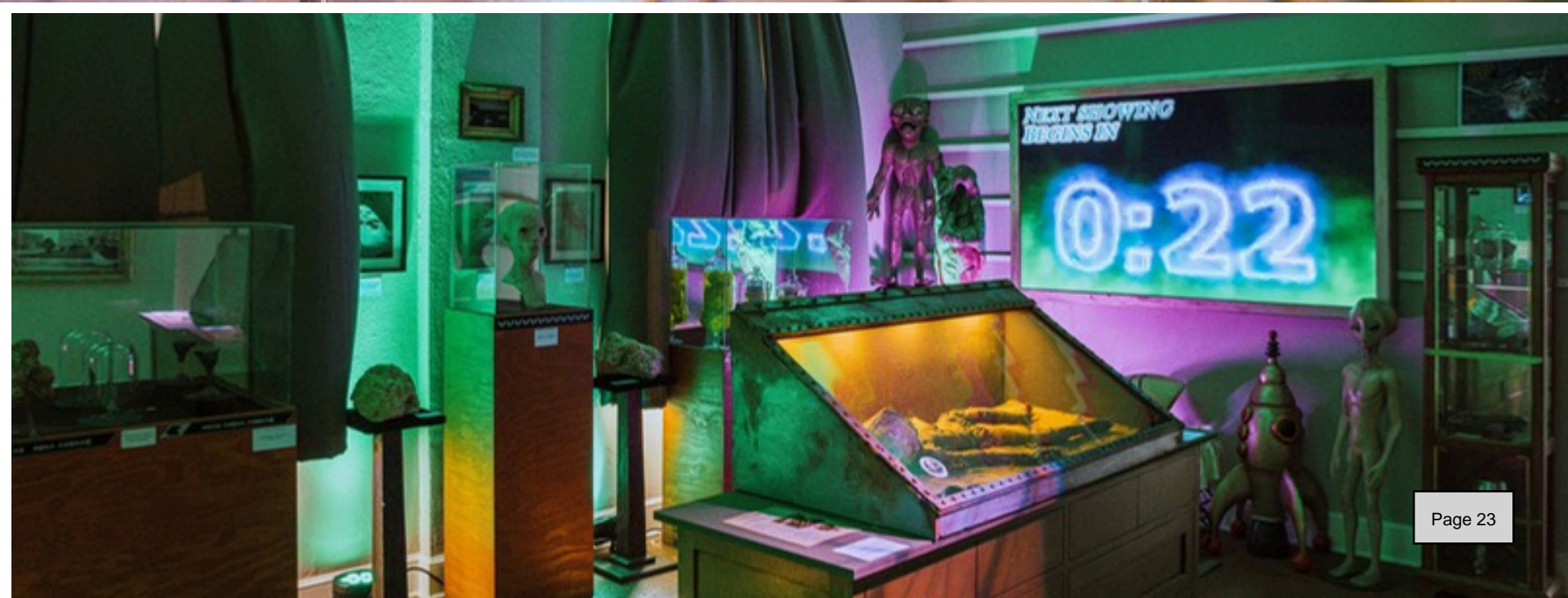
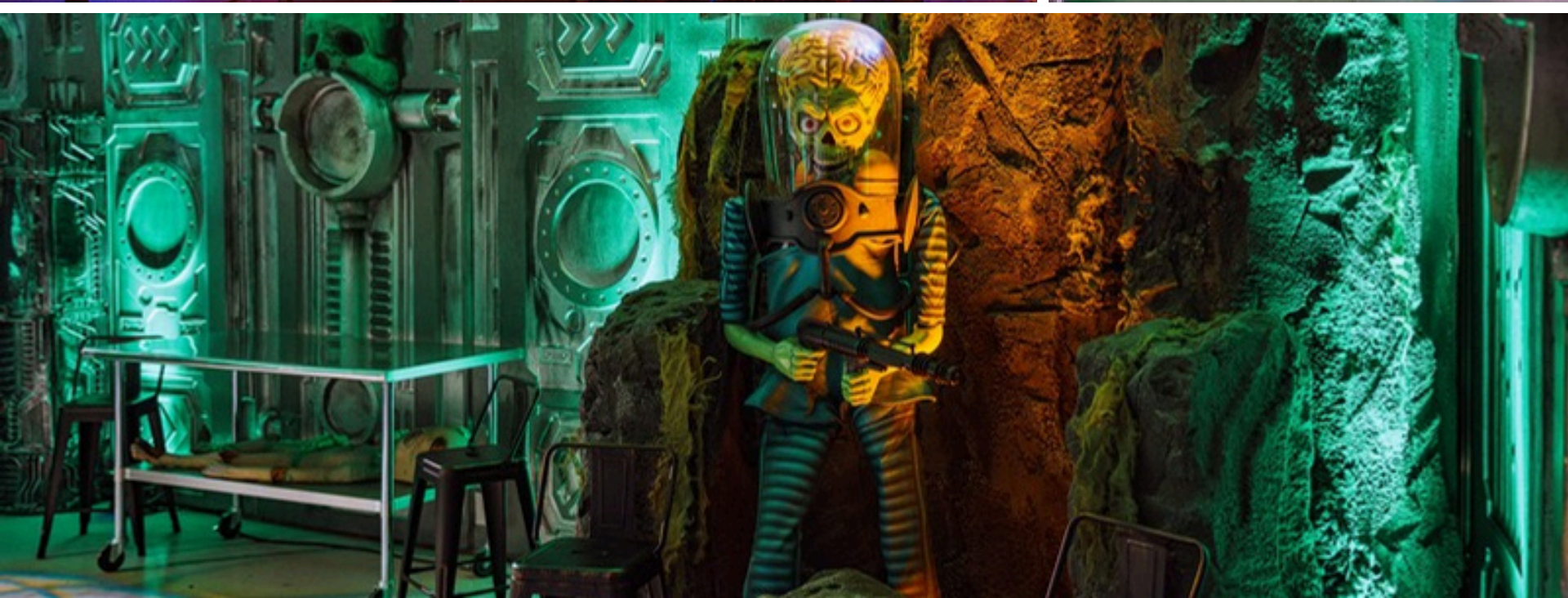
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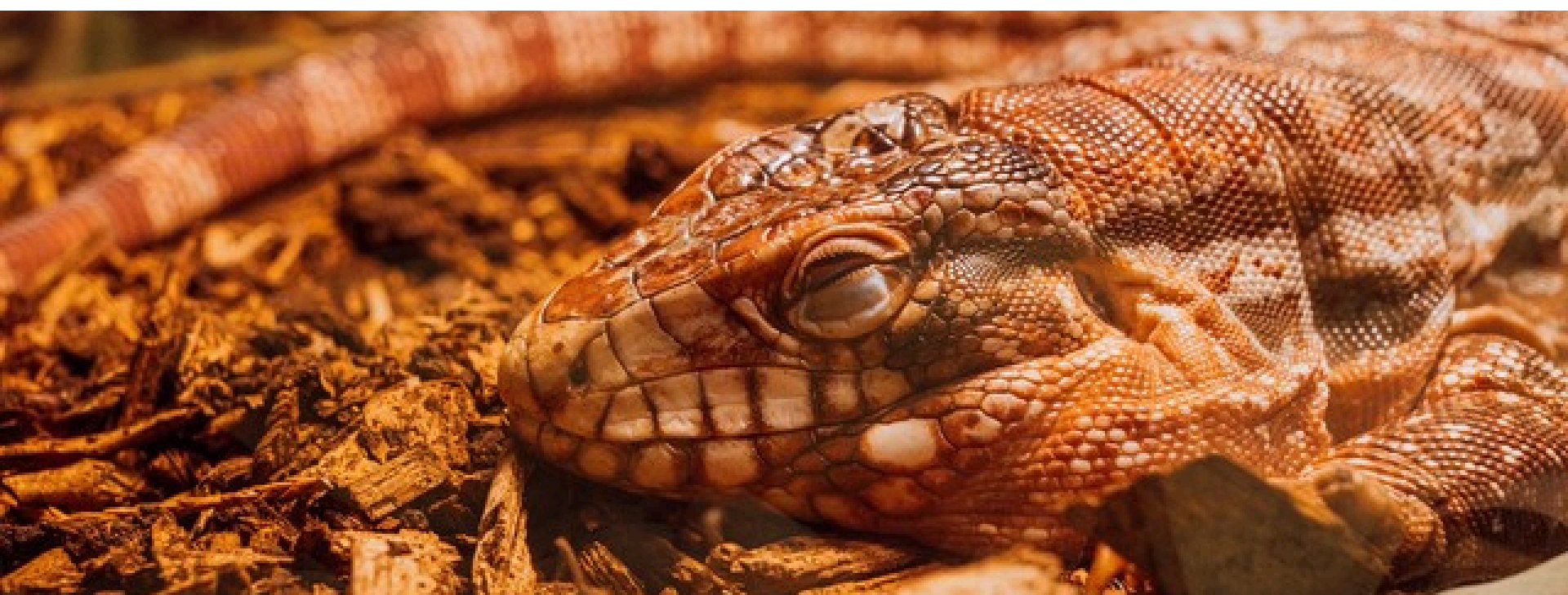
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THANK YOU!



TREADWAY EVENTS
& ENTERTAINMENT



5.0 MG RESERVOIR SITING STUDY

City of St. Helens

Peter Olsen, PE and Alexis Krupa
December 17, 2025



BACKGROUND



Item #4.

ST. HELENS RESERVOIR SITING STUDY

THE NEED

- Aging Infrastructure
 - 2.0 MG Reservoir Removed from Service
- Existing Water Storage Deficiency Identified in WMP
- Known Challenges at Existing Reservoir Site
- Maximizing Benefit from Investment

THE SOLUTION

- 5.0 MG Reservoir and Siting Study



PRESENTATION ROADMAP



Item #4.

ST. HELENS RESERVOIR SITING STUDY



1. Initial Site Identification

- Narrowed Down Site Options

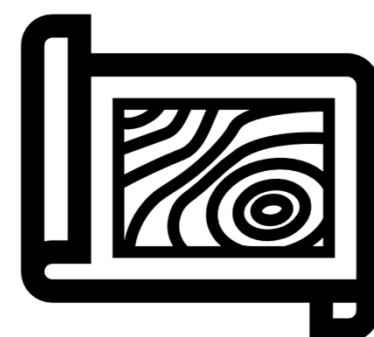


3. Stakeholder Engagement and Property Owner Communication



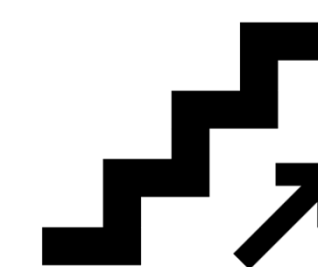
4. Recommended Site

- Site Rendering
- Planning Level Cost Estimate



2. Site Analysis

- Hydraulic Review
- Permitting and Environmental Analysis
- Geotechnical Review
- Cost and Constructability Review



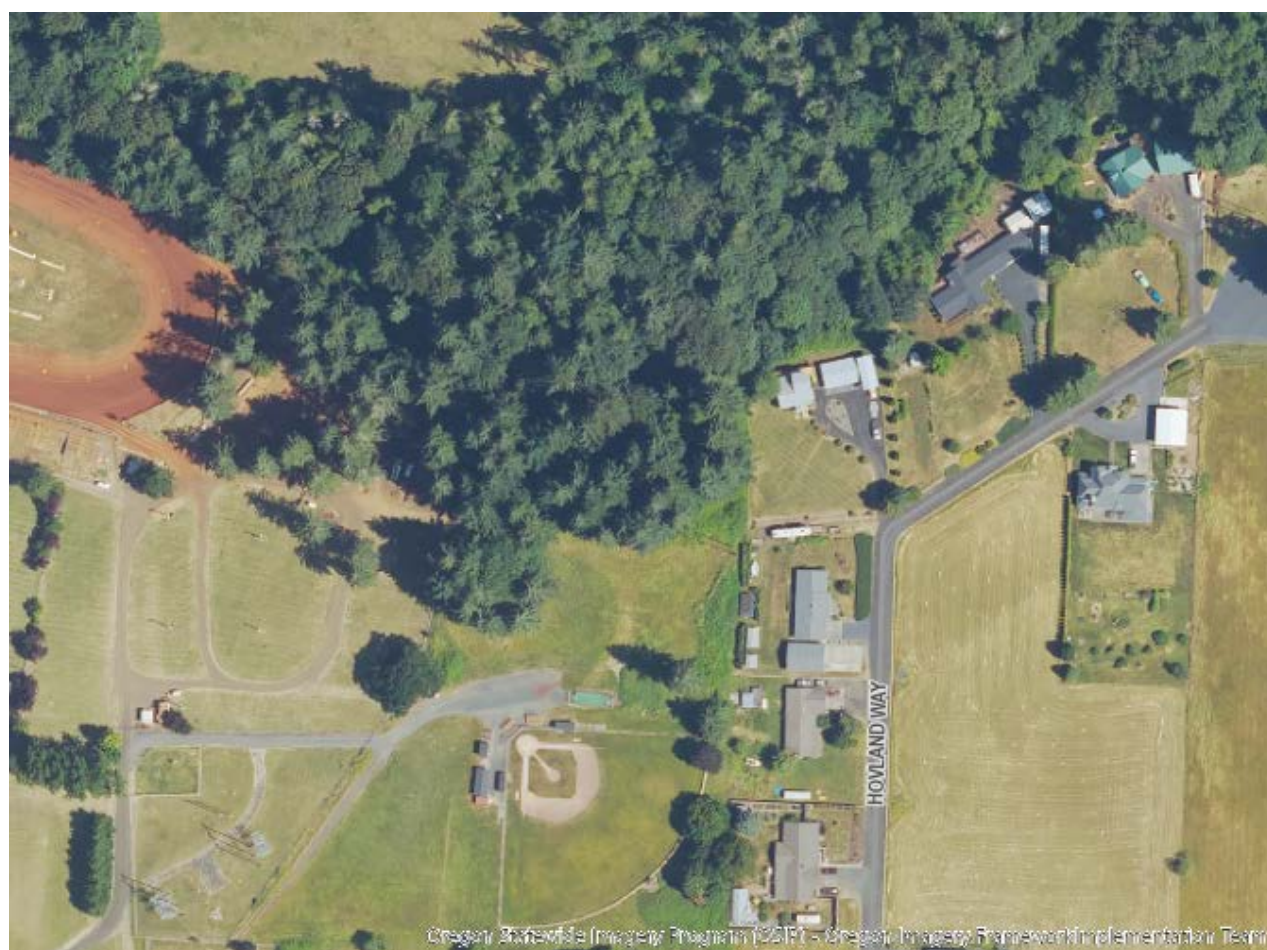
5. Next Steps



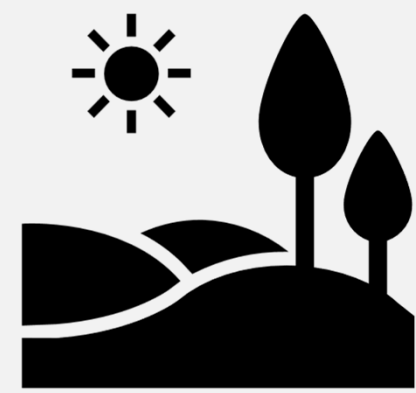


INITIAL SITE IDENTIFICATION

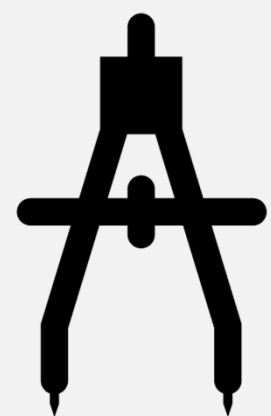
ST. HELENS RESERVOIR SITING STUDY



**Topography for
Hydraulics Review**



Available Land



Proximity to System

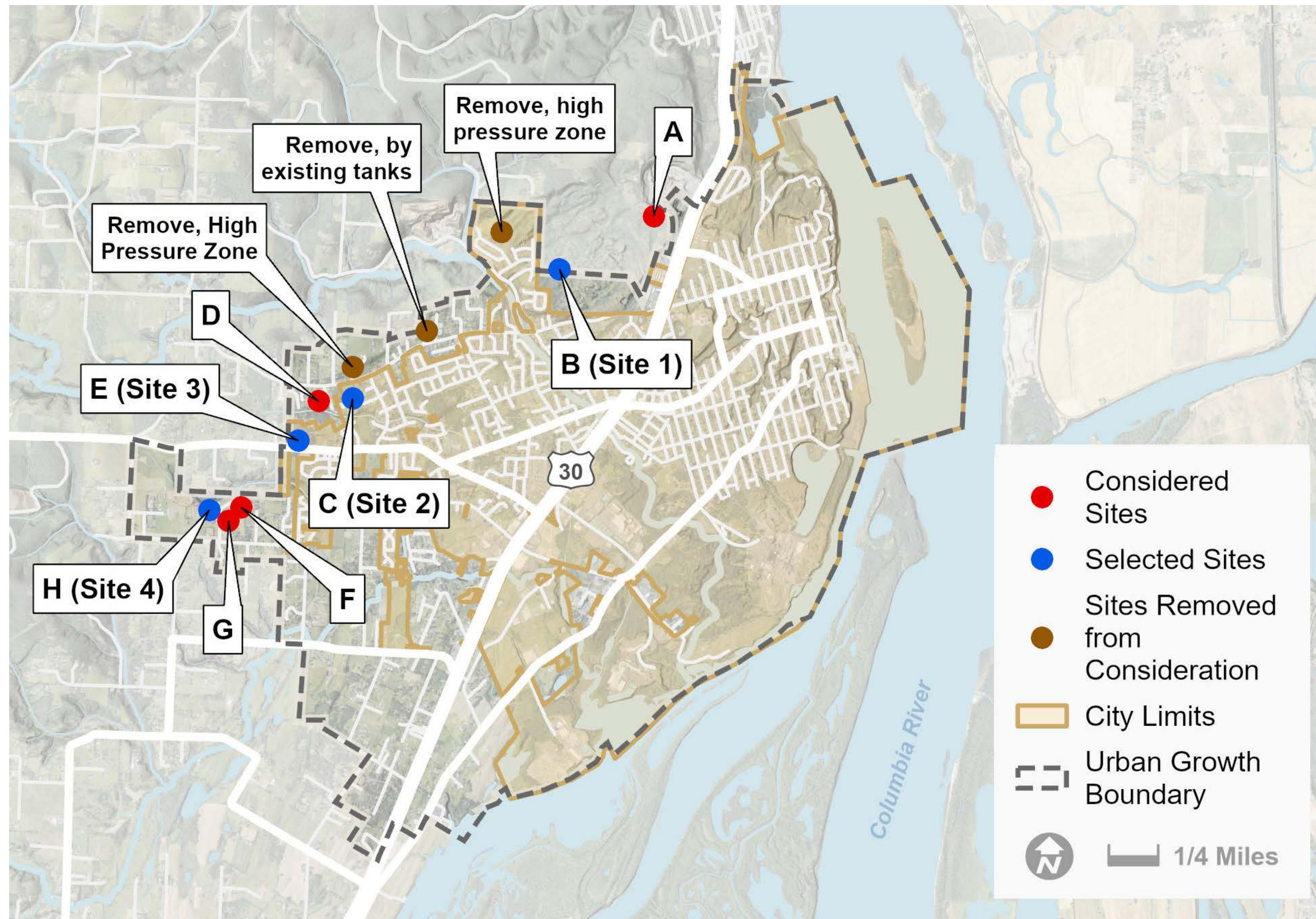


INITIAL SITE IDENTIFICATION



Item #4.

ST. HELENS RESERVOIR SITING STUDY



- Upper Zone Hydraulics
- Topography
- Land Use
- Overflow/Drain and Water System Connections
- Geology
- Constructability and Cost



INITIAL SITE SELECTION



Item #4.

ST. HELENS RESERVOIR SITING STUDY

EVALUATION RESULTS

- 8 Sites Evaluated, 4 Proposed for Continued Evaluation
- Proposed Sites Renamed Sites 1-4

Site 1 (Site B)



Site 2 (Site C)

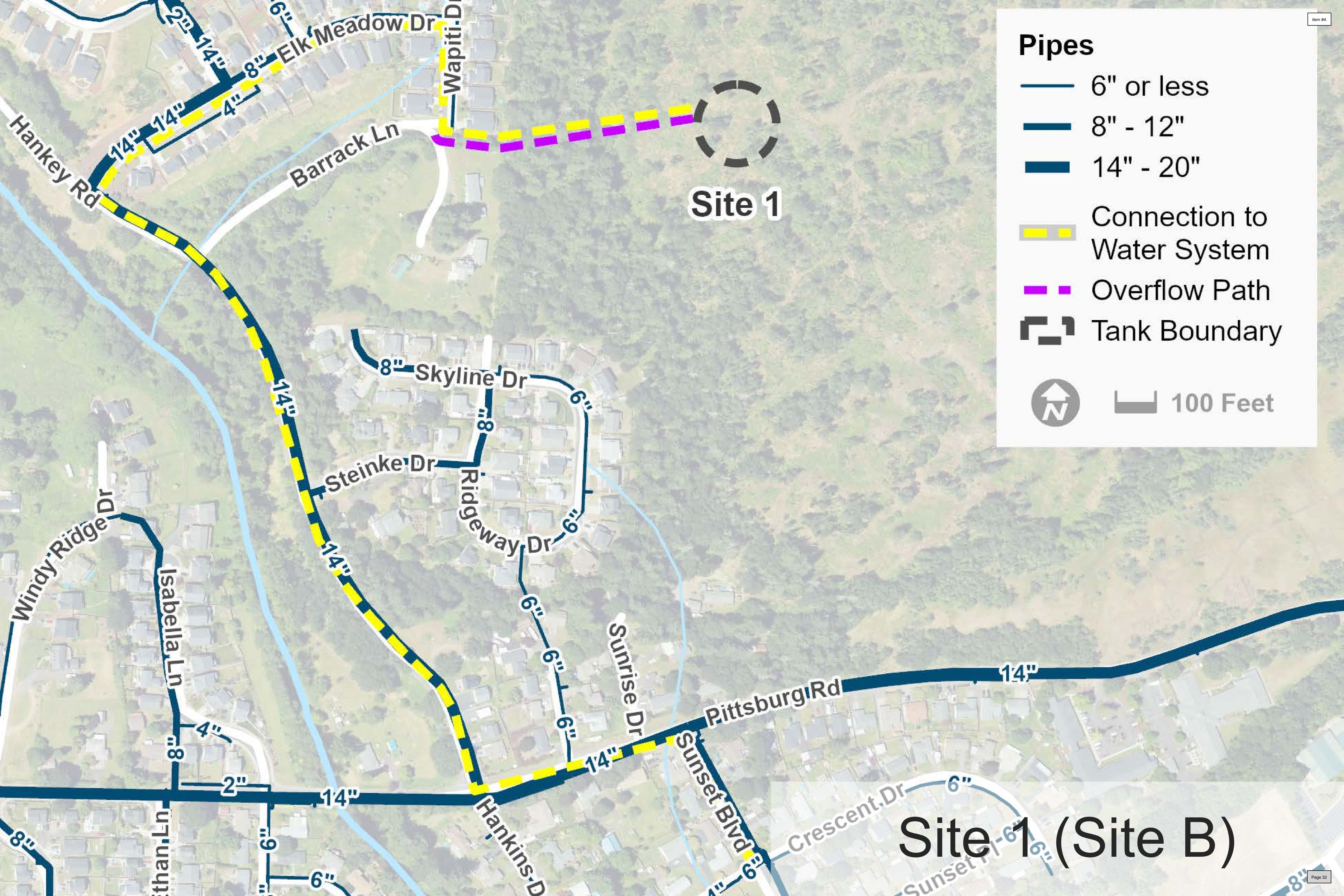


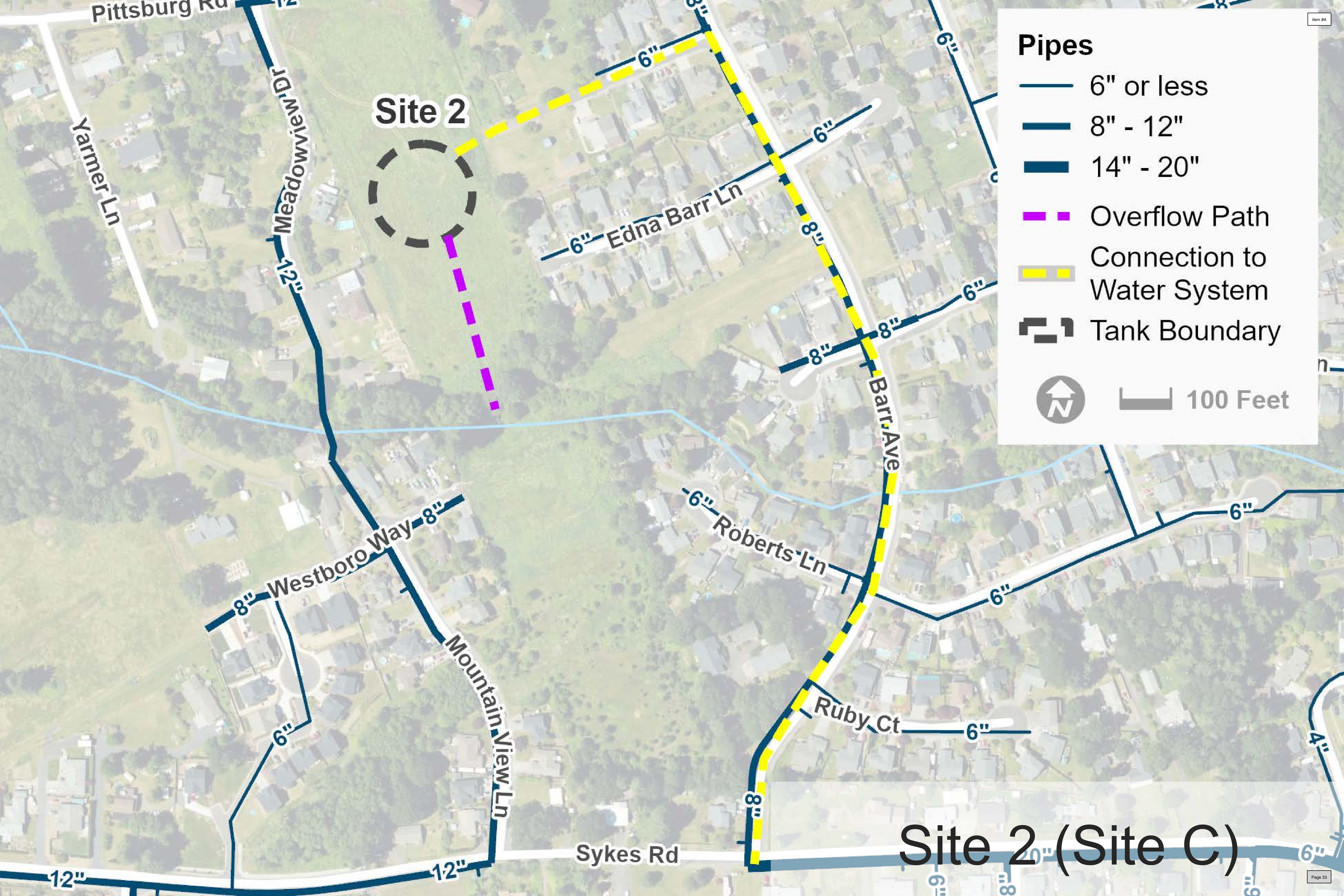
Site 3 (Site E)



Site 4 (Site H)







Pipes

- 6" or less
 - 8" - 12"
 - 14" - 20"
 - Overflow Path
 - Connection to Water System
 - Tank Boundary
- 100 Feet

Site 2 (Site C)

Pipes

- 6" or less
- 8" - 12"
- 14" - 20"

- Overflow Path
- Connection to Water System
- Tank Boundary



100 Feet

Site 3

Sykes Rd

Ruby Ct.

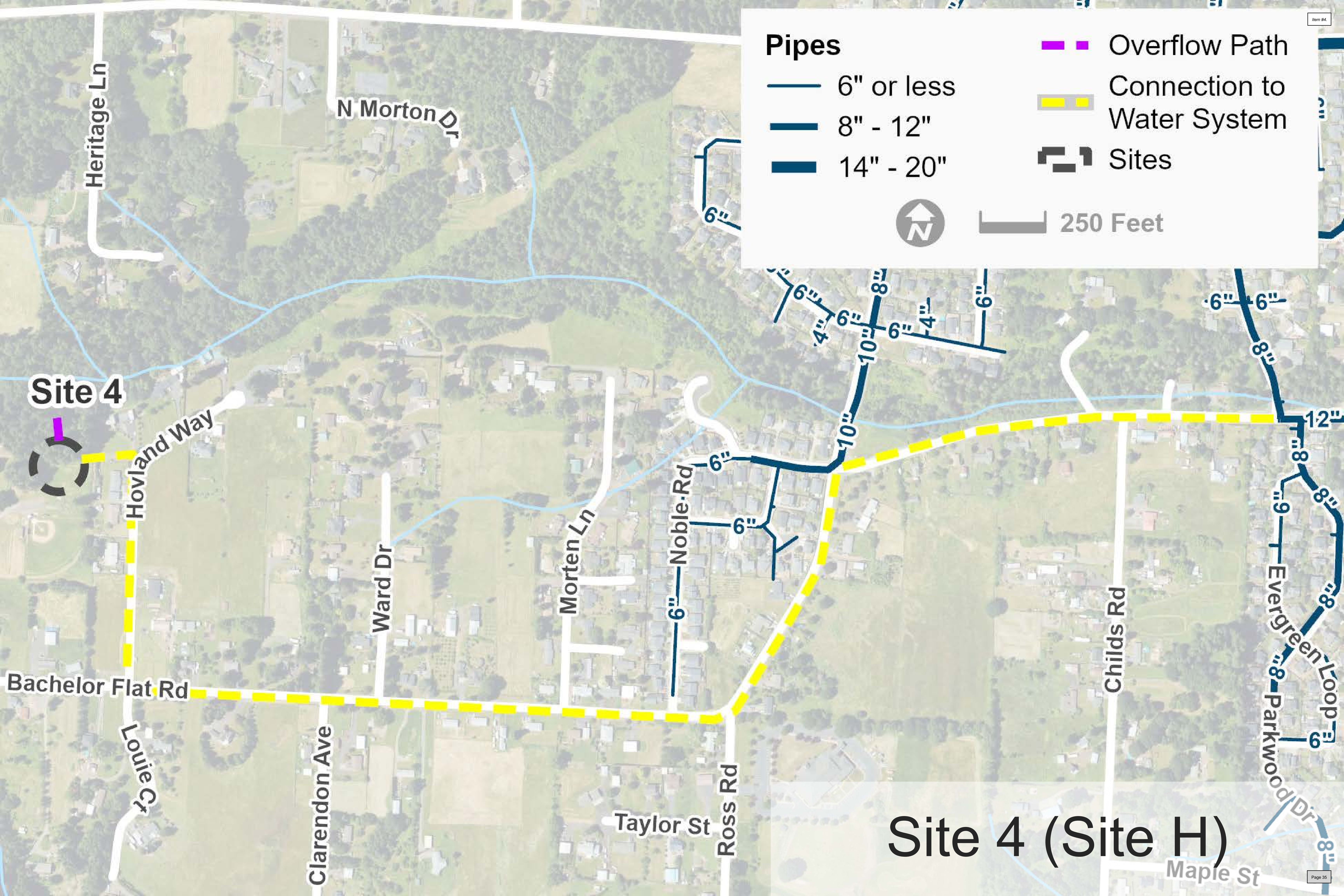
Alpine Ave

Timberline Ave

Cascade St

Glacier Ave

Site 3 (Site E)

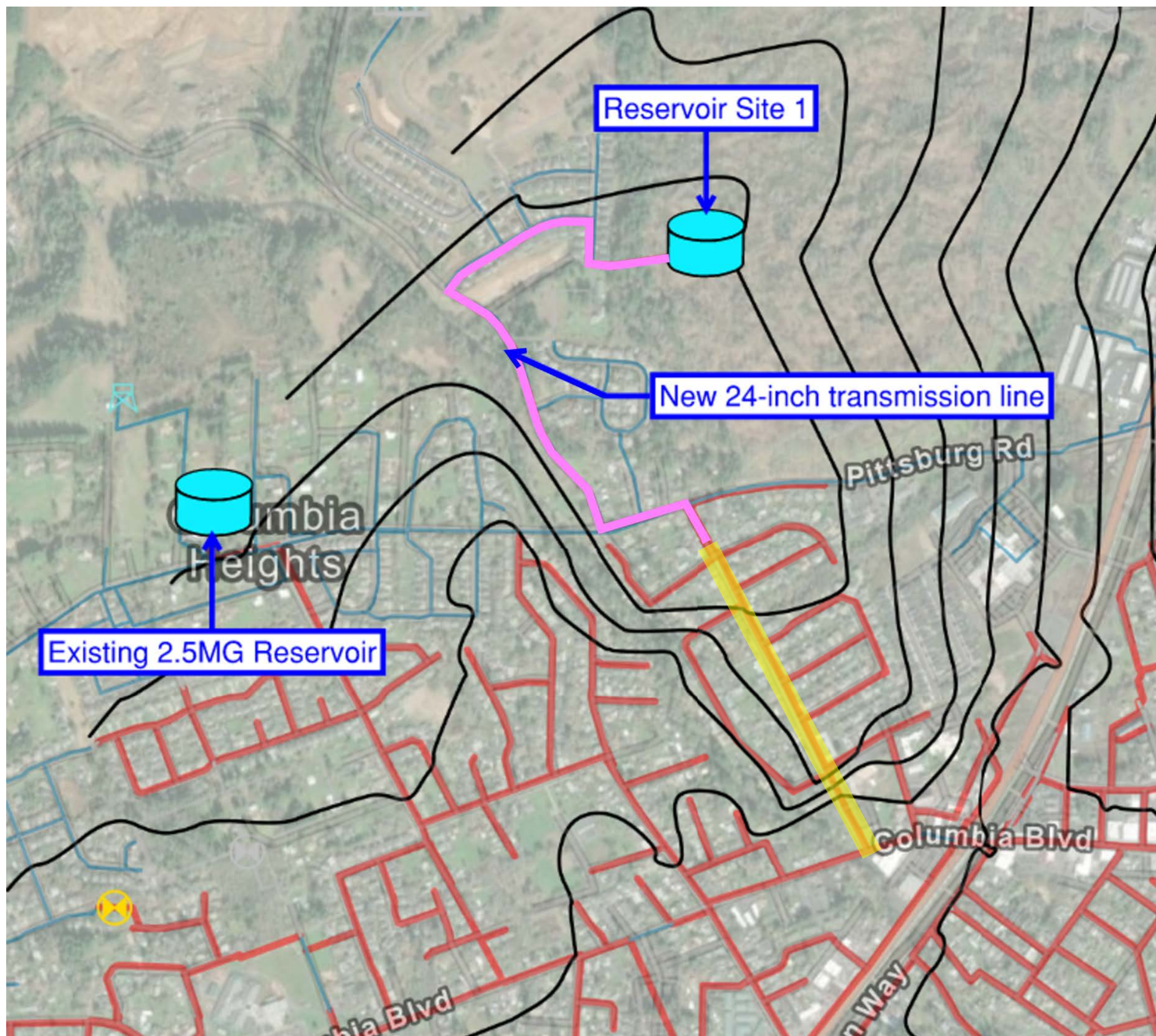


HYDRAULICS AND OPERATIONS



Item #4.

ST. HELENS RESERVOIR SITING STUDY



WATER MODELING

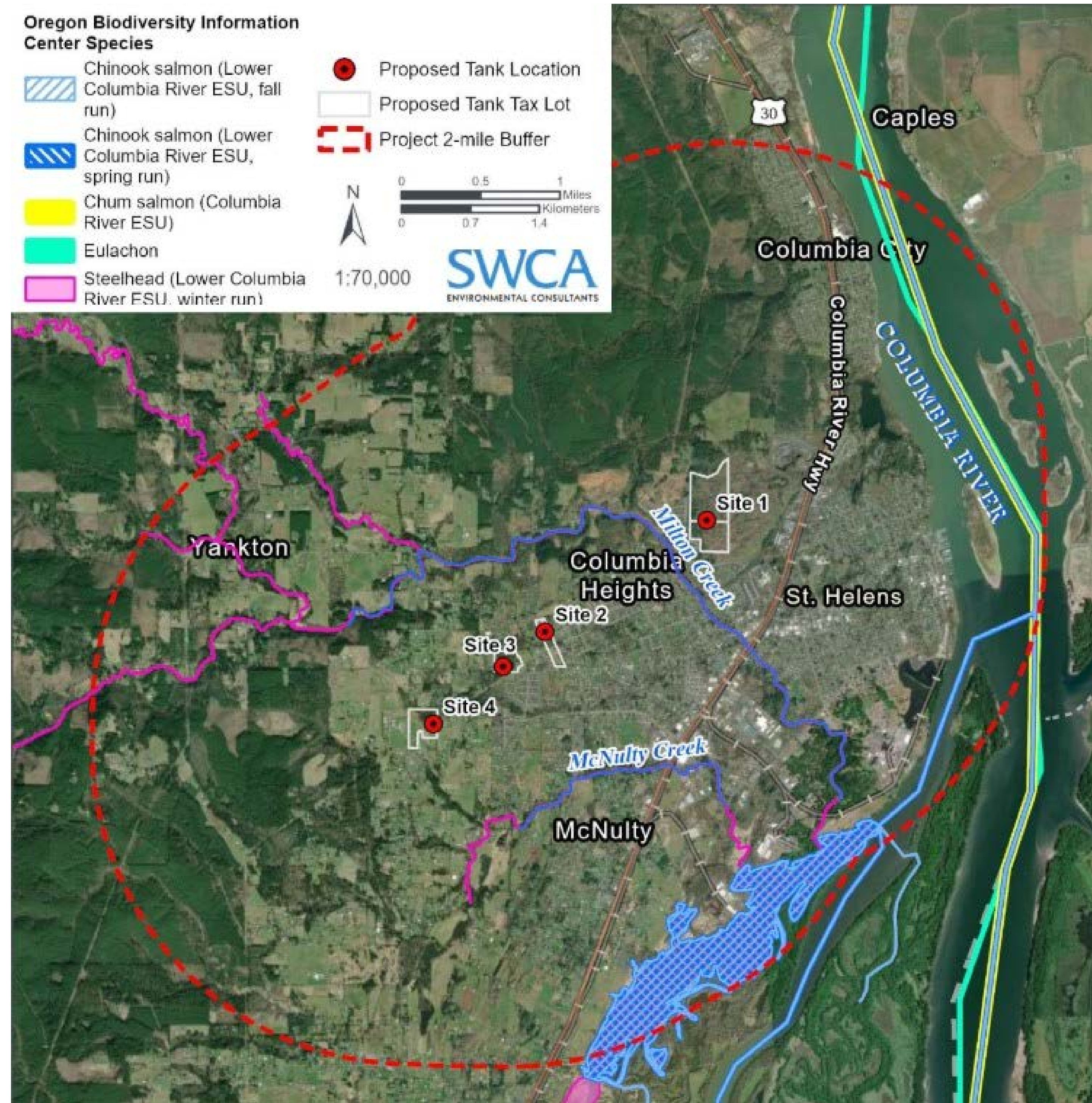
- Operation and Controls
- Water Transmission
- Pressure and Fire Flow
- Overflow and Drain Conditions
- Deficiency for Site 1 on Elk Meadows Drive



PERMITTING AND ENVIRONMENTAL



ST. HELENS RESERVOIR SITING STUDY



- **Evaluation of:**
 - Land Use and Planning
 - Aquatic Resources
 - Vegetation and Habitat
 - Special-Status Species
 - Archaeological, Historical, and Cultural Resources
 - Visual Impacts and Aesthetics
 - Hazardous Materials
- **No Fatal Flaws Identified**



PUBLIC ENGAGEMENT



Item #4.

ST. HELENS RESERVOIR SITING STUDY

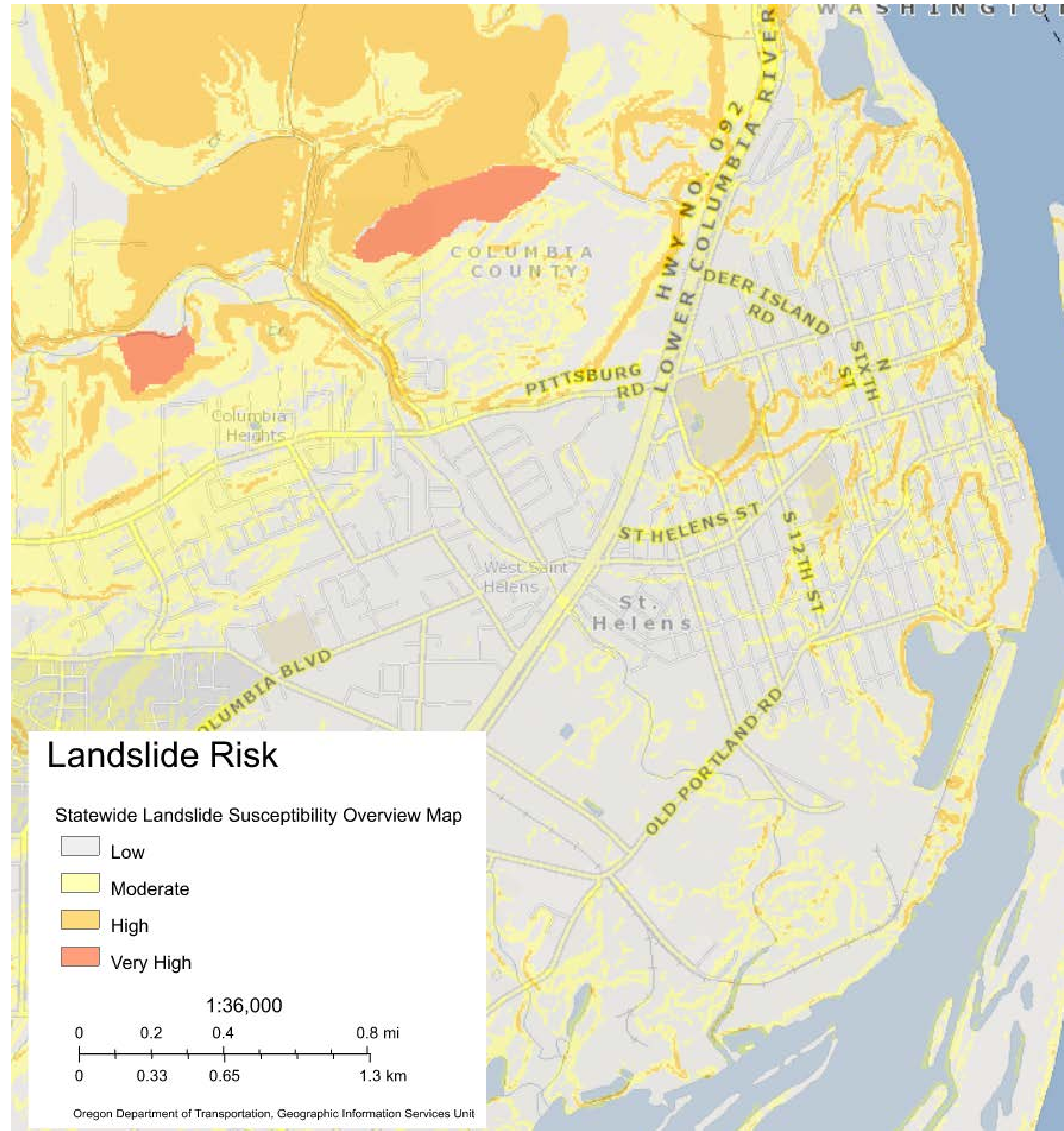
- Stakeholder Meetings – Council Members, County Staff, City Staff, Other Stakeholders
- Project Mailings
- City Website
- Property Owner Communication
- Public Meeting (Open House)



GEOTECHNICAL DESKTOP REVIEW



ST. HELENS RESERVOIR SITING STUDY



- Historical Boring and Well Log Review
- Historical Landslide Review
- In-Depth Geologic Hazard Review (Liquefaction, Landslides, Spreading, etc.)



GEOTECHNICAL INVESTIGATIONS



Item #4.

ST. HELENS RESERVOIR SITING STUDY

FIELD INVESTIGATIONS

- Sites 2, 3, 4
- Lab Testing on Samples
- Site 2 – Basalt Encountered, Best Geologic Conditions
- Site 3 – Missoula Flood Deposits, Tank Height Limitations
- Site 4 – Missoula Flood Deposits and Zero Blow Material, Worst Geologic Conditions, Significant Tank Construction Requirements and Limitations



COST AND CONSTRUCTABILITY



ST. HELENS RESERVOIR SITING STUDY

- Relative Ranking of Constructability and Costs
- Considering:

- Laydown Area
- Site Access (Including Deliveries)
- Pre-Stressed Tank Wrapping Space
- Site Preparation
- Structural Implications



#1 – SITE 2

- Best Existing Site Area, Minimum Site Preparation
- No Significant Structural Impacts
- Great Access



#2 – SITE 3

- Good Access After Site Preparation
- Maximum Tank Height



#3 – SITE 1

- Subsurface Conditions Expected Positive, Not Field Verified
- Significant Site Improvements Required
- Poor Access



#4 – SITE 4

- Significant Structural Impacts to Design
- Proximate Above Ground Utilities
- Poor Soil Conditions



SITE EVALUATION



ST. HELENS RESERVOIR SITING STUDY

	Hydraulics and Operations	Environmental Considerations	Piping Connection Pathways	Geotechnical Favorability	Land Use and Planning	Owner Willingness to Sell	Capital Cost	Public Support	Totals
Weighting	10%	10%	10%	20%	15%	5%	25%	5%	100%
Site 1	1	4	2	2	3	1	2	2	2.2
Site 2	4	3	5	5	4	4	5	4	4.5
Site 3	4	3	3	3	4	5	3	3	3.4
Site 4	2	2	1	1	2	3	1	1	1.5

- 1 is Poor → 5 is Great
- Hydraulics and Operations – Distribution Compatibility
- Environmental Considerations – Wetlands and Special Status Species, Resources
- Piping Connection Pathways – Connection to Main PZ, Overflow/Drain
- Land Use and Planning – Planning Approvals and Processes



RECOMMENDED SITE: SITE 2



Item #4.



- No Tank Structural Limitations from Geologic Conditions
- Wetlands Expected to be Mitigated with Avoidance
- Owner Interest in Selling
- Expected to Have Positive Public Interest
- Lowest Expected Cost and Best Constructability
- Path to System Connection Favorable



NEXT STEPS



ST. HELENS RESERVOIR SITING STUDY



SITING STUDY

- Finalization of Study Materials
- Final City Council Presentation January 2026



PROPERTY ACQUISITION

- Property Valuation
- Start Acquisition Process



SOLIDIFY FUNDING

- Determine Funding Sources and Associated Requirements



DESIGN

- Tank and Site Design
- Pipeline Design



CONSTRUCTION

- Bidding
- Startup



QUESTIONS/FEEDBACK?



Item #4.

ST. HELENS RESERVOIR SITING STUDY



DECEMBER 2025
PROJECT NO. 225054
CITY PROJECT NO. W-484

CITY OF ST. HELENS

Draft Technical Report

Reservoir Siting Study

PREPARED BY



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PREPARED FOR



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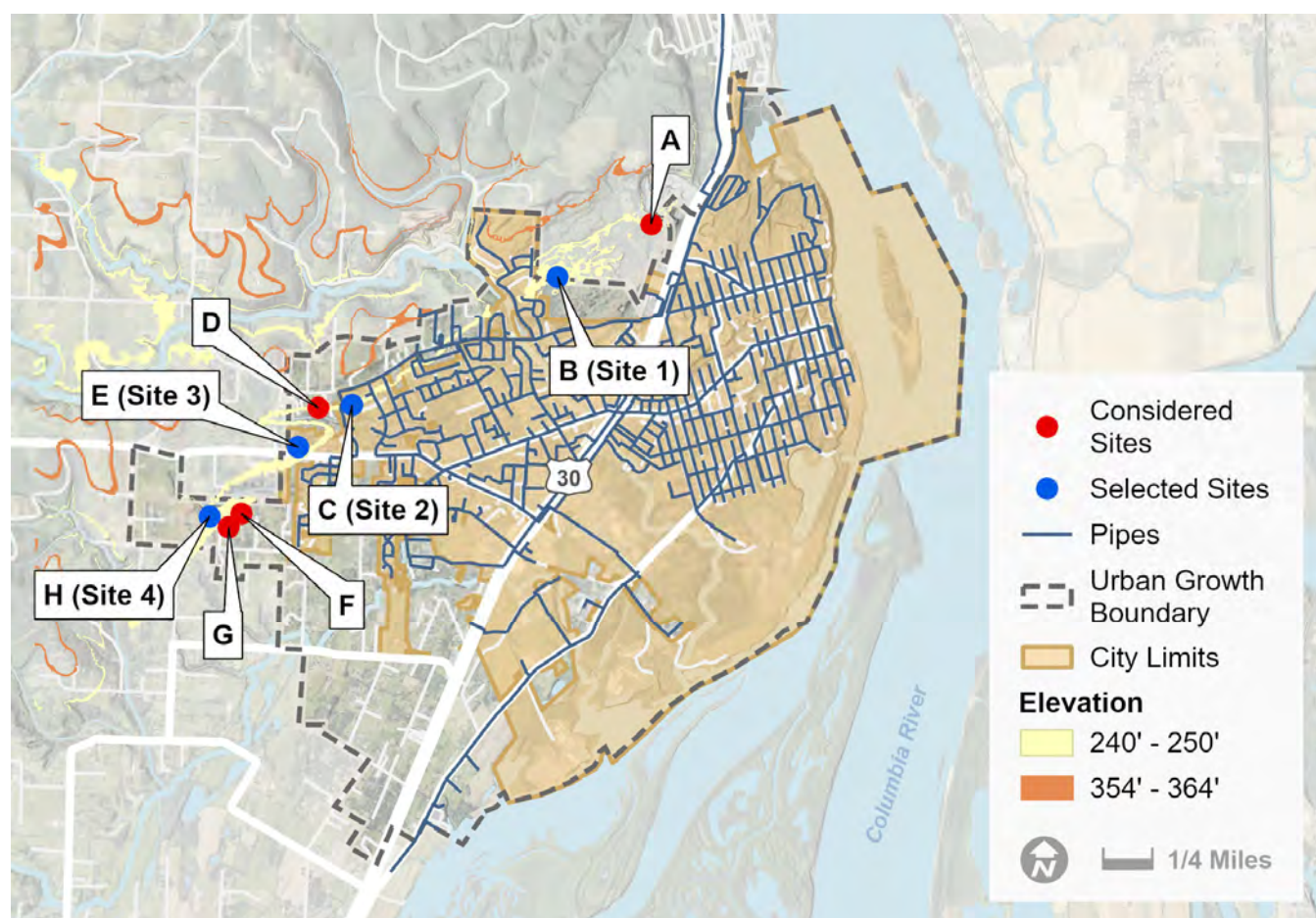
EXECUTIVE SUMMARY

The City of St. Helens currently faces potable water storage deficits that are expected to increase with growth while working to maintain aging infrastructure. The City contracted with Keller Associates (Keller) for the development of a reservoir siting study to evaluate potential sites for the proposed 5.0 MG reservoir. The improvements have been spurred by the City's desire to meet the storage requirements while improving redundancy and providing capacity for future growth.

Site Identification and Determination of Priority Sites

A review of potential sites that aligned with the hydraulic requirements of the existing water system were identified. Several of these sites were removed from consideration due to future cost, operations, and maintenance implications associated with a site in the high pressure zone or known site deficiencies. Of the original eleven sites that were originally identified, eight were evaluated with a preliminary desktop study. These eight sites are depicted in **Figure 1**.

FIGURE 1: PRELIMINARY SITE IDENTIFICATION



The preliminary desktop study considered seismic and geologic hazards, liquefaction potential, surrounding land uses, constructability, proximity to the main pressure zone, proximity to an overflow and drain connection, and hydraulic operations. The eight (8) sites considered were narrowed down based on the desktop study to a list of four (4) sites, shown in blue in **Figure 1**, that warranted further investigation in the study.

Evaluation of Priority Sites

The four selected sites were evaluated more thoroughly, considering hydraulics, geotechnical and seismic considerations, permitting and environmental factors, land use and planning processes, cost and constructability, and stakeholder engagement results.

Hydraulic Evaluation

The hydraulic evaluation determined that there is a transmission bottleneck in Site 1 where a 12-inch line in Sunset Blvd. would significantly impact the empty and fill rates of the reservoir. If Site 1 is selected, it is recommended that the 12-inch line be upsized to 24-inches to minimize headloss. Additionally, if Site 1 is selected, a redundant connection to the Main PZ is recommended. All four sites would require an altitude valve to maximize the usable volume of both reservoirs.

Geologic Investigation

Field investigations of Sites 2, 3, and 4 were conducted with one geotechnical boring at or near each site. The sample from Site 2 showed a layer of colluvium overlaying basalt at approximately 14.5 ft below ground surface. Site 3 had a thin layer of fill material overlaying Missoula Flood deposits. The soils of Site 4 showed a layer of colluvium overlaying Missoula Flood deposits with sandy river mudstone starting at 37.5 feet below ground surface. The most unsuitable subsurface conditions were encountered at Site 4, which is likely to require deep foundations. Site 3 is more suitable than Site 4, but less suitable than Site 2, with the potential for structural mat foundations or limitations to tank height. Of the three sites evaluated, Site 2 shows the most suitable subsurface conditions for the reservoir and has no atypical structural conditions expected.

Environmental and Permitting Review

An environmental and permitting review for each of the four sites was conducted, including an evaluation of aquatic resources, vegetation and habitat, special-status species, archaeological, historical, and cultural resources, visual impacts, hazardous materials, and the associated permits for each site. The environmental review found no fatal flaws for any of the four sites. Sites 2 and 4 have wetlands and areas that will need to be delineated and should be considered as part of the design process. A habitat assessment will be required for any selected site. No historical, cultural, or archaeological resources were identified at any of the sites.

Land Use and Planning Review

Keller coordinated with the planning authority from both the City and County to confirm the planning requirements and procedures associated with each site. Site 1 and Site 4 are both located outside City limits with a PF-80 zoning classification. Both sites would require a Site Design Review and Site 4 would also require a Conditional Use Permit. Sites 2 and 3 are both located within the city limits with an R7 classification. Both sites require a Conditional Use Permit.

Property Owner and Stakeholder Engagement

As part of the study, property owners associated with all four sites were contacted and the project was discussed with them. The Site 1 property owner indicated a disinterest in selling all or part of the property and rejected a right-of-entry agreement to complete field investigations on the site. The property owners at Sites 2 and 3 indicated an openness to selling all or part of their property to the City for a potential reservoir site. Site 4 is located on the County Fairgrounds property and is therefore managed by both the Columbia County Fair Board and the County. The County has not indicated whether or not it would be open to selling part of the fairground property.

Various parties engaged with stakeholders, including property owners, City and County staff, tribal organizations, City Council members, and others, as part of the study to involve the interested parties in the process. Two stakeholder engagement presentations were held in addition to a public meeting. Feedback from all parties shaped the decision-making process.

Recommended Site Determination

An evaluation of the sites was presented to the City staff and included consideration for many factors, including cost and constructability, stakeholder feedback, environmental and permitting considerations, hydraulics, property owner interest in selling, land use and planning, and geologic conditions. Ultimately, Site 2 is the preferred site for the future 5.0 MG reservoir. A map of Site 2 is presented in **Figure 2** and a preliminary site concept rendering is shown as **Figure 3**.

FIGURE 2: SITE 2 LOCATION

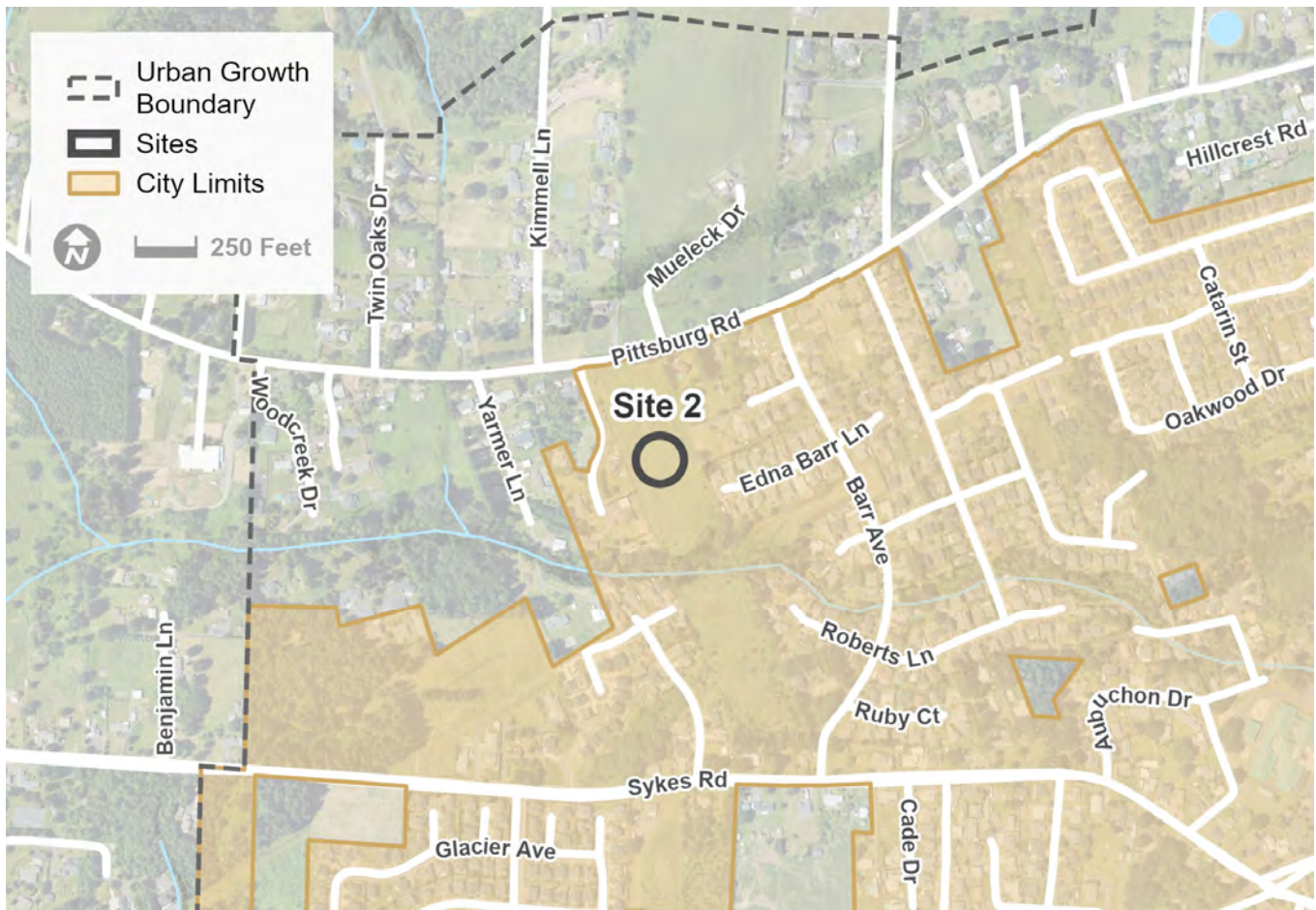


FIGURE 3: PRELIMINARY SITE CONCEPT RENDERING



1 - BACKGROUND

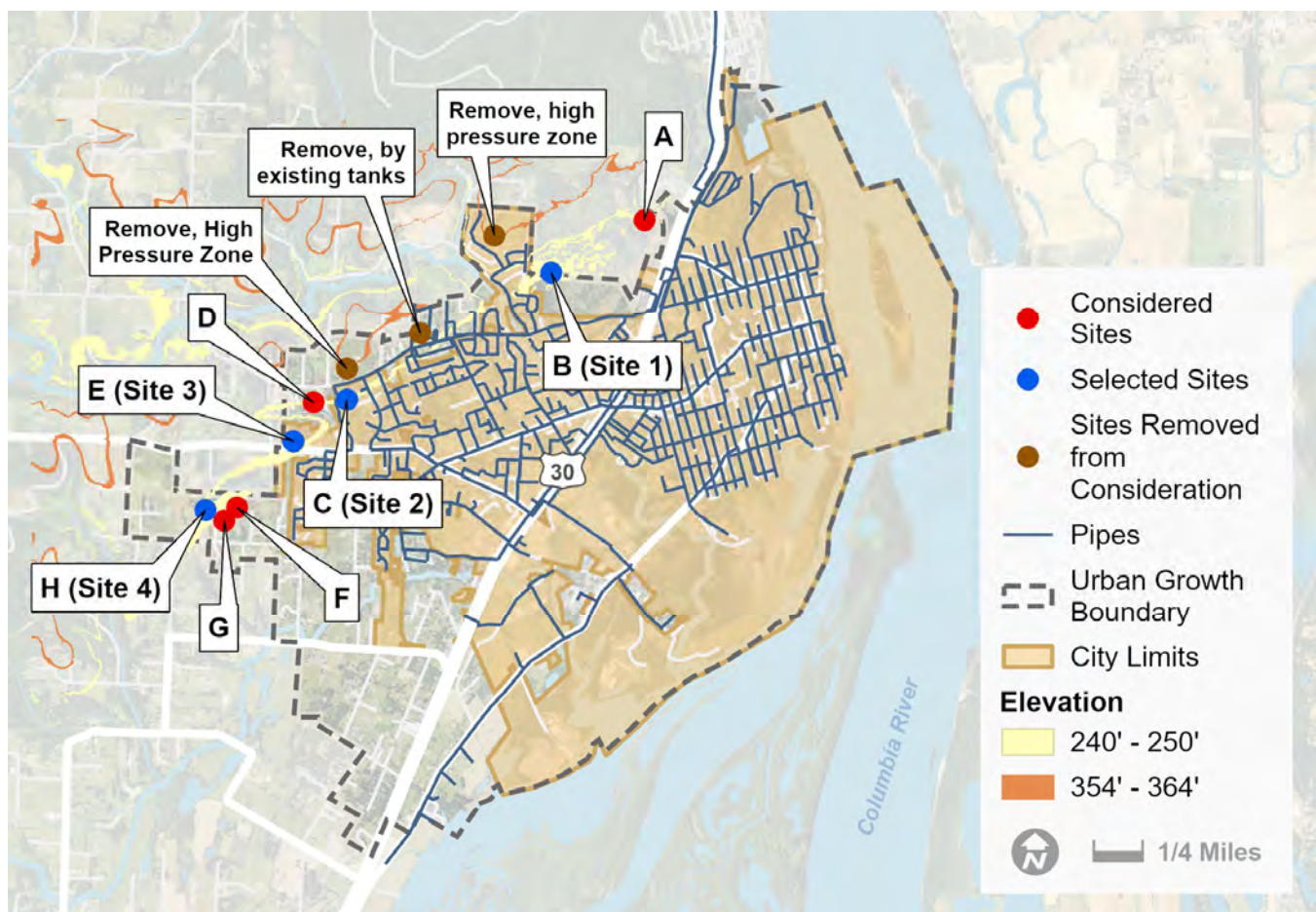
The City of St. Helens (the City) Water Master Plan (WMP) from 2022 identified issues with aging infrastructure and an existing water storage deficiency that is expected to increase during the 20-year planning period. Preliminary design of a new tank to replace an existing 2.0 MG tank at the same site as the 2.5 MGD tank was started previously, but the project was abandoned due to design and constructability constraints associated with the site. For this reason, the City has commissioned a siting study for a 5.0 MG reservoir. The City contracted with Keller Associates (Keller) to identify and evaluate potential sites. This report summarizes the evaluation and reports on the findings.

2 - PRELIMINARY SITE IDENTIFICATION AND EVALUATION

2.1. INITIAL SITE IDENTIFICATION

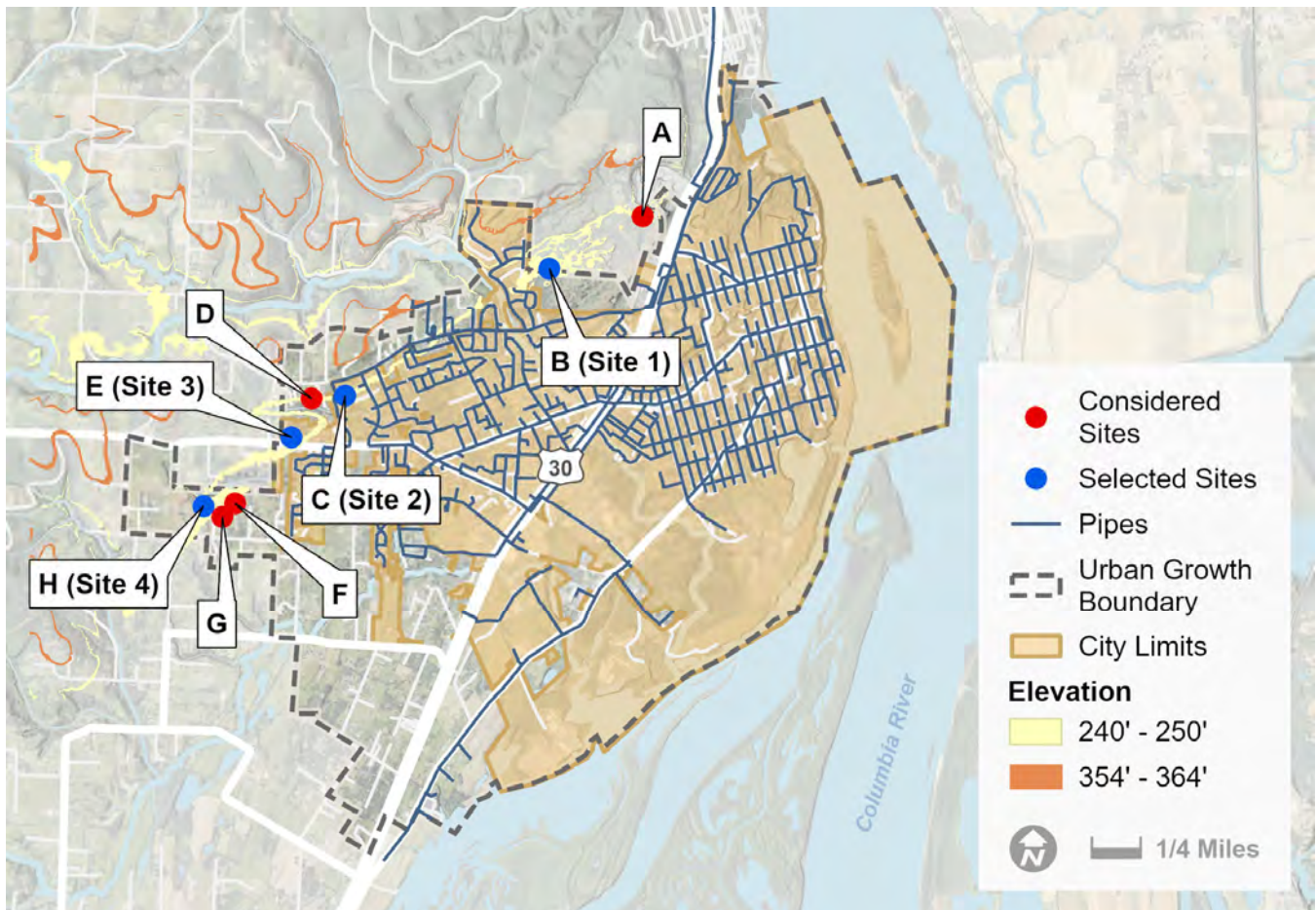
The City's water distribution system is broken down into three pressure zones – the high pressure zone (High PZ), main pressure zone (Main PZ), and the Elk Ridge pressure zone (Elk Ridge PZ). The hydraulics of the system require that the tank be sited within a 10' elevation range in either the Main PZ (240'-250') or High PZ (354'-364'). An initial group of 11 potential sites with undeveloped land were identified with consideration for the potential elevations where the tank could be sited. These sites are presented in **Figure 4**.

FIGURE 4: PRELIMINARY SITE IDENTIFICATION



Preliminary evaluation of the sites identified issues that would greatly impact the future reservoir design, construction, and operation. For example, the installation of the reservoir within the High PZ would require costly equipment and operations would be more complex compared to a reservoir sited within the Main PZ. The City decided that sites identified within the High PZ were to be excluded from consideration for these reasons. Similarly, the existing reservoir site includes known geotechnical hazards which would increase capital cost and negatively affect constructability. The existing reservoir site was also excluded from further evaluation. A total of 3 sites were removed from consideration as the sites were either within the High PZ or are located within a site with known challenges. With the exclusion of these sites, eight sites remained for additional consideration and were named Sites A-H. A map of each site, tank location, water connection pathway, and overflow/drain connection pathway are available as **Appendix A**. A map of all 8 sites is presented as **Figure 5**.

FIGURE 5: PRELIMINARY SITE IDENTIFICATION



2.2. SITE EVALUATION CRITERIA

The remaining eight sites were evaluated using a desktop review of site topography, publicly available geological resources, existing land use, proximity to the Main PZ, and site access. This section describes the information that was collected and the purpose of each in further narrowing down the sites. A summary of the findings from the preliminary site evaluation are available in **Appendix B**.

2.2.1. Desktop Geological Evaluation

Geotechnical favorability greatly impacts the cost and constructability of a reservoir site. An ideal site will have a low risk of liquefaction and a low landslide risk. A desktop analysis of the geologic substrate,

liquefaction risk, and landslide risk was conducted using data available by the Oregon Department of Geology and Mineral Industries (DOGAMI) and the Oregon Geologic Data Compilation. Sites A and B are in an area with shallow basalt rock with a low risk of liquefaction. Sites C-H are in an area that are expected to be composed primarily of Missoula flood deposits, which have a moderate risk of liquefaction. Landslide risk for Sites C-H ranged from low to moderate, with mapping showing Sites C and D having the highest risk of the sites evaluated.

2.2.2. Land Use

Existing zoning, land availability, and neighboring land use will influence the cost of property acquisition and the associated timeline to achieve approval. Sites were evaluated using publicly available zoning and tax lot information. In general, sites that are either zoned for residential use or adjacent to existing homes may be more likely to face neighborhood opposition. Sites C-G are zoned for medium density residential, are mostly undeveloped, and are generally located adjacent to existing housing. Sites A and B are located in areas with larger areas of forests and shrubbery, but Site A is located adjacent to an active quarry. Neither Site A nor B are in areas that would be expected to have significant neighborhood opposition due to the nearby quarry. Site H is located within a County-owned park, which could improve the likelihood that the property owner would be a willing seller.

2.2.3. Constructability and Access

Reservoirs are constructed with a flat bottom at a set elevation, so significantly sloping sites are likely to require greater site development costs. Favorable sites have low slopes across the potential tank site and topography and nearby roadways that are conducive to improved site access. Sites B, E, F, and G have average slopes at 4% or below, while others range from 5.5% (Site C) to the highest at 10% (Site D). While the reservoir location for most sites is less than 150 feet from an existing road, Sites B and D would require a longer driveway that would have to be built through private property, therefore increasing costs due to the access improvements and the associated land acquisition or easements.

2.2.4. Proximity to Main PZ

As previously discussed, the reservoir must be connected to the Main PZ. Sites located adjacent to the High PZ require the pipeline line to connect to a location in the Main PZ, increasing the length of associated water pipeline. Sites on the far extents of the City such as Sites B, F, G, and H would require the greatest pipeline lengths for connecting to the Main PZ (between 4,690 and 6,220 linear feet). Sites such as Sites A, C, and E that are more centrally located require less pipeline (under 2,370 linear feet). Long pipeline lengths greatly impact the overall capital cost of the improvements while simultaneously increasing the quantity of assets for which the City is responsible for maintaining and increasing the area disturbed during construction.

2.2.5. Proximity to Overflow and Drain Connection Point

Water reservoirs must be designed with an overflow to release water in the event the tank is overfilled and a drain line for fully emptying the reservoir, both of which are connected together in a line hereinafter referred to as the overflow/drain line. After dechlorination, reservoir overflow/drain lines are often piped to a location above the ordinary high water level in a stream or to a stormwater system when a stream or other receiving water body is not available. Similar to the connection to the Main PZ, the overflow/drain can impact overall costs while increasing the area disturbed during construction. Sites C, D, F, G, and H are near existing streams (between 120 and 670 linear feet) that were assumed to be able to receive the overflow and/or drain volumes. Sites A, B, and E are significantly farther from receiving water bodies and would therefore be expected to discharge to the City's stormwater conveyance system. The stormwater system would need to be evaluated for each site to concretely determine whether the stormwater system could handle these additional flows during a storm. If the existing capacity at the connection point is insufficient, the project may also require improvements to the stormwater system.

2.2.6. Hydraulic Operations

In St. Helens, the Water Filtration Facility (WFF) turns on and off based on the water levels in the existing 2.5 MG reservoir. Currently, the 2.5 MG reservoir is the only active reservoir in the Main PZ and will therefore stop filling once the reservoir reaches its maximum operational level. When multiple reservoirs are located within the same pressure zone, reservoirs fill at different rates depending on their location within the water system. These flow rates can be regulated using an altitude valve. For example, if the new reservoir is constructed closer to the WFF than the existing 2.5 MG Reservoir, the hydraulic conditions would cause the new reservoir to fill faster, and an altitude valve will be required to prevent overflowing while the existing reservoir continues filling to the maximum operating level. The inverse conditions would exist if the new reservoir were further from the WFF and an altitude valve would likely be required to be installed at the existing 2.5 MG Reservoir. Altitude valves are commonly used to control reservoir levels by sensing the water level in the reservoir and opening and closing accordingly to fill the reservoir. All sites (A-H) are expected to require an altitude valve at one or both reservoir sites.

2.3. SELECTED SITES FOR FURTHER INVESTIGATION

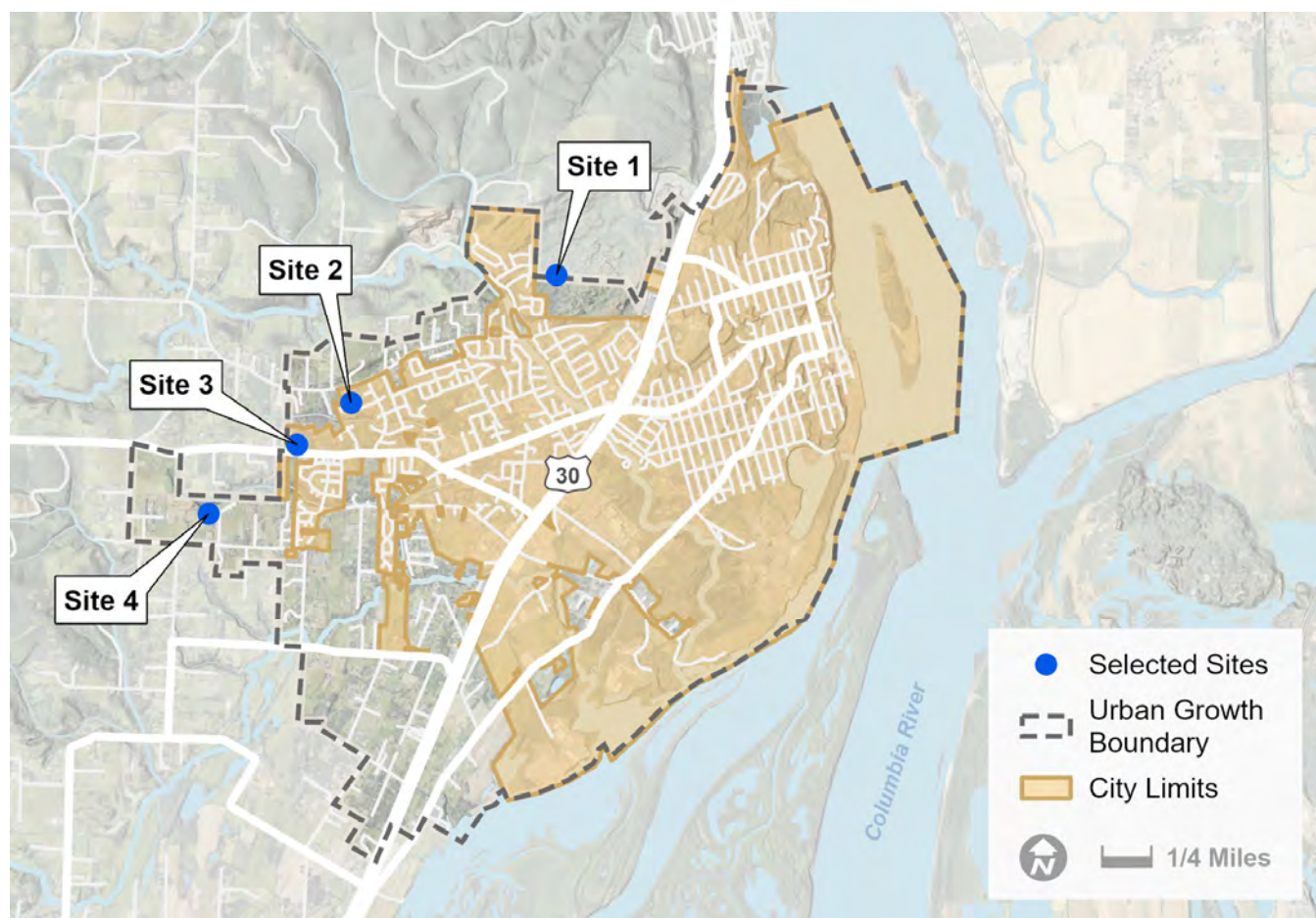
Out of the 8 original sites, the 4 sites selected for further consideration were Site B, C, E, and H. Site A was dismissed due to its proximity to an active quarry, where frequent blasting raised seismic concerns. Site D was also removed from consideration because it had significant cross-slopes (a 10% slope across the proposed reservoir location) and would require a relatively long connection to the water system. Sites F, G, and H are close to one another, with similar geologic conditions expected, similar site conditions, and significant pipe corridors required to connect to the Main PZ. Of the three, Site H was selected as a priority site over the others because it is flat and has the smallest length from the site to the stream for an overflow/drain line. For simplicity, the selected sites were renamed numerically and are presented in **Table 1**.

TABLE 1: INITIAL SELECTED SITE SUMMARY

Initial Site Reviewed	Site Selection and Renaming
Site A	Not selected
Site B	Site 1
Site C	Site 2
Site D	Not selected
Site E	Site 3
Site F	Not selected
Site G	Not selected
Site H	Site 4

A map of the selected sites is presented as **Figure 6**.

FIGURE 6: SITES 1-4 MAP



2.3.1. Site 1 (Site B)

Site 1 is located on the northern edge of the City limits, west of Highway 30 and north of Pittsburg Rd. A drone photo of the site is shown in **Figure 7** and the general location of the future reservoir is shown in **Figure 8**.

Site 1 (Site B) was identified as a recommended site because the geologic conditions are expected to have an underlayment of basalt, which reduces the risk of landslide and liquefaction. The existing site is owned by Weyerhaeuser, which also leases the eastern portion of the adjacent property for quarry work.

FIGURE 7: SITE 1 DRONE PHOTO

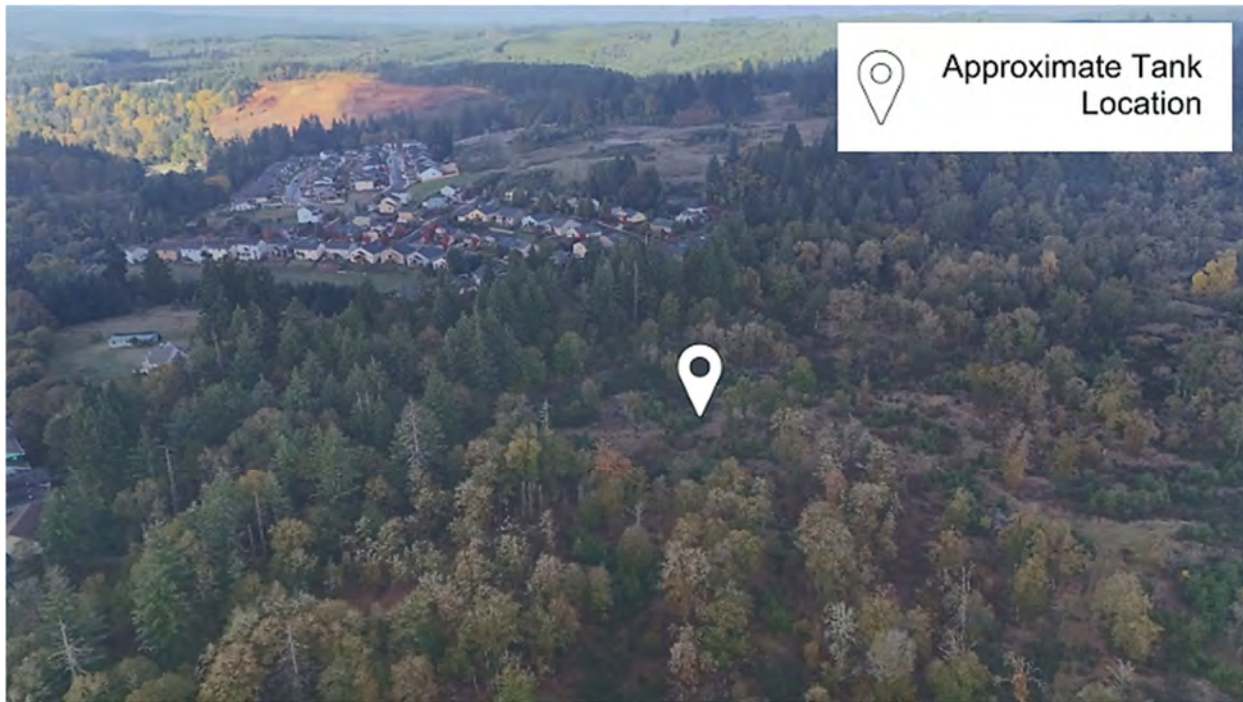
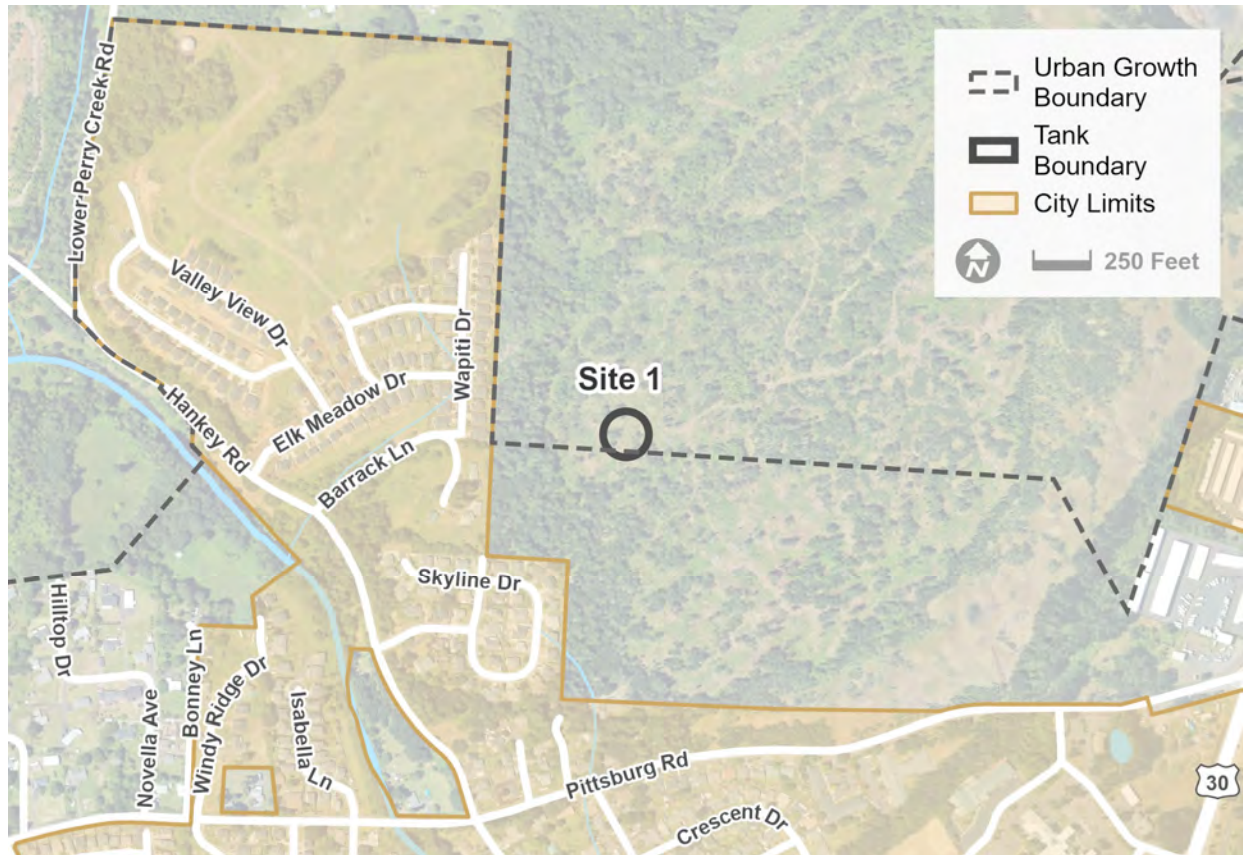


FIGURE 8: SITE 1 LOCATION



2.3.2. Site 2 (Site C)

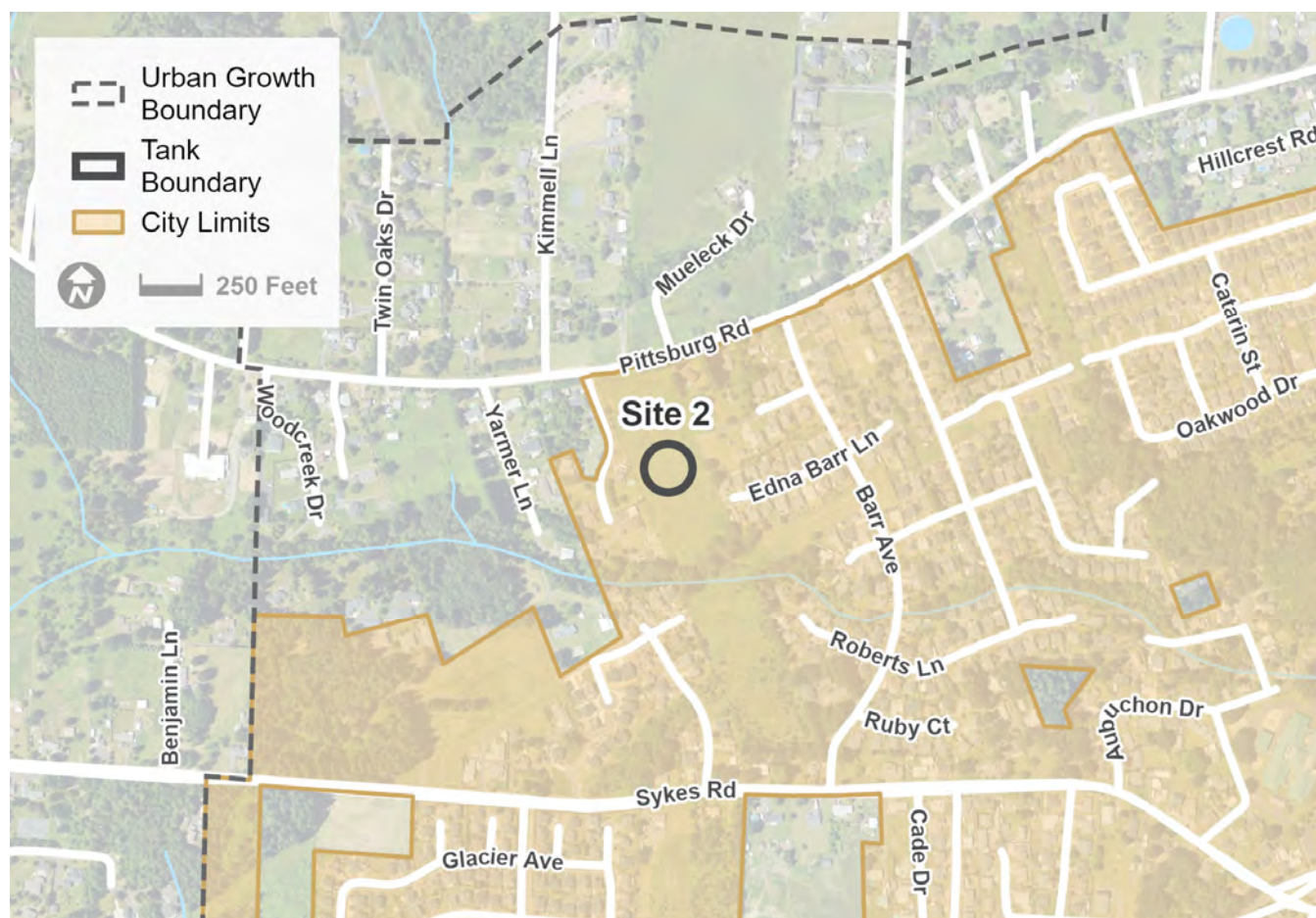
Site 2 (Site C) fronts Pittsburg Rd. to the north and Meadowview Dr. to the west. It is located between several residential neighborhoods. A drone photo of Site 2 is shown in **Figure 9** and a map of the location of Site 2 is shown in **Figure 10**.

Site 2 (Site C) was selected as a recommended site because the associated water connection and overflow/drain piping lengths are short relative to the other sites. Additionally, the site has low slopes and minimal site preparation is expected. The reservoir could be accessed from Pittsburg Rd. or Meadowview Dr.

FIGURE 9: SITE 2 DRONE PHOTO



FIGURE 10: SITE 2 LOCATION



2.3.3. Site 3 (Site E)

Site 3 (Site E) fronts Sykes Rd. to the south and is located on the far western extent of the City. A drone photo of Site 3 is shown in **Figure 11** and a map of the general site location is shown in **Figure 12**.

The reservoir at Site 3 is anticipated to be located within the heavily wooded area, about 100' north of Pittsburg Rd. Site 3 has low slopes in this area and is expected to require a short pipeline for the connection to the Main PZ.

FIGURE 11: SITE 3 DRONE PHOTO

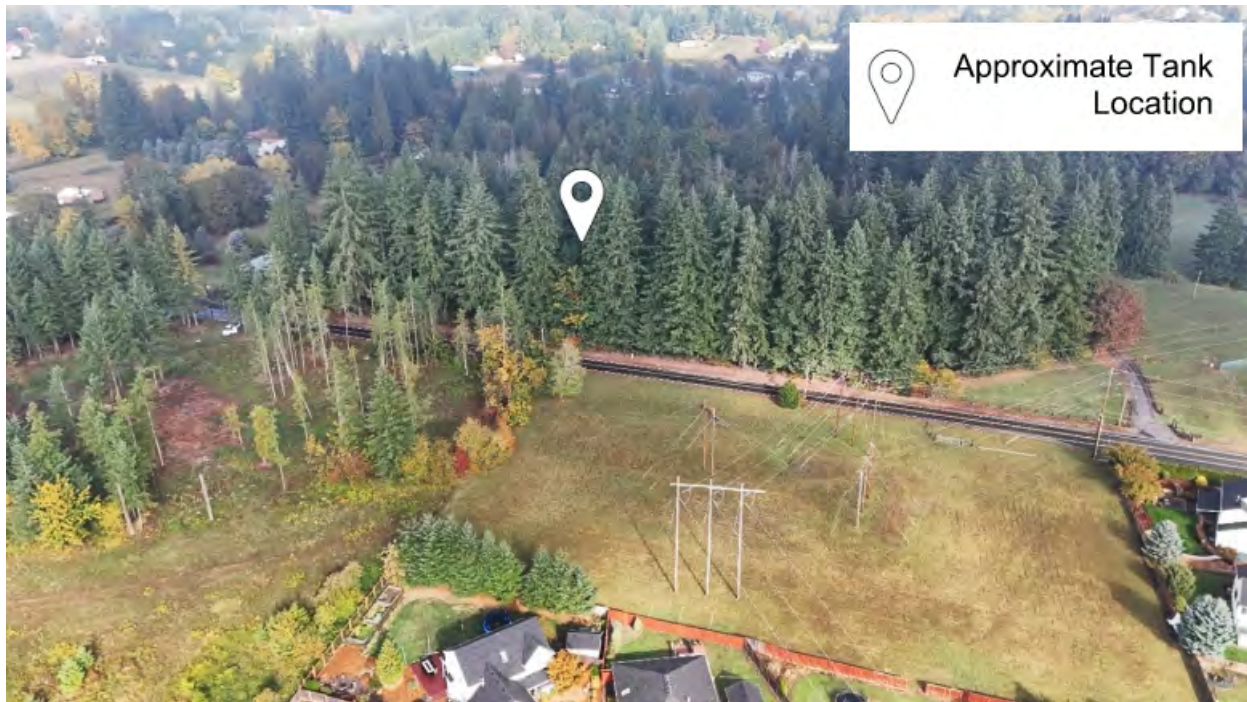


FIGURE 12: SITE 3 LOCATION



2.3.4. Site 4 (Site H)

Site 4 (Site H) is located west of the City limit, north of Bachelor Flat Rd. and south of Sykes Road. The reservoir is anticipated to be sited just north of the baseball field in the County park. A drone photo of the site is presented in **Figure 13** and a map of the general site location is shown in **Figure 14**.

Site 4 was selected for further evaluation because the site is flat, the overflow/drain pathway is anticipated to be short, and the site access is anticipated to be allowed through the County's property.

FIGURE 13: SITE 4 DRONE PHOTO



FIGURE 14: SITE 4 LOCATION



3 - HYDRAULIC ANALYSIS

A hydraulic analysis was completed for the four selected reservoir sites using Innovyze Infowater Pro. The City's existing hydraulic model was used to identify transmission bottlenecks, control valve requirements, impacts to system pressure and available fire flow, and considerations for the overflow and drain connections.

Sufficient transmission piping for filling and emptying the new reservoir must be included in a reservoir design to maintain the existing hydraulic grade line (HGL) across the zone, maximize the benefit of the new reservoir, and maintain pipe velocities below recommended maximums. The model was used to evaluate the existing distribution system under average day demand (ADD), max day demand (MDD), and peak hour demand (PHD) to identify transmission bottlenecks which may develop for the potential reservoir sites.

Extended period simulations were used to show how the two reservoirs in the Main PZ will fill and where altitude valves will be required.

Impacts to distribution system pressure and available fire flow were considered for each of the proposed reservoir sites. However, these impacts are not a primary factor in comparing the different sites. Pressure and available fire flow deficiencies can be corrected through other distribution improvements such as looping pipes and upsizing small diameter pipes. The addition of a reservoir may also result in localized improvements to these factors.

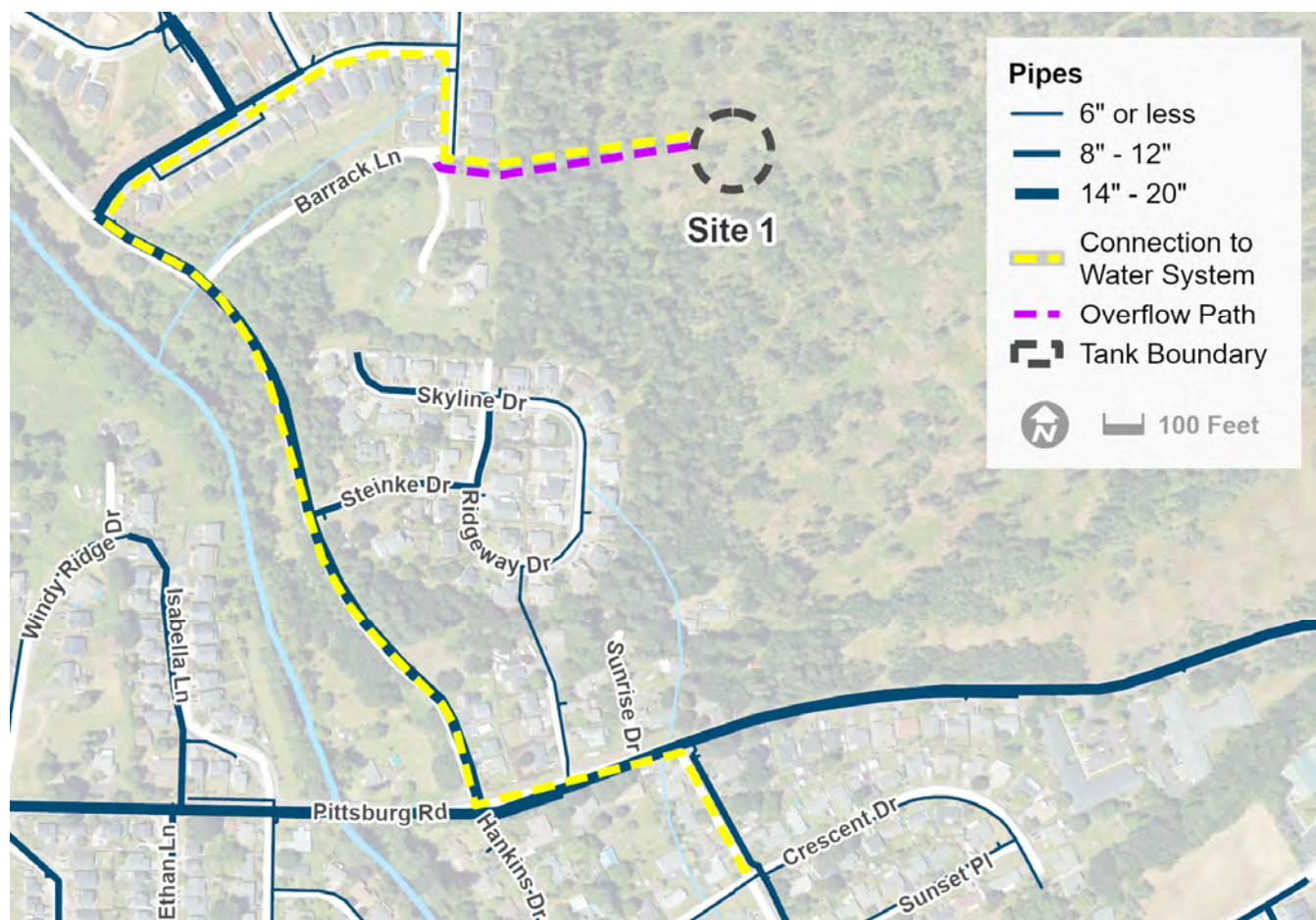
Water reservoirs require an overflow line to safely convey excess water if system controls malfunction. A drain for fully emptying the reservoir is also required for operational flexibility and is typically connected to the overflow line. The model was used to document maximum expected overflow rates at each of the sites. Overflow/drain lines would discharge to a nearby stream for Sites 2 and 4 under the assumption that the streams could handle the detained flows when the overflow/drain is flowing. In the cases of Sites 1 and 3, there are no proximate streams and both sites will require connections to the City stormwater collection system. The available capacity for the overflow/drain volumes was evaluated for the associated connections to the stormwater system.

There are many scenarios that could lead to overflow at one or both of the reservoirs. This study considers the "worst-case" scenario which would be if the WFF failed to turn off while it was pumping at its maximum anticipated production rate of 4,000 gpm. This would likely occur during the middle of the night while also occurring during an average winter (low) demand (approximately 0.8 MGD). It was assumed both reservoirs would be able to overflow; therefore, the flow will be split between the existing and proposed reservoirs. The City indicated that at least one person is on call at all times and would receive notifications if the WFF failed to turn off, if flows are too high, or if discharge pressures are too high. A response time of 15 minutes was assumed for the City to turn off the pumps at the WFF, based on discussions with city operators.

3.1. SITE 1 HYDRAULIC ANALYSIS

The location of Site 1 and the preliminary pipe alignment are illustrated in **Figure 15**. The following sections discuss the transmission, operation, pressure and fire flow, and overflow considerations specific to this site.

FIGURE 15: SITE 1 CONNECTION TO EXISTING WATER SYSTEM AND OVERFLOW SYSTEM

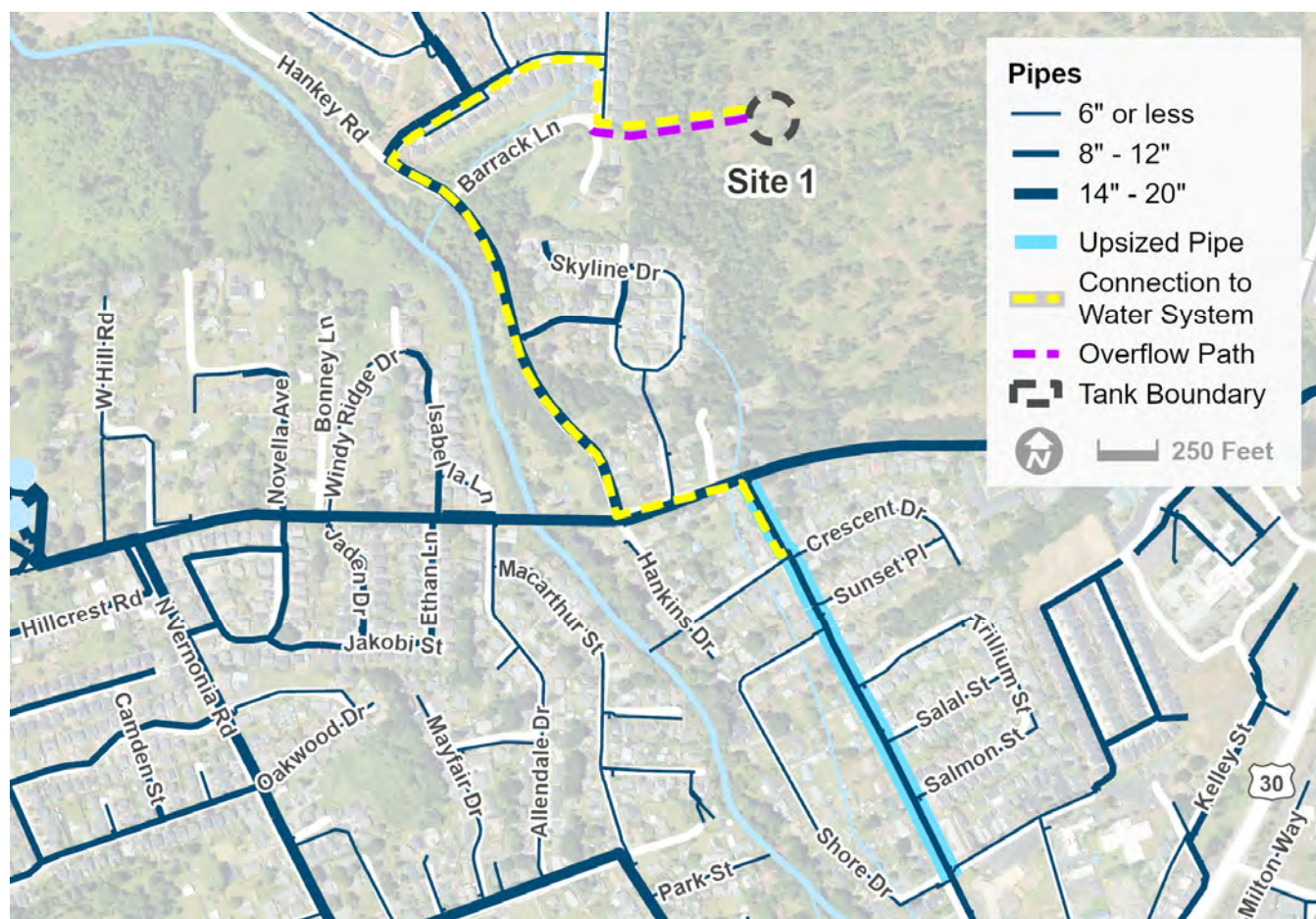


3.1.1. Transmission Analysis

Though Site 1 is located near the existing water system distribution piping, the nearby pipes are a part of the High PZ. For this reason, approximately 5,000 feet of new transmission line would be required to connect to the Main PZ piping as illustrated in **Figure 15**. The new pipeline would be constructed parallel to the existing Elk Ridge Reservoir fill/discharge line in Elk Meadows Drive and Hankey Road. Modeling indicates that a 24-inch diameter pipeline would be recommended to reduce headloss as it fills and empties. The larger diameter would improve the pipeline's ability to empty to meet PHD and fire flow demands.

To fill or empty from Site 1, water would flow north from an existing 14-inch pipe along Columbia Road through a single 12-inch pipe along Sunset Boulevard. The City's most recent GIS mapping shows a 380-foot section 8-inch pipe along Sunset Boulevard south of Shore Drive. North of Columbia Boulevard., the tank fill/discharge line does not have any other connections with other portions of the Main PZ. This means, if a break occurs in the 12-inch pipe along Sunset Boulevard or in the new transmission line in Hankey Road/Elk Meadows Drive, the reservoir would either have reduced transmission capacity or would not be able to be utilized at all. **Figure 16** depicts the transmission limitations associated with Site 1. To improve the resiliency of the system, a connection to the High PZ pipe could be made so there is a redundant source of supply to fill the tank. A pressure reducing valve (PRV) would be required to lower the HGL back to the Main PZ hydraulic grade line.

FIGURE 16: SITE 1 TRANSMISSION LIMITATIONS



During PHD, with both reservoirs set to the same hydraulic grade, the existing reservoir would empty at rate of more than two times that of the potential new reservoir at Site 1. This indicates the existing 12-inch/8-inch pipe along Sunset Boulevard is a transmission bottleneck that limits the influence of the new reservoir. It is recommended that the 12-inch pipe along Sunset Boulevard would be upsized to 24-inches, to ensure that both reservoirs empty at approximately the same rate.

3.1.2. Operation and Controls

The MDD extended period simulation shows that the existing 2.5 MG reservoir has a higher turnover rate than the new Site 1 reservoir. This is a result of the smaller transmission pipes leading to the Site 1 reservoir, meaning that the headloss for transmission would be greater and the empty and fill rates would be longer. The existing reservoir has approximately 2-3 feet of operating depth while the new Site 1 reservoir has less than 1 foot. This could lead to water stagnation in the new reservoir with an increased water age and potential for low chlorine residuals. Furthermore, if the WFF controls remain based on the existing 2.5 MG reservoir, the new Site 1 reservoir would not reach its full level before the WFF turns off. To address this, an altitude valve would be required on the existing 2.5 MG reservoir and the WFF 'off' setting would be recommended to be controlled using the level in the new reservoir. The 2.5 MG reservoir would drain much faster than the new reservoir, so the WFF 'on' setpoint would be recommended to be controlled by the level in the 2.5 MG reservoir rather than the new reservoir.

3.1.3. Pressure and Fire Flow Conditions

The local system pressures and available fire flow which would be influenced by the new Site 1 Reservoir are primarily located along Sunset Boulevard, north of Columbia Road. Existing PHD pressures are between 40-60 psi and no existing deficiencies were identified in the WMP. The available fire flow along Sunset Boulevard meets the required fire demand except for a few dead-end lines. The new Site 1 Reservoir will increase the available fire flow within this area, but as mentioned, there are no existing deficiencies.

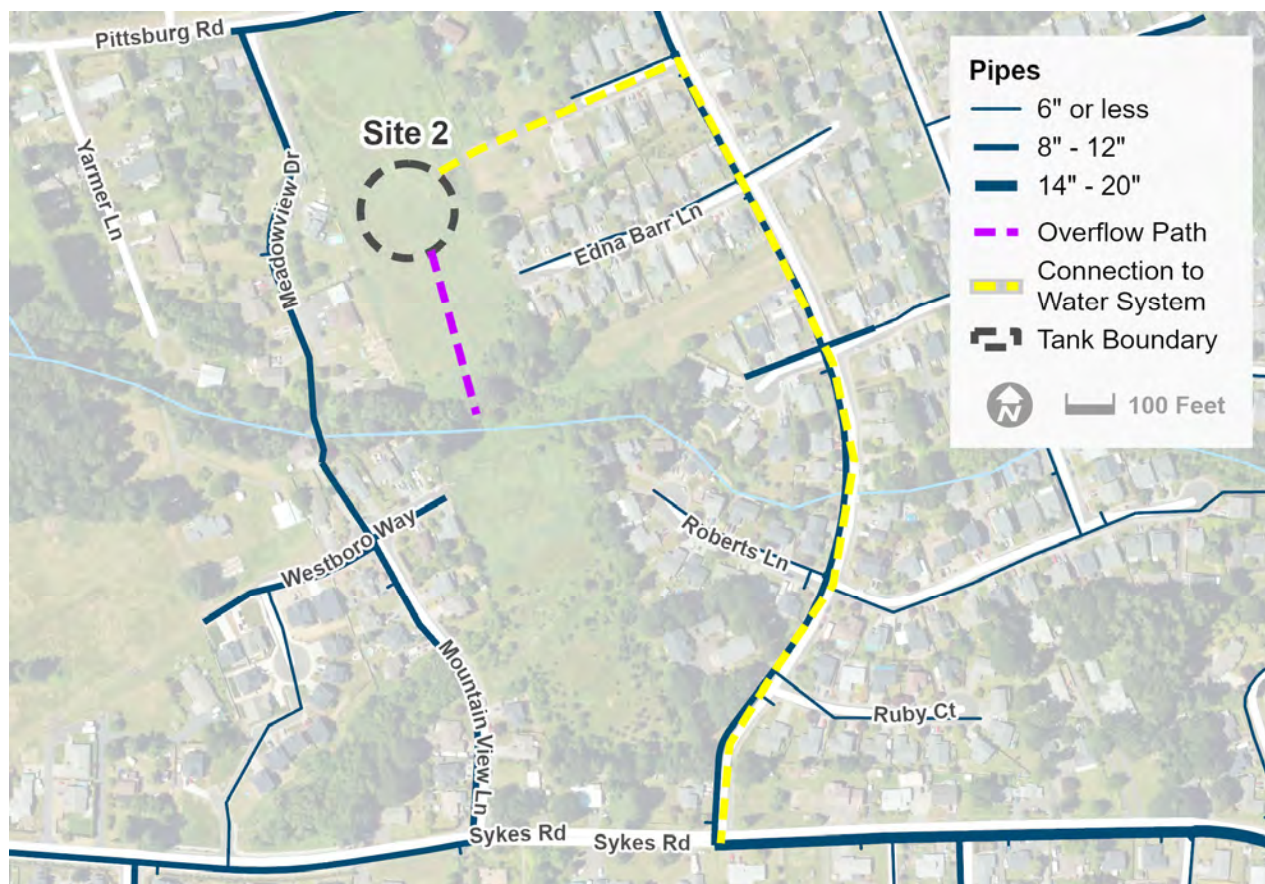
3.1.4. Overflow Analysis

The maximum overflow rate for the new Site 1 without increasing the pipe size along Sunset Boulevard is expected to be 1,000 gpm which would correspond to a volume of 15,000 gallons of overflow volume at the maximum period before for city operator response (15 minutes). If the transmission piping is upsized along Sunset Blvd., the max overflow rate would be increased to approximately 2,200 gpm and a volume of 33,000 gallons. Approximately 900-1,000 feet of overflow piping will need to be constructed to connect to the existing stormwater system. The proposed overflow/drain pipeline would connect to an existing 24-inch stormwater pipe near Wapiti Dr. and Elk Meadows Dr. This storm system discharges into Milton Creek approximately 1,000 ft downstream of the connection point. This stormwater system does not have existing capacity constraints for the flows anticipated under an overflow event.

3.2. SITE 2 HYDRAULIC ANALYSIS

The location of Site 2 and the preliminary pipe alignment are illustrated in **Figure 17**. The following sections discuss the transmission, operation, pressure and fire flow, and overflow considerations specific to this site.

FIGURE 17: SITE 2 CONNECTION TO EXISTING WATER SYSTEM AND OVERFLOW SYSTEM



3.2.1. Transmission Analysis

Similar to Site 1, Site 2 is also located close to the existing water system distribution piping on Pittsburg Rd. However, the nearby lines are a part of the High PZ. Approximately 2,400 feet of new transmission line would be required to connect to the existing Main PZ piping as illustrated in **Figure 17**. The new pipeline would be constructed parallel to an existing 8-inch waterline along Barr Avenue. A 24-inch diameter pipeline is recommended to reduce headloss while the reservoir fills and empties. The larger diameter will improve its ability to be emptied to meet PHD and fire flow demands.

The transmission network to Site 2 is well looped and there are multiple paths through the system to fill the reservoir. The only single transmission pathway would be the new 24-inch line along Barr Avenue to the new reservoir. While the transmission piping would be more resilient than Site 1, a connection from the High Zone from Barr Avenue could be considered as an alternative fill point for resiliency if there was a line break in the new 24-inch pipe.

During PHD, with both reservoirs set to the same hydraulic grade, the existing reservoir would empty at a slightly higher flow rate than the new reservoir, indicating good transmission from the new tank site to the system. There is an existing 20-inch pipe along Sykes Rd. and Columbia Blvd. that has multiple looped interconnections. No transmission bottlenecks were identified to or from Site 2.

3.2.2. Operation and Controls

The MDD extended period simulation shows that the existing 2.5 MG reservoir and the new reservoir would operate well together and have similar turnover. The existing 2.5 MG reservoir would fill slightly faster than the new reservoir because it is located closer to the WFF. An altitude valve should be installed on the existing 2.5 MG reservoir so it can stop filling while the new reservoir finishes filling. The 2.5 MG reservoir would also empty slightly faster; however before the pumps from the WFF are given the indication to turn on, the two tank levels are less than 1 foot different. This minimal difference in the emptying rate demonstrates that the reservoirs work well together. The WFF 'on' setting controls could continue to be operated based on the 2.5 MG reservoir, but the 'off' setting should be controlled on the levels in the new reservoir to fully fill the new reservoir during each cycle.

3.2.3. Pressure and Fire Flow Conditions

The local system pressures and available fire flow would see minimal changes from construction of the new reservoir at Site 2. Existing PHD pressures are between 40-60 psi and no existing deficiencies were identified in the WMP. The available fire flow along Sykes Road meets the required fire demand except for a few dead-end and small diameter lines.

3.2.4. Overflow Analysis

The maximum anticipated overflow rate for Site 2 is 1,900 gpm which would result in an overflow volume of 28,500 gallons. The reservoir at Site 2 would be located less than 500 feet north of a branch of McNulty Creek. The overflow/drain line was assumed to be able to be routed directly into this water body and no connection to the existing stormwater system would be required.

3.3. SITE 3 HYDRAULIC ANALYSIS

The location of Site 3 and the preliminary pipe alignment are illustrated in **Figure 18**. The following sections discuss the transmission, operation, pressure and fire flow, and overflow considerations specific to this site.

FIGURE 18: SITE 3 CONNECTION TO EXISTING WATER SYSTEM AND OVERFLOW SYSTEM



3.3.1. Transmission Analysis

Site 3 is also located on the west side of the City limits along Sykes Road. Approximately 2,600 feet of new transmission line will be required to connect to the existing Main PZ piping as illustrated in **Figure 18**. The new pipe will be constructed in Sykes Road and connect to the existing 20-inch pipe at Sykes Road and Barr Ave. Similar to the other two sites, a 24-inch diameter pipeline is recommended to reduce headloss as it fills and empties. The larger diameter will improve its ability to be emptied to meet PHD and fire flow demands.

The transmission network description for Site 3 is the same as Site 2 because they connect to the Main PZ at the same location. As described in the Site 2 transmission analysis, the system is well looped and there are multiple paths through the system to fill the reservoir and the only single transmission pathway would be the new 24-inch line along Sykes Road to the new reservoir.

During PHD, with both reservoirs set to the same hydraulic grade, the new reservoir empties at a slightly higher flow rate than the existing reservoir indicating good transmission from the new tank site to the system.

There is an existing 20-inch pipe along Sykes Road and Columbia Boulevard and has multiple looped interconnections. No transmission bottlenecks were identified to or from Site 3.

3.3.2. Operation and Controls

The operation and controls for the Site 3 Reservoir are very similar to Site 2. The MDD extended period simulation shows that the existing 2.5 MG Reservoir and the new reservoir operate well with each other and have similar turnover. The existing 2.5 MG Reservoir fills slightly faster than the new reservoir because it is located closer to the WFF. An altitude valve should be installed on the existing 2.5 MG Reservoir so it can stop filling while the new reservoir finishes filling. The 2.5 MG Reservoir also empties slightly faster; however, before it triggers the WFF to turn on, the two tank levels have a difference of less than one foot. The WFF controls can continue to be turned on based on the 2.5 MG Reservoir, but to fully fill the new reservoir with each cycle, the 'off' setting should be based on the new reservoir levels.

3.3.3. Pressure and Fire Flow Conditions

The local system pressures and available fire flow would see minimal changes as a result of constructing the new reservoir at Site 3. Existing PHD pressures are between 40-60 psi and no existing deficiencies were identified in the WMP. The available fire flow along Sykes Road meets the required fire demand with the exception of a few dead-end and small diameter lines.

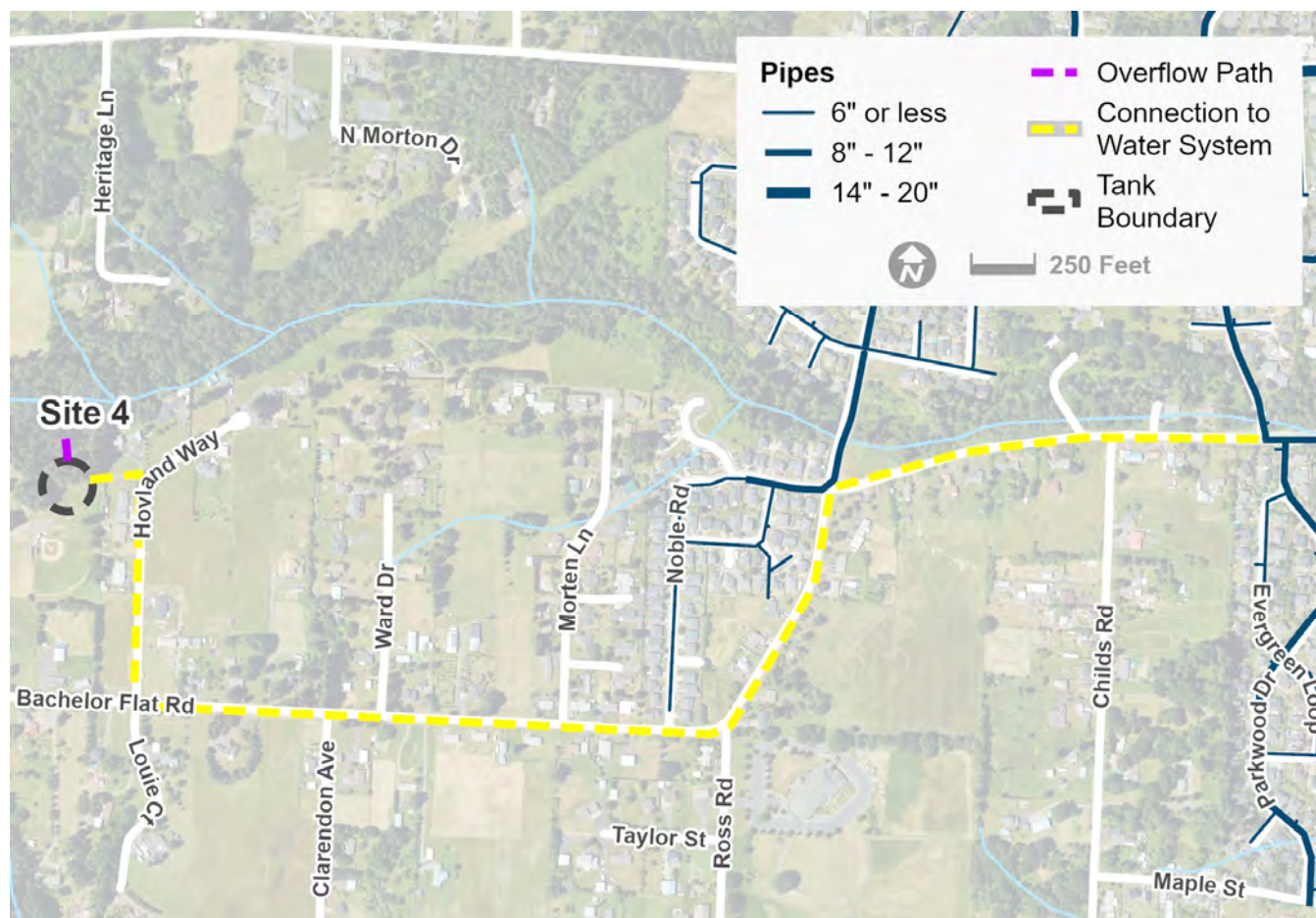
3.3.4. Overflow Analysis

The maximum anticipated overflow rate for Site 3 is 1,800 gpm which would result in an overflow volume of 27,000 gallons. Approximately 1,400 feet of overflow piping would need to be constructed to connect to the existing stormwater system. The proposed overflow would drain into an existing 12-inch pipe along Sykes Road at Summit View Dr. This system does not have existing capacity constraints for the flows anticipated during an overflow event. It should be noted that this manhole is very shallow (approximately 3 feet deep). There is a constant slope from the reservoir site to this point, however once the pipe is near the connection point, the cover depth on top of the pipe is likely between 2.5 and 3.0 feet. If additional cover is required, the first segment of the existing storm pipe could be reconstructed deeper and at a shallower slope.

3.4. SITE 4 HYDRAULIC ANALYSIS

The location of Site 4 and the preliminary pipe alignment are illustrated in **Figure 19**. The following sections discuss the transmission, operation, pressure and fire flow, and overflow considerations specific to this site.

FIGURE 19: SITE 4 CONNECTION TO EXISTING WATER SYSTEM AND OVERFLOW SYSTEM



3.4.1. Transmission Analysis

Site 4 is located outside of the City limits but within the Urban Growth Boundary (UGB). This site would have the longest new pipeline required to connect to the existing system with about 6,300 feet of new transmission pipe required. The new transmission pipe would be installed along Bachelor Flat Road and connect to the existing Main PZ at Whitetail Avenue as illustrated in **Figure 19**. Similar to the other three sites, a 24-inch diameter pipeline is recommended to reduce headloss while filling and emptying. The larger diameter would improve the reservoir's ability to be emptied to meet PHD and fire flow demands.

The connection to the existing Main PZ piping would be a 12-inch pipe that is well looped with the system. The 12-inch pipe splits at Columbia Boulevard and Gable Road, each with a 12-inch line. Apart from the new 6,300 feet of new pipe the system has multiple paths to fill the tank, and no improvements are recommended to improve redundancy.

During PHD, with both reservoirs set to the same hydraulic grade, the new reservoir would empty at a lower flow rate than the existing reservoir indicating the transmission is not as good as Site 2 and Site 3, but no specific bottleneck was identified.

3.4.2. Operation and Controls

The MDD extended period simulation shows that the existing 2.5 MG Reservoir has higher turnover than the potential Site 4 reservoir. This is primarily a result of the new reservoir being farther from the WFF and the transmission pipes are reduced to 12-inches west of Sykes Rd. The water level in the new reservoir would be about 2 feet lower than the existing reservoir level when the 2.5 MG Reservoir reaches its full setpoint. The new reservoir would be about 1 foot higher than the existing reservoir at its low setpoint. This difference in turnover could lead to water stagnation in the new reservoir with an increased water age and potential for low chlorine residuals. To correct this, an altitude valve would be recommended to be installed on the 2.5 MG reservoir to stop the 2.5 MG reservoir from filling while the new reservoir continues to fill and the WFF off setpoint would be based on the new reservoir level. Because the 2.5 MG reservoir would also drain faster than the new reservoir, the WFF on setpoint should remain controlled by the 2.5 MG reservoir level. This would ensure that the water level in the 2.5 MG reservoir will not get too low.

3.4.3. Pressure and Fire Flow Conditions

The local system pressures and available fire flow would see minimal changes as a result of constructing the new reservoir at Site 4. Existing PHD pressures are between 40-60 psi and no existing deficiencies were identified in the WMP. The available fire flow along Gable Rd. meets the required fire demand apart from a few dead-end and small diameter lines.

3.4.4. Overflow Analysis

The maximum anticipated overflow rate for Site 4 is 1,500 gpm which would result in an overflow volume of 22,500 gallons. The Site 4 reservoir would be located just south of a branch of McNulty Creek. The overflow/drain line was assumed to be routed directly into this water body with no required connection to the existing stormwater system.

4 - GEOTECHNICAL AND SEISMIC CONSIDERATIONS

Shannon & Wilson completed site visits and subsurface explorations for Sites 2, 3, and 4, which included three borings ranging from 36.5 to 61.5 feet below ground surface (bgs). Soil samples were tested in the lab for moisture content, Atterberg limits, and particle size distribution.

Note that subsurface investigations could not be conducted at Site 1 because the property owner rejected the right of entry agreement, citing a disinterest in selling either of the two parcels in question. Data collected regarding the conditions of Site 1 was collected via a desktop analysis only.

A geotechnical report with the findings from Sites 2 through 4 was submitted to Keller in November 2025. Key results from that report, along with the findings from the desktop analysis for Site 1, are summarized in this section. A full copy of the report is available in **Appendix C**.

4.1. GEOTECHNICAL AND SEISMIC SETTING

Site 1 is located on surface geology classified as part of the Sentinel Bluffs unit, consisting of basalt bedrock. Site 1 is near the area of a mapped landslide and the basalt may be overlain by 15-20 feet below ground surface (bgs) of a combination of silt, clay, and sand. Nearby well logs show a silt layer from 25-70 feet bgs overlaying basalt bedrock. The well logs did not indicate whether the basalt was weathered.

Sites 2 through 4 are primarily underlain by Pleistocene-aged Missoula Flood deposits. North of Site 2, mapping indicates the presence of Grande Ronde Basalt. Subsurface explorations at Site 2 confirmed the presence of the colluvial deposits underlain by basalt.

The project area lies within the northern edge of the Cascadia fore-arc, a region affected by both margin-normal subduction and margin-parallel compression. This interaction creates complex deformation and results in large and potentially damaging earthquakes (Magnitude of greater than 6.0). Seismic hazards in this area are associated with three key sources:

- The locked portion of the Cascadia Subduction Zone (CSZ), which can generate large megathrust earthquakes.
- The deep intraslab section of the CSZ, within the subducting Juan de Fuca Plate, which is responsible for Wadati-Benioff zone events.
- Shallow crustal faults in the overriding North American Plate.

All three seismic sources could influence ground motion hazards at the project site.

4.2. FIELD MEASURED SUBSURFACE CONDITIONS

4.2.1. Site 2

The boring of Site 2 was made up of largely 3 different units:

- Colluvium (0-14.5 ft bgs): Dense Clayey Gravel with Sand (GC), very dense Silty Gravel with Sand (GM), and medium dense/very stiff Sandy Silt to Sandy Silt with Gravel (ML);
- Predominantly Decomposed Grande Ronde Basalt (14.5-17.5 ft bgs): Predominantly decomposed to medium dense Silty Sand (SM); and
- Grande Ronde Basalt (17.5-36.5 ft bgs): Extremely weak to weak (R0–R2), slightly to highly weathered.

4.2.2. Site 3

Site 3 consisted mainly of two different units:

- Fill (0-7 ft bgs): Includes pavement and base aggregate section; very stiff Lean Clay with Sand (CL).
- Missoula Flood Deposits – Fine-Grained Facies (7-61.5 ft bgs): Stiff Silt with Sand (ML), and medium stiff to very stiff Lean Clay (CL).

4.2.3. Site 4

The boring of Site 4 was made up of largely 3 different units:

- Colluvium (0-12 ft bgs): Medium dense Silty Sand (SM), medium dense Silt with cobbles (ML), stiff Silt (ML), and medium stiff Elastic Silt (MH).
- Missoula Flood Deposits – Fine-Grained Facies (12-37.5 ft bgs): Very soft to medium stiff Lean Clay (CL) and medium stiff Fat Clay (CH).
- Sandy River Mudstone (37.5-61.5 ft bgs): Medium stiff to stiff Fat Clay (CH).

4.3. GROUNDWATER CONDITIONS

Groundwater levels were measured during drilling by lowering a water level indicator through the hollow-stem auger. The measured groundwater levels are tabulated in **Table 2**.

TABLE 2 . MEASURED GROUNDWATER CONDITIONS

Site	Borehole	Date	Water level in feet bgs
Site 2	B-1	9/24/2025	9.5
Site 3	B-2	9/25/2025	15.7
Site 4	B-3	10/21/2025	15

Groundwater levels are expected to vary depending on topography and precipitation.

4.4. GEOTECHNICAL CONSTRUCTION CONSIDERATIONS

The following provides an overview of the geological hazards and preliminary foundation design considerations for each site.

4.4.1. Site 2

Subsurface investigations at Site 2 indicate low risk for seismic and geologic hazards. The potential for liquefaction, lateral spreading, and landslides is minimal due to dense soils, low groundwater levels, and relatively flat terrain. The site is classified as Site Class C for seismic design per the 2022 Oregon Structural Specialty Code.

Soils consist of medium dense to very stiff colluvium overlying decomposed and intact Grande Ronde Basalt. These materials are expected to have low compressibility and support shallow foundation systems. An allowable bearing capacity of 3,000 psf is appropriate for design, assuming removal and replacement of any soft zones with compacted fill.

Excavation to depths greater than 5 feet is not anticipated. Standard earthwork equipment should be adequate, and specialized rock removal methods are not expected to be necessary. Groundwater levels are low and unlikely to impact construction, but internal sump pits can be used if needed.

4.4.2. Site 3

Site 3 presents low seismic and geologic risk. Liquefaction and lateral spreading potential are minimal due to deep groundwater and cohesive soils. The site has flat topography, and landslide or surface fault rupture hazards are also considered low. According to the 2022 Oregon Structural Specialty Code, the site is classified as Site Class E based on standard penetration testing data, but future classifications (ASCE 7-22) may place it in Site Class D or E based on shear wave velocity.

Soils encountered include medium-stiff to stiff Missoula Flood Deposits with occasional softer layers. These are expected to be moderately compressible below 10 feet. Conventional shallow foundations are considered feasible, though design may require limiting water tank height or using a structural mat foundation. An allowable bearing capacity of 2,000 psf is recommended, with over-excavation and replacement required in soft zones.

The site is densely vegetated with mature trees and a thick root zone that will need full removal. Grubbing may cause extensive soil disturbance, requiring replacement with imported granular structural fill. Native soils are unlikely to be reusable except during dry summer conditions. Standard earthwork equipment should be sufficient, but excavation should proceed in small sections to manage moisture and fill placement effectively.

4.4.3. Site 4

Subsurface conditions at Site 4 suggest moderate seismic risk, with some soils showing susceptibility to liquefaction and potential for limited lateral spreading and settlement. While no significant liquefaction is expected, localized landslide hazards were observed along the northern slope above the creek. Setback distances should be established in accordance with the Oregon Structural Specialty Code, and further landslide analysis is recommended. The site is classified as Site Class E (likely to fall within Class E, DE, or D under future ASCE 7-22 criteria).

Soils consist of medium-stiff colluvium overlying soft Missoula Flood Deposits and Sandy River Mudstone. A zone of very soft clay between 12- and 23-foot depth makes shallow foundations unsuitable. Deep foundations, such as auger cast piles embedded in a structural mat, are recommended to ensure stability and mitigate settlement. Driven piles may be feasible but should be evaluated due to potential vibration impacts on nearby residences.

Construction will require specialty contractors for deep foundations, and auger cast piles are preferred for lower noise and vibration but may be more expensive. Vegetation removal will be necessary, particularly in the northern portion of the site, which is densely wooded with a significant root zone. Grubbing will disturb soils, requiring removal and replacement with compacted imported fill.

5 - PERMITTING AND ENVIRONMENTAL COMPLIANCE

An analysis of potential environmental and permitting considerations for Sites 1-4 was completed by SWCA, Inc (November 2025). Their conclusions are summarized in this section and a full report is available in **Appendix D**. The review included Landownership, Land Use, Zoning, Aquatic Resources, Vegetation and Habitat, Special-Status Species, Archaeological Historical and Cultural Resources, Visual Impacts and Aesthetics, Hazardous Materials and Permit implications.

5.1. AQUATIC RESOURCES AND VEGETATION AND HABITAT IMPLICATIONS

The following table provides an overview of the aquatic features and information on the National Land Cover Database (NLCD) data, as well as the category according to the Oregon Department of Fish and Wildlife (ODFW) for each tank site. For the ODFW Category, the lower the number, higher the quality of the habitat. For a detailed view of the estimate of the acreage of ODFW habitat categories see **Appendix D**. A habitat assessment is required for all site locations.

TABLE 3 . AQUATIC FEATURES, VEGETATION, AND HABITAT

Tank Site	Aquatic Features	Vegetation & Habitat Summary
1	None within parcel. Two mapped streams crossed by connection line (existing culverts assumed).	Developed (40.4%) and mixed forest (34.9%). Tank site is herbaceous/wooded. Habitat: Douglas-fir–Western Hemlock Forest (42.1%), low-quality habitat (Category 5-6)
2	Mapped Wetland features: <ul style="list-style-type: none"> • Riverine, Intermittent Streambed, Seasonally Flooded (0.06 acre)* • Palustrine emergent (0.55 acre) • Mapped Water features: • Perennial Stream/River (317 linear feet) 	Developed (64.9%), tank site is herbaceous open space. Habitat: Developed-Upland mix (68.8%). Some emergent wetlands are present, likely Category 3-5 habitat.
3	No mapped wetlands or water features.	Developed open space (51.1%), tank site appears forested. Habitat: Douglas-fir–Western Hemlock Forest (47.8%), likely low-moderate quality (Category 4-5).
4	Mapped Wetland features: <ul style="list-style-type: none"> • Riverine, Intermittent Streambed, Seasonally Flooded (0.36 acre) • Mapped Water features: • Intermittent Stream/River (1,056 linear feet) 	Pasture (40.7%) and developed open space (37.7%). Tank site is grassland/forest. Habitat: Agricultural Pasture (34.3%), likely low to moderate quality (Category 4-6).

For Site 2, the associated regulatory buffers (50 to 75 feet) cover approximately 22% (2.65 acres) of the 12-acre parcel. Although the tank footprint avoids direct intersection with these resources, it lies approximately 240 feet from the stream buffer and 630 feet from the wetland buffer. The proposed water line crosses the stream along an existing road assumed to contain a culvert, likely avoiding removal-fill impacts. However, the overflow path would discharge into the stream and may require a sensitive lands permit due to disturbance within the buffer, as well as a discharge permit from ODEQ.

Site 4 includes a 0.36-acre riverine wetland and a 1,056-foot intermittent stream, which may be part of the same drainage. These features occupy about 1.6% of the 22-acre site, with estimated protective buffers potentially extending up to 2 acres. The tank site avoids these features and lies approximately 100 feet away. While the overflow path is expected to discharge above the ordinary high water line, construction within the buffer may still require County permitting under Columbia County Zoning Ordinance Section 1170, as well as ODEQ approval for any discharges.

In both cases, the use of directional drilling is anticipated to reduce construction-related impacts within regulated buffers. However, formal delineations and agency coordination will be required to confirm jurisdictional boundaries and determine final permitting requirements.

5.2. SPECIAL-STATUS SPECIES

Special-status species include species protected or managed under the federal Endangered Species Act (ESA), Oregon Endangered Species Act, Migratory Bird and Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (BGEPA). For overview only, the species that may occur on each site are listed below.

Site 1

- Columbian white-tailed deer
- Monarch butterfly
- Suckley's cuckoo bumble

Site 2

- Northwestern pond turtle
- Monarch butterfly
- Suckley's cuckoo bumble
- Nelson's checkermallow

Site 3

- No species listed as expected to occur.

Site 4

- Northwestern pond turtle
- Monarch butterfly
- Suckley's cuckoo bumble

All four tank sites fall within the same U.S. Fish and Wildlife Service (USFWS) IPaC resource area, which identifies 15 bird species of conservation concern (BCC) that may use the project area. These birds are not listed under the Endangered Species Act (ESA) but are considered at risk without conservation efforts.

All native migratory birds, including BCC species, are protected under the Migratory Bird Treaty Act (MBTA), which prohibits incidental take of birds, eggs, or active nests. While habitat removal or destruction of unoccupied nests is not restricted, construction activities that could disturb nesting birds are regulated.

Given the presence of suitable habitat and nearby wetlands, Sites 2 and 4 may attract nesting birds. To stay in compliance with the MBTA, surface disturbance and vegetation clearing should be avoided between February 1 and August 31. If construction must occur during this period, pre-construction nest surveys are recommended. Coordination with the Oregon Department of Fish and Wildlife (ODFW) is also advised to confirm nesting windows and any site-specific recommendations.

5.3. ARCHAEOLOGICAL, HISTORICAL, AND CULTURAL RESOURCES

SWCA anticipates that archaeological, historic, and cultural resources could require surveys, studies, and agency coordination as part of the overarching land use permitting process. The results of the background review indicate that none of the sites have been surveyed for cultural resources with only a regional desktop analysis having occurred across the four sites.

If there is a federal- or state-level regulatory nexus, formal consultation with interested Tribal entities and SHPO under Section 106 of the National Historic Preservation Act (NHPA) is required and would be the responsibility of the lead federal agency charged with issuing the federal permit.

5.4. VISUAL IMPACTS AND AESTHETICS AND HAZARDOUS MATERIALS

Overall, Sites 2 and 4 are expected to result in greater visual impacts compared to Sites 1 and 3 as they appear less likely to be visible based on the presence of intervening vegetation and the distance between tanks and nearby residents.

Based on review of the Oregon State Fire Marshall's Hazardous Substance Incidents database, there are nine recorded incidents within a 0.5-mile buffer of the sites. Given that these incidents did not occur within the sites themselves, they are not expected to impact or be impacted by the project.

5.5. SUMMARY OF REQUIRED PERMITTING EFFORTS BY SITE

The following table provides an overview of the probability of permits being triggered depending on the site location.

TABLE 4 . PERMITS AND PERMIT APPLICABILITY

Permit	Permit Trigger	Site 1	Site 2	Site 3	Site 4
USACE Removal-Fill Permit	Discharges of dredged or fill material into WOTUS, including their adjacent wetlands.	-	Low	-	Moderate
USFWS EAS Section 7 consultation	Actions that have a federal nexus (e.g., federal funding or federal permit) and may affect federally listed species or their critical habitat.	Low	Low	Low	Low
USFWS BGEPA compliance	Projects that may result in the take of eagles, including their parts, nests, or eggs.	Low	-	-	-
USFWS MBTA compliance	Projects and activities that have the potential to result in take of migratory birds.	High	High	High	High
DSL Removal-Fill Permit	Removal of material from, or placement of fill in, waters of the state (50 cubic yards or greater), or any amount of removal/fill in state-designated Essential Salmonid Habitat.	-	Low	-	Moderate
ODEQ CWA Section 401 WQC	Discharge of fill material into or removal of substrate or sediment in WOTUS and waters of the state that also require a federal Removal-Fill Permit from the USACE.	-	Low	-	Moderate
ODEQ 1200-C Permit	Construction Stormwater General Discharge Permit	High	High	Low	High
ODEQ NPDES Permit	Discharges of pollutants into surface waters of the state.	-	Moderate	-	Moderate
ODA Listed Plant Permit or Consultation	Any land action on Oregon non-federal public lands which results in, or might result in, the taking of a threatened or endangered plant species.	-	Moderate	-	-

Permit	Permit Trigger	Site 1	Site 2	Site 3	Site 4
SHPO Section 106	Required if there are potential impacts to cultural and/or historical resources that are listed in or eligible for listing in the NRHP	-	Low	-	Moderate
Columbia County Zoning Review	Development of “reservoirs and water impoundments” in the PF-80 zoning designation.	High	-	-	-
Columbia County Determination of Similar Use (DSU)	Proposed uses in the CS-I zoning designation that are not explicitly permitted, but may qualify as “other uses found similar by the Planning Commission”	-	-	-	High
Columbia County Type 2 Site Design Review	All new development of community or governmental uses which is not explicitly exempted.	High	-	-	High
City of St. Helens CUP	Development of “major public facility” within the R7 zoning designation.	-	High	High	-
City of St. Helens Sensitive Land Permit	Development (excluding those which are exempted) within significant wetlands, riparian corridors, and protective buffers, as defined under SHMC 17.40.	-	Low	-	-
City of St. Helens Erosion Control and Sediment Prevention Permit	Sites disturbing 5,000 square feet or greater, or sites disturbing 1,000 square feet that are within 50 feet of a water body or wetland.	-	High	High	-

6 - LAND USE AND PLANNING

The parcels for Sites 1, 2, and 3 are currently privately owned. Only Site 4 is owned by the County. Sites 2 and 3 are located within the St. Helens City limits, whereas Sites 1 and 4 are located outside the city limits. Planning authorities from both the City and the County were engaged to confirm the land use, zoning, and planning considerations associated with each site.

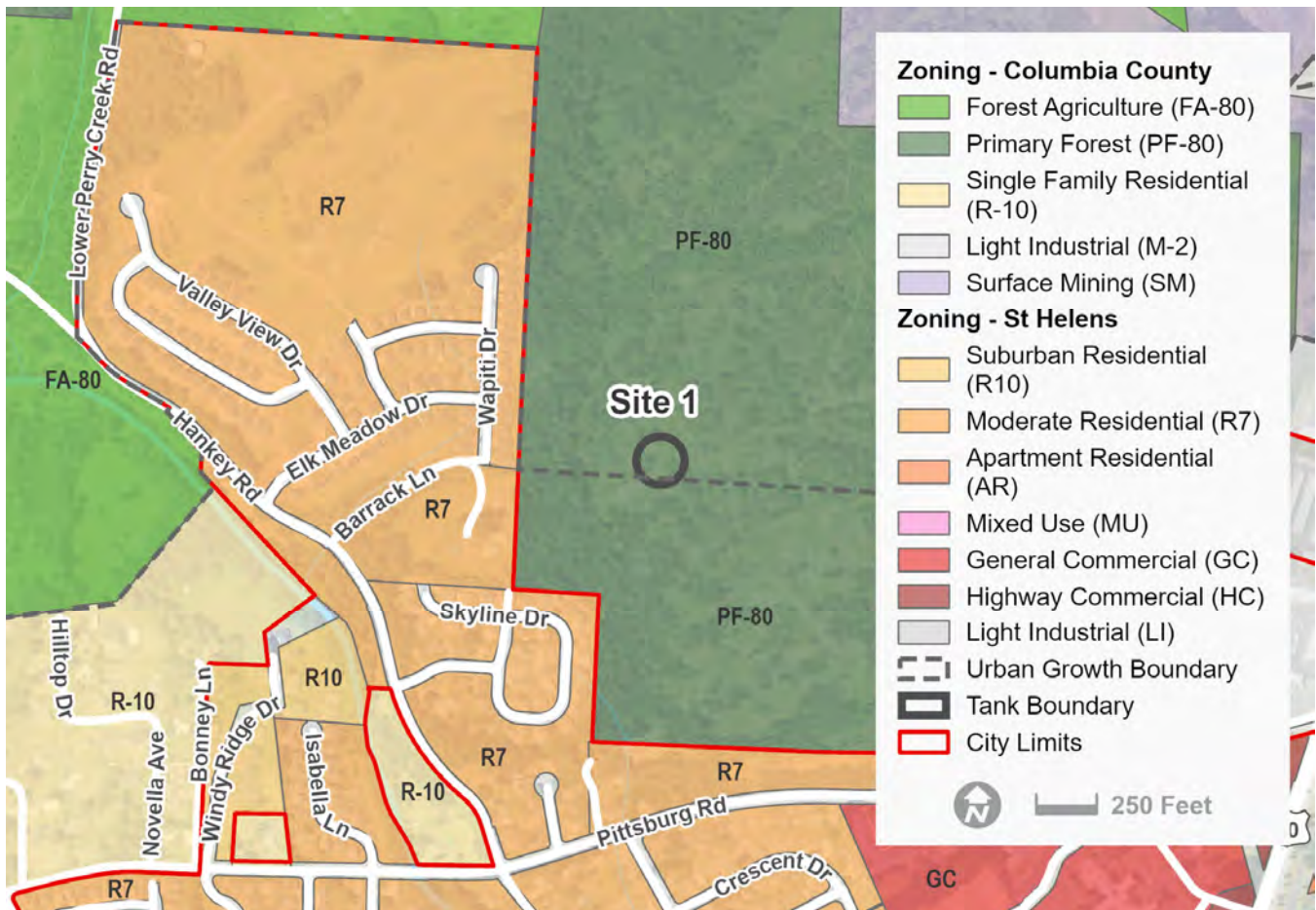
All proposed overflow/drain paths are planned to be within the same tax lots as their associated tank, whereas all the proposed water line connections would extend outside of the tax lot boundaries and would follow along existing public right-of-way lines. The City indicated that all pipelines through the public right-of-way would require a Conditional Use Permit.

6.1. SITE 1

Site 1 is located outside St. Helens City limits in Columbia County, partially within and partially outside of the UGB. The site is within the County’s Primary

Forest (PF-80) zoning designation. The PF-80 zone is designed to conserve and manage forest lands for timber production and related uses, while also allowing other types of compatible uses such as recreational uses, locationally dependent uses, or dwellings under certain conditions. **Figure 20** depicts the land use associated with the proposed reservoir site and surrounding uses.

FIGURE 20: SITE 1 LAND USE MAP

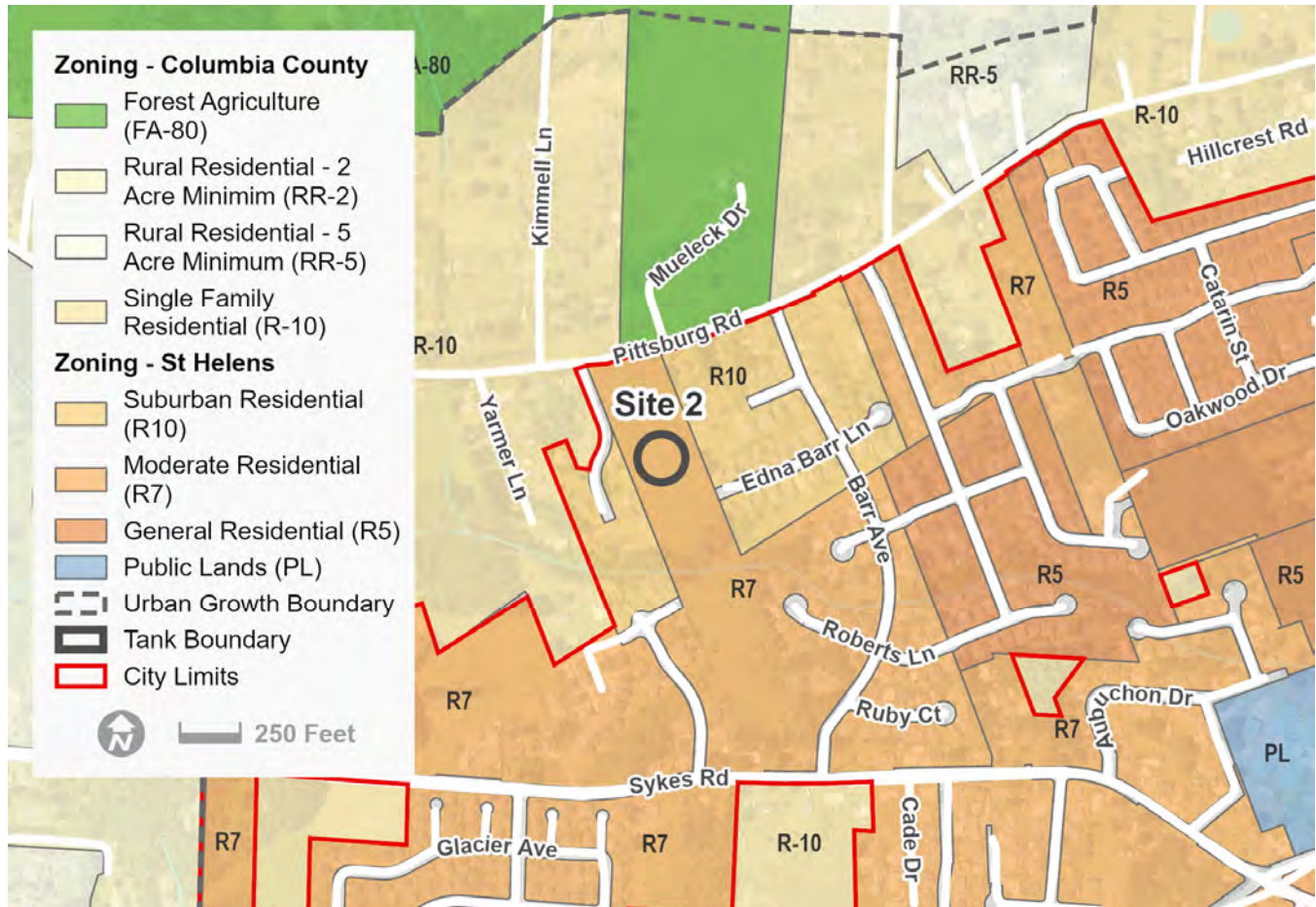


Under the PF-80 designation, the reservoir project would require approval of a Site Design Review application, which may be an administrative or quasi-judicial decision, depending on the size of the development. A pre-application conference will be required. There is also an existing Conditional Use Permit (CU 22-92) for Surface Mine operations on these two parcels.

6.2. SITE 2

Sites 2 is located within the St. Helens City limit and is within the City's Moderate Residential (R7) zoning designation. **Figure 21** shows Site 2 and the nearby zoning designations.

FIGURE 21: SITE 2 LAND USE MAP

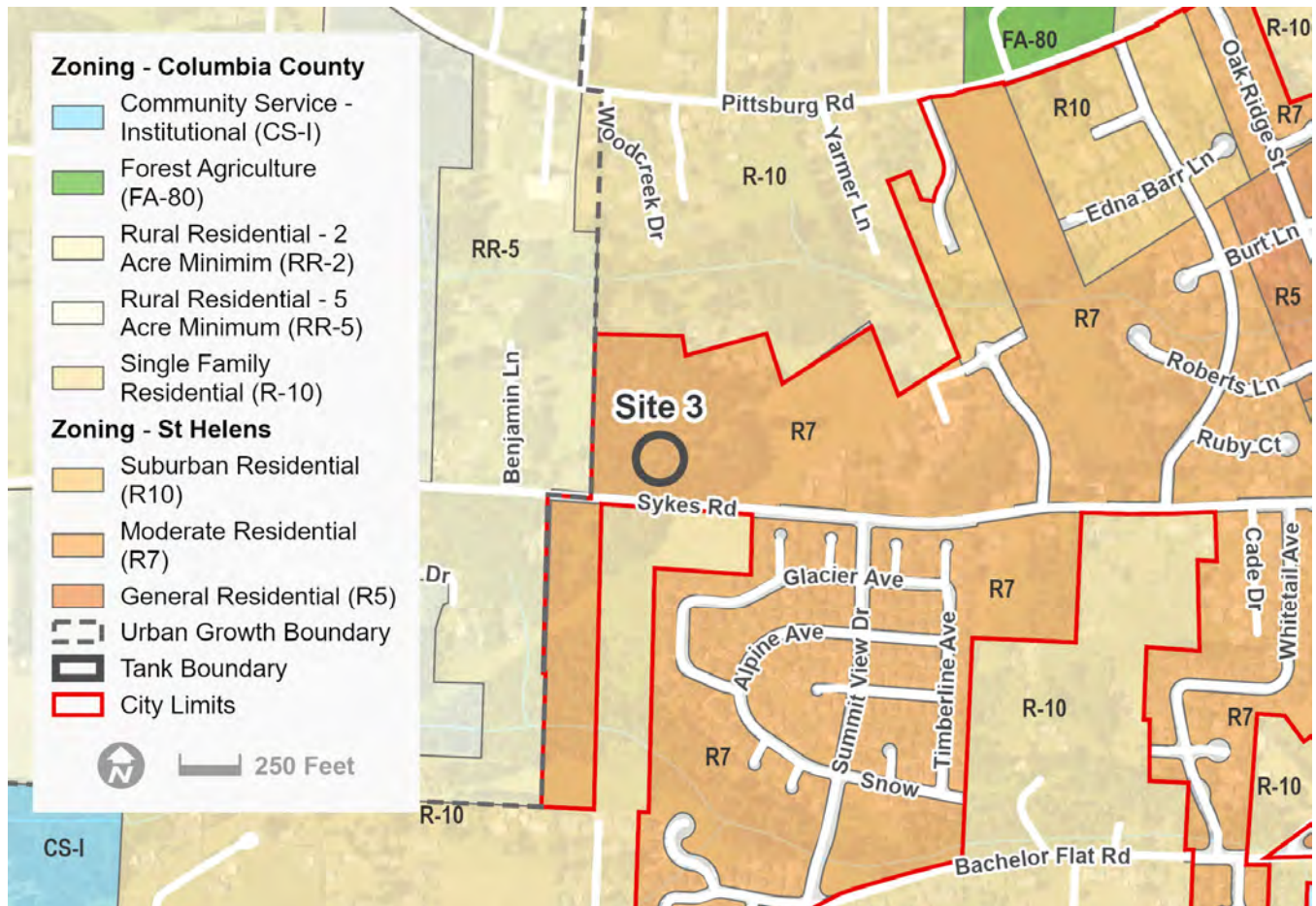


As listed in Section 17.32.060(3)(h) of the St. Helens Community Development Code (SHCDC) “major public facilities,” which includes but is not limited to “water system reservoirs,” are allowed as a conditional use in the R-7 zone. A Conditional Use Permit must be obtained for this property and frontage improvements may be required.

6.3. SITE 3

Site 3 is located within the St. Helens City limit, within the City's Moderate Residential (R7) zoning designation. A map of this site is included in **Figure 22**.

FIGURE 22: SITE 3 LAND USE MAP

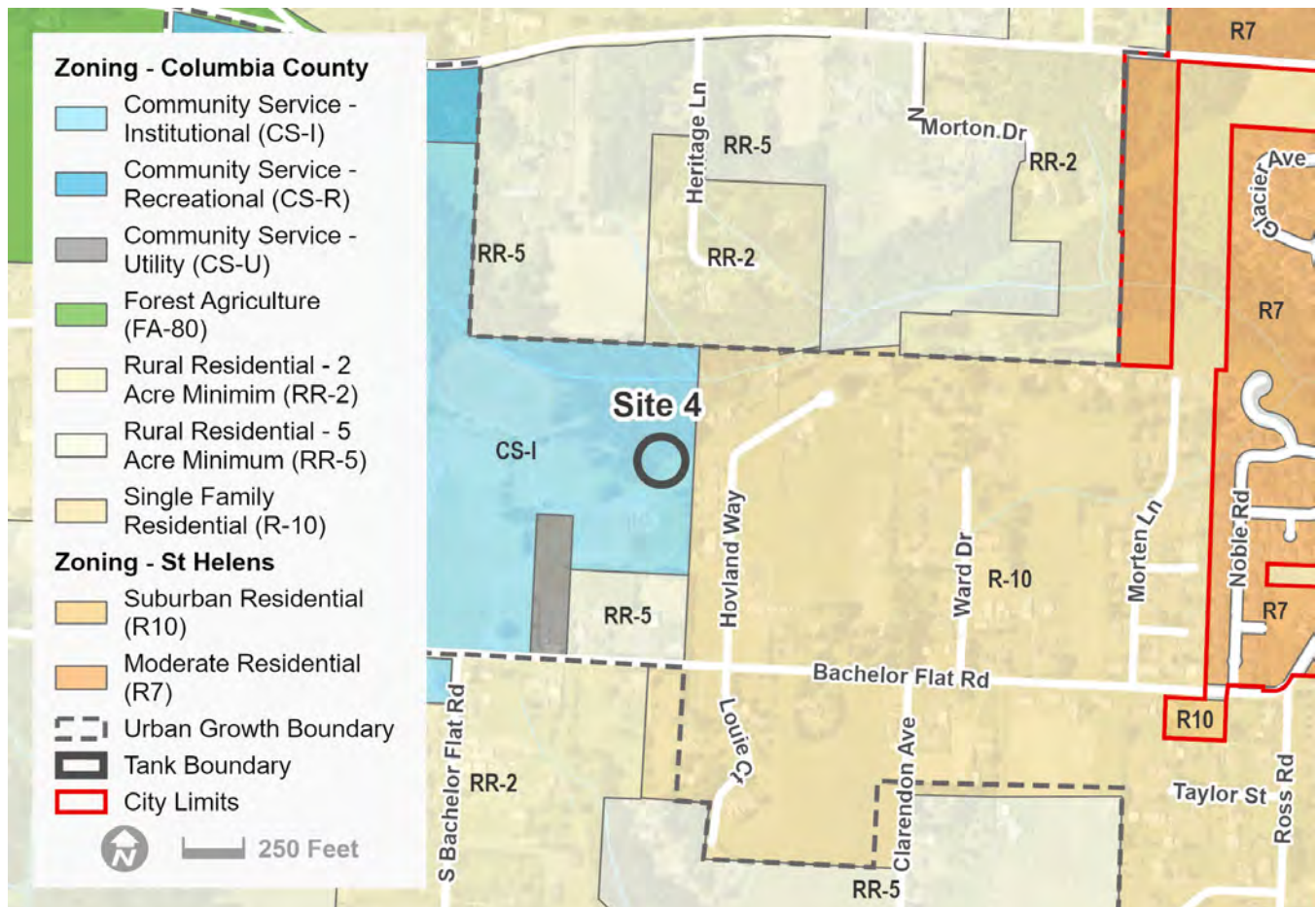


Similar to Site 2, a Conditional Use Permit must be obtained for this property as it falls within the R7 zone. As the City has indicated the intention to purchase only a portion of this property, a land partition would be required. Frontage improvements should be expected.

6.4. SITE 4

Site 4 is located outside St. Helens City limits in Columbia County. The site is within the County's Community Service – Institutional (CS-I) zoning designation. The CS-I zone is intended to provide a mechanism for the establishment of public and private facilities necessary to meet the demand for the various types of public assemblies and public and private institutional facilities. A map showing zoning designations in the area is presented in **Figure 23**.

FIGURE 23: SITE 4 LAND USE MAP



The parcel on which the reservoir would be sited does not explicitly permit reservoirs and water impoundments. However, the County Planning Commission may approve the project as a Permitted Use. This process would require a Determination of Similar Use (DSU) application in conjunction with a Site Design Review application. Additionally, a Pre-Application Conference would be required prior to the submission of the Site Design Review application. Both the DSU and Site Design Review application must be reviewed by the County Planning Commission.

6.5. OWNERSHIP AND ZONING OVERVIEW

An overview of parcel ownership and zoning for all four sites is presented in **Table 5**.

TABLE 5. PROPERTY OWNERSHIP AND ZONING

Tank Site	Ownership	Owner	Tax Lot ID	Zoning
1	Private	Weyerhaeuser NR Company	5N1W3200 1600; 5N1W32DD 100	Columbia County PF-80
2	Private	Comstock Chieko Revocable Trust	4N1W 6AD 2600; 4N1W 6D0 604	City of St. Helens R7
3	Private	Thayer Paul L and Laura R	4N1W 6DB 1203	City of St. Helens R7
4	Public	Columbia County	4N1W 7BB 400	Columbia County CS-I

7 - PROPERTY OWNER COMMUNICATION

Commonstreet Consulting supported communication efforts with property owners by engaging them for involvement as stakeholders, coordinating Right of Entry (ROE) approvals, and discussing potential design concepts with them. This section includes a brief description of the outcomes from property owner communication.

7.1. SITE 1

The Site 1 parcels are owned by Weyerhaeuser, a prominent logging company. The company has an existing long-term lease with Knife River for the use of the adjacent property as a quarry and indicated that they were disinterested in pursuing any potential purchase of the property. Weyerhaeuser rejected the proposed ROE and no subsurface investigations could be conducted.

7.2. SITE 2

The Site 2 property owner expressed interest in selling the property but maintained that preference that the property be purchased in full (both parcels). The property owner granted a ROE agreement for the City to conduct the investigations related to the study.

7.3. SITE 3

Paul and Laura Thayer indicated that they were open to future discussions regarding the purchase of a portion of their property for the future reservoir site. A ROE was not required for this site as the borings were conducted in the public right-of-way.

7.4. SITE 4

Site 4 is located on the County Fairgrounds property and is therefore managed by both the Columbia County Fair Board and the County. The Columbia County Board of County Commissioners approved the ROE. The County has indicated it is open to selling part of the fairground property with certain provisions.

8 - STAKEHOLDER ENGAGEMENT

SWCA supported the development of a Stakeholder Engagement Plan (SEP) for the City's use during the project. The SEP identified stakeholder engagement goals, supported in the development of the stakeholder list, and recommended outreach methods in coordination with the City to achieve the engagement goals. A summary of the SEP is included in this section. The SEP prepared by SWCA is provided in **Appendix E**.

8.1. STAKEHOLDER ENGAGEMENT METHODS

SWCA coordinated with the City to identify several outreach methods to reach the identified stakeholders. These outreach methods are tabulated in **Table 6**.

TABLE 6 . PERMITS AND PERMIT APPLICABILITY

Outreach Method	Description	Responsible	Target Date
Mailing List	Contact information for potentially interested parties will be maintained in a mailing list. This list included individuals and organizations that may be affected by or have an interest in the project. It will serve as the primary distribution list for project-related communications and updates.	City, SWCA	3 weeks prior to public meeting
Public Mailing	Informational postcards were mailed to adjacent landowners for up to four potential reservoir sites. Postcards were sent prior to the public meeting and included information about the project and the public meeting, along with a link to the project website.	SWCA	2 weeks prior to public meeting
Public email blast	Informational emails were emailed to adjacent landowners for the four potential reservoir sites considered. Emails were sent prior to the public meeting and included information about the project and the public meeting, along with a link to the project website.	City	2 weeks prior to public meeting
Newspaper Advertisement	Public meeting details were advertised in the Columbia County Spotlight newspaper to broaden public awareness.	SWCA	Ad will run once: 1 week prior to public meeting
Public Meeting	One in-person public open house occurred in the evening. Meeting materials included sign-in sheets, information boards, and a project handout.	SWCA, Keller, City	November 13, 2025

Keller, SWCA, and the City conducted a public meeting on November 13, 2025. The event was held open-house style, with SWCA preparing boards summarizing the project progress and both Keller and City staff communicating with attendees. This presentation method allowed for one-on-one communication about the attendees' concerns while educating them on the project efforts. Approximately 20 people attended, many of whom requested to be added to the City email list for future reservoir-related communications. No written feedback was provided by attendees at the open house.

8.2. STAKEHOLDER FEEDBACK

Participants in the public meeting described concerns about rate increases associated with the project and communicated their concern that the reservoir may appear visually unappealing. One resident voiced concerns

regarding the impacts of an abandoned landfill site upstream of Site 4. This concern was evaluated by the project team and determined to be unlikely to affect project design or construction.

9 - COST AND CONSTRUCTABILITY

Keller completed a site visit with Walsh Group to evaluate the existing site conditions of Sites 1-4 and determine the relative ranking of construction costs between the four sites. Each site was evaluated on constructability with consideration for site layout, potential laydown areas, access for deliveries, available space for pre-stressed tank wrapping, equipment storage, and site preparation prior to significant construction activities. Capital cost was originally evaluated with consideration for known conditions and was refined later in the process with feedback from pre-stressed concrete tank manufacturers and City preferences.

9.1. SITE EVALUATION RESULTS

9.1.1. Site 1

As the ROE was rejected for Site 1, the site was evaluated from the nearby right-of-way and with additional support from aerial imagery and topographical data available from public data sources. Access to Site 1 would require a driveway connecting the property to the nearby roadways. Site 1 would be expected to require some site preparation in advance of most construction activities. Connections to the Main PZ and to the stormwater system for the overflow/drain require approximately 5,400 linear feet of pipeline, which is the longest overflow/drain pipeline length of the four sites evaluated in depth. The existing pipeline on Sunset Blvd. would need to be upsized from the existing 12-inch to a future 24-inch pipeline. A more in-depth analysis of the constructability and cost associated with the site could not be completed without property access.

9.1.2. Site 2

Site 2 has gentle sloping topography to the nearby stream with nearby access available from Meadowview Dr. The land would require minimal preparation in advance of construction activities and space is available for laydown areas, tank wrapping, equipment storage, and large delivery access. No atypical structural limitations or requirements are expected because of the geologic conditions. Approximately 2,730 linear feet of pipeline would be required to connect to the Main PZ and to connect the overflow/drain pipeline to the stream. Site 2 is ideal for construction and is likely to have the least cost.

9.1.3. Site 3

Site 3 is heavily forested and is located off Sykes Rd., a relatively high-traffic County road. Site preparation is expected to be significant and would include significant removal of trees on the reservoir site. The reservoir access drive location is expected to be relatively difficult to site and construct due to the proximity of the reservoir to Sykes Rd. Tank wrapping is expected to be possible but difficult in this location due to other nearby trees, homes, and utility lines. The subsurface conditions will likely require tank height and foundation considerations, increasing the expected cost of the reservoir and foundation preparation. To connect the overflow/drain line to the stormwater system and to connect to the Main PZ would require approximately 3,120 linear feet of pipeline.

9.1.4. Site 4

The construction associated with Site 4 is expected to prove difficult. Subsurface conditions are expected to prove difficult for heavy machinery in addition to having significant tank restrictions to account for the geologic hazards. Nearby utilities, namely overhead power lines, are expected to be a challenge for tank wrapping. Access from the County Fairgrounds drive is expected to be sufficient. The connection to the Main PZ is the

longest of the four sites and requires a pipeline that is approximately 6,220 linear feet. In total, approximately 6,340 linear feet of pipeline would be required to install the reservoir at this site.

9.2. RELATIVE RANKING

Keller and Walsh Group identified the following relative ranking of sites, where the top choice is expected to have the best construction conditions and lowest costs and the bottom choice is expected to have the least preferred construction conditions and highest costs.

- #1 – Site 2 (Best Choice)
- #2 – Site 3
- #3 – Site 1
- #4 – Site 4 (Least Preferred Choice)

Site 2 was identified as the best option as it has good site access, no atypical structural considerations or limitations, and the required site preparation is expected to be minimal.

10 - SITE EVALUATION SUMMARY

Sites were evaluated with consideration for various criteria including:

- Hydraulics and Operations – Valving, water transmission, available pressure and flows, and controls.
- Environmental Considerations – Permitting, special-status species, wetlands, and aquatic resources.
- Piping Connection Pathways – Water system and overflow/drain pathways and overall lengths.
- Geotechnical Favorability – Seismic and geological hazards, reservoir design implications, groundwater implications, and soil compatibility.
- Land Use and Permitting – Planning processes and timelines expected for approval and land use compatibility.
- Owner Willingness to Sell – Interest from property owner in selling area associated with site.
- Capital Cost – Expected relative capital cost.
- Public Support – Interest or disinterest in siting locations from public stakeholders.

Each site was evaluated according to each criterion on a scale from 1-5, where 1 is low or poor and 5 is high or good. The City identified the relative importance of each criterion by assigning a weight. A weighted average using the assigned weight and score was developed for each site as part of the decision matrix, shown in **Table 7**.

TABLE 7 . DECISION MATRIX

Criteria	Weight	Score			
		Site 1	Site 2	Site 3	Site 4
Hydraulics and Operations	10%	1	4	4	2
Environmental Considerations	10%	4	3	3	2
Piping Connection Pathways	10%	2	5	3	1
Geotechnical Favorability	20%	2	5	3	1
Land Use and Planning	15%	3	4	4	2
Owner Willingness to Sell	5%	1	4	5	3
Capital Cost	25%	2	5	3	1
Public Support	5%	2	4	3	1
WEIGHTED AVERAGE	100%	2.2	4.5	3.4	1.5

Site 2 has highly favorable geologic conditions, would work well within the existing water system hydraulics, has relatively short piping pathways compared to the other sites, and is expected to have the lowest overall capital cost. For these reasons, it is recommended that the City proceed with design of the 5.0 MG reservoir at Site 2. The planning level cost for Site 2 can be referenced in **Appendix F**.

11 - RECOMMENDED SITE

A rendering of a site concept for Site 2 is depicted in **Figure 24**. This concept includes the following items:

- 5.0 MG Pre-Stressed Concrete Tank with a Flat Roof, Access Stair and Access Ports,
- Asphalt access drive and parking area,
- Gravel access surrounding the reservoir,
- Fenced and Gated Entrance for Security,
- Arborvitae Trees for Screening,
- and a Detention Pond for Overflow, Drain, and Stormwater Management.

FIGURE 24: PRELIMINARY SITE CONCEPT RENDERING



12 - NEXT STEPS

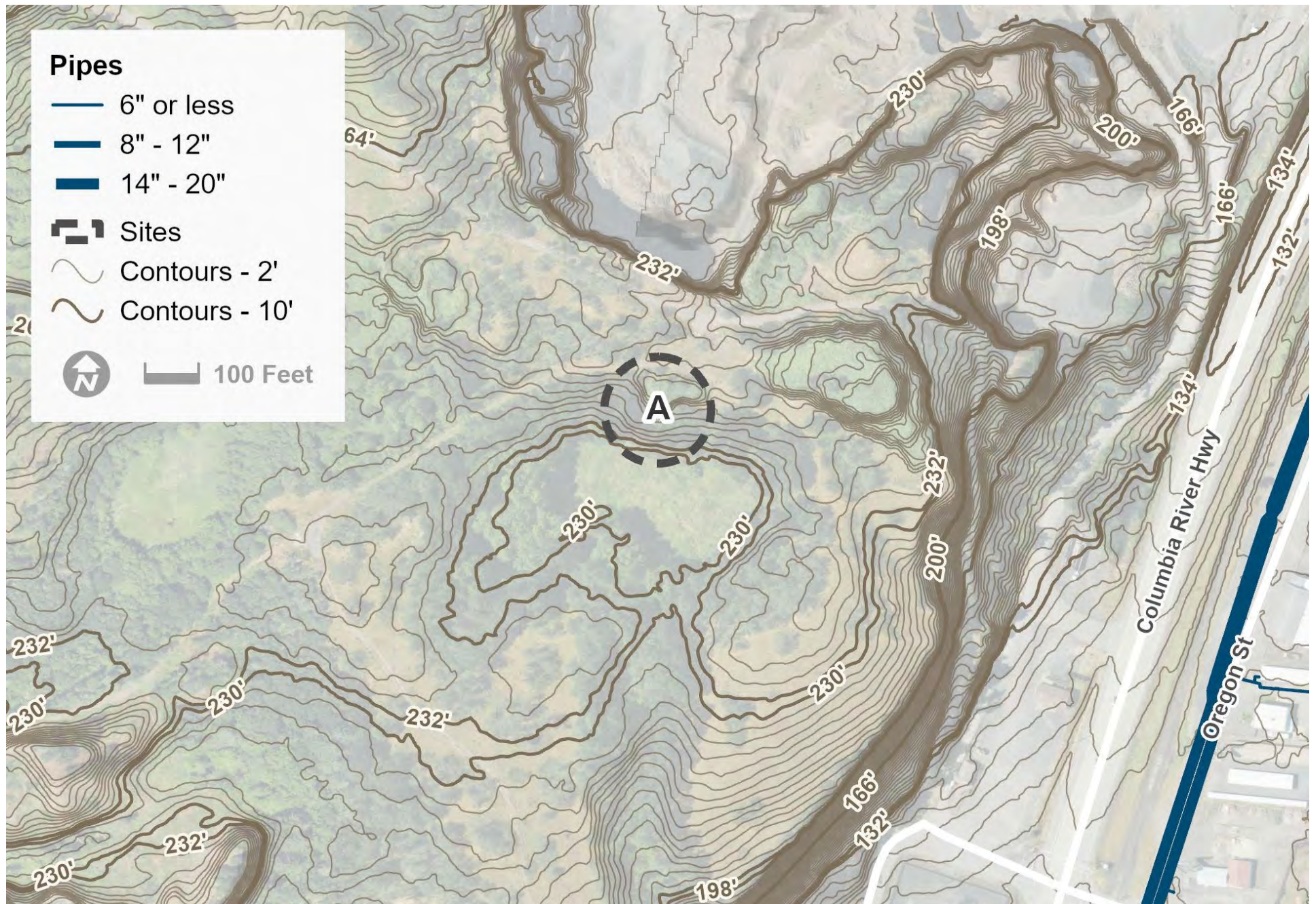
The next step in the process is property acquisition. This step may take time to progress to a point at which the City is comfortable to proceed with design. In the meantime, the City should continue working to secure funding for the design and construction of the 5.0 MG reservoir.

APPENDIX A

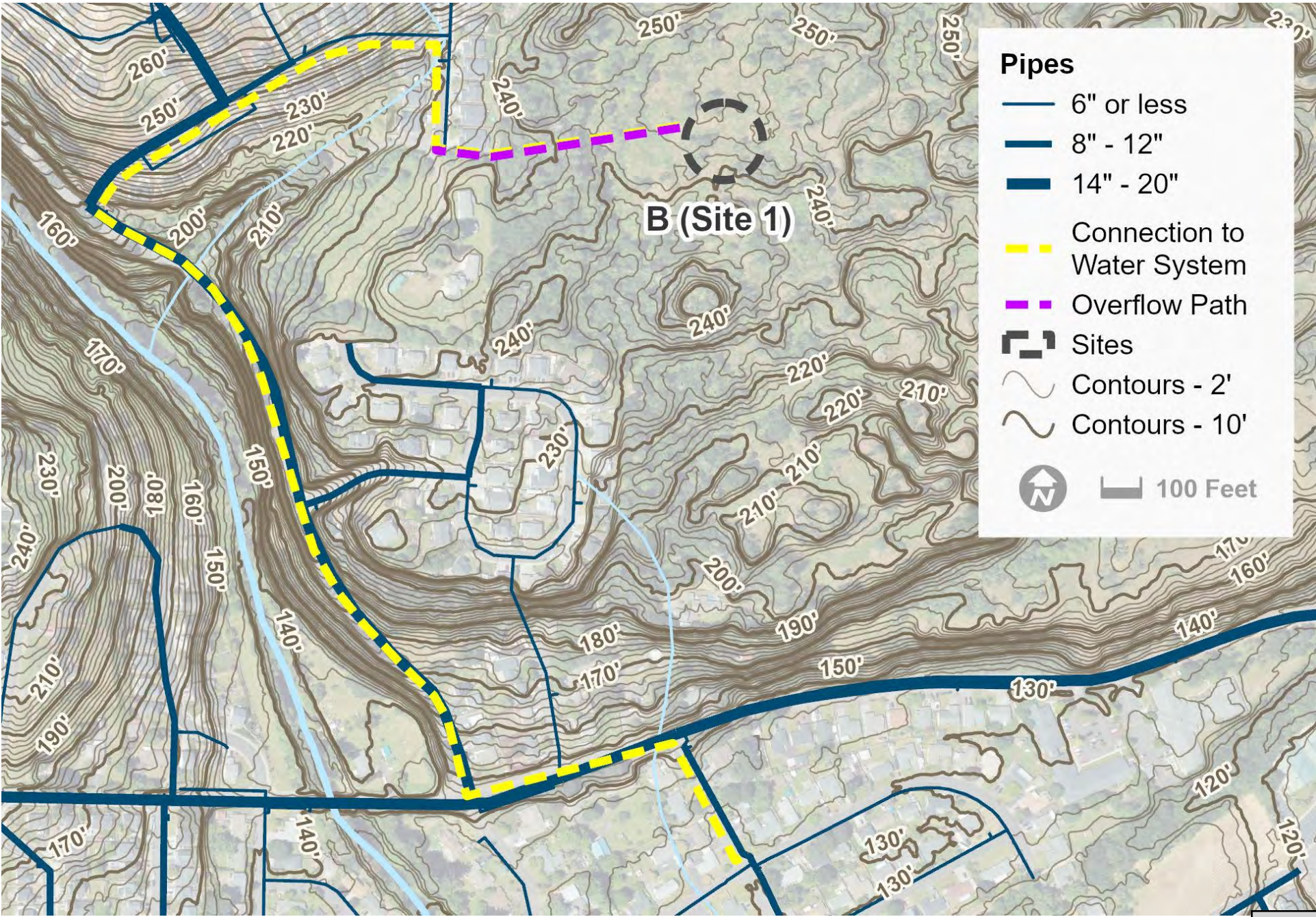
Maps of Preliminary Sites A-H

Site A Site Map

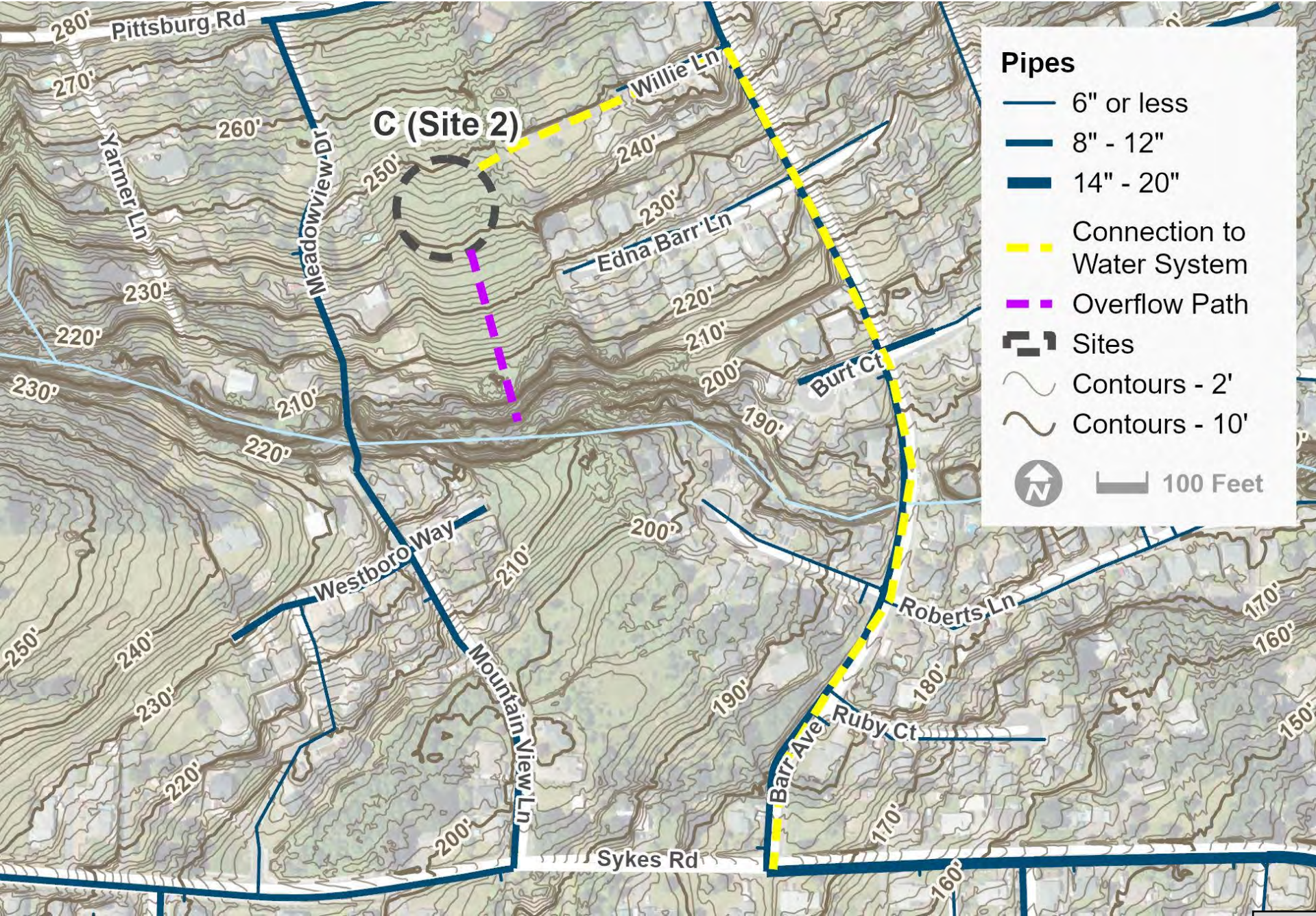
Item #4.



Site B (Site 1) Map

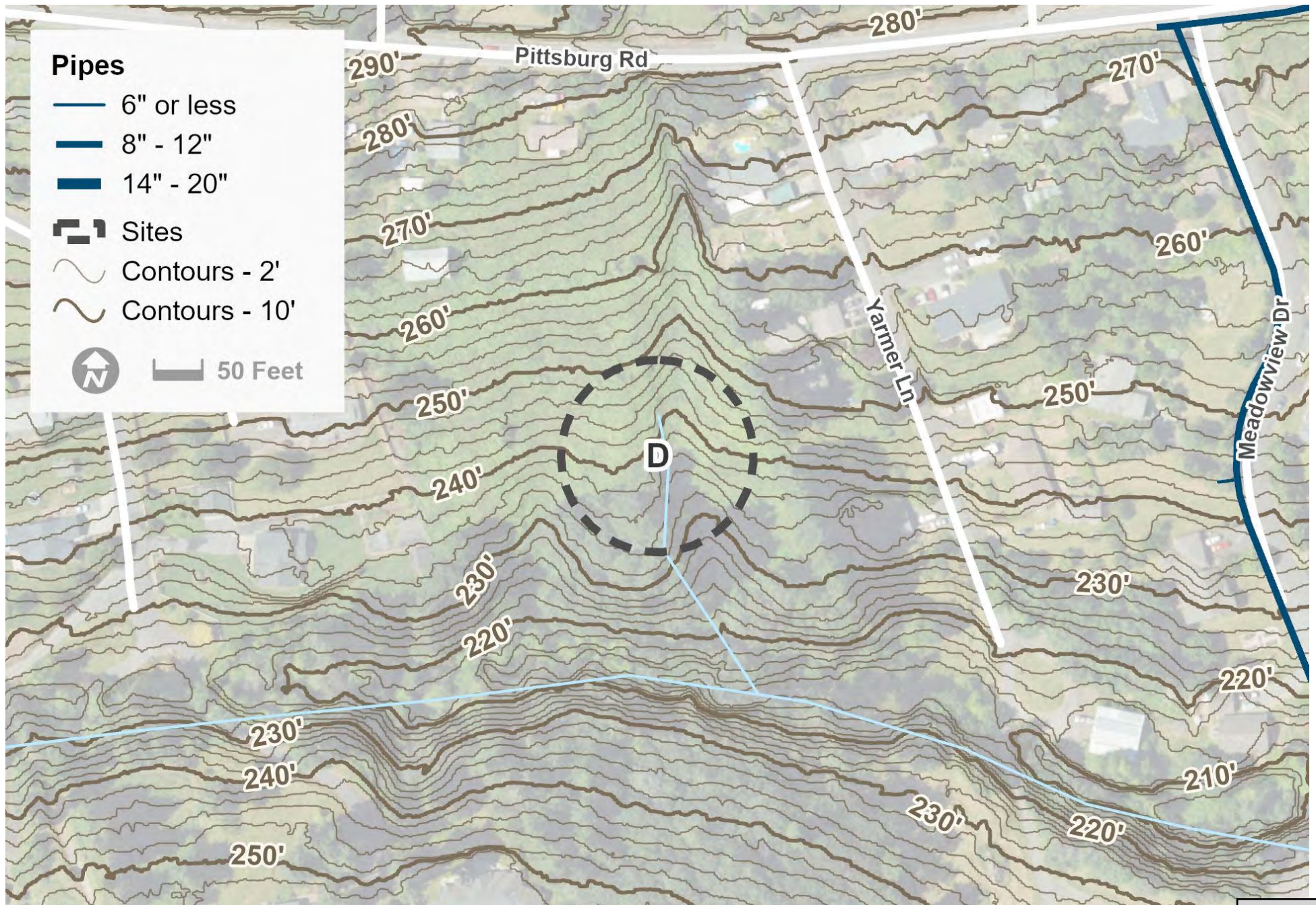


Site C (Site 2) Map

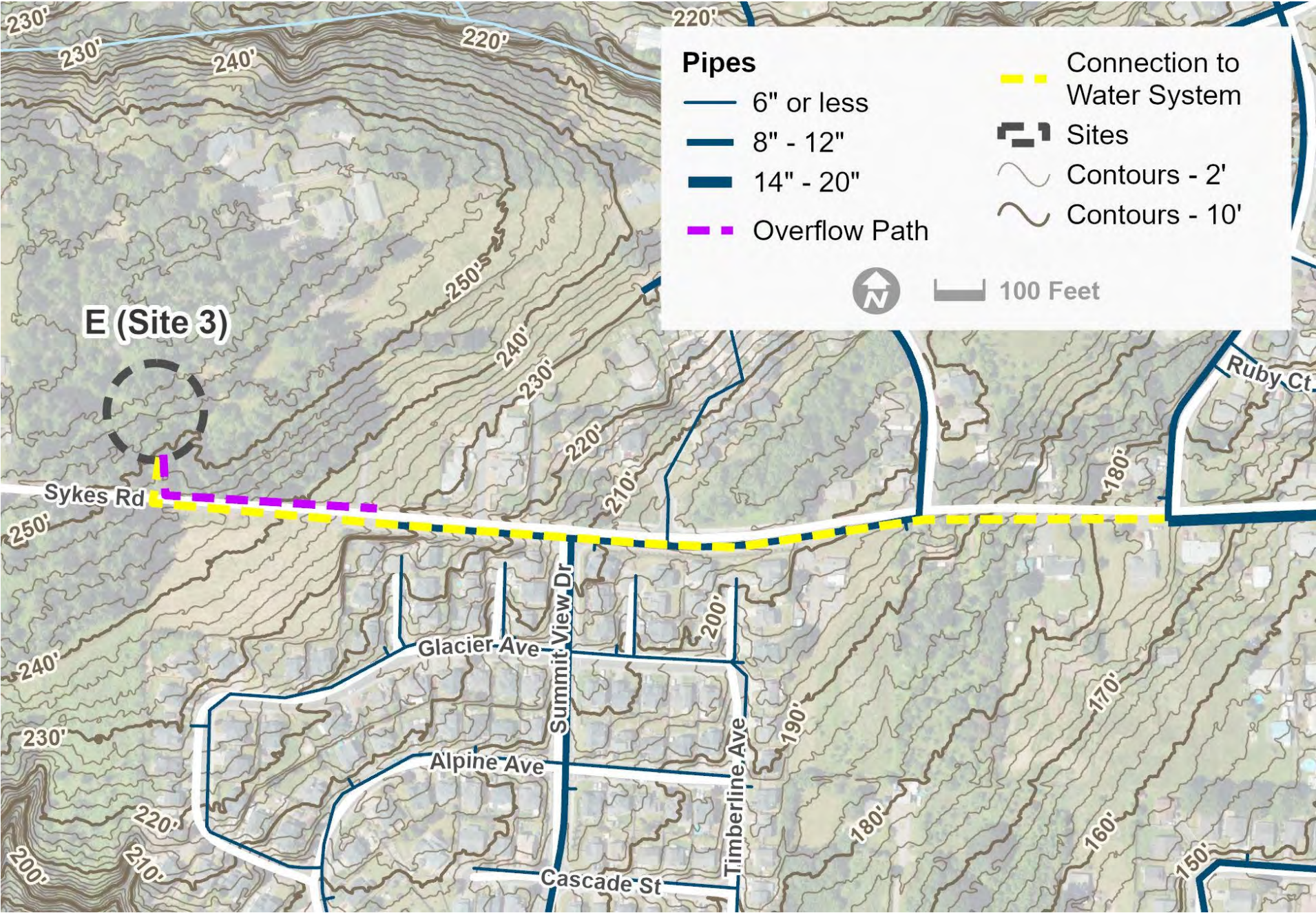


Site D Map

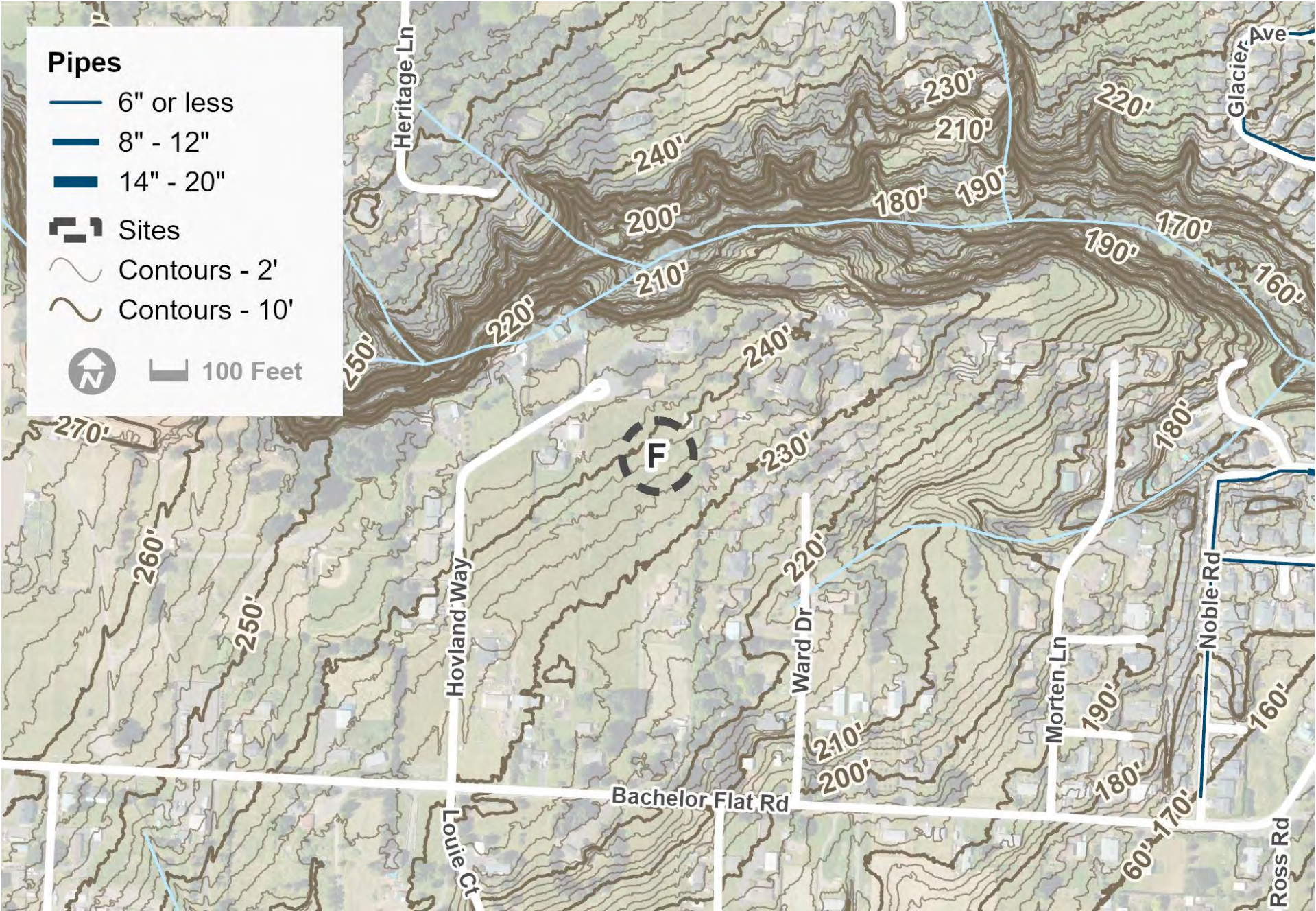
Item #4.



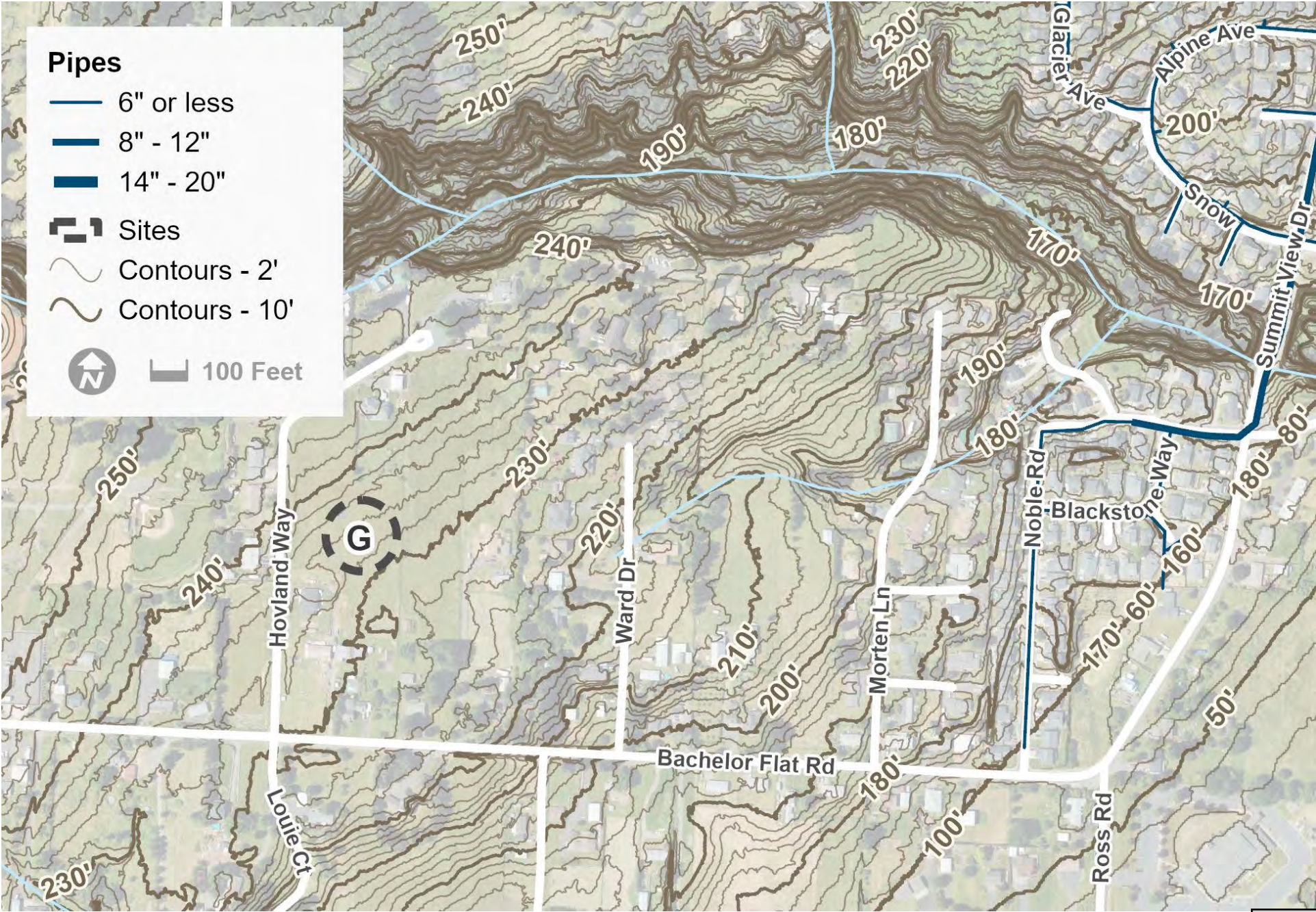
Site E (Site 3) Map



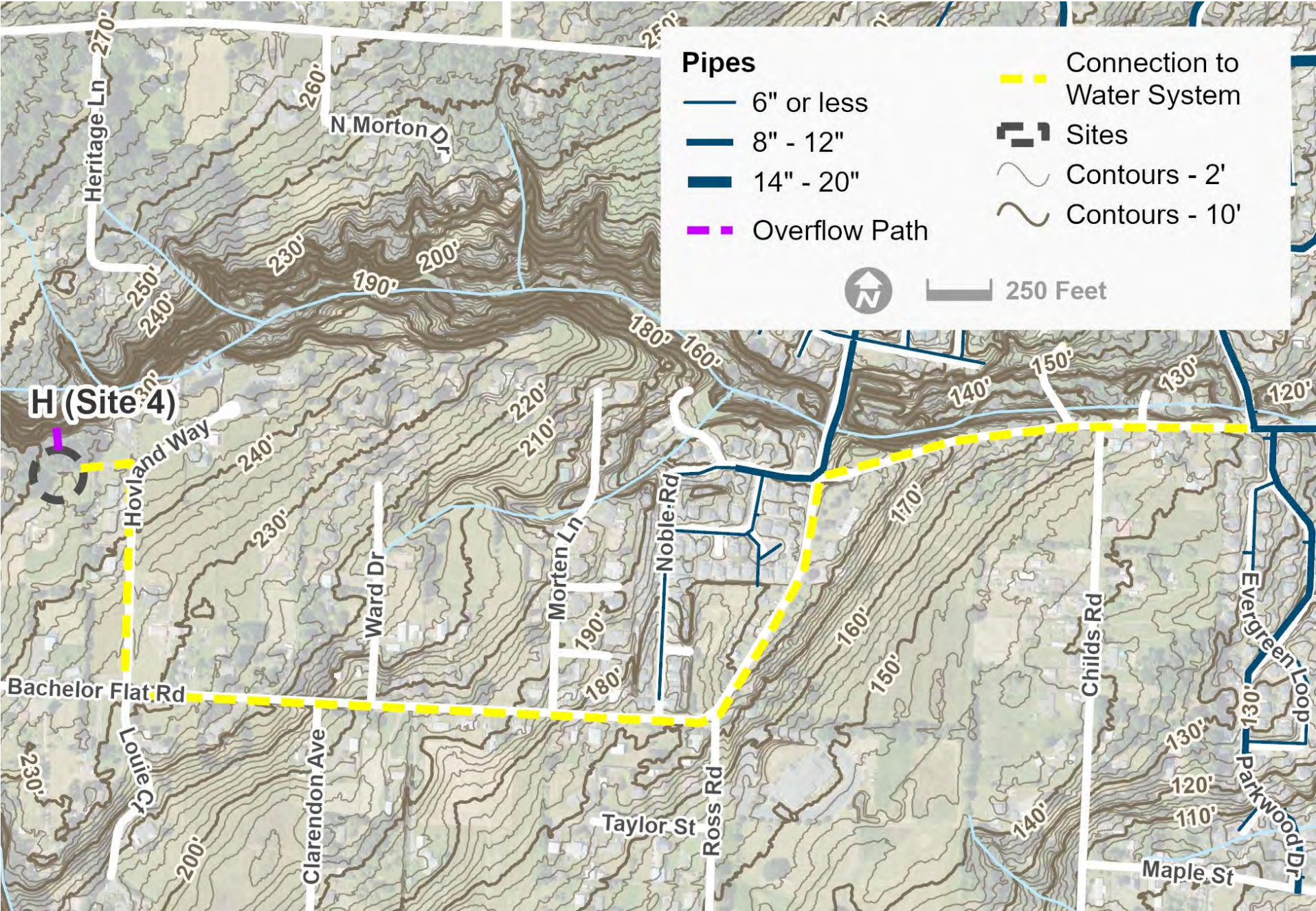
Site F Map



Site G Map



Site H (Site 4) Map



APPENDIX B

Preliminary Site Evaluation Summary of Findings

APPENDIX B – PRELIMINARY SITE EVALUATION SUMMARY

Characteristic	Site A	Site B	Site C	Site D	Site E	Site F	Site G	Site H
Substrate	Basalt Rock	Basalt Rock	Missoula Flood Deposits	Missoula Flood Deposits	Missoula Flood Deposits	Missoula Flood Deposits	Missoula Flood Deposits	Missoula Flood Deposits
Liquefaction Risk	None	None	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Landslide Risk	Moderate-low	Low	Moderate	Moderate	Moderate-low	Low	Low	Low
Land Availability	Industrial property owner. Positive past experience	Industrial Property Owner	Undeveloped Property. Spans two parcels. May have some neighborhood opposition	Undeveloped Property	Semi-rural property. May be particularly sensitive to public works proposals	Undeveloped Property	Undeveloped Property	County park, may be more readily available
Land Use / Zoning	Mineral and Aggregate; Prime Forest 80	Prime Forest 80	Medium Density Residential	Medium Density Residential	Medium Density Residential	Medium-Density Residential	Medium-Density Residential	UC Rural Industrial
Surrounding Land Use / Space constraints	No space constraints (forest)	No space constraints (forest)	Nearby housing	Nearby housing	No space constraints (forest)	Nearby housing, park	Nearby housing, park	Nearby housing, park
Proximity to Main PZ in Water System (linear feet)	1970 LF	4690 LF	2370 LF	3640 LF	2190 LF	6590 LF	5840 LF	6220 LF
Proximity for Overflow / Drain	1700+ LF to stormwater ditch ¹	650 LF to stormwater system ¹	360 LF to stream	180 LF to stream	930 LF to stormwater ditch ¹	420 LF to stream	670 LF to stream	120 LF to stream
Accessibility	Easy access from nearby Liberty Hill Dr. Would need very short driveway	Would need to build a road through private property (620 ft)	Nearby road; would need to construct a short driveway through private property	Nearby road; would need to construct a short driveway through private property	Easy access from Sykes Rd. Short driveway needed	Easy access from Hovland Way. Short driveway, through private property	Easy access from Hovland Way. Short driveway, through private property	Easy access from Hovland Way. Short driveway, through private property
Slopes	17 ft gradient across tank, 8.5% slope.	6 ft gradient across tank, 3% slope.	11 ft gradient across tank, 5.5% slope.	20 ft gradient across tank, 10% slope.	9 ft gradient across tank, 4.5% slope.	7 ft gradient, 3.5% slope.	8 ft gradient, 4% slope.	2 ft gradient, 1% slope.
Operational Hydraulics	Likely requires altitude valve on new tank	Likely requires altitude valve on new tank	May require altitude valve at existing tank	May require altitude valve at existing tank	May require altitude valve at existing tank	Likely requires altitude valve at existing tank	Likely requires altitude valve at existing tank	Likely requires altitude valve at existing tank

Note:

1. Subject to available stormwater system capacity.

APPENDIX C

Shannon & Wilson Draft Geotechnical Report, November 2025

SUBMITTED TO:

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DRAFT

GEOTECHNICAL ENGINEERING REPORT

St. Helens Reservoir Siting Study

ST. HELENS, OREGON

Submitted To: Keller Associates, Inc.
245 Commercial Street SE, Suite 210
Salem, OR 97301
Attn: Peter Olsen, PE

Subject: DRAFT GEOTECHNICAL ENGINEERING REPORT, ST. HELENS RESERVOIR
SITING STUDY, ST. HELENS, OREGON

Shannon & Wilson prepared this report and participated in this project as a subconsultant to Keller Associates, Inc. (Keller). Our scope of services was specified in our Subconsultant Agreement with Keller dated July 21, 2025. This report presents findings from our preliminary geotechnical evaluation and subsurface exploration, along with geotechnical considerations for site selection of a new above-ground water reservoir. It was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or if we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

Jordan Melby, PE
Senior Engineer

JLM:RPP/mmb

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Important Information

DRAFT

1 INTRODUCTION

This report presents the findings from our subsurface field explorations, laboratory testing, and preliminary geotechnical design evaluations, along with geotechnical considerations developed for the St. Helens Reservoir Siting Study in St. Helens, Oregon. As a subconsultant to Keller, Shannon & Wilson is providing geotechnical services to support the reservoir site selection process.

2 PROJECT UNDERSTANDING

2.1 Project Description

The City of St. Helens is planning to construct a new 5.0-million-gallon (MG) above-ground concrete reservoir to enhance its water storage capacity. Four potential sites have been identified within the city and surrounding areas of Columbia County, as illustrated in Figure 1, Vicinity Map. These preliminary site locations were selected by Keller based on optimal elevation and location.

Initially, seven candidate sites were identified by Keller for consideration. However, based on hydraulic constraints and other assessments, Keller and the City narrowed the list to four viable sites. Of these, three were selected for subsurface exploration to assess geotechnical conditions. Subsurface exploration was not conducted at Site 1 as the property owner denied access to the property. The findings from the subsurface explorations will inform the main geotechnical considerations for each property, guiding the final reservoir siting decision.

2.2 Site Descriptions

Although four potential reservoir sites were identified by Keller and the City, Shannon & Wilson conducted site reconnaissance and subsurface explorations at only three of them (Sites 2 through 4). During these visits, we observed surface conditions within the proposed reservoir footprints and surrounding areas. Site-specific observations from each location are detailed in the following sections.

2.2.1 Site 2

As shown in Figure 1, Vicinity Map, Site 2 is located just south of Pittsburg Road, near its intersection with Meadowview Drive, in the northwest corner of the City. The property is currently undeveloped and covered with short, ankle-high grasses. It is bordered on all

sides by residential lots and features a gentle slope toward the southeast. At the southern edge of the site, the elevation drops approximately 20 to 25 feet into an old drainage channel. Photographs of Site 2 are provided in Exhibits 2-1 through 2-4.



Exhibit 2-1: Photo looking southeast across Site 2. The stake in the foreground is the location of boring B-1.



Exhibit 2-2: Photo of the southern extent of the property at Site 2. South of the blackberry bushes in the foreground, the property drops off to an old drainage channel.



Exhibit 2-3: Photo from Pittsburg Road looking south at Site 2.



Exhibit 2-4: Photo looking southeast across Site 2.

2.2.2 Site 3

Site 3 is situated just north of Sykes Road on the west side of the city. The property is privately owned, and at the time of site reconnaissance and subsurface investigation, right-of-entry had not yet been obtained. Consequently, all observations were conducted from within the Columbia County right-of-way and supplemented with aerial imagery and LiDAR analysis.

Site 3 is currently heavily forested with a gentle slope to the south, as determined from LiDAR analysis. The property is surrounded on all sides by residential lots. Shannon & Wilson performed boring B-2 within Columbia County ROW just south of the proposed location of the reservoir. Exhibits 2-5 through 2-7 provide photographs of the site taken from the existing right-of-way.



Exhibit 2-5: Photo looking north into private property at the proposed site of the reservoir.



Exhibit 2-6: Photo looking west along Sykes Road. The private property on the right side of the photo is where the proposed reservoir would be constructed.



Exhibit 2-7: Photo looking west along Sykes Road. The private property on the right side of the photo is where the proposed reservoir would be constructed.

2.2.3 Site 4

Site 4 is located at the Columbia County Fairgrounds, just north of Bachelor Flat Road. The proposed reservoir site is currently undeveloped; however, a community baseball field lies immediately to the south. The site is bordered by residential lots to the east, while the remaining surroundings consist of Fairgrounds property and wooded areas. The topography is generally flat, though gently rolling hills are present to the north and west. Notably, the North Fork of McNutty Creek runs just north of the site, incised approximately 30 feet below the elevation of the proposed reservoir. Exhibits 2-8 through 2-10 show the existing site conditions.



Exhibit 2-8: Photo looking east across Site 4.



Exhibit 2-9: Photo looking south across Site 4.



Exhibit 2-10: Photo looking west across Site 4.

2.3 Scope of Services

Our services were performed in accordance with the scope described in our Subconsultant Services Agreement with Keller dated July 21, 2025. These services included:

- Reviewing published geologic subsurface information, available well logs, and geotechnical explorations in the site vicinity;
- Conducting site reconnaissance to mark exploration locations, coordinate access to the boring locations, and arrange utility locating for the exploration sites;
- Performing a subsurface exploration program consisting of one boring at three (3) sites selected by Keller and the City. Each boring was performed to a depth between 36.5 and 61.5 feet below ground surface (bgs);
- Performing laboratory testing on select samples from the subsurface explorations, including moisture content, fines content determination, and Atterberg limits determinations;
- Performing an evaluation of geologic hazards at four sites based on our review of available information and results from the subsurface explorations;
- Developing preliminary soil profiles and parameters for engineering analysis;
- Providing preliminary foundation support options for the proposed reservoir at the three sites where explorations were performed, including anticipated bearing capacity and total and differential settlement; and
- Preparing this GER.

3 GEOLOGIC SETTING

3.1 Regional Geology

The City of St. Helens is at the northern end of the Portland Basin, a structural depression created by complex folding and faulting of the basement rocks. The most prevalent basement rock of the Portland Basin is a sequence of lava flows called the Columbia River Basalt Group (CRBG), which flowed into the area between about 17 million and 6 million years ago (Beeson and others, 1991). Due to the wet and mild climate of the Pacific Northwest, intense chemical weathering of the geologic units has taken place (Evarts, 2009). In some instances, the rocks of the CRBG have been completely weathered to soil, destroying all primary rock textures. This has resulted in the development of soil horizons as thick as 10 meters.

The Columbia and Willamette Rivers converge within the Portland Basin, and with their tributaries, have contributed to extensive sedimentary deposits which overlie the basement

rock formations. These deposits are known within the Portland Basin as Sandy River Mudstone (SRM) and Troutdale Formation. According to Beeson and others (1991), the SRM consists of claystone, siltstone, and sandstone beds deposited in the Miocene to Pliocene epochs (about 10 million to 3.5 million years ago), and the Troutdale Formation consists of well-consolidated, friable to moderately well-cemented conglomerate and sandstone, also deposited in the Miocene to Pliocene epochs (about 12.5 million to 1.6 million years ago).

Toward the end of the Pleistocene, a tremendous load of sediment was deposited at the Project Site by a series of catastrophic floods. During the late stages of the last great ice age, between about 18,000 and 15,000 years ago, a lobe of the continental ice sheet repeatedly crossed and dammed the Clark Fork River in western Montana, which then formed an immense glacial lake called Lake Missoula (Allen and others, 2009). Periodically, the ice dam was breached and flood waters from Lake Missoula flowed southwest across portions of eastern Washington and into the Columbia River drainage. Forty or more repetitive outburst floods have been documented (Allen and others, 2009). These repeated floods are collectively referred to as the Missoula Floods. During each short-lived episode, floodwaters washed across the Idaho panhandle, through the eastern Washington scablands, and through the Columbia River Gorge. When the floodwater emerged from the western end of the gorge, it deposited a tremendous load of sediment (O'Connor and others, 2001).

During and after the Missoula Floods, rivers, streams, and wind have moved and deposited surficial sediment throughout the region. In more recent times, humans have changed the landscape, grading cuts and fills for development.

3.2 Local Geology

The surficial geology at sites 2, 3, and 4 has been mapped by Wells (2020) and Evarts (2004) as predominantly Pleistocene Missoula Flood Deposits. However, just north of Site 2, both authors have mapped the area as Grande Ronde Basalt (a member of the CRBG). During our subsurface explorations at Site 2, colluvial deposits were encountered overlying Grande Ronde Basalt. At Site 3, only fine-grained sediments of Missoula Flood Deposits were encountered, and at Site 4, colluvial deposits were found overlying Missoula Flood Deposits and Sandy River Mudstone.

Shannon & Wilson did not perform any geotechnical explorations at the proposed Site 1, located north of Pittsburg Road. According to geologic mapping, the site is entirely underlain by Grande Ronde Basalt. However, a review of nearby well logs indicates that while basalt is present, it may be highly to completely weathered in some areas, potentially

resembling soil rather than competent rock. Given this variability, if Site 1 is to be considered for development, a comprehensive geotechnical evaluation is strongly recommended to accurately characterize subsurface conditions.

4 SEISMIC SETTING

The contemporary tectonics and seismicity of the region are the result of oblique, northeastward subduction at a rate of about 40 millimeters per year (mm/yr) of the Juan de Fuca oceanic plate beneath the North American continental plate (e.g., Wells and others, 1998; Wells and Simpson, 2001). This complex tectonic setting produces east-west compressive strain along the Cascadia Subduction Zone (CSZ), as well as northward translation and rotation of the mobile, crustal, Cascadia fore-arc blocks that span the leading edge of the North America plate (Wells and others, 1998; McCaffrey and others, 2007, 2013). Rotation of the Sierra-Nevada block and expansion of the Basin and Range drive the northward migration and clockwise rotation of the Cascadia fore-arc blocks (e.g., Pezzopane and Weldon, 1993; Wells and others, 1998; Wells and Simpson, 2001). As a result, the southern portion of the forearc, the Oregon Coast block, is impinging on western Washington at a rate of about 8 to 12 mm/yr, causing crustal shortening in northwest Oregon and western Washington (Wells and others, 1998; Wells and Simpson, 2001; Mazzotti and others, 2002).

The combined effect of margin-normal subduction and margin-parallel shortening produces complex and diverse deformation within the northern edge of the Cascadia fore-arc and triggers large (greater than magnitude [Mw] 6.0), damaging earthquakes from three seismogenic source zones:

- The locked zone of the CSZ fault interface produces great mega-thrust earthquakes;
- The deep intraslab portion of the CSZ (i.e., the subducted portion of the Juan de Fuca Plate), the source of Wadati-Benioff zone earthquakes; and
- The overriding North American Plate, where shallow crustal faults rupture.

All three sources potentially produce earthquakes that impact the ground motion hazards at the project site. Offshore, elastic release of strain accumulated in the locked plate interface of the CSZ produces great megathrust earthquakes (greater than Mw 8.0) occurring at irregular intervals that span from about 100 to more than 1,200 years, with an average recurrence interval of about 300 to 500 years (Atwater and Hemphill-Haley, 1997; Clague, 1997; Goldfinger and others, 2003 and 2012); and the most recent rupture occurred in A.D. 1700 (Satake and others, 1996; Atwater and Hemphill-Haley, 1997; Clague, 1997; Yamaguchi and others, 1997; Goldfinger and others, 2003 and 2012). Onshore migration and

rotation of tectonic blocks produce deformation along shallow faults within the upper part of the crust. At depth, rupture within the subducting slab, referred to as the intraslab, has produced some of the largest recorded earthquakes (Mw 6.5 to 7.0) to strike the Pacific Northwest, the northern California Coast, and Western Washington. However, over the past century, intraslab earthquakes have been markedly infrequent in Oregon. The following sections briefly describe the location, characteristics, and seismicity of each of the sources.

4.1 Cascadia Subduction Zone: Mega-Thrust Source

CSZ mega-thrust earthquakes originate along the interface between the subducting oceanic plates and the North American plate. Because of the significant uncertainty of the landward extent of a potential rupture surface, estimates of the closest distance between the project and potential rupture surface range from about 65 to 140 horizontal miles. Focal depths for mega-thrust earthquakes are commonly on the order of about 15 to 25 miles. Rupture of the interface could result in earthquakes with Mw on the order of 8.5 to over 9.0, with strong shaking that lasts for several minutes. No large earthquakes have occurred in this zone during historic times (in the last 170 years). However, geologic evidence suggests that coastal estuaries have experienced rapid subsidence at various times within the last 2,000 years (e.g., Atwater, 1987; Atwater and Hemphill-Haley, 1997) as a result of tectonic movement associated with mega-thrust earthquakes on the CSZ. It appears that ruptures of this zone have occurred at irregular intervals that span from about 100 to more than 1,200 years, with an average recurrence interval of about 300 to 500 years (Atwater and Hemphill-Haley, 1997). Based on historical tsunami records in Japan (Satake and others, 1996) the most recent interplate event on the CSZ was a Mw 9.0 event on January 26, 1700.

4.2 Cascadia Subduction Zone: Intraslab Source

CSZ intraslab earthquakes originate from within the subducting oceanic plates because of down-dip tensional forces and bending caused by mineralogical and density changes in the plates at depth. These earthquakes typically occur 28 to 37 miles beneath the surface. Because intraslab events involve high-angle normal faulting, the area of the rupture surface and magnitude is strongly dependent on the thickness of the subducting slab. Young subduction zones, such as the CSZ, generally have relatively thin subducting slabs. Thermal modeling of the CSZ (Hyndman and Wang, 1993) and the observed geometry of the Wadati-Benioff Zone (Jarrard, 1986) confirm the likelihood that the subducting slab is relatively thin.

Worldwide observations indicate that the largest intraslab earthquakes are on the order of magnitude (M) 8, with the 12 largest of these occurring in older subducting slabs. The

largest recorded intraslab earthquake beneath the Puget Lowland, the 1949 Olympia earthquake, was a surface wave magnitude 7.1 event. Ludwin and others (1991) estimate that the maximum magnitude from this source zone would be about 7.5.

At the Project Site, ground shaking produced by intraslab earthquakes would generally be less intense and less prolonged than ground motions generated by large subduction zone interface earthquake events. Historic seismicity from this source zone includes the 1949 magnitude 7.1 Olympia earthquake; the 1965 magnitude 6.5 earthquake between Tacoma and Seattle; and the 2001 magnitude 6.8 Nisqually earthquake. While intraslab events have occurred frequently in the Puget Sound area, they are historically rare in Oregon.

4.3 Shallow Crustal Source

Shallow crustal earthquakes within the North American Plate have historically occurred in a diffuse pattern within western Oregon, typically within the upper 4 to 19 miles of the continental crust. The largest known crustal earthquake in the Pacific Northwest is the 1872 North Cascades earthquake at magnitude 6.8. Other examples include the 1993 magnitude 5.6 Scotts Mill earthquake and the 1993 magnitude 6.0 Klamath Falls earthquake.

Shallow crustal faults and folds throughout Oregon and Washington have been located and characterized by the United States Geological Survey (USGS, 2024). The USGS provides approximate fault locations and a detailed summary of available fault information in the USGS Quaternary Fault and Fold Database.

The database defines four categories of faults, Class A through D, based on evidence of tectonic movement known or presumed to be associated with large earthquakes during Quaternary time (within the last 2.6 million years). For Class A faults, geologic evidence demonstrates that a tectonic fault exists and that it has likely been active within the Quaternary period. For Class B faults, there is equivocal geologic evidence of Quaternary tectonic deformation, or the fault may not extend deep enough to be considered a source of significant earthquakes. Class C and D faults lack convincing geologic evidence of Quaternary tectonic deformation or have been studied carefully enough to determine that they are not likely to generate significant earthquakes.

According to the USGS Quaternary Fault and Fold database, there are five Class A features within approximately 20 miles of the project vicinity. Their names, general locations relative to the site, and the time since their most recent deformation are summarized in Exhibit 4-1.

Exhibit 4-1: USGS Class A Faults Within a 20-Mile Radius of the Project Site

Fault Name	USGS Fault Number	Approximate Length	Approximate Distance & Direction from Project Site ¹	Slip Rate Category ²	Time Since Last Deformation ³
Portland Hills Fault	877	30.4 miles	16 miles SE	< 0.2 mm/yr	<1.6 Ma
East Bank Fault	876	18.0 miles	16 miles SE	< 0.2 mm/yr	< 750 ka
Oatfield Fault	875	18.0 miles	17 miles S	< 0.2 mm/yr	< 1.6 Ma
Helvetia Fault	714	4.3 miles	18 miles SW	< 0.2 mm/yr	< 1.6 Ma
Lacamas Lake Fault	880	14.9 miles	21 miles SE	< 0.2 mm/yr	< 750 ka

NOTES:

- 1 Approximate distance between nearest reservoir site and nearest extent of fault mapped at the ground surface.
- 2 mm = millimeters; yr = year.
- 3 Ma = "Mega-annum" or million years ago; ka = "Kilo-annum" or one thousand years ago.

5 FIELD EXPLORATIONS

As part of the geotechnical field exploration program for this project, three borings designated as B-1 through B-3 were completed. Boring B-1 was conducted at Site 2, B-2 at Site 3, and B-3 at Site 4. Their approximate locations are presented in Figure 2.

Explorations for this field program were completed in two mobilizations. Borings B-1 and B-2 were completed on September 24 and 25, 2025, respectively. Boring B-3 was completed on October 21, 2025. The borings were drilled to depths ranging from 36.5 to 61.5 feet bgs using a track-mounted Geoprobe 3126GT drill rig owned and operated by Western States Soil Conservation, Inc. out of Hubbard, Oregon. Standard Penetration Test (SPT) samples were collected at 2.5 and 5-foot intervals, and HQ3-wireline rock coring techniques were used to advance the boring and sample the rock at boring B-1.

A Shannon & Wilson geologist was present during the explorations to locate the borings, observe the drilling, collect the geotechnical soil and rock samples, and log the materials encountered. Disturbed SPT samples were placed in plastic sample jars and sealed, and rock core was boxed and returned to the laboratory at Shannon & Wilson for further evaluation and testing. Appendix A, Field Explorations, presents details of the field exploration program, including the techniques used to advance the explorations and the resulting logs of the materials encountered.

6 LABORATORY TESTING

The samples we obtained during our field explorations were transported to our laboratory for further examination. We then selected samples for laboratory tests. The soil testing program included moisture content tests, Atterberg limits tests, and particle-size analyses. Testing was completed by Shannon & Wilson at our in-house laboratory in Lake Oswego, Oregon, in accordance with applicable ASTM International standards. Results of the laboratory tests and brief descriptions of the test procedures are presented in Appendix B, Laboratory Test Results.

7 SUBSURFACE CONDITIONS

7.1 Site 2 Geotechnical Soil Units

Based on the results of boring B-1, Shannon & Wilson grouped the materials encountered at Site 2 into three geotechnical units as described below. This description of the subsurface conditions is based on the explorations and regional geologic information from published sources. The geotechnical units are as follows:

- **Colluvium:** Dense Clayey Gravel with Sand (GC), very dense Silty Gravel with Sand (GM), and medium dense/very stiff Sandy Silt to Sandy Silt with Gravel (ML);
- **Predominantly Decomposed Grande Ronde Basalt:** Predominantly decomposed to medium dense Silty Sand (SM); and
- **Grande Ronde Basalt:** Extremely weak to weak (R0-R2), slightly to highly weathered.

These geotechnical units were grouped based on their engineering properties, geologic origins, and their distribution in the subsurface. Contacts between the units may be more gradational than shown in the boring logs in Appendix A. The Standard Penetration Test (SPT) N-values shown on the boring logs are as recorded in the field (uncorrected). The following sections describe the geotechnical unit characteristics in greater detail.

7.1.1 Colluvium

The colluvium at Site 2 was encountered in the boring from ground surface to a depth of 14.5 feet bgs. The unit generally consisted of dense Clayey Gravel with Sand (GC), very dense Silty Gravel with Sand (GM), and medium dense/very stiff Sandy Silt. The sand and gravel constituents of the unit were typically fine to coarse, while the fines were generally nonplastic to medium plasticity. SPT N-values within the unit ranged from 18 to 75 blow per foot (bpf) and averaged 36 bpf. Natural moisture content within the unit ranged from

34.1 to 45.6 percent, and averaged 41.5 percent. A single fines content analysis indicated that the tested sample contained 35 percent fines by dry weight.

7.1.2 Predominantly Decomposed Grande Ronde Basalt

Predominantly decomposed Grande Ronde Basalt was encountered in the boring below the colluvium, until a depth of 17.5 feet bgs. The unit typically consisted of predominantly decomposed to medium dense Silty Sand. A relict bedrock texture was observed within the unit. Only a single SPT was attempted within the unit, registering an N-Value of 29 bpf.

7.1.3 Grande Ronde Basalt

Grande Ronde Basalt was encountered within the boring below the Predominantly Decomposed Grande Ronde Basalt until the boring's termination 36.5 feet bgs. The unit typically consisted of extremely weak to weak (R0-R2) basalt which was slightly to highly weathered. Only a single SPT was attempted within the unit, and it was met with refusal. RQD within the unit was generally low and ranged from 0 to 22 percent.

7.2 Site 3 Geotechnical Soil Units

Based on the results of boring B-2, Shannon & Wilson grouped the materials encountered in our field exploration at Site 3 into two geotechnical units as described below. This description of the subsurface conditions is based on the explorations and regional geologic information from published sources. The geotechnical units are as follows:

- **Fill:** Includes pavement and base aggregate section; very stiff Lean Clay with Sand (CL).
- **Missoula Flood Deposits - Fine-Grained Facies:** Stiff Silt with Sand (ML), and medium stiff to very stiff Lean Clay (CL).

These geotechnical units were grouped based on their engineering properties, geologic origins, and their distribution in the subsurface. Contacts between the units may be more gradational than shown in the boring logs in Appendix A. The Standard Penetration Test (SPT) N-values shown on the boring logs are as recorded in the field (uncorrected). The following sections describe the geotechnical unit characteristics in greater detail.

7.2.1 Fill

Fill was encountered within the boring from ground surface to a depth of 7 feet bgs. The unit typically consisted of very stiff Lean Clay with Sand (CL). The sand constituent of the unit was generally fine to medium, while the fines were typically low to medium plasticity. Two SPTs were attempted within the unit and yielded N-values of 19 and 23 bpf, respectively. A single natural moisture content was taken in the unit and registered

approximately 24 percent moisture by dry weight. A fines content test was also performed on the unit and yielded approximately 83 percent fines by dry weight.

7.2.2 Missoula Flood Deposits - Fine-Grained Facies

The Missoula Flood Deposits were encountered below the fill until the boring's termination at a depth of 61.5 feet bgs. The unit typically consisted of stiff Silt with Sand (ML), and medium stiff to very stiff Lean Clay (CL). The sand constituent of the unit was generally fine, while the fines were typically low to high plasticity. SPT N-values within the unit ranged from 5 to 23 bpf and averaged 11.7 bpf. Natural moisture content ranged from 30 to 40 percent and averaged approximately 36 percent. Two Atterberg limits determination tests were performed, which yielded plasticity indexes of 23 and 26 percent, with the USCS designation of CL.

7.3 Site 4 Geotechnical Soil Units

Based on the results of boring B-3, Shannon & Wilson grouped the materials encountered in our field exploration at Site 4 into three geotechnical units as described below. This description of the subsurface conditions is based on the explorations and regional geologic information from published sources. The geotechnical units are as follows:

- **Colluvium:** Medium dense Silty Sand (SM), medium dense Silt, with cobbles (ML), stiff Silt (ML), and medium stiff Elastic Silt (MH).
- **Missoula Flood Deposits - Fine-Grained Facies:** Very soft to medium stiff Lean Clay (CL) and medium stiff Fat Clay (CH).
- **Sandy River Mudstone:** Medium stiff to stiff Fat Clay (CH).

These geotechnical units were grouped based on their engineering properties, geologic origins, and their distribution in the subsurface. Contacts between the units may be more gradational than shown in the boring logs in Appendix A. The Standard Penetration Test (SPT) N-values shown on the boring logs are as recorded in the field (uncorrected). The following sections describe the geotechnical unit characteristics in greater detail.

7.3.1 Colluvium

Colluvium was encountered within the boring to a depth of 12 feet bgs. The unit typically consisted of medium dense Silty Sand (SM), medium dense, Silt, with Cobbles (ML), stiff Silt (ML), and medium dense Elastic Silt (MH). The sand constituent of the unit was generally fine to coarse, while the fines were typically nonplastic to medium plasticity. SPT N-values within the unit ranged from 6 to 15 bpf and averaged 12 bpf. Two moisture contents were performed on the unit which were 18 and 25 percent by dry weight, respectively.

7.3.2 Missoula Flood Deposits - Fine-Grained Facies

Missoula Flood Deposits were encountered within the boring below the colluvium to a depth of 37.5 feet bgs. The unit typically consisted of very soft to medium stiff Lean Clay (CL) and medium stiff Fat Clay (CH). Fines within the unit were generally medium to high plasticity. SPT N-values within the unit ranged from 0 to 6 bpf and averaged 3 bpf. Natural moisture content within the unit ranged from 25 to 42 percent and averaged 31 percent. Two Atterberg limits tests were performed on the unit and yielded plasticity indexes of 15 and 33 percent, with USCS designations of CL and CH, respectively.

7.3.3 Sand River Mudstone

Sandy River Mudstone was encountered beneath the Missoula Flood Deposits and extended to the termination depth of the boring at 61.5 feet below ground surface (bgs). The unit typically consisted of medium-stiff to stiff Fat Clay (CH). The fines within the unit were generally highly plastic. SPT N-values within the unit ranged from 5 to 16 bpf and averaged 11 bpf.

7.4 Groundwater

All borings were initially advanced using hollow-stem auger drilling methods. Groundwater levels were measured during drilling by lowering a water level indicator through the hollow-stem augers. Groundwater was encountered at a depth of 9.5 feet bgs in boring B-1, 15.7 feet bgs in boring B-2, and 15.0 feet bgs in boring B-3. It is important to note that these measurements may not represent stabilized groundwater conditions, as the boreholes were not left open for an extended period (e.g., overnight), which would allow water levels to equilibrate. Exhibit 7-1 summarizes the observed groundwater depths at each boring location.

Exhibit 7-1: Depth to Groundwater Summary

Site ID	Exploration	Date	Measured Depth of Water (feet bgs)
Site 2	B-1	9/24/2025	9.5
Site 3	B-2	9/25/2025	15.7
Site 4	B-3	10/21/2025	15

Groundwater levels should be expected to vary with changes in topography and precipitation. Generally, groundwater highs occur at the end of the wet season in late spring or early summer, and groundwater lows occur towards the end of the dry season in the early to mid-fall. Additionally, topographic high areas are generally associated with deeper water table depths than topographic low areas.

8 PRELIMINARY GEOTECHNICAL DESIGN AND CONSTRUCTION CONSIDERATIONS

Based on the results of our preliminary subsurface explorations and a review of relevant geotechnical data, Sites 2 through 4 are generally considered geotechnically feasible for the proposed reservoir development, assuming subsurface conditions are consistent with those observed in the initial borings. However, some sites may require more extensive and costly foundation support and are subject to higher seismic loading due to their estimated site class. This section presents an overview of the geologic hazards and preliminary foundation design considerations for each site, along with conceptual construction considerations. It is important to note that these findings are based on a limited subsurface exploration program; additional subsurface explorations will be necessary to fully characterize subsurface conditions. As such, these preliminary conclusions are subject to change pending further exploration.

8.1 Site 2 Design and Construction Considerations

8.1.1 Site 2 Geologic Hazards and Seismicity

Generally, the subsurface conditions encountered at Site 2 do not indicate the potential for seismic and geologic hazards. The potential for liquefaction at Site 2 is considered low, primarily due to the depth of groundwater and the presence of dense soil conditions below the water table. Similarly, the risk of lateral spreading is very low, supported by these subsurface characteristics. Landslide risk at the reservoir location at the property is also low, given the site's relatively flat surface topography and its distance from significant slopes. There may be localized slope instability near the drainage at the site's southern boundary; however, this area is located more than 200 feet from the proposed southern edge of the reservoir and is therefore not expected to impact the reservoir. Additionally, the risk of surface fault rupture is minimal, with the nearest mapped fault, the Portland Hills Fault, located more than seven miles away.

According to the 2022 Oregon Structural Specialty Code, which references Chapter 20 of ASCE 7-16 for seismic site classification, Site 2 is classified as Site Class C based on Standard Penetration Test (SPT) N-values and proximity to intact rock.

The upcoming 2025 Oregon Structural Specialty Code, effective April 1, 2026, will adopt Chapter 20 of ASCE 7-22, which bases site classification on average shear wave velocity. Although shear wave velocity measurements were not included in the scope of this study, correlations between SPT N-values and shear wave velocity suggest that the site will likely fall within Site Class C or CD under the ASCE 7-22 criteria.

8.1.2 Site 2 Foundation Considerations

Medium dense to very stiff colluvium was encountered within the upper 9.5 feet at Site 2, underlain by approximately 5 feet of decomposed basalt, which transitions into intact Grande Ronde Basalt. The decomposed basalt exhibits characteristics consistent with very dense to dense silty and clayey gravel, while the overlying colluvium consists of medium dense to very stiff sandy silt with varying amounts of gravel. These site soils are generally expected to exhibit low compressibility and appear suitable for supporting the proposed reservoir using conventional shallow foundation systems.

Based on these site soil conditions, an allowable bearing capacity of 3,000 psf could be assumed for the preliminary design of shallow foundations, provided that any localized zones of soft or loose areas of subgrade are over-excavated and replaced with compacted structural fill.

Specialized foundation systems, such as rigid structural slabs or reinforced crushed rock zones, are not anticipated to be necessary, provided the foundation deflection tolerances are specified within 1/2 inch over a span of 50 feet. If tighter deflection tolerances are needed, a reinforced crushed rock mat or structural slab may need to be incorporated in the design.

8.1.3 Site 2 Other Considerations

In general, conventional earthwork equipment in good working condition is expected to be adequate for performing the required site grading and excavation at Site 2. While some variability in contact with the underlying decomposed and intact Grande Ronde Basalt is possible, excavations deeper than 5 feet are not anticipated. Therefore, specialized rock removal methods, such as blasting or hydraulic rock breakers, are not expected to be necessary. Large track hoes equipped with bucket rock teeth should be sufficient for excavation if decomposed basalt is encountered.

Additionally, groundwater is expected to have minimal impact on construction activities, assuming it remains near the levels observed during the September 2025 subsurface exploration. Groundwater measurements were taken during a time of year when levels are typically at their seasonal low in this region. If groundwater is encountered during excavation, internal sump pits are likely to be a feasible and effective method for managing and removing collected water.

8.2 Site 3 Design and Construction Considerations

8.2.1 Site 3 Geologic Hazards and Seismicity

The subsurface conditions observed at Site 3 do not suggest a significant potential for seismic or geologic hazards. The likelihood of liquefaction is considered low, primarily due to the depth of the groundwater table and the presence of medium to high-plasticity soils beneath it. According to the criteria outlined by Bray and Sancio (2006), the soils tested at the site are not susceptible to liquefaction. As a result, the risk of lateral spreading is also low.

The potential for landslides is also low, given the site's relatively flat topography and its considerable distance from any steep or unstable slopes. Furthermore, the risk of surface fault rupture is negligible, with the nearest mapped fault, Portland Hills Fault, located over seven miles from the site.

According to the 2022 Oregon Structural Specialty Code, which references Chapter 20 of ASCE 7-16 for seismic site classification, Site 3 is classified as Site Class E based on Standard Penetration Test (SPT) N-values from boring B-2.

The upcoming 2025 Oregon Structural Specialty Code, effective April 1, 2026, will adopt Chapter 20 of ASCE 7-22, which bases site classification on average shear wave velocity. Although shear wave velocity measurements were not included in the scope of this study, correlations between SPT N-values and shear wave velocity suggest that the site will likely fall within Site Class D or DE under the ASCE 7-22 criteria.

8.2.2 Site 3 Foundation Considerations

At the southern boundary of Site 3, subsurface exploration revealed predominantly medium-stiff to stiff Missoula Flood Deposits, with occasional very stiff layers. These soils are generally expected to exhibit moderate compressibility at depths greater than 10 feet.

Based on the observed conditions, the site soils appear suitable for supporting the proposed reservoir using conventional shallow foundation systems. However, design considerations may require limiting the water stack height, incorporating a rigid structural mat foundation, or potentially implementing both strategies. Use of a membrane slab foundation will likely not be feasible for this site.

For preliminary design purposes, an allowable bearing capacity of 2,000 psf may be assumed for shallow foundations, provided that any localized zones of soft or loose subgrade are over-excavated and replaced with compacted structural fill. To maintain deflection tolerances within ½ inch over a 50-foot span, a reinforced crushed rock pad or a 3-

to 5-foot over-excavation may be necessary; however, this should be determined through a more comprehensive subsurface exploration program and consolidation testing.

8.2.3 Site 3 Other Considerations

The site is currently densely vegetated with mature trees and thick underbrush, which likely includes a substantial root zone. This root zone will need to be fully removed within the proposed improvement areas. During grubbing operations, extensive soil disturbance may occur, potentially requiring over-excavation of affected areas. Recomposition of these disturbed soils is expected to be impractical, as they are likely to be above their optimum moisture content. Consequently, removed disturbed material should be replaced with compacted imported granular structural fill.

Additionally, the use of on-site soils as general fill is expected to be infeasible during most of the year. However, if earthwork is scheduled during the dry summer months, the warmer weather may allow for adequate moisture conditioning, potentially making the native soils suitable for reuse.

Standard earthwork equipment in good working condition should be sufficient for site grading and excavation. To minimize exposure to wet conditions, earthwork should be performed in small, manageable sections, each sized to allow removal of unsuitable soils and placement and compaction of structural fill within the same day. In addition, equipment size may need to be limited to reduce subgrade disturbance.

8.3 Site 4 Design and Construction Considerations

8.3.1 Site 4 Geologic Hazards and Seismicity

Subsurface conditions at Site 4 suggest a potential for seismic hazards that warrant further evaluation. Based on the criteria outlined by Bray and Sancio (2006), portions of the saturated soils exhibit moderate susceptibility to liquefaction, whereas other portions do not exhibit susceptibility. While significant liquefaction is not anticipated, some vertical settlement may occur, and limited horizontal displacement due to lateral spreading is possible. A detailed analysis of these potential displacements is beyond the scope of the current study.

According to the Statewide Landslide Information Database for Oregon (SLIDO 4.5), landslide susceptibility is shown as "low" within the anticipated reservoir footprint. Landslide susceptibility increases to the north, where it is shown as "moderate" to "high" in the area near the slopes surrounding the stream channel of North Fork McNutty Creek (DOGAMI, 2024).

During our site reconnaissance, we observed multiple localized, shallow-seated slope failures within the upper portions of the slope above the stream channel. One area of the slope appeared to be undergoing progressive erosion and oversteepening, resulting in the uprooting and downslope movement of two large trees into the creek area. Based on our site reconnaissance, a more detailed evaluation of landslide risk and appropriate setback distances is recommended. For preliminary planning purposes, the reservoir and associated structures should be sited no closer than one-third of the slope height from the top of the slope and positioned outside the upward 1H:1V projection from the toe of the slope, in accordance with Section 1808 of the Oregon Structural Specialty Code.

The risk of surface fault rupture at Site 4 is negligible, with the nearest mapped fault, Portland Hills Fault, located over seven miles from the site.

According to the 2022 Oregon Structural Specialty Code, which references Chapter 20 of ASCE 7-16 for seismic site classification, Site 4 is classified as **Site Class E** based on Standard Penetration Test (SPT) N-values from boring B-3.

The upcoming 2025 Oregon Structural Specialty Code, effective April 1, 2026, will adopt Chapter 20 of ASCE 7-22, which bases site classification on average shear wave velocity. Although shear wave velocity measurements were not included in the scope of this study, correlations between SPT N-values and shear wave velocity suggest that the site will likely fall within Site Class E, DE, or D under the ASCE 7-22 criteria.

8.3.2 Site 4 Foundation Considerations

Subsurface exploration at Site 4 identified predominantly medium-stiff and medium-dense colluvium overlying Missoula Flood Deposits at approximately 12 feet bgs. Immediately beneath this contact, the flood deposits consist of very soft to soft lean clay (CL) extending to a depth of about 23 feet bgs. From 23 to 37.5 feet bgs, the deposits transition to medium stiff lean clay (CL), which are underlain by medium stiff to stiff Sandy River Mudstone.

Due to the presence of the approximately 11-foot-thick zone of very soft to soft clay between 12 and 23 feet bgs, conventional shallow foundations are unlikely to provide adequate support for the proposed reservoir. Deep foundations will likely be required to mitigate settlement and ensure structural stability. In addition, the reservoir floor will need to be structurally supported between the deep foundation elements to limit differential settlement, usually through a structural mat slab.

Based on the depth to medium stiff to stiff Sandy River Mudstone, augercast piles appear to be feasible options for supporting the proposed reservoir. Augercast piles are typically

embedded within a 2- to 3-foot-thick structural mat, which transfers the reservoir loads to the piles and is structurally connected through steel reinforcement.

Driven piles may be a viable foundation option for supporting the reservoir; however, their use should be carefully evaluated due to the proximity of nearby residences. According to Caltrans guidance (2020), pile driving operations are generally not expected to cause significant structural damage to the adjacent residential structures. Nonetheless, significant nuisance impacts, such as vibration and noise are likely and should be considered. In addition, there is a significant risk that property owners may still report minor damage or cite pre-existing conditions not documented in pre-construction surveys.

If driven piles are pursued, a comprehensive vibration study should be conducted to assess potential impacts to the residences and guide decisions if driven piles are feasible.

8.3.3 Site 4 Other Considerations

Installation of deep foundations requires a specialty contractor with appropriate equipment and expertise. Augercast piles are generally preferred over driven piles due to their non-vibratory installation methods, which help minimize noise and vibration impacts. However, augercast piles typically come at a higher cost. Their performance is highly dependent on the contractor's procedure, workmanship, and equipment quality.

Based on our experience, the unit cost for augercast piles may range from approximately \$100 to \$150 per linear foot, excluding contingencies. Actual costs will vary depending on factors such as pile depth and the amount of steel reinforcement used in the cage. To support deep foundation equipment and protect the subgrade from construction traffic, a granular working pad should be constructed.

Similar to Site 3, the northern portion of Site 4 is densely vegetated with mature trees and thick underbrush, likely to contain a substantial root zone. This vegetation will need to be fully cleared from proposed improvement areas. Grubbing operations may cause significant soil disturbance, potentially requiring over-excavation. Recomposition of these disturbed soils is expected to be impractical due to their likely elevated moisture content. Consequently, removed disturbed material should be replaced with compacted imported granular structural fill.

9 LIMITATIONS

The conceptual analysis, conclusions, and recommendations contained in this preliminary report are based upon site conditions as they presently exist and further assume that the

explorations are representative of subsurface conditions throughout the site, i.e., the subsurface conditions everywhere are not significantly different from those disclosed by the field explorations. Within the limitations of our scope, schedule, budget, and analyses presented in this report, our geotechnical data and findings were prepared in accordance with generally accepted professional geotechnical engineering principles and practice in this area at the time this report was prepared. We make no warranty, either express or implied. Our conceptual conclusions and recommendations are based on our understanding of the project as described in this report and the site conditions as interpreted from the explorations.

This report was prepared for the exclusive use of Keller and the City of St. Helens. The conceptual conclusions and recommendations portion of the report is interpretive information and is based on conceptual project information. Therefore, this report should be considered for planning and conceptual design use only. It should not be provided to future prospective Contractors as a basis for bidding. Also, this report is not a warranty of subsurface conditions. Our findings are the result of explorations at particular locations and at the time the explorations were performed. When additional project information is developed on the proposed structures, additional explorations and evaluations will likely be required.

The scope of our geotechnical services did not include any environmental assessment or evaluation regarding the presence or absence of hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below the site, or for evaluation of disposal of contaminated soils or groundwater, should any be encountered, except as noted in this report.

Shannon & Wilson, Inc. has prepared the attached document, "Important Information About Your Geotechnical Report", to assist you and others in understanding the use and limitations of this document.

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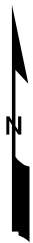
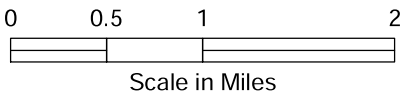
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Author, year of publication, title, and publishing data—all the information necessary for unique identification and library search

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



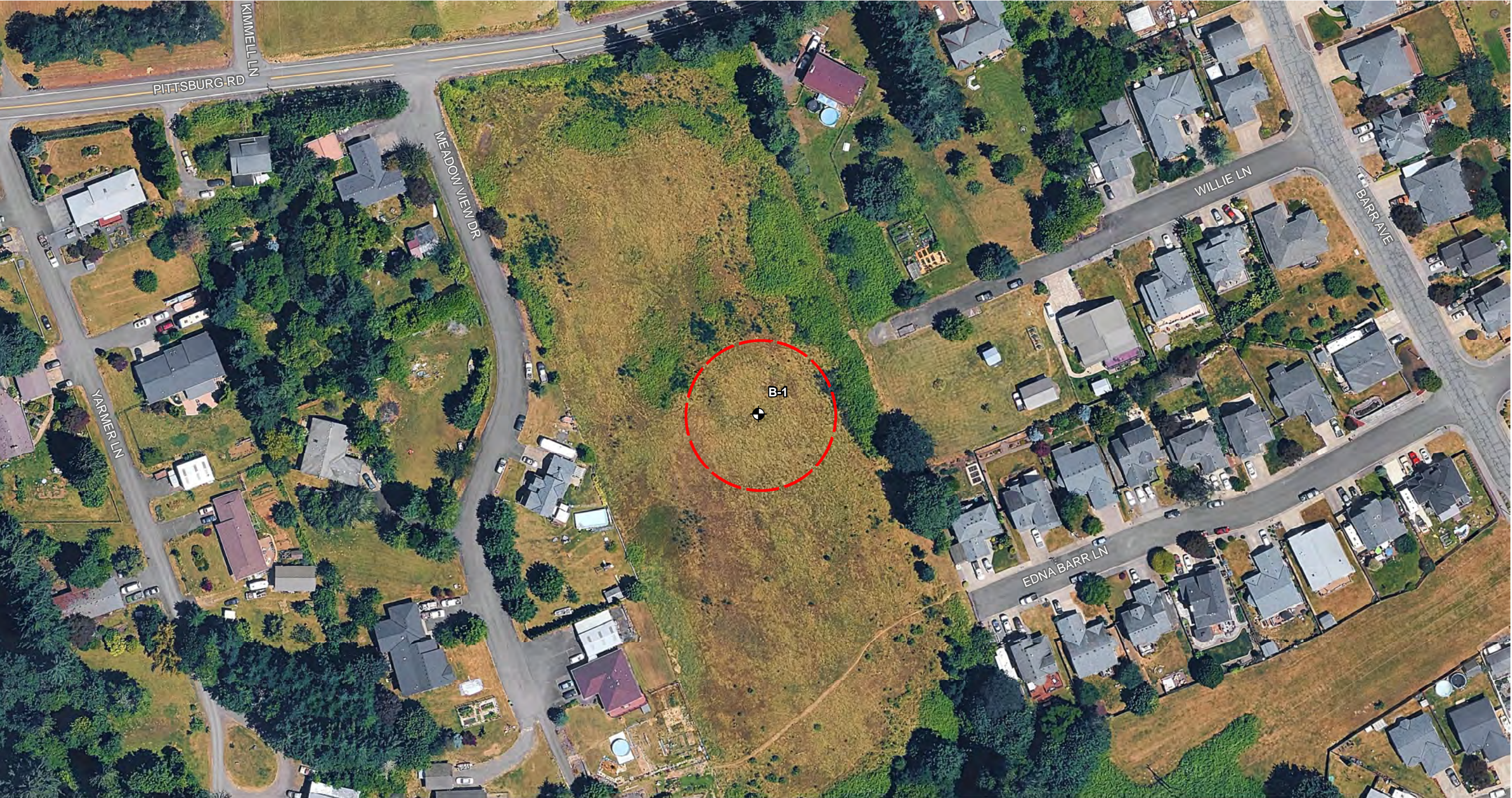
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VICINITY MAP

November 2025

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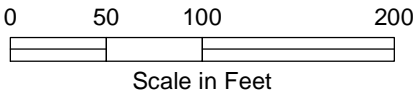
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LEGEND

 Approximate Location and Designation of Geotechnical Boring



 Approximate Reservoir Footprint

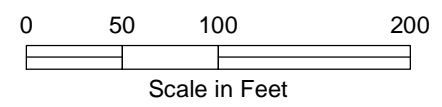


- NOTES**
1. Satellite imagery obtained through Google Maps.


St. Helens Reservoir Siting Study St. Helens, Oregon	
SITE AND EXPLORATION PLAN SITE 2	
December 2025	115125
 SHANNON & WILSON	F Sh Page 136



- LEGEND**
-  Approximate Location and Designation of Geotechnical Boring
 -  Approximate Reservoir Footprint





- NOTES**
1. Satellite imagery obtained through Google Maps.

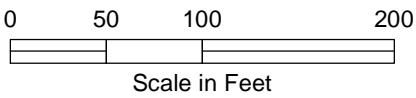
St. Helens Reservoir Siting Study St. Helens, Oregon	
SITE AND EXPLORATION PLAN SITE 3	
December 2025	115125
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LEGEND


 Approximate Location and Designation of Geotechnical Boring

 Approximate Reservoir Footprint



NOTES

1. Satellite imagery obtained through Google Maps.

St. Helens Reservoir Siting Study St. Helens, Oregon	
SITE AND EXPLORATION PLAN SITE 4	
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Appendix A

Field Explorations

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Figure A3: Log of Boring, B-1
Figure A4: Log of Boring, B-2
Figure A5: Log of Boring, B-3
Figure A6: Core Photographs, B-1

A.1 GENERAL

The geotechnical field exploration program included three (3) borings, designated B-1 through B-3. Completed exploration locations were measured in the field and are shown on the Site and Exploration Plan, Figure 2. A Shannon & Wilson geologist was present during the drilling of the geotechnical borings to locate the drilling sites, log the materials encountered, and collect soil samples.

This appendix describes the techniques used to advance and sample the borings and presents logs of the materials encountered.

A.2 GEOTECHNICAL DRILLING

The geotechnical borings were in two mobilizations. The first mobilization, which included the drilling of borings B-1 and B-2 was between September 24, 2025 and September 25, 2025. The second mobilization to drill boring B-3 was on October 21, 2025. All borings were drilled using a track mounted Geoprobe 3126GT drill rig owned and operated by Western States Soil Conservation, Inc. out of Hubbard, Oregon. The borings were drilled to depths ranging from 36.5 and 61.5 feet below ground surface (bgs). Sampling methods are detailed in the following sections.

A.2.1 Disturbed Sampling

Disturbed samples were collected in the borings at 2.5-foot depth intervals, using a standard 2-inch outside diameter (O.D.) split spoon sampler in conjunction with Standard Penetration Testing (SPT). In a Standard Penetration Test, ASTM D1586, the 2-inch O.D. sampler is driven 18 inches into the soil using a 140-pound hammer dropped 30 inches. The number of blows required to drive the sampler the last 12 inches is defined as the standard penetration resistance or N-value. The SPT N-value provides a measure of in situ relative density of granular soils such as sand and gravel, and the consistency of cohesive soils such as silt and clay. All disturbed samples were visually identified and described in the field, sealed to retain moisture, and returned to our laboratory for additional examination and testing.

SPT N-values can be significantly affected by several factors, including the efficiency of the hammer used. Automatic hammers, like the hammer used for this project, generally have higher energy transfer efficiencies than cathead (manual) hammers. For reference, cathead hammers are typically assumed to have an average energy efficiency of 60 percent. All N-values presented in this report are in blows per foot, as counted in the field. No corrections of any kind have been applied. N-values of zero indicate that the sampler advanced the last

12 inches of the 18-inch sampling interval without a single hammer strike. That is, the weight of the drilling rods or the weight of the drilling rods plus the weight of the hammer (not in motion) was sufficient to advance the sampler.

An SPT was considered to have met “refusal” when 50 blows were required to drive the sampler 6 inches or less. If refusal was encountered in the first 6-inch interval (for example, 50 for 1.5”), the count is reported as 50/1st 1.5”. If refusal was encountered in the second 6-inch interval (for example, 48, 50 for 1.5”), the count is reported as 50/1.5”. If refusal was encountered in the last 6-inch interval (for example, 39, 48, 50 for 2”), the count is reported as 98/8”.

A.2.2 Continuous Coring

Continuous HQ-wireline rock coring was used in boring B-1 to sample and advance through rock. Core samples were visually described in the field and then boxed for transport to our laboratory for further examination. The rock core recovery (presented on the Drill Logs) was calculated by dividing the length of core recovered in the barrel by the length of the total drilled run. This ratio is expressed as a percent.

The rock quality designation (RQD), also presented on the Drill Logs, is a modified core recovery percentage including only the total length of the specimens of intact rock more than 4 inches in length, divided by the total length of the core run. The smaller pieces are considered to be the result of close jointing, fracturing, or weathering in the rock mass and are excluded from the determination. Difficulties such as distinguishing natural fractures in the rock core from mechanical breaks due to drilling operations restrict the use of the RQD in evaluating in situ rock properties. However, it does provide a subjective estimate of rock mass quality and a comparison of rock quality in the borings.

A.3 MATERIAL DESCRIPTIONS

Soil samples were described and identified visually in the field in general accordance with ASTM D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). The specific terminology used is defined in the Soil Description and Log Key, Figure A1. Consistency, color, relative moisture, degree of plasticity, and other distinguishing characteristics of the samples were noted. Once transported to Shannon & Wilson, Inc., the SPT samples were re-examined and the field descriptions and identifications were modified where necessary. We refined our visual-manual soil descriptions and identifications based on the results of the laboratory tests, using elements of the Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), ASTM D2487. However, ASTM D2487 was not followed in full,

because it requires a suite of tests to be performed to classify a single sample. The specific terminology used in the soil and rock classifications are defined in the Soil Description and Log Key, Figure A1 and Rock Classification and Log Key, Figure A2.

A.4 BORING LOGS

The summary logs of the borings are presented in the Logs of Borings, Figures A2 to A5. Material descriptions and interfaces on the logs are interpretive, and actual changes may be gradual. The left-hand portion of the boring logs provides descriptions, identifications, and geotechnical unit designations for the materials encountered in the boring. The right-hand portion of the boring logs shows a graphic log, sample locations and designations, backfill details, and a graphical representation of N-values, natural water contents, Atterberg Limits, percent passing the No. 200 sieve, and sample recovery.

A.5 BOREHOLE ABANDONMENT

All borings were backfilled with bentonite chips or bentonite grout in accordance with State of Oregon regulations. Boring B-2 was performed within the roadway and was finished at the surface with asphalt concrete. B-1 and B-3 were finished at the surface with native soil.

Shannon & Wilson, Inc. (S&W), uses a soil identification system modified from the Unified Soil Classification System (USCS). Elements of the USCS and other definitions are provided on this and the following pages. Soil descriptions are based on visual-manual procedures (ASTM D2488) and laboratory testing procedures (ASTM D2487), if performed.

S&W INORGANIC SOIL CONSTITUENT DEFINITIONS

CONSTITUENT ²	FINE-GRAINED SOILS (50% or more fines) ¹	COARSE-GRAINED SOILS (less than 50% fines) ¹
Major	Silt, Lean Clay, Elastic Silt, or Fat Clay³	Sand or Gravel⁴
Modifying (Secondary) Precedes major constituent	30% or more coarse-grained: Sandy or Gravelly⁴	More than 12% fine-grained: Silty or Clayey³
Minor Follows major constituent	15% to 30% coarse-grained: with Sand or with Gravel⁴ 30% or more total coarse-grained and lesser coarse-grained constituent is 15% or more: with Sand or with Gravel⁵	5% to 12% fine-grained: with Silt or with Clay³ 15% or more of a second coarse-grained constituent: with Sand or with Gravel⁵

¹All percentages are by weight of total specimen passing a 3-inch sieve.

²The order of terms is: *Modifying Major with Minor*.

³Determined based on behavior.

⁴Determined based on which constituent comprises a larger percentage.

⁵Whichever is the lesser constituent.

MOISTURE CONTENT TERMS

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

STANDARD PENETRATION TEST (SPT) SPECIFICATIONS

Hammer:	140 pounds with a 30-inch free fall. Rope on 6- to 10-inch-diam. cathead 2-1/4 rope turns, > 100 rpm
Sampler:	10 to 30 inches long Shoe I.D. = 1.375 inches Barrel I.D. = 1.5 inches Barrel O.D. = 2 inches
N-Value:	Sum blow counts for second and third 6-inch increments. Refusal: 50 blows for 6 inches or less; 10 blows for 0 inches.
NOTE: Penetration resistances (N-values) shown on boring logs are as recorded in the field and have not been corrected for hammer efficiency, overburden, or other factors.	













PARTICLE SIZE DEFINITIONS

DESCRIPTION	SIEVE NUMBER AND/OR APPROXIMATE SIZE
FINES	< #200 (0.075 mm = 0.003 in.)
SAND Fine Medium Coarse	#200 to #40 (0.075 to 0.4 mm; 0.003 to 0.02 in.) #40 to #10 (0.4 to 2 mm; 0.02 to 0.08 in.) #10 to #4 (2 to 4.75 mm; 0.08 to 0.187 in.)
GRAVEL Fine Coarse	#4 to 3/4 in. (4.75 to 19 mm; 0.187 to 0.75 in.) 3/4 to 3 in. (19 to 76 mm)
COBBLES	3 to 12 in. (76 to 305 mm)
BOULDERS	> 12 in. (305 mm)

RELATIVE DENSITY / CONSISTENCY

COHESIONLESS SOILS		COHESIVE SOILS	
N, SPT, BLOWS/FT.	RELATIVE DENSITY	N, SPT, BLOWS/FT.	RELATIVE CONSISTENCY
< 4	Very loose	< 2	Very soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium dense	4 - 8	Medium stiff
30 - 50	Dense	8 - 15	Stiff
> 50	Very dense	15 - 30	Very stiff
		> 30	Hard

WELL AND BACKFILL SYMBOLS

	Bentonite		Surface Cement Seal
	Cement Grout		Asphalt or Cap
	Bentonite Grout		Slough
	Bentonite Chips		Inclinometer or Non-perforated Casing
	Silica Sand		Vibrating Wire Piezometer
	Gravel		
	Perforated or Screened Casing		

PERCENTAGES TERMS^{1,2}

Trace	< 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

¹Gravel, sand, and fines estimated by mass. Other constituents, such as organics, cobbles, and boulders, estimated by volume.

²Reprinted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

St. Helens Reservoir Siting Study
St. Helens Oregon

SOIL DESCRIPTION AND LOG KEY

November 2025

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FIG. 11
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UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) (Modified From USACE Tech Memo 3-357, ASTM D2487, and ASTM D2488)					
MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL		TYPICAL IDENTIFICATIONS
COARSE-GRAINED SOILS (more than 50% retained on No. 200 sieve)	Gravels (more than 50% of coarse fraction retained on No. 4 sieve)	Gravel (less than 5% fines)	GW		Well-Graded Gravel; Well-Graded Gravel with Sand
			GP		Poorly Graded Gravel; Poorly Graded Gravel with Sand
		Silty or Clayey Gravel (more than 12% fines)	GM		Silty Gravel; Silty Gravel with Sand
			GC		Clayey Gravel; Clayey Gravel with Sand
	Sands (50% or more of coarse fraction passes the No. 4 sieve)	Sand (less than 5% fines)	SW		Well-Graded Sand; Well-Graded Sand with Gravel
			SP		Poorly Graded Sand; Poorly Graded Sand with Gravel
		Silty or Clayey Sand (more than 12% fines)	SM		Silty Sand; Silty Sand with Gravel
			SC		Clayey Sand; Clayey Sand with Gravel
FINE-GRAINED SOILS (50% or more passes the No. 200 sieve)	Silts and Clays (liquid limit less than 50)	Inorganic	ML		Silt; Silt with Sand or Gravel; Sandy or Gravelly Silt
			CL		Lean Clay; Lean Clay with Sand or Gravel; Sandy or Gravelly Lean Clay
		Organic	OL		Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
	Silts and Clays (liquid limit 50 or more)	Inorganic	MH		Elastic Silt; Elastic Silt with Sand or Gravel; Sandy or Gravelly Elastic Silt
			CH		Fat Clay; Fat Clay with Sand or Gravel; Sandy or Gravelly Fat Clay
		Organic	OH		Organic Silt or Clay; Organic Silt or Clay with Sand or Gravel; Sandy or Gravelly Organic Silt or Clay
HIGHLY-ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor		PT		Peat or other highly organic soils (see ASTM D4427)
FILL	Placed by humans, both engineered and nonengineered. May include various soil materials and debris.				The Fill graphic symbol is combined with the soil graphic that best represents the observed material

NOTE: No. 4 size = 4.75 mm = 0.187 in.; No. 200 size = 0.075 mm = 0.003 in.

NOTES

- Dual symbols (symbols separated by a hyphen, i.e., SP-SM, Sand with Silt) are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.
- Borderline symbols (symbols separated by a slash, i.e., CL/ML, Lean Clay to Silt; SP-SM/SM, Sand with Silt to Silty Sand) indicate that the soil properties are close to the defining boundary between two groups.
- The soil graphics above represent the various USCS identifications (i.e., GP, SM, etc.) and may be augmented with additional symbology to represent differences within USCS designations. Sandy Silt (ML), for example, may be accompanied by the ML soil graphic with sand grains added. Non-USCS materials may be represented by other graphic symbols; see log for descriptions.

St. Helens Reservoir Siting Study
St. Helens Oregon

SOIL DESCRIPTION AND LOG KEY

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FIG. 11
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GRADATION TERMS

Poorly Graded	Narrow range of grain sizes present or, within the range of grain sizes present, one or more sizes are missing (Gap Graded). Meets criteria in ASTM D2487, if tested.
Well-Graded	Full range and even distribution of grain sizes present. Meets criteria in ASTM D2487, if tested.

CEMENTATION TERMS¹

Weak	Crumbles or breaks with handling or slight finger pressure
Moderate	Crumbles or breaks with considerable finger pressure
Strong	Will not crumble or break with finger pressure

PLASTICITY²

DESCRIPTION	VISUAL-MANUAL CRITERIA	APPROX. PLASTICITY INDEX RANGE
Nonplastic	A 1/8-in. thread cannot be rolled at any water content.	< 4%
Low	A thread can barely be rolled and a lump cannot be formed when drier than the plastic limit.	4 to 10%
Medium	A thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. A lump crumbles when drier than the plastic limit.	10 to 20%
High	It take considerable time rolling and kneading to reach the plastic limit. A thread can be rerolled several times after reaching the plastic limit. A lump can be formed without crumbling when drier than the plastic limit.	> 20%

ADDITIONAL TERMS

Mottled	Irregular patches of different colors.
Bioturbated	Soil disturbance or mixing by plants or animals.
Diamict	Nonsorted sediment; sand and gravel in silt and/or clay matrix.
Cuttings	Material brought to surface by drilling.
Slough	Material that caved from sides of borehole.
Sheared	Disturbed texture, mix of strengths.

PARTICLE ANGULARITY AND SHAPE TERMS¹

Angular	Sharp edges and unpolished planar surfaces.
Subangular	Similar to angular, but with rounded edges.
Subrounded	Nearly planar sides with well-rounded edges.
Rounded	Smoothly curved sides with no edges.
Flat	Width/thickness ratio > 3.
Elongated	Length/width ratio > 3.

ACRONYMS AND ABBREVIATIONS

ATD	At Time of Drilling
approx.	Approximate/Approximately
Diam.	Diameter
Elev.	Elevation
ft.	Feet
FeO	Iron Oxide
gal.	Gallons
Horiz.	Horizontal
HSA	Hollow Stem Auger
I.D.	Inside Diameter
in.	Inches
lbs.	Pounds
MgO	Magnesium Oxide
mm	Millimeter
MnO	Manganese Oxide
NA	Not Applicable or Not Available
NP	Nonplastic
O.D.	Outside Diameter
OW	Observation Well
pcf	Pounds per Cubic Foot
PID	Photo-Ionization Detector
PMT	Pressuremeter Test
ppm	Parts per Million
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
rpm	Rotations per Minute
SPT	Standard Penetration Test
USCS	Unified Soil Classification System
q _u	Unconfined Compressive Strength
VWP	Vibrating Wire Piezometer
Vert.	Vertical
WOH	Weight of Hammer
WOR	Weight of Rods
Wt.	Weight

STRUCTURE TERMS¹

Interbedded	Alternating layers of varying material or color with layers at least 1/4-inch thick; singular: bed.
Laminated	Alternating layers of varying material or color with layers less than 1/4-inch thick; singular: lamination.
Fissured	Breaks along definite planes or fractures with little resistance.
Slickensided	Fracture planes appear polished or glossy; sometimes striated.
Blocky	Cohesive soil that can be broken down into small angular lumps that resist further breakdown.
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay.
Homogeneous	Same color and appearance throughout.

St. Helens Reservoir Siting Study
St. Helens Oregon

**SOIL DESCRIPTION
AND LOG KEY**

November 2025

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FIG. 11
She Page 145

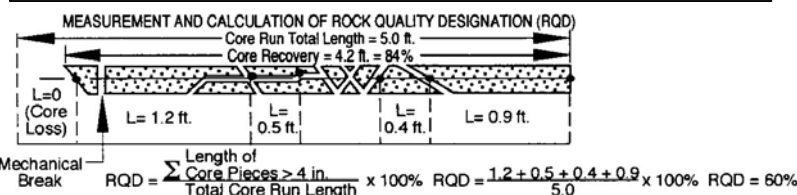
¹Reprinted, with permission, from ASTM D2488 - 09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. A copy of the complete standard may be obtained from ASTM International, www.astm.org.

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FABRIC TERMS	STRENGTH				
	GRADE	DESCRIPTION	FIELD IDENTIFICATION	APPROXIMATE RANGE OF UNIAxIAL COMPRESSIVE STRENGTH	
				(MPa)	(psi)
SEDIMENTARY ROCKS MASSIVE - Rock without significant structure BEDDED - Regular layering from sedimentation FISSILE - Tendency to break along laminations	R0	Extremely Weak Rock	Indented by thumbnail	0.25 to 1	36 to 145
	R1	Very Weak Rock	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	1 to 5	145 to 700
	R2	Weak Rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	5 to 25	700 to 3,600
METAMORPHIC ROCKS FOLIATED - Parallel arrangement or distribution of minerals SCHISTOSE - Parallel arrangement of tabular minerals giving a planar fissility GNEISSOSE - Segregation of minerals into bands CLEAVAGE - Tendency to split along secondary, planar textures or structures	R3	Medium Strong Rock	Cannot be scraped or peeled by a pocket knife, specimen can be fractured with single firm blow of geological hammer	25 to 50	3,600 to 7,200
	R4	Strong Rock	Specimen requires more than one blow of geological hammer to fracture it	50 to 100	7,200 to 14,500
	R5	Very Strong Rock	Specimen requires many blows of geological hammer to fracture it	100 to 250	14,500 to 36,250
	R6	Extremely Strong Rock	Specimen can only be chipped with geological hammer	>250	>36,250

VESICULARITY		WEATHERING	
Slightly Vesicular	1 to 10%	TERM	DESCRIPTION
Moderately Vesicular	10 to 30%	Fresh	No visible signs of rock material weathering: perhaps slight discoloration on major discontinuity surfaces.
Highly Vesicular	30 to 50%	Slightly Weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and somewhat weaker than in its fresh condition.
Scoriaceous	>50%	Moderately Weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
		Highly Weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
		Completely Weathered	All rock is decomposed and/or disintegrated to soil. The original mass is still largely intact.
		Residual Soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

DISCONTINUITY TERMS		STRUCTURE SPACING TERMS		
FRACTURE - Collective term for any natural break excluding shears, shear zones, and faults JOINT (JT) - Planar break with little or no displacement FOLIATION JOINT (FJ) or BEDDING JOINT (BJ) - Joint along foliation or bedding INCIPIENT JOINT (IJ) or INCIPIENT FRACTURE (IF) - Joint or fracture not evident until wetted and dried; breaks along existing surface RANDOM FRACTURE (RF) - Natural, very irregular fracture that does not belong to a set BEDDING PLANE SEPARATION or PARTING - A separation along bedding after extraction from stress relief or slaking FRACTURE ZONE (FZ) - Planar zone of broken rock without gouge MECHANICAL BREAK (MB) - Breaks due to drilling or handling; drilling break (DB), hammer break (HB) SHEAR (SH) - Surface of differential movement evident by presence of slickensides, striations, or polishing SHEAR ZONE (SZ) - Zone of gouge and rock fragments bounded by planar shear surfaces FAULT (FT) - Shear zone of significant extent; differentiation from shear zone may be site-specific		STRATIGRAPHIC	SPACING	DISCONTINUITY *
		Extremely Thick	> 20 ft. (> 6 m)	Extremely Wide
		Very Thick	6 to 20 ft. (2 to 6 m)	Very Wide
		Thick	2 to 6 ft. (0.6 to 2 m)	Wide
		Medium	8 to 24 in. (0.2 to 0.6 m)	Moderate
		Thin	2.5 to 8 in. (60 to 200 mm)	Close
		Very Thin	1 to 2.5 in. (20 to 60 mm)	Very Close
		Laminated: Thickly	0.25 to 1 in. (6 to 20 mm)	Extremely Close
		Laminated: Thinly	<0.25 in. (<6 mm)	Extremely Close
		* Refers to apparent spacing along core axis unless measured orthogonal to discontinuity; should then report for each set		
		<small>R. Reference: Brown, E.T., ed., 1981, Rock Characterization Testing and Monitoring ISRM Suggested methods. New York, International Society for Rock Mechanics (ISRM).</small>		



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ROCK CLASSIFICATION AND LOG KEY

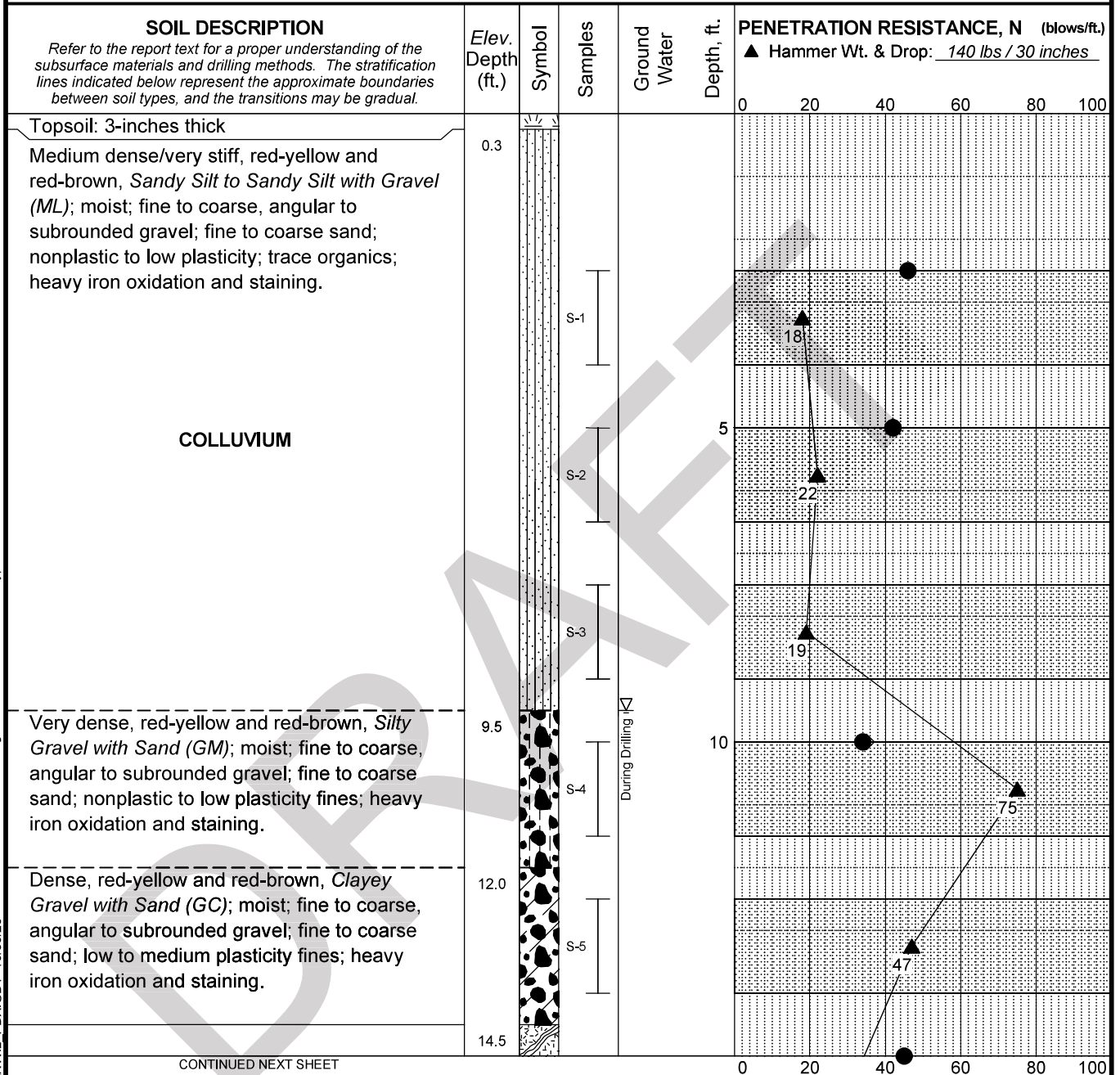
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FI Page 146

Total Depth: 36.5 ft. Northing: ~ Drilling Method: HSA and Rock Core Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~



CONTINUED NEXT SHEET

LEGEND

- Standard Penetration Test
 Rock Core - HQ
 Groundwater Level ATD

- Recovery (%) RQD (%)
 % Fines (<0.075mm)
 % Water Content
 Plastic Limit ———— Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. Group symbol is based on visual-manual identification and selected lab testing.
4. The hole location and elevation should be considered approximate.

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Siting Study
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LOG OF BORING B-1

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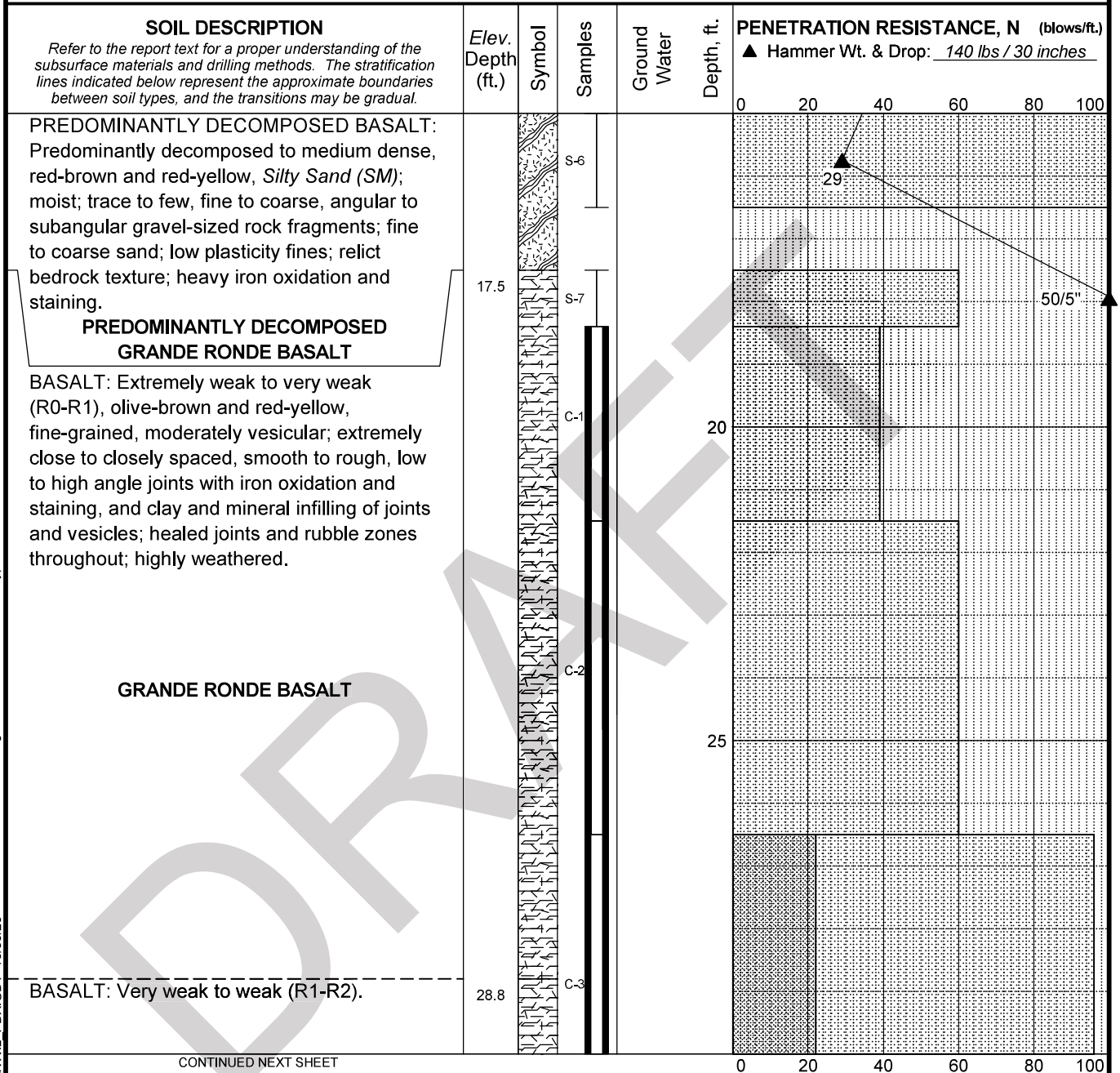
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FIG. 10
Sheet

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REV 2

Total Depth: 36.5 ft. Northing: ~ Drilling Method: HSA and Rock Core Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~



CONTINUED NEXT SHEET

LEGEND

Standard Penetration Test
 Rock Core - HQ

Groundwater Level ATD

Recovery (%) RQD (%)

% Fines (<0.075mm)

% Water Content

Plastic Limit Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
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4. The hole location and elevation should be considered approximate.

St. Helens Reservoir
 Siting Study
 Saint Helens, Oregon

LOG OF BORING B-1

November 2025

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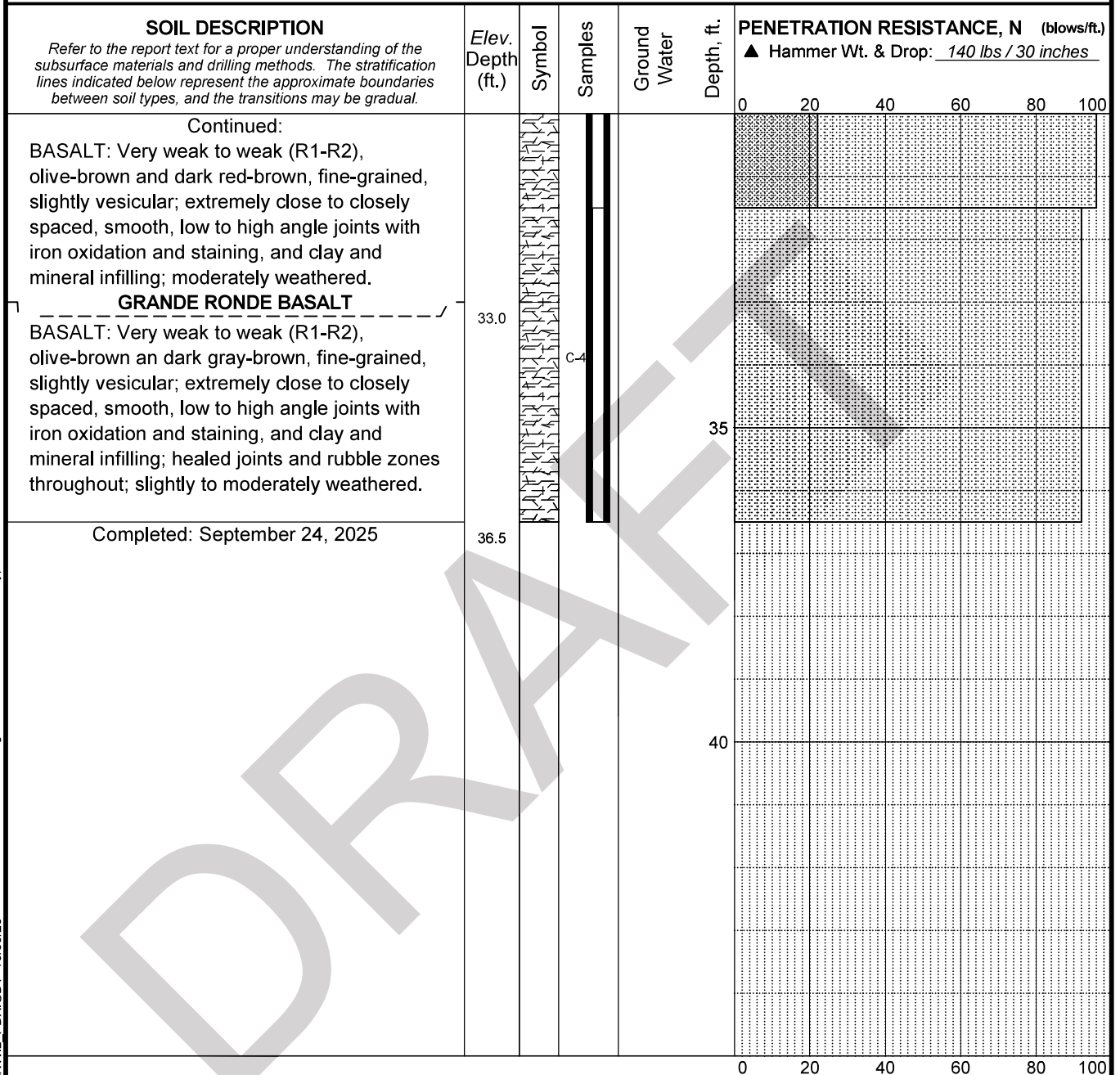
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FIG. 10
Sheet

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REV 2

Total Depth: 36.5 ft. Northing: ~ Drilling Method: HSA and Rock Core Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~



LEGEND

Standard Penetration Test
 Rock Core - HQ
 Groundwater Level ATD

Recovery (%) RQD (%)
 % Fines (<0.075mm)
 % Water Content
 Plastic Limit ——— Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. Group symbol is based on visual-manual identification and selected lab testing.
4. The hole location and elevation should be considered approximate.

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LOG OF BORING B-1

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FIG. 10
Sheet

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REV 2

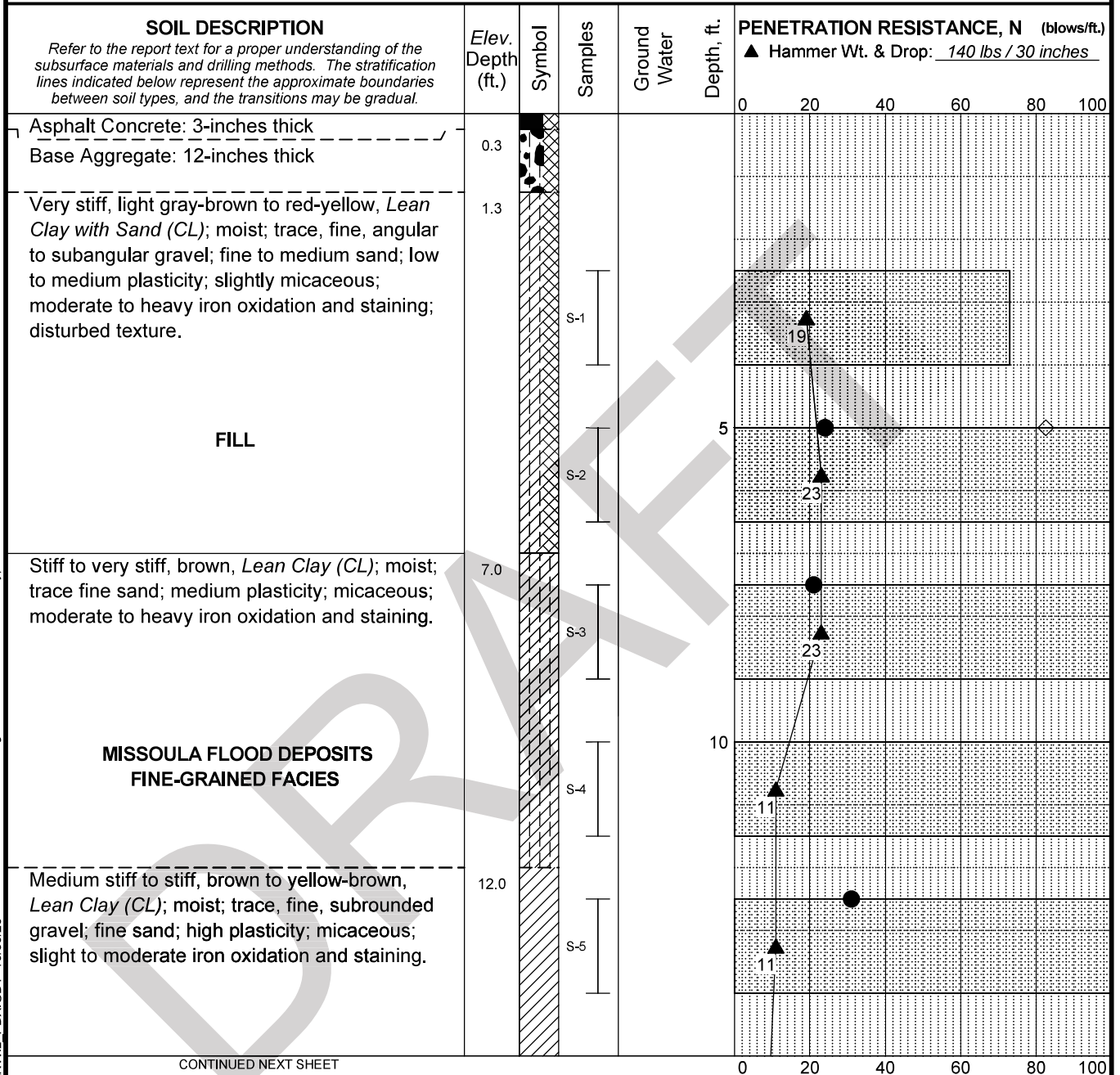
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Rev: DSJ

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 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~



CONTINUED NEXT SHEET

LEGEND

Standard Penetration Test Groundwater Level ATD

Recovery (%)

% Fines (<0.075mm)

% Water Content

Plastic Limit Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. Group symbol is based on visual-manual identification and selected lab testing.
4. The hole location and elevation should be considered approximate.

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Siting Study
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LOG OF BORING B-2

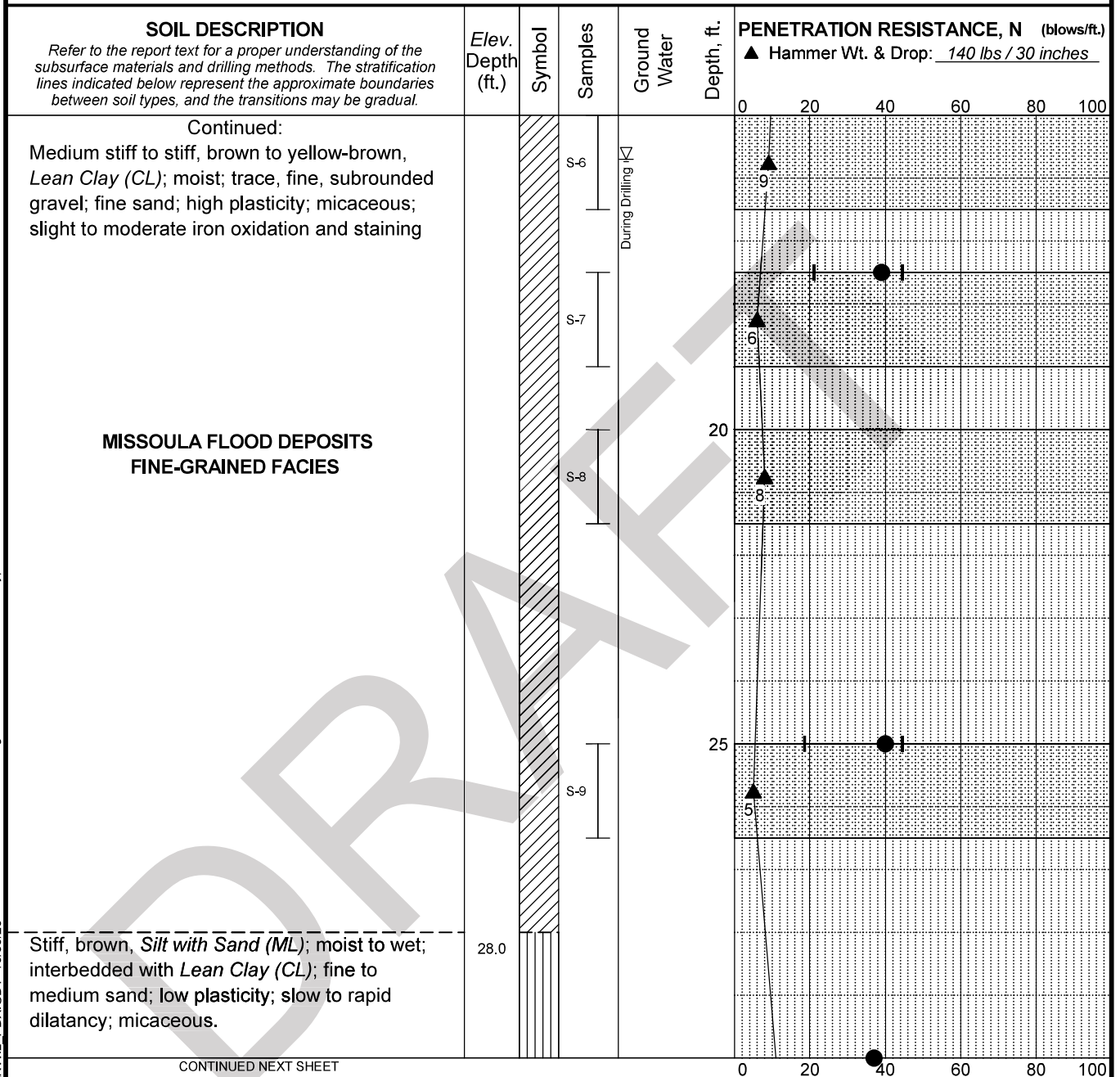
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FIG. 115125
Sheet
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Total Depth: 61.5 ft. Northing: ~ Drilling Method: HSA and Mud Rotary Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~



CONTINUED NEXT SHEET

LEGEND

└─ Standard Penetration Test ▽ Groundwater Level ATD

▣ Recovery (%)

◇ % Fines (<0.075mm)

● % Water Content

Plastic Limit ——— Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. Group symbol is based on visual-manual identification and selected lab testing.
4. The hole location and elevation should be considered approximate.

St. Helens Reservoir
Siting Study
Saint Helens, Oregon

LOG OF BORING B-2

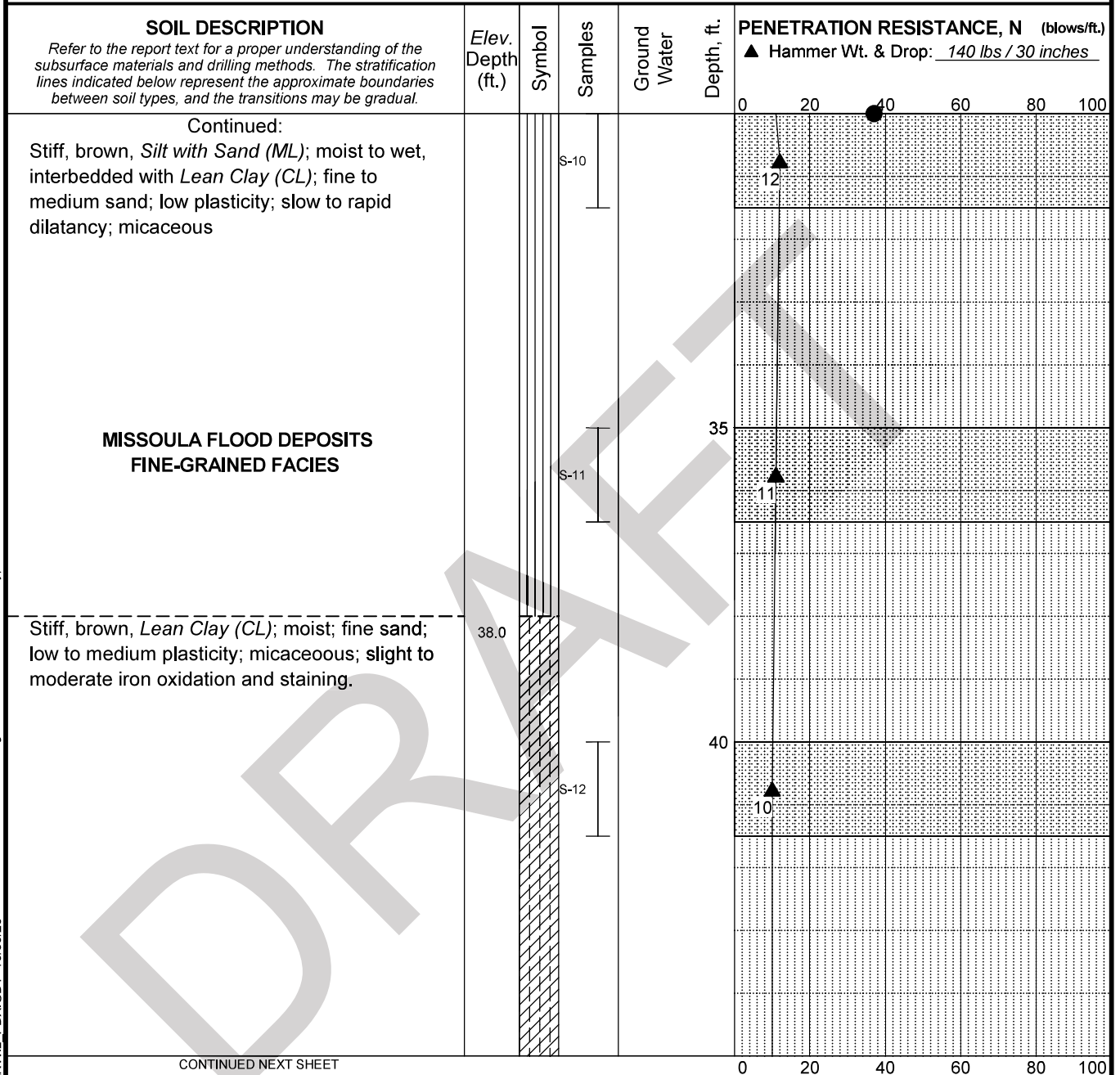
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FIG. 115125
Sheet Page 151

Total Depth: 61.5 ft. Northing: ~ Drilling Method: HSA and Mud Rotary Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~




CONTINUED NEXT SHEET

LEGEND

 Standard Penetration Test

 Groundwater Level ATD

 Recovery (%)

 % Fines (<0.075mm)

 % Water Content

Plastic Limit ——— Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. Group symbol is based on visual-manual identification and selected lab testing.
4. The hole location and elevation should be considered approximate.

St. Helens Reservoir
Siting Study
Saint Helens, Oregon

LOG OF BORING B-2

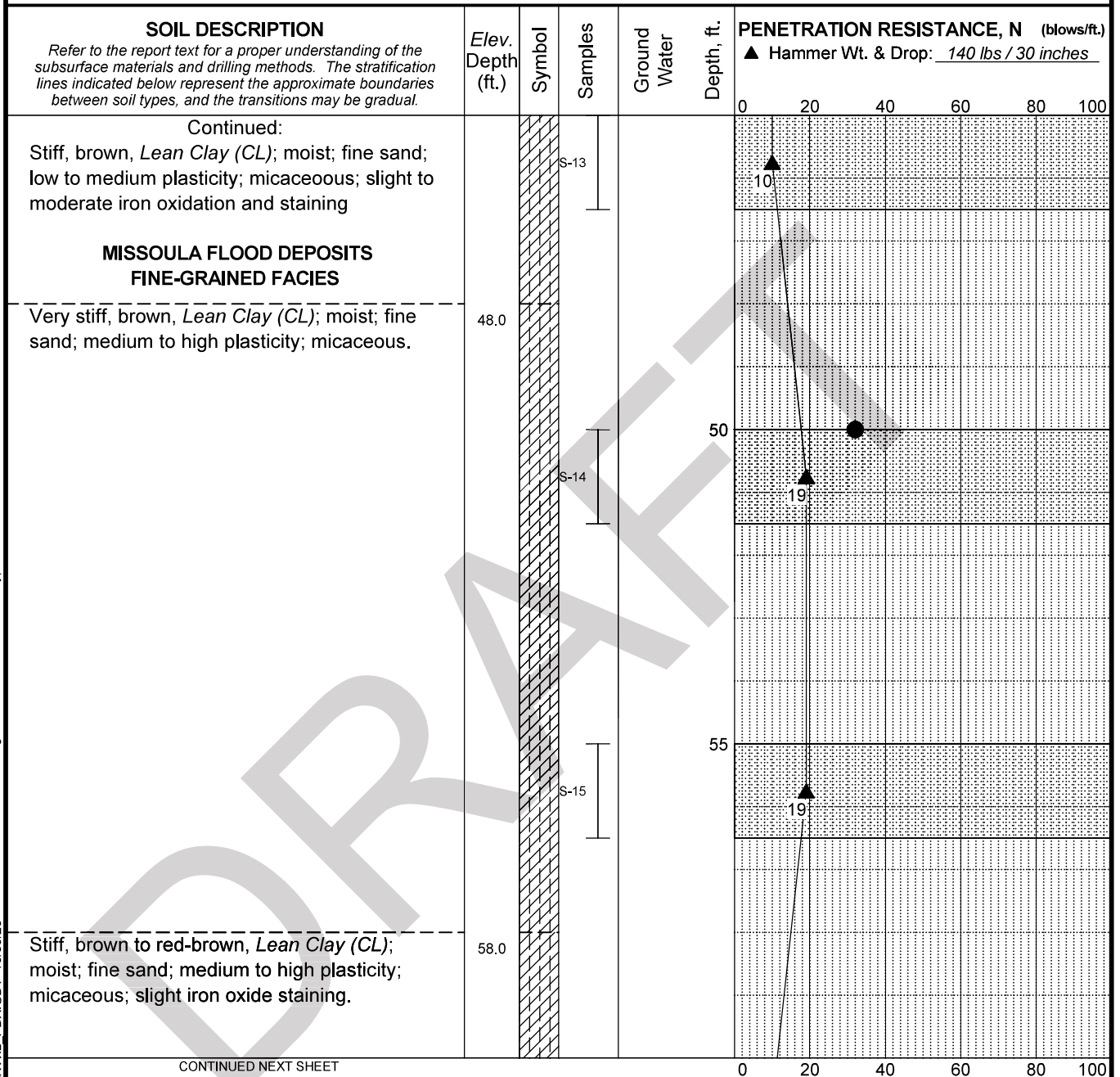
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 FIG. 115125
 Sheet
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Total Depth: 61.5 ft. Northing: ~ Drilling Method: HSA and Mud Rotary Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~




CONTINUED NEXT SHEET

LEGEND

 Standard Penetration Test

 Groundwater Level ATD

 Recovery (%)

 % Fines (<0.075mm)

 % Water Content

Plastic Limit ———— Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. Group symbol is based on visual-manual identification and selected lab testing.
4. The hole location and elevation should be considered approximate.

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Siting Study
Saint Helens, Oregon

LOG OF BORING B-2

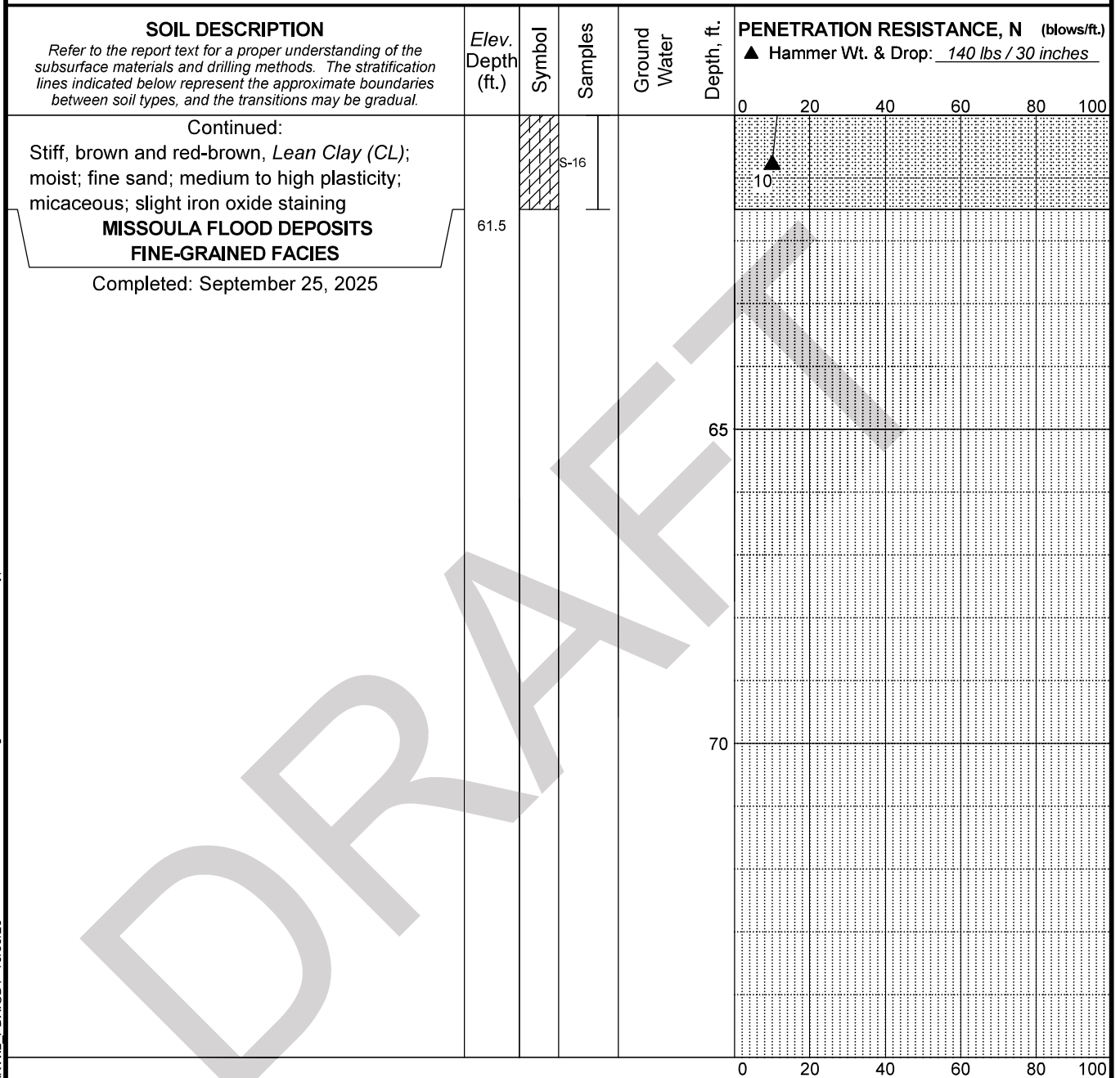
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 FIG. 115125
 Sheet
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Total Depth: 61.5 ft. Northing: ~ Drilling Method: HSA and Mud Rotary Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~



LEGEND

Standard Penetration Test Groundwater Level ATD

Recovery (%)
 % Fines (<0.075mm)
 % Water Content
 Plastic Limit ——— Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. Group symbol is based on visual-manual identification and selected lab testing.
4. The hole location and elevation should be considered approximate.

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Siting Study
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LOG OF BORING B-2

November 2025

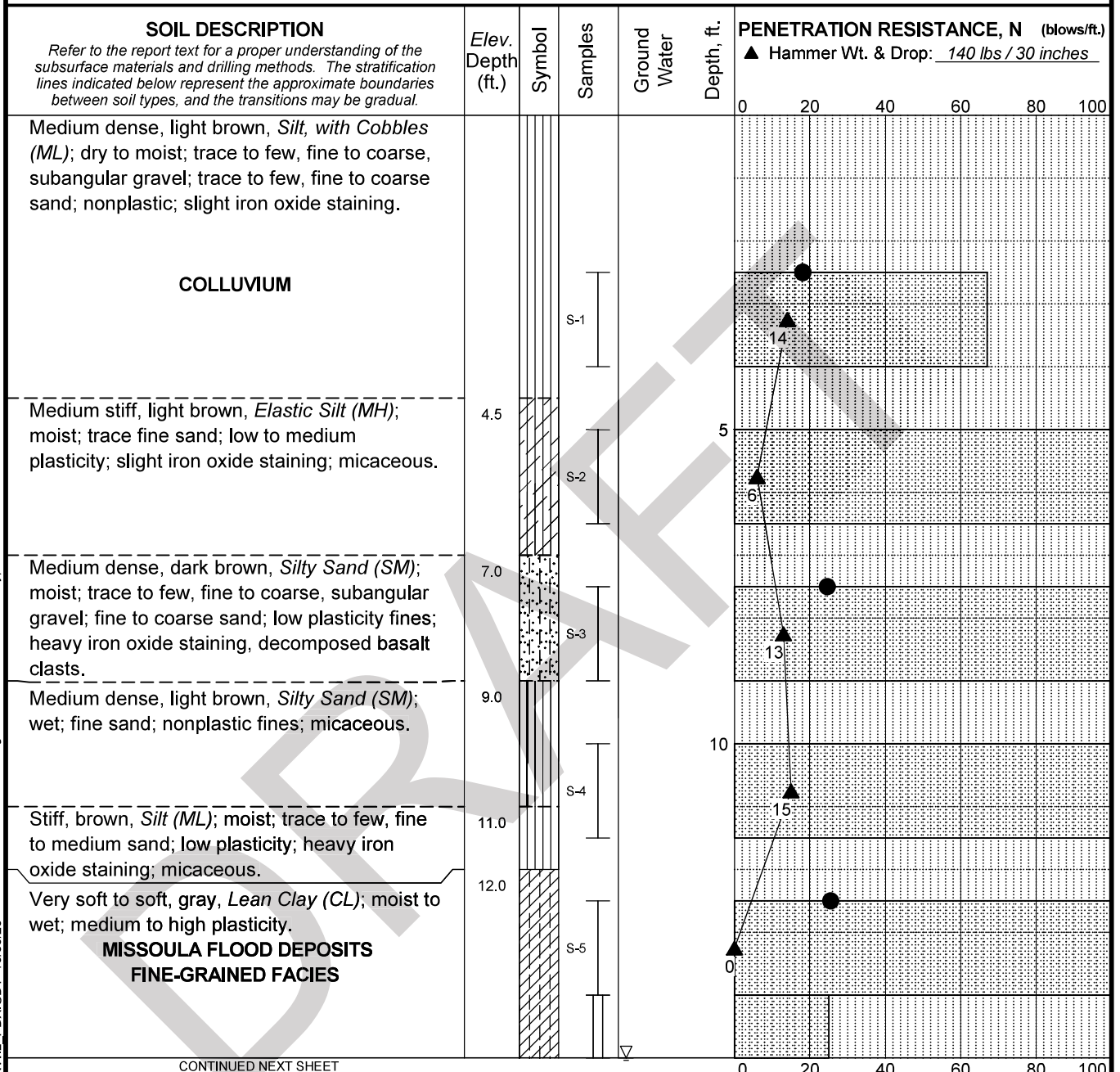
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FIG. 11
Sheet
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REV 2

Total Depth: 61.5 ft. Northing: ~ Drilling Method: HSA and Mud Rotary Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~



LEGEND

Standard Penetration Test
 3" O.D. Shelby Tube
 Groundwater Level ATD

Recovery (%)

% Water Content
 Plastic Limit — Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. Group symbol is based on visual-manual identification and selected lab testing.
4. The hole location and elevation should be considered approximate.

St. Helens Reservoir
 Siting Study
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LOG OF BORING B-3

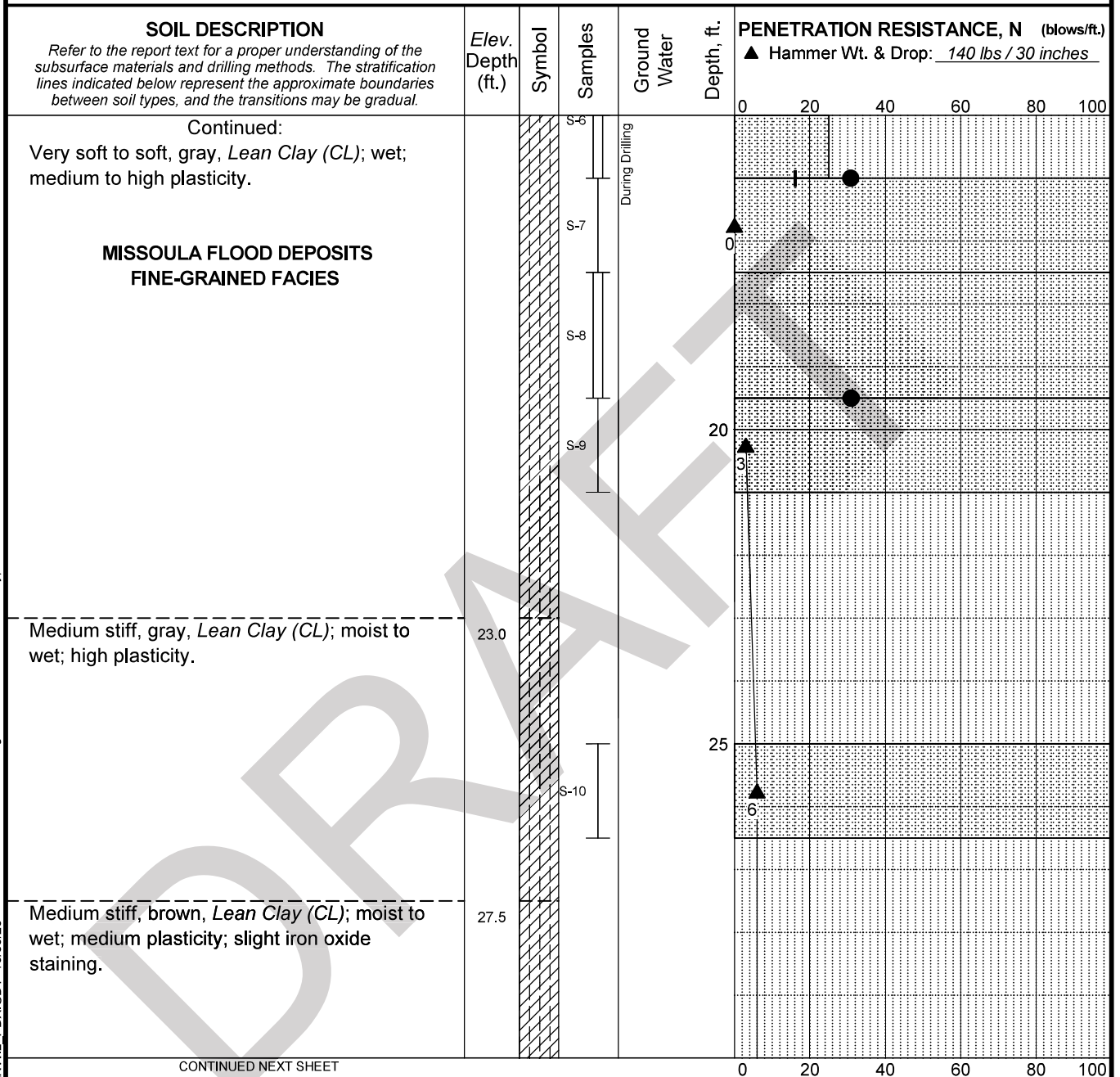
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FIG. 115125
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Total Depth:	<u>61.5 ft.</u>	Northing:	<u>~</u>	Drilling Method:	<u>HSA and Mud Rotary</u>	Hole Diam.:	<u>8 in.</u>
Top Elevation:	<u>~</u>	Easting:	<u>~</u>	Drilling Company:	<u>Western States</u>	Rod Type:	<u>NWJ</u>
Vert. Datum:	<u>~</u>	Station:	<u>~</u>	Drill Rig Equipment:	<u>Geoprobe 3126GT</u>	Hammer Type:	<u>Automatic</u>
Horiz. Datum:	<u>~</u>	Offset:	<u>~</u>	Other Comments:	<u> </u>		



CONTINUED NEXT SHEET

LEGEND

- | | | | |
|---|---------------------------|---|-----------------------|
| | Standard Penetration Test | | Groundwater Level ATD |
| | 3" O.D. Shelby Tube | | |

Recovery (%)

● % Water Content

Plastic Limit | Liquid Limit

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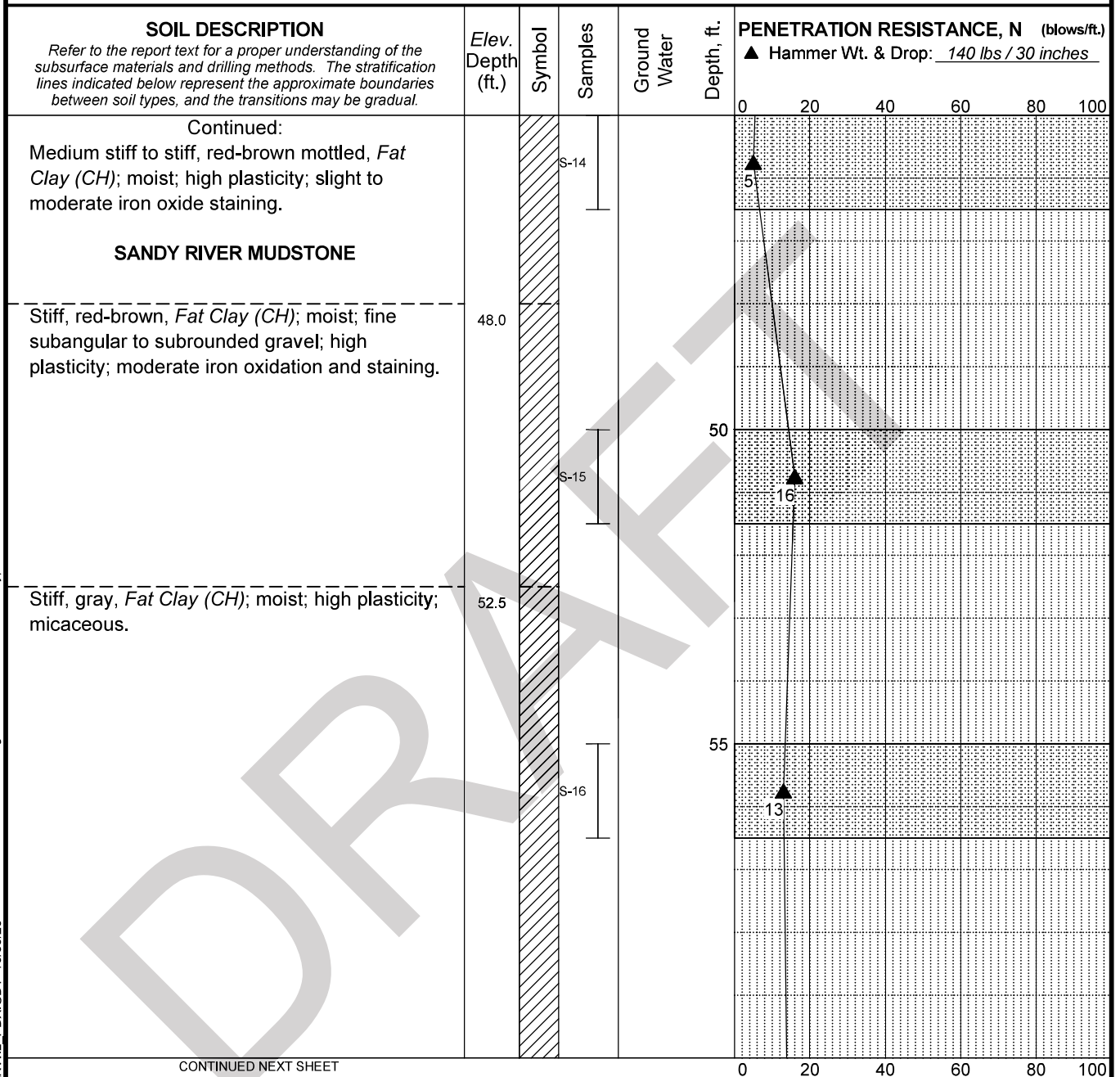
LOG OF BORING B-3

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SOIL DESCRIPTION	Elev. Depth (ft.)	Symbol	Samples	Ground Water	Depth, ft.	PENETRATION RESISTANCE, N (blows/ft.) ▲ Hammer Wt. & Drop: 140 lbs / 30 inches
Continued: Medium stiff, brown, <i>Lean Clay (CL)</i> ; moist to wet; medium plasticity; slight iron oxide staining.						
MISSOULA FLOOD DEPOSITS FINE-GRAINED FACIES Medium stiff, brown mottled, <i>Fat Clay (CH)</i> ; moist; high plasticity; slight iron oxide staining.	32.5		S-11			
					35	
			S-12			
					2	
Medium stiff to stiff, red-brown mottled, <i>Fat Clay (CH)</i> ; moist; high plasticity; slight to moderate iron oxide staining.	37.5					
SANDY RIVER MUDSTONE					40	
			S-13			
					8	

Total Depth: 61.5 ft. Northing: ~ Drilling Method: HSA and Mud Rotary Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~



LEGEND

Standard Penetration Test
 3" O.D. Shelby Tube
 Groundwater Level ATD

Recovery (%)

% Water Content
 Plastic Limit — Liquid Limit

NOTES

- Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
- Groundwater level, if indicated above, is for the date specified and may vary.
- Group symbol is based on visual-manual identification and selected lab testing.
- The hole location and elevation should be considered approximate.

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 Siting Study
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LOG OF BORING B-3

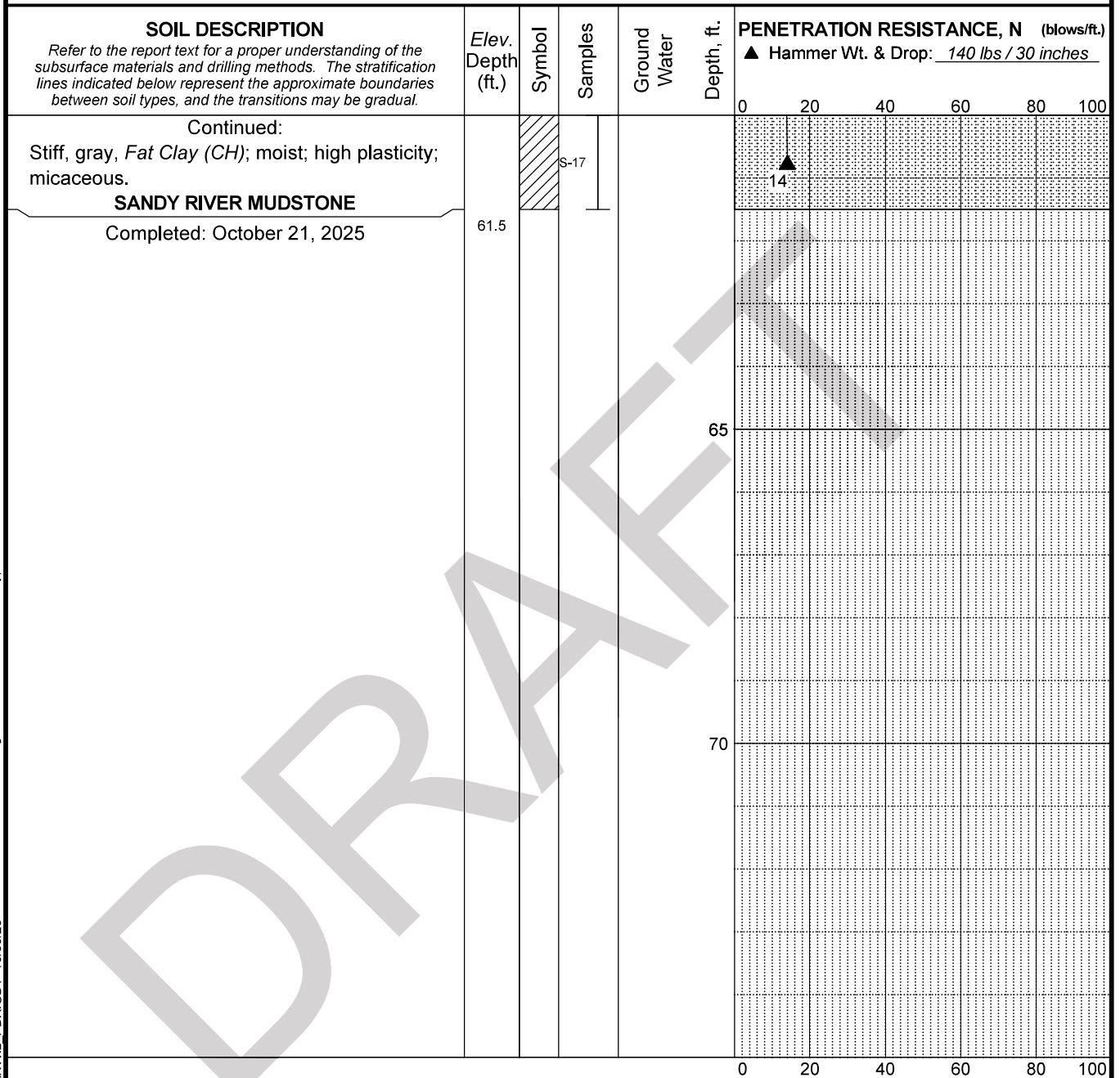
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FIG. 115125
 Sheet Page 158

Total Depth: 61.5 ft. Northing: ~ Drilling Method: HSA and Mud Rotary Hole Diam.: 8 in.
 Top Elevation: ~ Easting: ~ Drilling Company: Western States Rod Type: NWJ
 Vert. Datum: ~ Station: ~ Drill Rig Equipment: Geoprobe 3126GT Hammer Type: Automatic
 Horiz. Datum: ~ Offset: ~ Other Comments: ~



LEGEND

Standard Penetration Test
 3" O.D. Shelby Tube

Groundwater Level ATD

Recovery (%)

● % Water Content
 Plastic Limit ——— Liquid Limit

NOTES

1. Refer to KEY for explanation of symbols, codes, abbreviations, and definitions.
2. Groundwater level, if indicated above, is for the date specified and may vary.
3. Group symbol is based on visual-manual identification and selected lab testing.
4. The hole location and elevation should be considered approximate.

St. Helens Reservoir
 Siting Study
 Saint Helens, Oregon

LOG OF BORING B-3

November 2025

115125

SHANNON & WILSON

FIG. 115125
 Sheet
 Page 159



St. Helens Reservoir
Siting Study
St. Helens, Oregon

CORE PHOTOGRAPHS B-1

November 2025

115125

Appendix B

Laboratory Test Results

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B.2	Soil Testing.....	1
B.2.1	Moisture (Natural Water) Content	1
B.2.2	Atterberg Limits	1
B.2.3	Particle-Size Analyses.....	2

Figures

Figure B1: Atterberg Limits Results

Figure B2: Grain Size Distribution

B.1 GENERAL

Soil samples obtained during the field explorations were described and identified in the field in general accordance with the Practice for Description and Identification of Soils (Visual-Manual Procedure), ASTM D2488. The specific terminology used is defined in the Soil Description and Log Key, Figure A1, Appendix A. The physical characteristics of the collected samples were noted, and field descriptions and identifications were modified, as necessary, in accordance with the terminology presented in Appendix A, Figure A1.

The rock core was classified based on the International Society for Rock Mechanics methods. The specific terminology used in the rock classification is defined in the Rock Classification and Log Key, Appendix A, Figure A2.

During the review, some samples were selected for further testing. The material descriptions and identifications were refined/revised, as necessary, based on the results of the laboratory tests. The soil testing program included natural moisture contents, Atterberg limits testing, and particle size analyses. The rock testing program included unconfined compressive strength. All laboratory tests were performed in accordance with applicable ASTM International (ASTM) standards.

B.2 SOIL TESTING

B.2.1 Moisture (Natural Water) Content

Natural moisture content determinations were performed in accordance with ASTM D2216, on selected soil samples. The natural moisture content is a measure of the amount of moisture in the soil at the time of exploration. It is defined as the ratio of the weight of water to the dry weight of the soil, expressed as a percentage. The results of moisture content determinations are presented on the Logs of Borings in Appendix A.

B.2.2 Atterberg Limits

Atterberg limits were determined for a single sample in accordance with ASTM D4318. This analysis yields index parameters of the soil that are useful in soil identification, as well as in a number of analyses, including liquefaction analysis. An Atterberg limits test determines a soil's liquid limit (LL) and plastic limit (PL). These are the maximum and minimum moisture contents at which the soil exhibits plastic behavior. A soil's plasticity index (PI) can be determined by subtracting PL from LL. The LL, PL, and PI of the tested sample are

presented in Figure B1, Atterberg Limits Results. The result is also presented in the Logs of Borings in Appendix A.

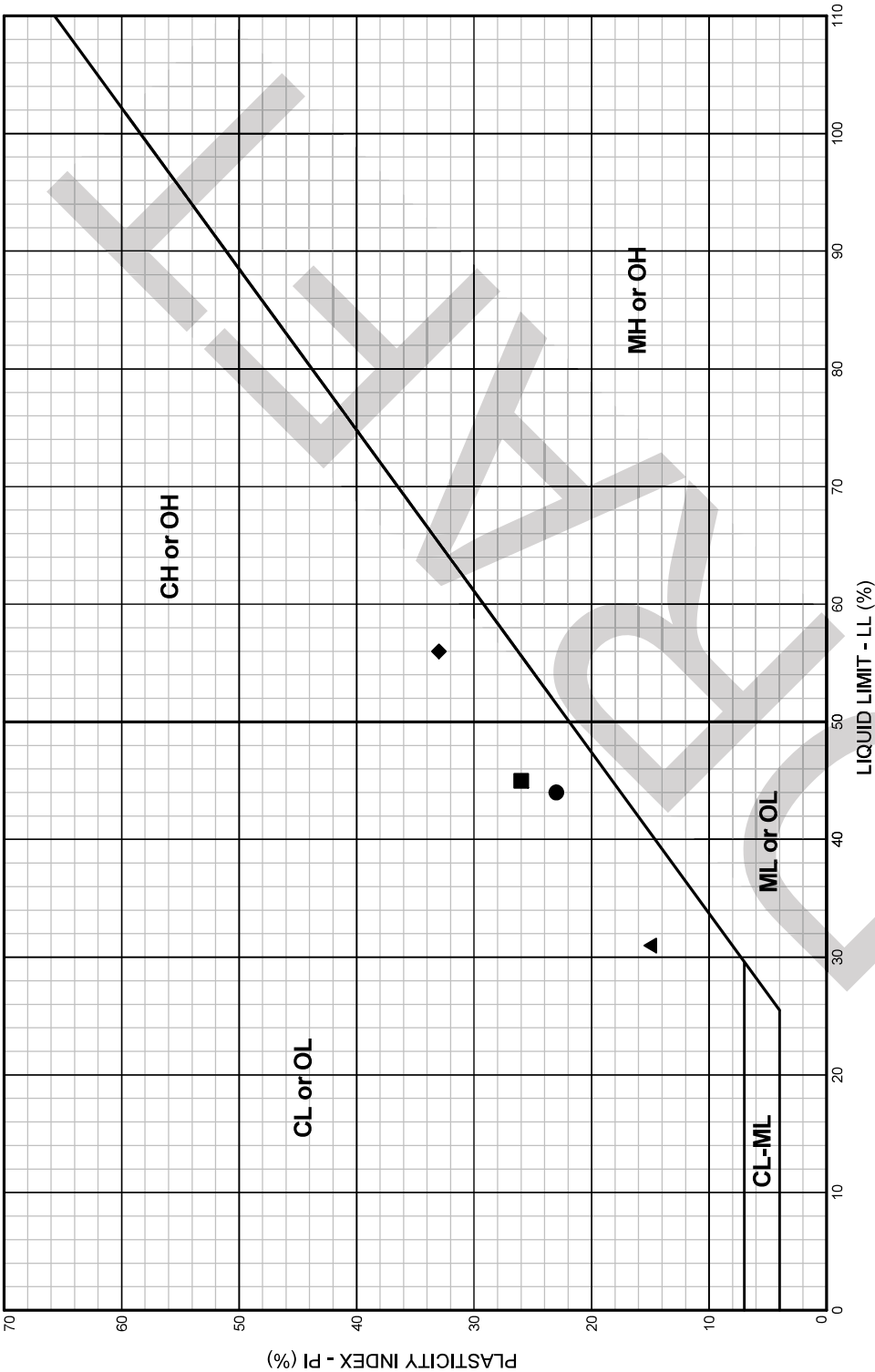
For the purposes of soil description, Shannon & Wilson uses the term nonplastic to refer to soils with a PI less than 4, low plasticity for soils with a PI range of 4 to 10, medium plasticity for soils with a PI range of 10 to 20, and high plasticity for soils with a PI greater than 20.

B.2.3 Particle-Size Analyses

Particle-size analyses were conducted on samples to determine their grain-size distributions. Grain size distributions were determined in accordance with ASTM D1140. For all samples, only a wet sieve analysis was performed to determine the percentage (by weight) of each sample passing the No. 200 (0.075 mm) sieve. Results of all particle-size analyses are presented in Figure B2, Grain Size Distribution. The fines percentages are also presented on the Logs of Borings in Appendix A.

NOTES

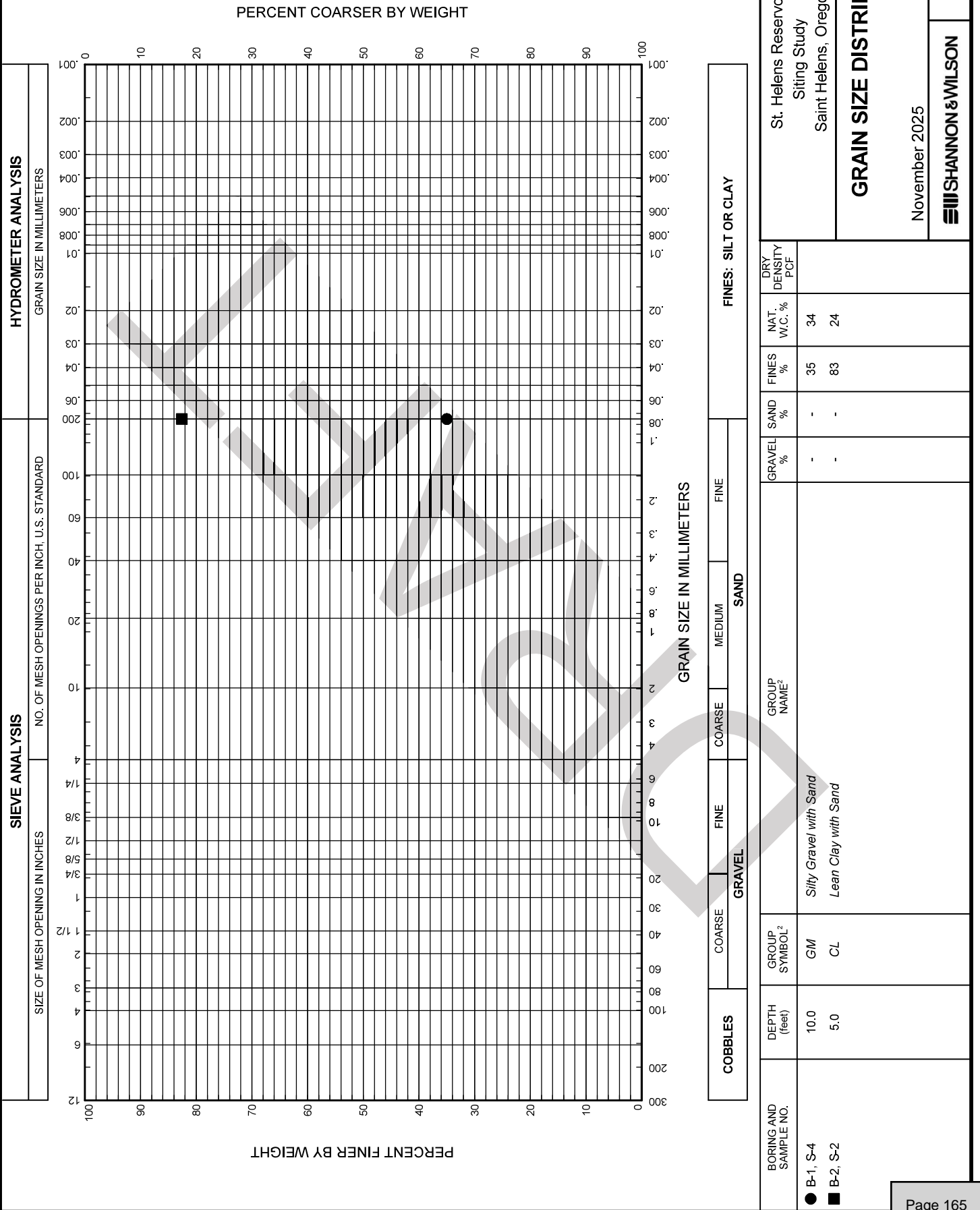
- 1) Atterberg limits tests were performed in general accordance with ASTM D4318 unless otherwise noted in the report.
- 2) Group Name and Group Symbol are in accordance with ASTM D2488 and are refined in accordance with ASTM D2487 where appropriate laboratory tests are performed.
- 3) Plasticity adjectives used in sample descriptions correspond to plasticity index as follows:
 - Nonplastic (NP) (< 4%)
 - Low Plasticity (4 to 10%)
 - Medium Plasticity (10 to 20%)
 - High Plasticity (> 20%)



BORING AND SAMPLE NO.	DEPTH (feet)	GROUP SYMBOL ²	GROUP NAME ²	LL %	PL %	PI % ³	NAT. W.C. %	FINES %	St. Helens Reservoir Siting Study Saint Helens, Oregon	
									November 2025	
● B-2, S-7	17.5	CL	Lean Clay	44	21	23	39		1151	
■ B-2, S-9	25.0	CL	Lean Clay	45	19	26	40		1151	
▲ B-3, S-7	16.0	CL	Lean Clay	31	16	15	31		1151	
◆ B-3, S-12	35.0	CH	Fat Clay	56	23	33	42		1151	
ATTERBERG LIMITS RESULTS									November 2025	
SHANNON & WILSON									FIG. B1	
Item #4.									1151	

NOTES:

1) Sieve analyses were performed in general accordance with ASTM D6913, sieve with hydrometer analyses were performed in general accordance with ASTM D422, and amount finer than #200 sieve analyses were performed in general accordance with ASTM D1140 unless otherwise noted in the report.
2) Group Name and Group Symbol are in accordance with ASTM D2488 and are refined in accordance with ASTM D2487 where appropriate laboratory tests are performed.



Important Information

Important Information

About Your Geotechnical Engineering Report

IMPORTANT INFORMATION

DRAFT

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the Geoprofessional Business Association (<https://www.geoprofessional.org>)

APPENDIX D

SWCA Environmental and Permitting Report, November 2025

Permitting and Environmental Constraints Report for the City of St. Helens Reservoir Siting Study

DECEMBER 2025

PREPARED FOR
City of St. Helens

PREPARED BY
SWCA Environmental Consultants

PERMITTING AND ENVIRONMENTAL CONSTRAINTS REPORT FOR THE CITY OF ST. HELENS RESERVOIR SITING STUDY

Prepared for

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SWCA Project No. 97131

December 2025

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INTRODUCTION

The City of St. Helens (City) is investigating siting a new 5-million-gallon water storage reservoir to support existing needs and future growth. This environmental constraints report summarizes potential environmental siting constraints for four proposed reservoir (hereafter referred to as “tank site”) locations. The proposed tank sites and associated water line connections and overflow paths evaluated in this report are shown in Figure 1. The constraints reviewed include those associated with land use and zoning restrictions, vegetation and habitat, special-status species, aquatic resources, historical and cultural resources, visual resources, and hazardous materials. Constraints were identified based on a desktop review of publicly available information and evaluated using best professional judgement, experience with similar projects, and regional knowledge. Results from this report can be used to inform the City’s overall site screening and selection process, which will also consider other non-environmental factors.

LAND OWNERSHIP AND USE

Land ownership information for the four proposed tank sites is summarized in Table 1 and shown in Figure 2. Tank Site 1 is located just outside (north of) the St. Helens city boundary, west of Highway 30 and south of Liberty Hill Road. Site 1 overlaps two tax lots east of Wapiti Drive, which are privately owned by Weyerhaeuser and appear undeveloped but are surrounded by residential uses to the west and industrial uses to the east. Sites 2 and 3 are located within the St. Helens City boundary, south of Pittsburgh Road and north of Sykes Road. Both sites overlap privately owned tax lots which are currently undeveloped but surrounded by residential development. Site 4 is located just outside (west of) the St. Helens City boundary, north of Bachelor Flat Road. Site 4 overlaps one publicly owned tax lot and is within the Columbia County Fairgrounds with residential development in surrounding areas.

All the proposed overflow paths would be within the same tax lots as their associated tank, whereas all the proposed water line connections would extend outside of the tax lot boundaries and would follow along existing public road rights-of-way.

Table 1. Land Ownership of Tank Sites

Tank Site No.	Land Ownership	Owner	Acres	Tax Lot ID	PLSS Land Description
1	Private	Weyerhaeuser NR Company	75	5N1W3200 1600; 5N1W32DD 100	Section 32, Township 5 North, Range 1 West
2	Private	Comstock Chieko Revocable Trust	12	4N1W 6AD 2600; 4N1W 6D0 604	Section 6, Township 4 North, Range 1 West
3	Private	Thayer Paul L and Laura R	13	4N1W 6DB 1203	Section 6, Township 4 North, Range 1 West
4	Public – County	Columbia County	22	4N1W 7BB 400	Section 7, Township 4 North, Range 1 West

Note: PLSS = Public Land Survey System.

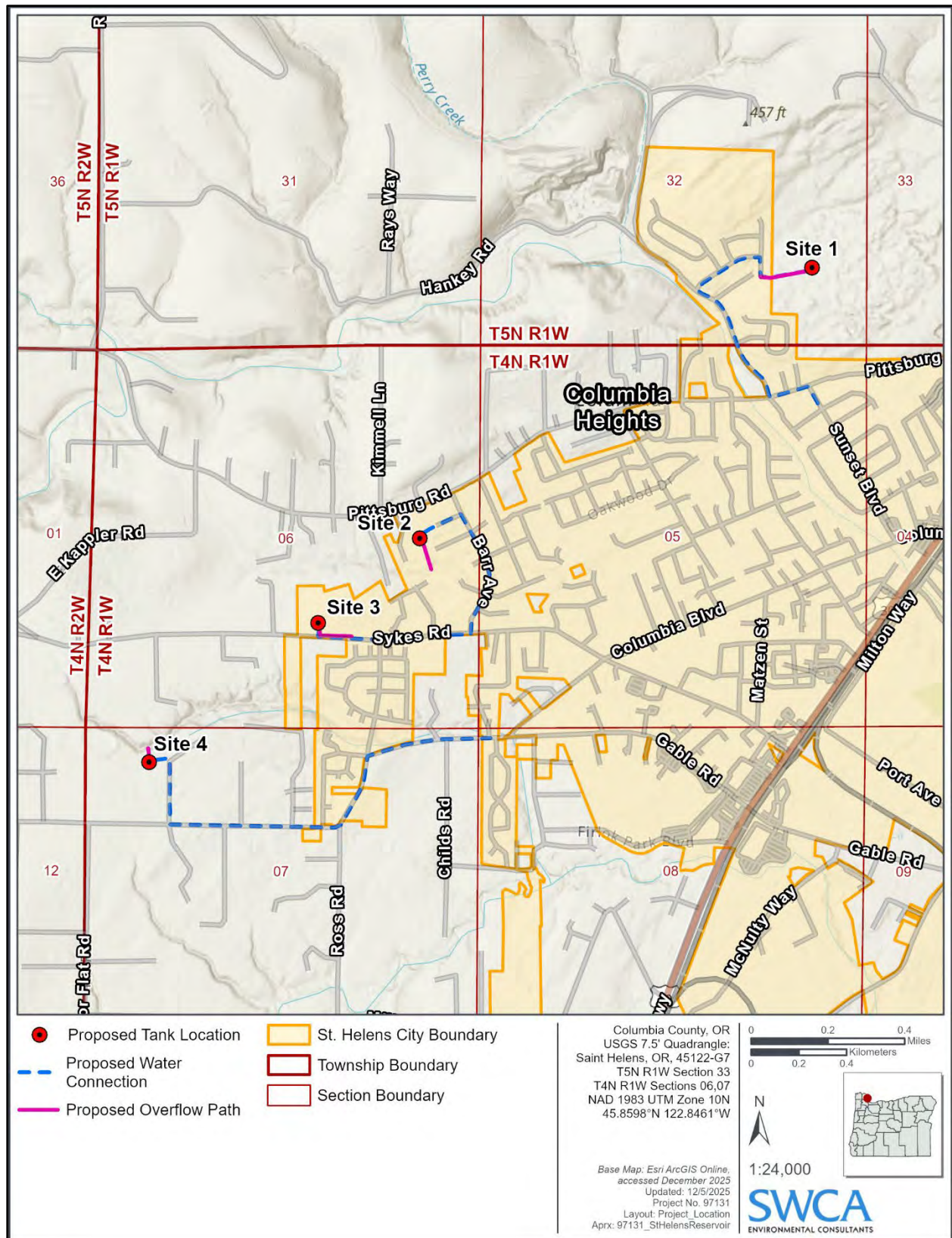


Figure 1. Project location.

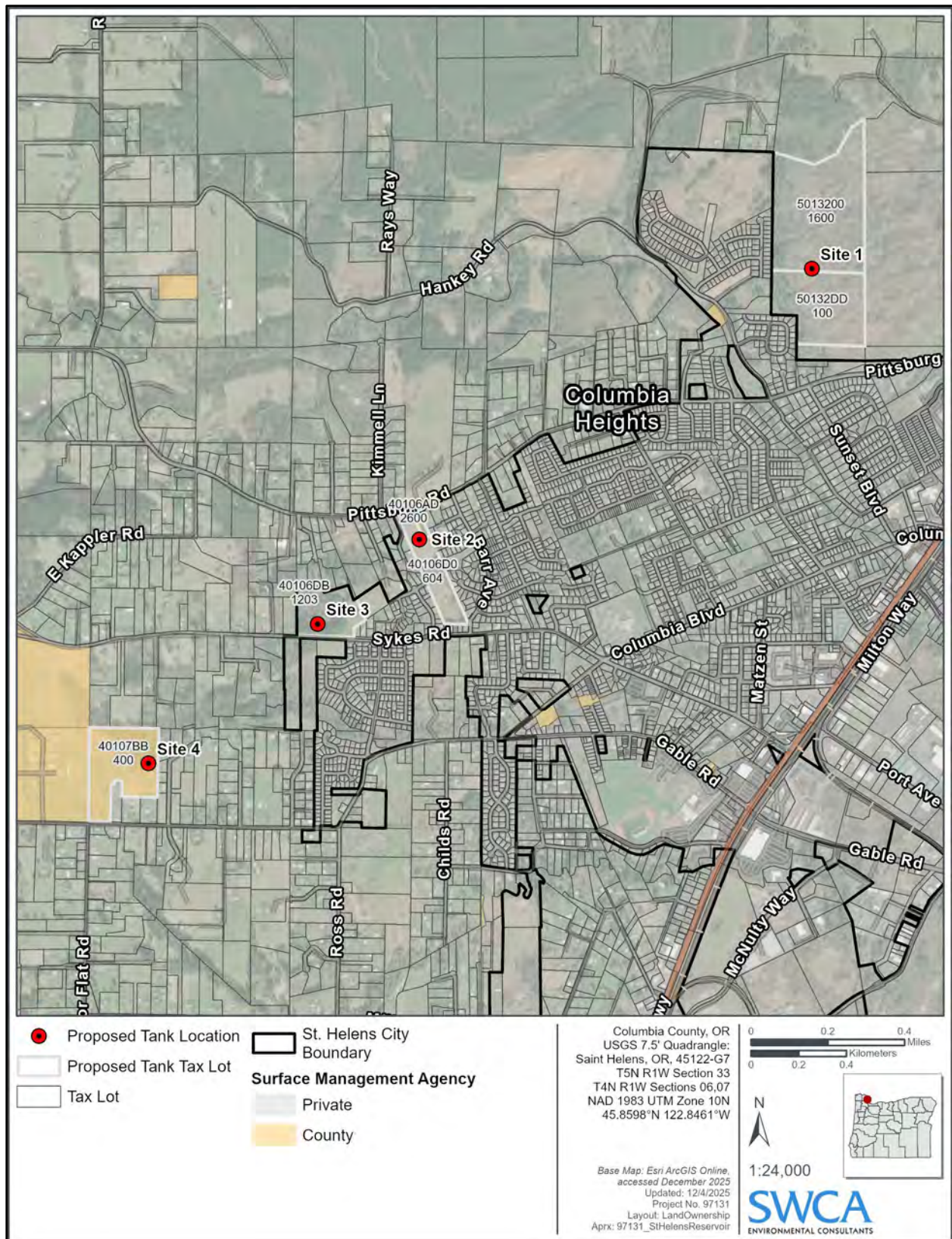


Figure 2. Land ownership of tank sites.

ZONING

A review of the Columbia County Interactive Zoning Map and the St. Helens, Oregon, Online Mapping Service was conducted to assess land use and zoning designations of the tank sites (City of St. Helens 2025; Columbia County 2025). The zoning designations for the tax lot parcels intersecting each of the tank sites are shown in Figure 3 and are further discussed below. Based on review of Natural Resources Conservation Service (NRCS) data, none of the tank sites overlap designated prime farmland (NRCS 2025).

Site 1 is located outside St. Helens City limits in Columbia County. The site is within Columbia County's (the County's) Primary Forest (PF-80) zoning designation. The PF-80 zone is designed to conserve and manage forest lands for timber production and related uses, while also allowing other types of compatible uses such as recreational uses, locationally dependent uses, or dwellings under certain conditions. In Section 504.13 of the Columbia County Zoning Ordinance (CCZO), "reservoirs and water impoundments" are listed as a permitted use, subject to administrative review under Section 1601 of the CCZO (Columbia County 1984). In addition, proposed uses must comply with applicable development standards for the PF-80 zone (see CCZO Article VI, Sections 508–510), which generally require that the use will not significantly change or impact existing forest uses, will not increase risk of fire, will comply with setbacks and fire siting standards, and is consistent with the County's comprehensive plan. Administrative zoning reviews are subject to review by the Planning Director, and do not require a pre-application conference or public meeting; however, a public hearing may be requested by the public. In addition to administrative review for zoning consistency, the project would also require site design review under CCZO Section 1550, which applies to all new development of community or governmental uses, among other things. For the site design review, the project would likely qualify as a Type 2 project (i.e., over 5,000 square feet, and causes a change in category of use), which entails review by the Planning Commission, and requires a pre-application conference and public hearing.

Sites 2 and 3 are both located within the St. Helens City boundary, and are within the City's Moderate Residential (R7) zoning designation (City of St. Helens 2025). The R7 Zone is intended for residential purposes and more specifically, moderate density urban residential development. As listed in Section 17.32.060(3)(h) of the St. Helens Community Development Code (SHCDC) "major public facilities," which includes but is not limited to "water system reservoirs," are allowed as a conditional use in the R-7 zone. Conditional Use Permits (CUPs) are reviewed by the Planning Commission and require a pre-application conference and a public hearing (SHCDC 17.24).

Site 4 is located outside St. Helens City limits in Columbia County. The site is within the County's Community Service – Institutional (CS-I) zoning designation. The CS-I zone is intended to provide a mechanism for the establishment of public and private facilities necessary to meet the demand for the various types of public assemblies and public and private institutional facilities. Section 1000 of the CCZO lists the types of uses that are permitted in the CS-I zone. Public water supply facilities, such as reservoirs, are not explicitly listed as a type of permitted use in this zone; however, the code identifies "other uses found similar by the Commission" as a permitted use, which means the County would have some discretion in deciding whether the proposed storage reservoir would be allowed within this zone. Given the intent of this zone to meet the demands of public institutions, the proposed reservoir tank may be considered compatible with this zone, provided adverse impacts on adjacent land uses could be avoided or mitigated. The project would need to apply for a Determination of Similar Use (DSU) from the County to confirm whether the proposed use aligns with the intent of the CS-I zoning designation and is considered a permitted use.

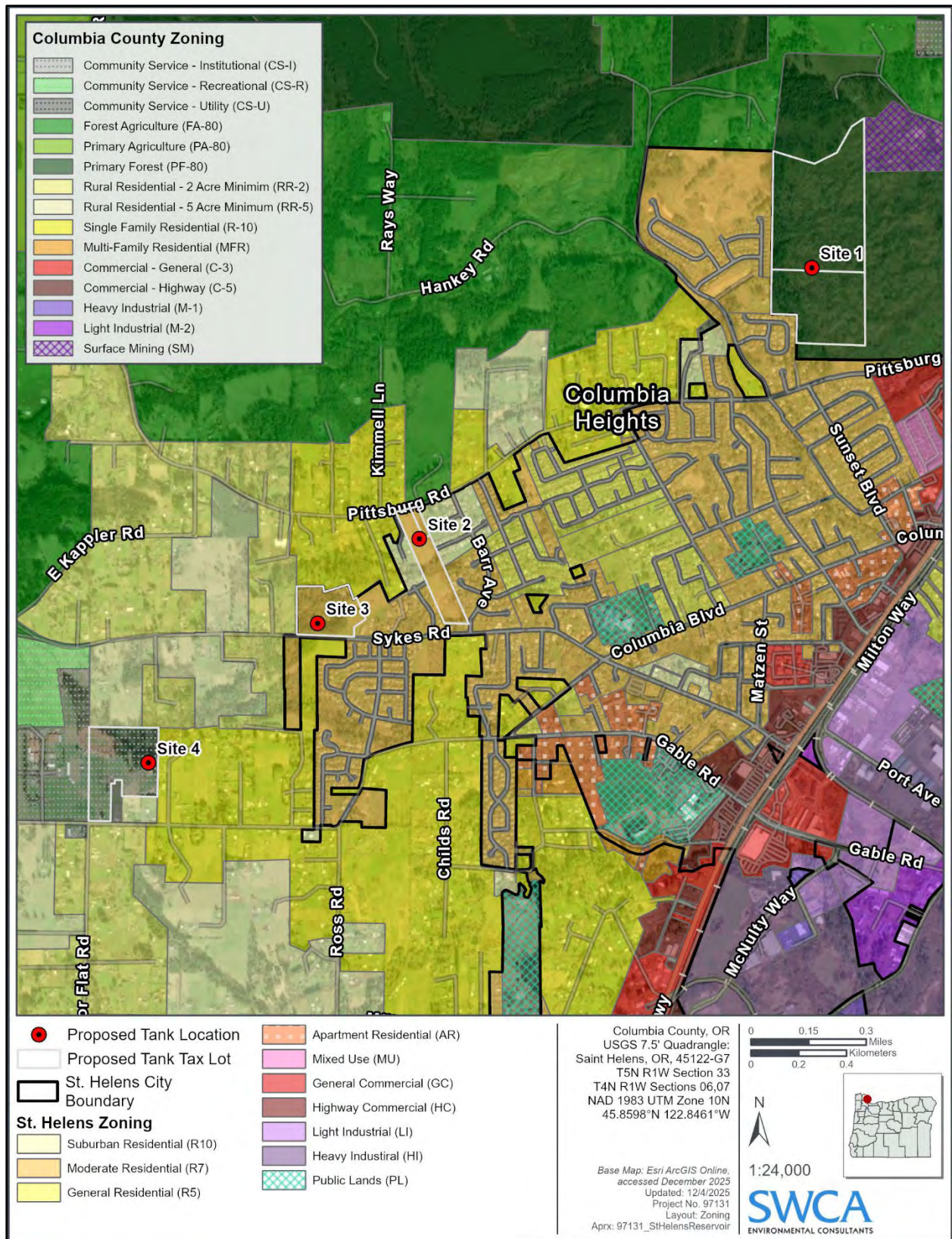


Figure 3. Zoning designations for tank sites.

The project would also require site design review under CCZO Section 1550, which applies to all new development of community or governmental uses, among other things. Similar to Site 1, the site design process entails review by the Planning Commission, and requires a pre-application conference and public hearing. The DSU and site design applications would be reviewed concurrently by the Planning Commission in a consolidated public hearing.

AQUATIC RESOURCES

The Oregon Department of State Lands (DSL), Oregon Department of Environmental Quality (ODEQ), and U.S. Army Corps of Engineers (USACE) regulate aquatic resources in the state of Oregon. At the federal level, USACE oversees the discharge of dredged or fill material into waters of the United States (WOTUS) under Section 404 of the Clean Water Act (CWA). WOTUS include wetlands and non-wetland water bodies that meet specific criteria. USACE has jurisdiction over the following:

- Traditional navigable waters
- Wetlands adjacent to traditional navigable waters
- Relatively permanent non-navigable tributaries that flow continuously for at least 3 months per year
- Wetlands that directly border relatively permanent tributaries

For non-navigable waters, tributaries that are not relatively permanent, and adjacent wetlands that do not meet the above criteria, USACE determines jurisdiction based on a significant nexus evaluation. Common WOTUS can include wetland and stream habitat types, but WOTUS may also consist of mudflats, playas, and natural ponds.

USACE has the authority to assert jurisdiction over perennial and intermittent streams and wetlands abutting or adjacent to these features. Ephemeral streams or washes may also be regulated if they possess indicators of ordinary high water and if they significantly affect the chemical, physical, and biological integrity of a downstream jurisdictional water. Erosional features characterized by low volume, infrequent flow, or short duration are not regulated.

At the state level, DSL regulates discharges of dredged or fill material into waters of the state in accordance with Oregon's removal-fill law (Oregon Revised Statute [ORS] Chapter 196) and requires a permit for removal-fill activities in most wetlands or waters that exceed 50 cubic yards. Waters of the state that fall under the jurisdiction of DSL include jurisdictional portions of the Pacific Ocean, tidal bays, tidal rivers, estuaries, non-tidal rivers, perennial and intermittent streams, lakes, ponds, wetlands, and reservoirs. In addition, certain ditches and created wetlands and ponds are also considered waters of this state.

Direct impacts on wetlands and waters may be avoided during siting of project infrastructure. If, however, impacts on jurisdictional wetlands or waters are unavoidable, a removal-fill permit from the USACE and/or DSL may be required. Both the USACE and DSL use the same Joint Permit Application (JPA) form for removal-fill permits, and the JPA can be submitted to both agencies for concurrent reviews. Additionally, under the CWA Section 401, a water quality certification (WQC) is required for projects that need CWA Section 402 or Section 404 permits. ODEQ regulates and oversees the WQC program in Oregon.

For USACE permits, projects that result in minimal permanent impacts to jurisdictional WOTUS (typically 0.5 acre or less) may qualify for coverage under a Nationwide Permit (NWP) which involves a

simpler, streamlined authorization process, requiring pre-construction notification and Section 401 WQC only. Otherwise, an Individual Permit (IP) is required if permanent impacts exceed the NWP threshold.

While USACE and DSL do not mandate uniform buffer requirements for jurisdictional wetlands and waters, buffers are often considered in the permitting process as a way to avoid and minimize impacts and may be attached as conditions to the permits. Based on SWCA's experience with wetland and water permitting, buffers typically can range anywhere from 50 to 250 feet, depending on the type of feature, its relative quality (in terms of habitat value or water treatment), and other site-specific factors such as topography, vegetation cover, etc.

The U.S. Environmental Protection Agency requires construction projects to be covered under a National Pollutant Discharge Elimination System (NPDES) construction general permit if they involve clearing, grading, and excavating activities that disturb 1 acre or more and discharge stormwater to surface waters of the state. The U.S. Environmental Protection Agency transferred permitting authority for stormwater permitting to ODEQ. A 1200-C Stormwater General Permit is required under the same conditions and satisfies the requirement for an NPDES permit. In addition, the applicant is required to prepare and implement a stormwater pollution prevention plan in accordance with the general permit conditions before construction begins. ODEQ is also responsible for issuing NPDES permits for point-source discharges of operational wastewater into surface waters. The specific type of NPDES permit needed depends on the nature of the discharge, such as whether it is stormwater, filter backwash, or an emergency overflow, and what pollutants it may contain. If discharges of pollutants into waters of the state can be avoided by project design during construction and/or operation, then NPDES permits may not be required.

At the local level, the City and County have ordinances that impose development restrictions in wetlands, waters, and riparian corridors. In Columbia County, Section 1170 of the CCZO prohibits development activities, such as placement of infrastructure, vegetation removal, grading, or removal and fill, within water bodies and their associated riparian corridors, which range from 50 to 75 feet from top of bank. If impacts are unavoidable, the County defers to USACE and DSL for issuing removal-fill permits. In the City of St. Helens, Section 17.40 of the St. Helens Municipal Code (SHMC) prohibits development within significant wetlands, riparian corridors, and protective buffers which range from 50 to 75 feet from the delineated wetland edge or top of bank, depending on the type or wetland or streamflow volumes. If development is unavoidable in these areas, a sensitive land permit (outlined under SHMC 17.44) may be required from the City, in addition to those required by state and federal agencies. In some cases, the geographic extent of protected sensitive lands (e.g., wetland, waters, and their regulated buffers) per the City code (SHMC 17.44) may be larger than what is recognized by USACE and DSL.

Based on review of National Wetlands Inventory (NWI) and National Hydrography Dataset (NHD) data sets, there are mapped wetland and water features within Sites 2 and 4, which are further described below (Table 2; Figure 4). No floodplains are mapped within any of the sites.

Table 2. Mapped Aquatic Resources within Sites

Site	Mapped Wetland features	Mapped Water features
Site 2	Riverine, Intermittent Streambed, Seasonally Flooded (0.06 acre)* Palustrine emergent (0.55 acre)*	Perennial Stream/River (317 linear feet)
Site 4	Riverine, Intermittent Streambed, Seasonally Flooded (0.36 acre)	Intermittent Stream/River (1,056 linear feet)

Source: USFWS (2025b), USGS (2023).

* Data from Wetland Solutions Northwest LLC (2021)

The parcels encompassing the tank footprints for Sites 1 and 3 do not intersect any mapped wetland or water features, nor is there any visible indication of potential wetland or water features based on review of aerial imagery (Appendix A). The proposed water connection and overflow path for Site 3 also do not intersect any mapped wetland or water features. However, the proposed water connection line for Site 1 intersects two mapped streams (see Figure 4). These crossings are along existing roadways (Elk Meadows Drive and Pittsburg Road) which are presumed to include existing culverts. It is assumed that construction of the proposed connections would not require new discharges (i.e., removal-fill) at these crossings.

Site 2 contains one NWI-mapped mapped riverine wetland (mapped as 0.13 acre) and one NHD-mapped perennial stream (317 linear feet), both of which overlap the same topographic drainage that flows through the central portion of the site (see Figure 4). In addition, a wetland and water delineation was previously completed for Site 2 in 2021 (Wetland Solutions Northwest LLC 2021) which confirmed the presence of the NWI/NHD-mapped stream/riverine wetland (delineated as 0.06 acre) and also identified two palustrine emergent wetlands (totaling 0.55 acre) just south of the stream. The City considers these features significant, as defined under SHMC 17.44, and would require upland protective buffers of 50 feet (for the emergent wetlands) or 75 feet (for the stream/riverine wetland) should any development be proposed at this site. The previous wetlands and waters delineation estimated these buffers would encompass an additional 2.04 acres (including 1.09 acres for the 75-foot stream buffer and 0.95 acre for the 50-foot emergent wetland buffer) (Wetland Solutions Northwest LLC 2021). Collectively, these aquatic features and protective buffers cover approximately 22% (2.65 acre) of the total parcel acreage for Site 2 (12 acres).

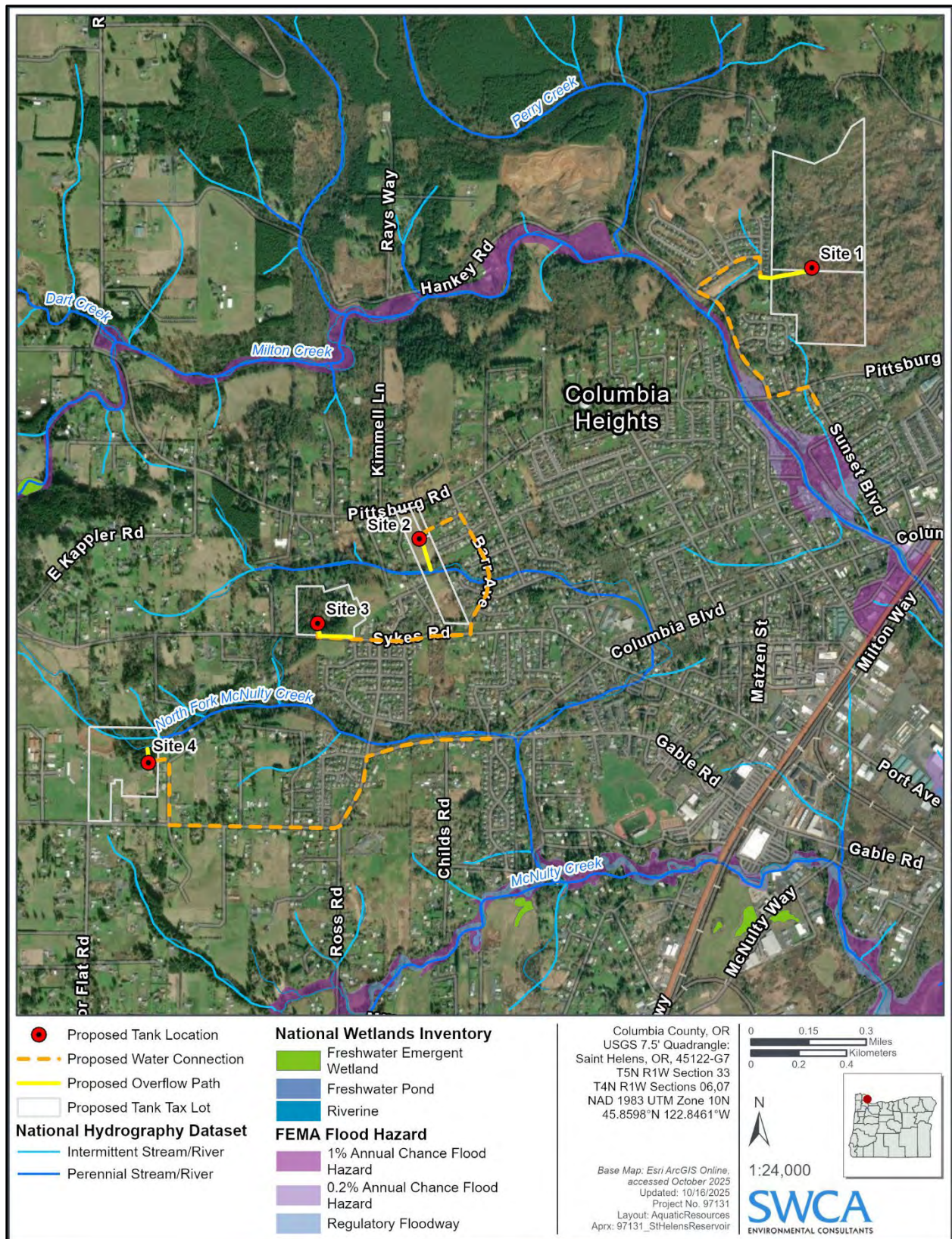


Figure 4. Aquatic resources within sites.

The Site 2 tank site itself does not intersect any mapped wetland and water features but comes within approximately 240 feet of the stream's protective buffer, and approximately 630 feet of the protective buffer for the mapped wetlands south of the stream. Given the proposed tank location relative to delineated features and buffers, it is reasonable to assume that the footprint of the tank itself could be sited to avoid these features and buffers. The proposed water connection line for Site 2 also crosses the same NWI/NHD-mapped stream that is mapped through the central portion of the site; however, the crossing is along an existing roadway (Barr Avenue) which is presumed to include a culvert crossing and it is assumed new discharges (i.e., removal-fill) would not be required at this crossing. The proposed overflow path for Site 2 would discharge treated water into the stream, as needed, when there is excess flow to the reservoir. The point of discharge for the overflow path is expected to occur above the ordinary high water line, which would avoid the need for removal or fill within the stream channel itself. Additionally, construction of the overflow path can be done with directional drilling to minimize the need for open trenching within the riparian buffer. Therefore, while construction of the overflow path is not expected to directly impact the stream channel, development within the stream's regulated buffer is likely to require a sensitive land permit from the City, depending on the level of disturbance needed for construction. In addition, proposed discharges would need to be permitted through ODEQ to ensure compliance with relevant water quality standards for the receiving water.

Site 4 contains one NWI-mapped riverine wetland (0.36 acre) and NHD-mapped intermittent stream (1,056 linear feet) which are in close proximity and may be associated with the same topographic drainage. These features cover approximately 1.6% of the total parcel acreage for Site 4 (22 acres) and, if required by the County or state agencies, protective buffers would add to this acreage (estimated at approximately 2 acre or less). The tank site itself does not intersect any mapped wetland or water features but comes within approximately 100 feet of them. Therefore, it is reasonable to assume that the footprint of the tank itself could be sited to avoid these features as well as protective buffers up to approximately 100 feet. Similar to Site 2, the proposed overflow path for Site 4 would also discharge treated water into the on-site stream, but is expected to be above the ordinary high water line, and directional drilling methods could be used to minimize the need for open trenching within the riparian buffer. Therefore, development within the stream's regulated buffer may require a permit from the County under CCZO Section 1170, and proposed discharges would need to be permitted through ODEQ to ensure compliance with relevant water quality standards for the receiving water. No mapped wetland or water features intersect the proposed connection line corridor for Site 4.

Aquatic features within Sites 2 and 4 are likely to be considered jurisdictional by DSL and USACE based on their proximity and potential connectivity to McNulty Creek, which is a tributary of Scappoose Bay and ultimately flows to the Columbia River. However, formal wetland and water delineation surveys within the project footprint would be necessary to confirm wetland and water boundaries, affirm their state and federal jurisdictional status, and determine permitting requirements. Section 10, Permit Matrix, includes additional information on federal, state, and local wetland- and water-related permit triggers, application requirements, and timelines.

VEGETATION AND HABITAT

A review of U.S. Geological Survey (USGS) National Land Cover Database (NLCD) data revealed eight broad land cover types across all four sites and their associated tax lot parcel boundaries. Table 3 and Figure 5 show the land cover classifications for each site. The general land cover within the footprint of each tank site is described below based on review of NLCD data compared against aerial imagery; figures showing aerial imagery at each site are included in Appendix A.

Table 3. Acres of NLCD Land Cover Types Within Each Site

Land Cover Type	Site 1	Site 2	Site 3	Site 4
Developed	30.23	7.72	4.91	3.00
Developed Open Space	3.77	3.83	6.50	8.42
Evergreen Forest	8.62	–	1.32	1.82
Grassland/Herbaceous	0.21	–	–	–
Mixed Forest	26.10	–	–	–
Pasture/Hay	5.28	–	–	9.10
Shrub/Scrub	0.64	–	–	–
Woody Wetlands	–	0.34	–	–
Total	74.85	11.89	12.73	22.34

Source: USGS (2025).

Note: Total site acreages vary slightly due to rounding. Acres are based on tax lot size; the actual project footprint (i.e., for the tanks and connection lines) at each site would be smaller than the parcels.

Based on aerial image review, the NLCD land cover types “developed” and “developed open space” appear to be associated with fragmented open space areas that are undeveloped (have no aboveground infrastructure) but have likely been subject to previous disturbance associated with surrounding residential and urban developments. Therefore, these NLCD classifications should not be construed to mean they lack vegetative cover, but instead that they have likely been disturbed and/or modified from their natural conditions to some degree.

According to NLCD data, the Site 1 parcels are primarily classified as developed land (40.4%) and mixed forest (34.9%). The proposed footprint of the tank is also mapped as developed land, which appears to be characterized by a mixture of herbaceous and wooded land cover based on aerial imagery (Google Earth 2025; see Appendix A, Figure A-1). The water connections would be placed parallel to existing roads within developed areas as well (e.g., residential setting).

The Site 2 parcels are primarily classified as developed lands (64.9%), and the proposed footprint of the tank itself is mapped as developed open space, which appears to be characterized by herbaceous land cover based on aerial imagery (Google Earth 2025; see Appendix A, Figure A-2). The water connections would be placed parallel to existing roads within developed areas as well (e.g., residential setting).

The Site 3 parcel is predominantly classified as developed open space (51.1%), and the proposed footprint of the tank itself is mapped as developed/developed open space, which appears to be characterized by forested land cover based on aerial imagery (Google Earth 2025; see Appendix A, Figure A-3). The water connections would be placed parallel to existing roads within developed areas as well (e.g., residential setting).

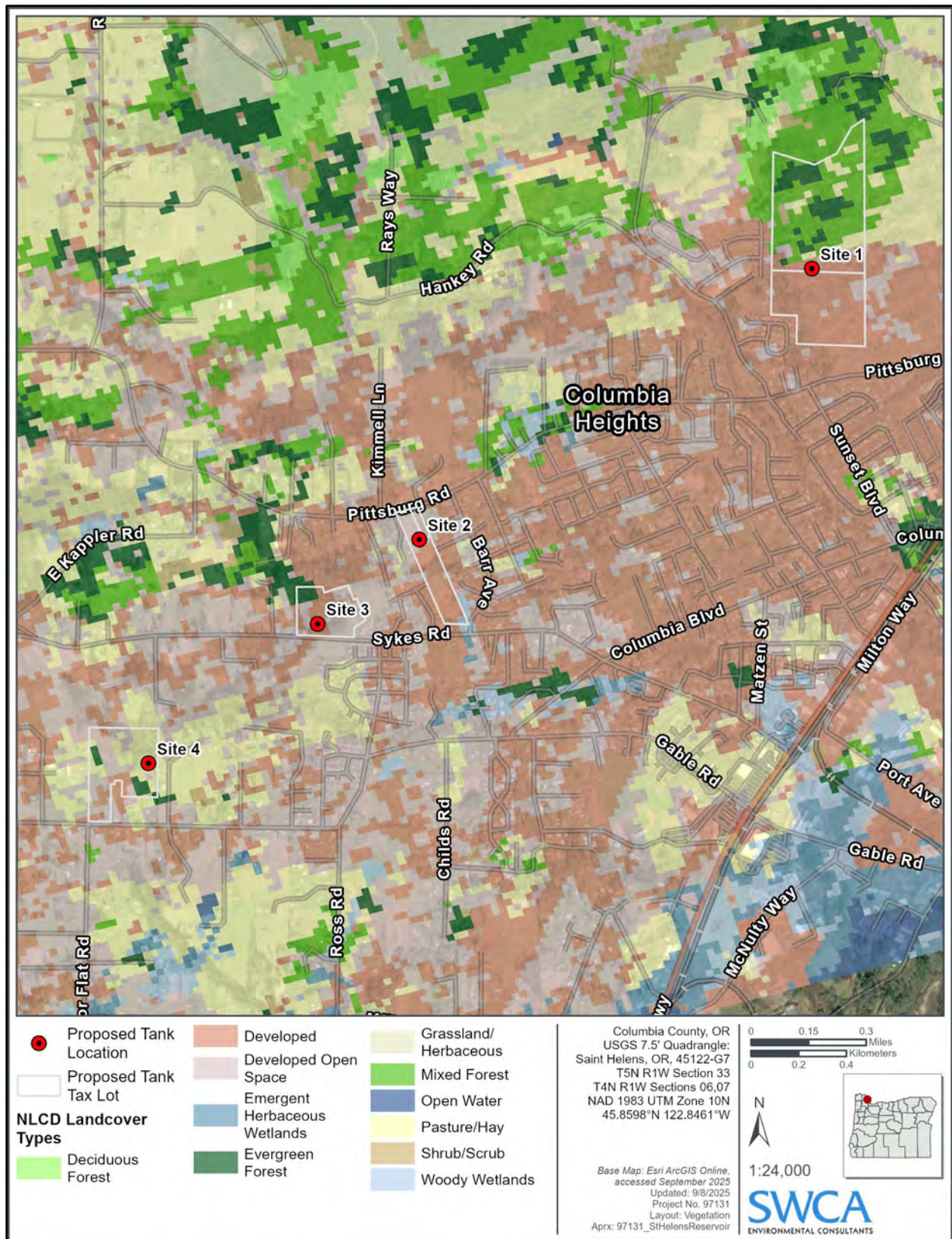


Figure 5. USGS NLCD land cover of sites.

The Site 4 parcel is predominantly classified as pasture (40.7%) and developed open space (37.7%). The proposed footprint of the tank itself is mapped as pasture, which appears to be characterized by open grasslands and forest based on aerial imagery (Google Earth 2025; see Appendix A, Figure A-4). The water connections would be placed parallel to existing roads within developed areas as well (e.g., residential setting).

Additionally, a review of the Institute of Natural Resources (INR) NW ReGAP Ecological Systems Map of Oregon revealed nine ecological systems throughout the sites and their associated tax lot boundaries. Site 1 consists primarily of Douglas-fir-Western Hemlock Forest and Woodland (42.1%) and Introduced Perennial Grassland and Forbland (15.9%). Site 2 consists primarily of Developed-Upland Forest/Herbaceous/Shrubland (68.8%). Site 3 consists primarily of Douglas-fir-Western Hemlock Forest and Woodland (47.8%) and Developed land (18.7%). Site 4 consists primarily of Agricultural Pasture (34.3%) and Developed land (25.0%). Table 4 shows the system types and area for each.

Table 4. Acres of NW ReGAP Ecological Systems within Each Site

Land Cover Type	Site 1	Site 2	Site 3	Site 4
Agricultural-Pasture and Hayland	5.35	1.03	1.52	7.66
Conifer-Oak Forest and Woodland	7.85	0.26	0.51	0.81
Developed	0.39	2.16	2.38	5.58
Developed-Upland Forest/Herbaceous/Shrubland	4.55	8.20	2.23	3.60
Douglas-fir-Western Hemlock Forest and Woodland	31.50	0.26	6.08	4.69
Introduced Perennial Grassland and Forbland	11.87	–	–	–
Introduced Upland Vegetation-Shrub	8.96	–	–	–
Red Alder Forest and Woodland	0.13	–	–	–
Western Oak Woodland and Savanna	4.20	–	–	–
Total	74.80	11.91	12.72	22.34

Source: USGS (2025).

Notes: Total site acreages vary slightly due to rounding. Acres are based on tax lot size; actual the project footprint (i.e., for the tanks and connection lines) at each site would be smaller than the parcels.

Compared to NLCD land cover types, these NW ReGAP ecological systems are generally more useful in understanding the actual types of vegetation present on-site, since NLCD data tends to conceal disturbed vegetation types under the label of “developed” lands.

In the state of Oregon, the Oregon Department of Fish and Wildlife (ODFW) is responsible for making recommendations on wildlife habitat avoidance, minimization, and mitigation strategies. The ODFW Fish and Wildlife Habitat Mitigation Policy (Oregon Administrative Rule [OAR] 635-415-0015) provides a framework for assigning one of six category types to habitats (Category 1 being the highest quality habitat and Category 6 being the lowest quality habitat) based on the relative importance of these habitats to fish and wildlife species (Table 5). Based on these category values, ODFW identifies preferred strategies to avoid or mitigate the impact of projects on fish and wildlife habitat. Mitigation goals and ratios for habitat impacts range from total avoidance for Category 1; in-kind, in-proximity mitigation at a 2:1 ratio for Category 2; in-kind, in-proximity mitigation at a 1:1 ratio for Categories 3 through 5; and minimizing impacts for Category 6. Generally speaking, shrubland, forest, grassland, and wetland habitat types typically qualify as Categories 1 through 4, depending on the quality of the habitat, and all other habitat types (e.g., cultivated crops and developed) typically qualify as Category 5 or 6. ODFW would likely encourage avoidance of wetland habitats to the extent possible, if present on any of the sites (see Section 6, Aquatic Resources).

Table 5. Estimated ODFW Habitat Mitigation Categories in the Tank Sites

ODFW Habitat Mitigation Category	Description	Example	Goal for Mitigation	Mitigation Strategy	Estimated Acreage ¹			
					Site 1	Site 2	Site 3	Site 4
1	Irreplaceable, essential habitat for fish or wildlife species, population, or unique assemblage of species that is limited on either a physiographic province or site-specific basis.	Bogs and fens, certain springs, seeps, and heron rookeries; caves that provide roosts and hibernacula for bats; trees or structures that contain a special-status raptor nest.	No loss of habitat quantity or quality.	Avoidance.	0	0	0	0
2	Essential habitat for fish* or wildlife species, population, or unique assemblage of species that is limited either on a physiographic province or site-specific basis.	Salt marshes, cottonwood galleries, subtidal habitat; elk winter range; mule deer winter range; pronghorn essential and limited habitat; fish-bearing streams; bat roosts and hibernacula other than caves; higher quality forested habitat.	No net loss of habitat quantity or quality; provide a net benefit to habitat quantity or quality.	In-kind, in-proximity mitigation at a 2:1 ratio.	0	0	0	0
3	Essential habitat for fish* and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis.	Elk summer range; mule deer summer range; non-fish-bearing streams; lower quality forested habitat. Specific to the tank sites, Category 3 includes mapped aquatic resources on Sites 2 and 4.	No net loss of habitat quantity or quality.	In-kind, in-proximity mitigation at a 1:1 ratio.	0	0.61*	0	5.05*
4	Important habitat for fish and wildlife species.	Isolated or degraded wetlands.	No net loss of habitat quantity or quality.	In-kind or out-of-kind, in-proximity or off-proximity mitigation at a 1:1 ratio.	0	0	0	0
5	Habitat for fish and wildlife with high potential to become either essential or important habitat.	Restorable rye grass fields or diked or drained coastal marshes. Specific to the tank sites, Category 5 includes open spaces with degraded herbaceous, shrub, or forested cover.	Net benefit to habitat quantity or quality.	Actions that improve habitat conditions at a 1:1 ratio.	74.80	9.89	12.0	0
6	Habitat that has low potential to become essential or important habitat for fish and wildlife.	Urban areas and other areas with little or no restoration potential. Specific to the tank sites, Category 6 includes the developed portions of Sites 2, 3, and 4 that include community facilities, residences, or roads.	Minimize impacts.	Minimize direct habitat loss and avoid off-site impacts.	0	2.16	0.75	17.29

*Includes 0.68 acre of mapped wetlands/waters for Site 2 and 0.36 acre of mapped wetland/waters for Site 4; see Section 6, Aquatic Resources

Table 5 provides a preliminary estimate of the acreage of ODFW habitat categories on each site based on review of NLCD, NW ReGAP, aquatic resources data (see Aquatic Resources section), and professional interpretation of these data sources against aerial imagery for each site. SWCA anticipates minimal representation of Categories 1 and 2 and expects the majority of the sites to fall within Categories 3, 5, and/or 6 (typically associated with lower quality habitat or developed areas). Field-verification of habitat type and quality is needed to inform further discussion and negotiations with ODFW regarding final habitat category determinations. Other local and state agencies typically coordinate with, and defer to, ODFW on matters relating to wildlife and habitat when reviewing and approving development permits. Thus, consultation with ODFW would be required as part of the City or County land use permitting process to determine the appropriate habitat categories and mitigation strategies at the project level.

SPECIAL-STATUS SPECIES

Special-status species include species protected or managed under the federal Endangered Species Act (ESA), Oregon Endangered Species Act, Migratory Bird and Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (BGEPA).

Each listed species was considered for its potential to occur within the parcel(s) on which each site is located and was categorized as follows:

- *Known to occur*: The species has been documented within the survey area by a reliable observer.
- *Likely to occur*: The species has been documented in the vicinity (within 5 miles), and the survey area may contain suitable habitat.
- *May occur*: The survey area is within the species' currently known range, and vegetation communities, soils, etc., resemble those known to be used by the species.
- *Unlikely to occur*: The survey area is within the species' currently known range, but vegetation communities, soils, etc., do not resemble those known to be used by the species, or the project site is clearly outside the species' currently known range.

Federal and State Threatened and Endangered Species and Critical Habitat

SWCA used data from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database (USFWS 2025a), the Oregon Biodiversity Information Center (ORBIC) database, the Oregon Department of Agriculture (ODA) list of special-status plant species for Columbia County, and StreamNet fish distribution data, to determine if federally or state-listed candidate, threatened, or endangered species have the potential to occur within 2 miles of the proposed tank sites. The State of Oregon and the federal government maintain separate lists of threatened and endangered species. ODFW is the regulatory agency for wildlife and ODA is the regulatory agency for plants within the state of Oregon. ODA only regulates listed plants on Oregon non-federal public lands.

Based on review of USFWS IPaC data, eight ESA species have the potential to occur across all four sites: five threatened species (Columbian white-tailed deer [*Odocoileus virginianus leucurus*], marbled murrelet [*Brachyramphus marmoratus*], northern spotted owl [*Strix occidentalis caurina*], streaked horned lark [*Eremophila alpestris strigata*], and yellow-billed cuckoo [*Coccyzus americanus*]), two proposed threatened species (northwestern pond turtle [*Actinemys marmorata*] and monarch butterfly [*Danaus plexippus*]), and one proposed endangered species (Suckley's cuckoo bumble bee [*Bombus suckleyi*]). Although Columbian white-tailed deer was only identified in the IPaC report for Site 4, it was evaluated

for all sites in Table 6 given the species' range and habitat preferences. The IPaC report did not identify any designated critical habitat for threatened and endangered species within any of the sites (Appendix A).

Based on review of ORBIC data covering the four tank sites and an approximately 2-mile buffer surrounding them, there are no documented occurrences of candidate, threatened, or endangered species within the tank site parcels. However, five ESA species are documented within 2 miles of the tank sites, all of which are federally threatened fish species (Chinook salmon [*Oncorhynchus tshawytscha*], coho salmon [*Oncorhynchus kisutch*], chum salmon [*Oncorhynchus keta*], steelhead [*Oncorhynchus mykiss*], and eulachon [*Thaleichthys pacificus*]). These species occurrences are shown on Figure 6. Review of StreamNet data confirmed that there are no ESA-listed fish species documented as occurring within any of the sites (Figure 7).

Based on review of USFWS and National Marine Fisheries Service critical habitat data, critical habitat does not occur within any of the tank sites but does occur within a 2-mile buffer. This includes: the Columbia River, which is designated as critical habitat for eulachon, chinook salmon, chum salmon, coho salmon, sockeye salmon, steelhead, and bull trout; and Milton and McNulty Creeks, which are both designated as critical habitat for coho salmon.

Based on review of the ODA's special-status plant species list for Columbia County, two state-listed threatened plant species were identified (water howellia [*Howellia aquatilis*] and Nelson's checkermallow [*Howellia aquatilis*]). Of these, water howellia is the only species documented to occur within 2 miles of the sites in ORBIC data.

Table 6 summarizes all federally and state-listed species identified in the data queries previously described, and provides a preliminary determination of their potential to occur within each site based on consideration of land cover present at each site and species-specific habitat preferences. Because existing data indicating lack of presence may be, in part, due to lack of data, the potential for occurrence of special-status species at the tank sites should be field-verified once preferred tank sites are selected.

The majority of federally and state-listed ESA species are unlikely to occur in the sites; however, Columbian white-tailed deer may occur on Site 1; northwestern pond turtle may occur on Sites 2 and 4; Nelson's checkermallow may occur on Site 2; and the monarch butterfly and Suckley's cuckoo bumble bee may occur on Sites 1, 2, and 4.

Prior to construction, field surveys are recommended to determine whether suitable habitat is present for these species. If suitable habitat is identified, consultation with federal and/or state agencies (e.g., ODFW, USFWS, or ODA) may be warranted to identify best management practices (BMPs) and other measures to avoid and minimize impacts to these species.

Under the federal ESA, if the project has a federal nexus and has the potential to adversely affect threatened or endangered species, consultation with USFWS under Section 7 of the ESA is required. Based on the lack of critical habitat, it is likely the project activities could avoid adverse effects to ESA species, provided pre-construction habitat assessment or presence/absence surveys are completed to verify the lack of species' presence and/or a lack of suitable habitat and conservation measures are incorporated into the project, as needed, to further avoid and minimize the potential for impacts.

Table 6. Potential for State and Federally Listed Species to Occur Within Each Site

Species	ESA Status	Habitat Description	Site 1	Site 2	Site 3	Site 4
Mammals						
Columbian white-tailed deer <i>Odocoileus virginianus leucurus</i>	FT	Columbian white-tailed deer inhabit wet prairies and lightly wooded tidelands along streams and rivers and woodlands that are interspersed with grasslands or pastures. Found along the Columbia River where Sitka spruce, dogwood, cottonwood, red alder, and willow dominate the vegetation.	May occur. The site is located within 1 mile of the Columbia River in an unpopulated area of forested land; however, U.S. Highway 30 divides Site 1 from the river, potentially acting as a barrier.	Unlikely to Occur. The site is located within a fragmented matrix of residential/urban development and is approximately 2.5 miles from the Columbia River with urban settings and major roadways as barriers between the two locations.	Unlikely to Occur. The site is not located within a wet prairie or along a stream or river that would provide suitable habitat for this species. Site 3 is approximately 3 miles from the Columbia River with urban settings and major roadways as barriers between the two locations.	Unlikely to Occur. The site is not located within a wet prairie and is located within a fragmented matrix of residential/urban development. Site 4 is approximately 3.25 miles from the Columbia River with urban settings and major roadways as barriers between the two locations.
Birds						
Marbled murrelet <i>Brachyramphus marmoratus</i>	FT	Marbled murrelets prefer coastal regions, foraging in bays and sounds and occasionally on rivers and lakes within 12 miles of the ocean (especially during breeding season), and nesting in old growth forests.	Unlikely to Occur. The site is not located near the coast and all rivers and streams are too far inland to be viable options for breeding grounds. The site also lacks suitable nesting habitat. No observations of the species have been documented near the site (eBird 2025; ORBIC 2025).	Unlikely to Occur. The site is not located near the coast and all rivers and streams are too far inland to be viable options for breeding grounds. The site also lacks suitable nesting habitat. No observations of the species have been documented near the site (eBird 2025; ORBIC 2025).	Unlikely to Occur. The site is not located near the coast and all rivers and streams are too far inland to be viable options for breeding grounds. The site also lacks suitable nesting habitat. No observations of the species have been documented near the site (eBird 2025; ORBIC 2025).	Unlikely to Occur. The site is not located near the coast and all rivers and streams are too far inland to be viable options for breeding grounds. The site also lacks suitable nesting habitat. No observations of the species have been documented near the site (eBird 2025; ORBIC 2025).
Northern spotted owl <i>Strix occidentalis caurina</i>	FT	Northern spotted owls occupy old growth forests (at least 150–200 years old) but sometimes occur in younger forests that include patches of old growth. Within this habitat, they prefer areas with moderate to high canopy closure, with a multilayered, multispecies canopy dominated by large overstory trees with cavities, broken tops, and other signs of decadence. The forest floor contains numerous large snags and substantial accumulations of logs and woody debris where there is considerable open space both within and beneath the canopy.	Unlikely to Occur. Old growth forest is not present near the site and there are no observations of the species near the site (eBird 2025; ORBIC 2025).	Unlikely to Occur. Old growth forest is not present near the site and there are no observations of the species near the site (eBird 2025; ORBIC 2025).	Unlikely to Occur. Old growth forest is not present near the site and there are no observations of the species near the site (eBird 2025; ORBIC 2025).	Unlikely to Occur. Old growth forest is not present near the site and there are no observations of the species near the site (eBird 2025; ORBIC 2025).
Streaked horned lark <i>Eremophila alpestris strigata</i>	FT	Streaked horned larks occupy large expanses of bare or thinly vegetated land free of visual obstructions, including fields, prairies, dunes, upper beaches, airports, and similar areas with low/sparse grassy vegetation.	Unlikely to Occur. The site does not contain expansive, sparsely vegetated habitat free of visual obstructions, which the species prefers. In addition, there are no observations of the species near the site with the closest observation approximately 15 miles south near the Heron Lake golf course in Portland (eBird 2025; ORBIC 2025).	Unlikely to Occur. The site does not contain expansive, sparsely vegetated habitat free of visual obstructions, which the species prefers. In addition, there are no observations of the species near the site with the closest observation approximately 15 miles south near the Heron Lake golf course in Portland (eBird 2025; ORBIC 2025).	Unlikely to Occur. The site does not contain expansive, sparsely vegetated habitat free of visual obstructions, which the species prefers. In addition, there are no observations of the species near the site with the closest observation approximately 15 miles south near the Heron Lake golf course in Portland (eBird 2025; ORBIC 2025).	Unlikely to Occur. The site does not contain expansive, sparsely vegetated habitat free of visual obstructions, which the species prefers. In addition, there are no observations of the species near the site with the closest observation approximately 15 miles south near the Heron Lake golf course in Portland (eBird 2025; ORBIC 2025).
Yellow-billed cuckoo <i>Coccyzus americanus</i>	FT	Yellow-billed cuckoos occur in deciduous riparian woodland of 50 acres or more, especially those including dense stands of multistoried cottonwood and willow. Occasionally, they will also use mesquite and salt-cedar in some areas. They have not been found nesting in isolated patches (1–2 acres) or narrow, linear riparian habitats that are less than 33 to 66 feet wide.	Unlikely to Occur. The site does not contain dense riparian woodlands preferred by the yellow-billed cuckoo and forested areas are too patchy or narrow. There are no observations of the species near the site (eBird 2025; ORBIC 2025).	Unlikely to Occur. The site does not contain dense riparian woodlands preferred by the yellow-billed cuckoo and forested areas are too patchy or narrow. There are no observations of the species near the site (eBird 2025; ORBIC 2025).	Unlikely to Occur. The site does not contain dense riparian woodlands preferred by the yellow-billed cuckoo. There are no observations of the species near the site (eBird 2025; ORBIC 2025).	Unlikely to Occur. The site does not contain dense riparian woodlands preferred by the yellow-billed cuckoo and forested areas are too patchy or narrow. There are no observations of the species near the site (eBird 2025; ORBIC 2025).
Reptiles						
Northwestern Pond Turtle <i>Actinemys marmorata</i>	FPT	Northwestern pond turtles occupy aquatic habitats including a wide variety of permanent or semi-permanent bodies of water such as rivers, creeks, small lakes, ponds, and marshes. Populations can also exist in a variety of human-made or human-modified aquatic habitats in rural and urban settings including reservoirs, canals, cattle ponds, and sewage-treatment ponds. Preferred characteristics within a given water body generally involve deeper pools and sections with ample basking sites such as logs, rocks, or floating mats of vegetation. Nesting sites often have open canopies and can include sandy banks and bars along water bodies, or fields or sunny spots up to a few hundred meters from water.	Unlikely to Occur. Site 1 does not contain any aquatic features to support this species.	May Occur. Site 2 contains an intermittent riverine feature that could provide suitable habitat for this species.	Unlikely to Occur. Site 3 does not contain any aquatic features to support this species.	May Occur. contains an intermittent riverine feature that could provide suitable habitat for this species.

Species	ESA Status	Habitat Description	Site 1	Site 2	Site 3	Site 4
Fishes						
Lower Columbia River Chinook salmon <i>Oncorhynchus tshawytscha</i>	FT	Chinook salmon generally spend most of their lives in the ocean. For spawning, they migrate up to several hundred miles upstream to their natal stream, where eggs are deposited in gravel bottoms of large streams and rivers.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 2 contains a mapped perennial stream that eventually flows to the Columbia River; however, Chinook salmon are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper best management practices (BMPs).	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 4 contains a mapped intermittent stream that eventually flows to the Columbia River; however, Chinook salmon are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.
Bull Trout <i>Salvelinus confluentus</i>	FT	Bull trout need cold water (where temperatures do not exceed 59 to 64 F°), require stable stream channels, clean spawning and rearing gravel, complex and diverse cover, and unblocked migratory corridors.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 2 contains a mapped perennial stream that eventually flows to the Columbia River; however, bull trout are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 4 contains a mapped intermittent stream that eventually flows to the Columbia River; however, bull trout are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.
Columbia River Chum salmon <i>Oncorhynchus keta</i>	FT	Chum salmon generally spend most of their lives in the ocean. For spawning, they migrate several hundred miles upstream to their natal stream, where spawning occurs in gravel riffles.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 2 contains a mapped perennial stream that eventually flows to the Columbia River; however, chum salmon are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 4 contains a mapped intermittent stream that eventually flows to the Columbia River; however, chum salmon are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.
Lower Columbia River Coho salmon <i>Oncorhynchus kisutch</i>	FT, SE	Adult coho salmon generally spend most of their lives in the ocean. Spawning occurs in coastal streams with canopy cover, in loose coarse gravel at heads of riffles. Young coho salmon spend up to 2 years in freshwater streams before migrating to the ocean.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 2 contains a mapped perennial stream that eventually flows to McNulty Creek, which is designated as critical habitat for coho. Coho salmon are not documented as occurring within this stream (StreamNet 2025). Site 2 is far enough away from McNulty Creek (approximately 0.7 mile) that any downstream impacts would not affect critical habitat with proper BMPs.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 4 contains a mapped intermittent stream that eventually flows to McNulty Creek, which is designated as critical habitat for coho. Coho salmon are not documented as occurring within this stream (StreamNet 2025). Site 4 is far enough away from McNulty Creek (approximately 0.7 mile) that any downstream impacts would not affect critical habitat with proper BMPs.
Eulachon <i>Thaleichthys pacificus</i>	FT	Eulachon spend most of their lives in the ocean. Spawning occurs is coastal freshwater streams with bar and riffle habitat containing sand or pre-gravel, but will also they select silt, sand, gravel, cobble, or detritus bottoms.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 2 contains a mapped perennial stream that eventually flows to the Columbia River; however, eulachon are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 4 contains a mapped intermittent stream that eventually flows to the Columbia River; however, eulachon are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.
Snake River Sockeye salmon <i>Oncorhynchus nerka</i>	FE	Most sockeye salmon spawn in or near lakes. Spawning can take place in lake tributaries, lake outlets, rivers between lakes, and on lake shorelines or beaches where suitable upwelling or intra-gravel flow is present.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 2 contains a mapped perennial stream that eventually flows to the Columbia River; however, sockeye salmon are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 4 contains a mapped intermittent stream that eventually flows to the Columbia River; however, sockeye salmon are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.
Lower Columbia River Steelhead <i>Oncorhynchus mykiss</i>	FT	Steelhead spend 1 to 3 years at sea and return to spawn at their natal streams at 4 to 5 years old.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 2 contains a mapped perennial stream that eventually flows to the Columbia River; however, steelhead are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are expected to be minimal due to the considerable distance from the Columbia River.	Unlikely to Occur. No aquatic features are located within the parcel for this site.	Unlikely to Occur. Site 4 contains a mapped intermittent stream that eventually flows to the Columbia River; however, steelhead are not documented as occurring within this stream (StreamNet 2025). Downstream impacts are not expected due to the considerable distance from the Columbia River and use of proper BMPs.

Species	ESA Status	Habitat Description	Site 1	Site 2	Site 3	Site 4
Insects						
Monarch butterfly <i>Danaus plexippus</i>	FPT	Monarch butterfly breeding habitat consists of agricultural fields, pastureland, and other grassland habitat but is highly dependent on the presence of milkweed species (<i>Asclepias</i> spp.).	May Occur. Site 1 contains grassland and pasture habitat that could support flowering species such as milkweed.	May Occur. Site 2 contains overgrowth vegetation throughout the parcel that could support flowering species such as milkweed.	Unlikely to Occur. Site 3 is heavily wooded upland area that does not contain suitable habitat for this species.	May Occur. Site 4 contains open grasslands and pastures that could support flowering species such as milkweed.
Suckley's cuckoo bumble bee <i>Bombus suckleyi</i>	FPE	Suckley's cuckoo bumble bee occupies open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows.	May Occur. Site 1 contains grassland, pasture, and shrubland habitat that could support this species.	May Occur. Site 2 contains open grassy areas that could support this species.	Unlikely to Occur. Site 3 is heavily wooded upland area that does not contain suitable habitat for this species	May Occur. Site 4 contain open grasslands and pastures that could support this species.
Plants						
Nelson's checkermallow <i>Sidalcea nelsoniana</i>	ST	Willamette Valley populations of Nelson's checkermallow are commonly found in open prairie remnants along stream margins, sloughs, ditches, roadsides, fence lines, drainage swales, and fallow fields. Occasionally, the species is also present in the understory or at the edges of ash woodlands and among woody shrubs. Soils at these sites range from gravelly, well-drained loams to poorly drained, hydric clays.	Unlikely to Occur. Site 1 does not contain open habitat suitable to support this species. Site 1 is a dry upland area with intermixed wooded, bare, and shrub covered patches.	May Occur. Site 2 contain a riverine and wetland feature that could potentially support this species. The species has not been previously documented within the site (ORBIC 2025).	Unlikely to Occur. Site 3 is heavily wooded upland area that does not contain suitable habitat for this species.	Unlikely to Occur. Site 4 does not contain habitat suitable to support this species. Site 4 is a dry upland area with agricultural pastures, developed areas, and woodlands.
Water howelia <i>Howellia aquatilis</i>	ST	Water howellia occurs in low-elevation ponds and marshes, where it is either submerged or floating along the surface of slow-moving or still water.	Unlikely to Occur. The site is outside of the range documented by ORBIC and no aquatic features are located within the parcel for this site.	Unlikely to Occur. Aquatic features located within the parcel for this site are not suitable for this species. The species has not been previously documented within the site (ORBIC 2025).	Unlikely to Occur. The site is outside of the range documented by ORBIC and no aquatic features are located within the parcel for this site.	Unlikely to Occur. Aquatic features located within the parcel for this site are intermittent and not suitable for this species. The species has not been previously documented within the site (ORBIC 2025).

Source: eBird (2025), NatureServe (2025), ORBIC (2025).
Note: FT = federally threatened; St. = state threatened; FPT = federally proposed threatened; FPE = federally proposed endangered.
Green cells indicate species is unlikely to occur, whereas yellow cells indicate the species may occur.

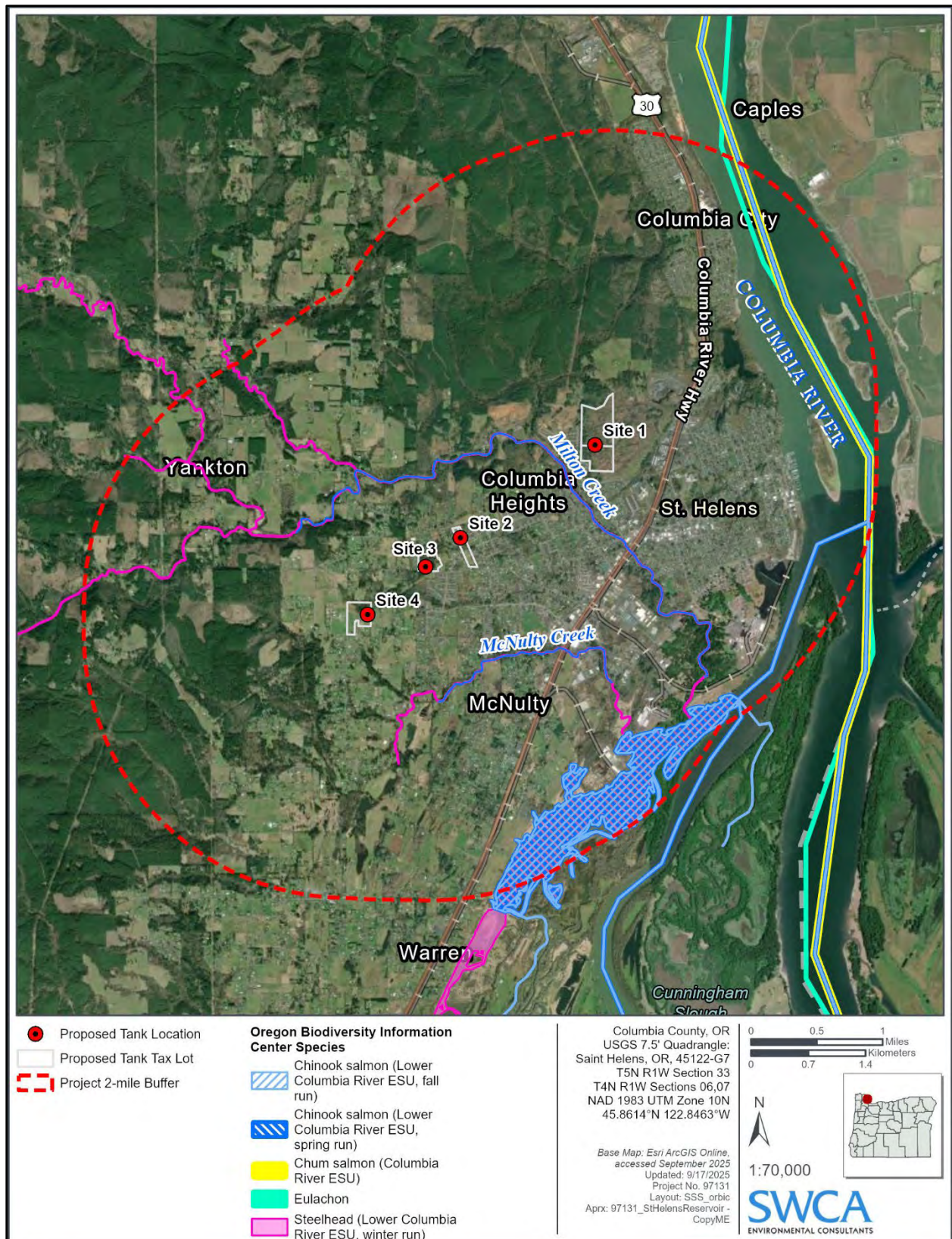


Figure 6. Special-status species data within 2 miles of sites.

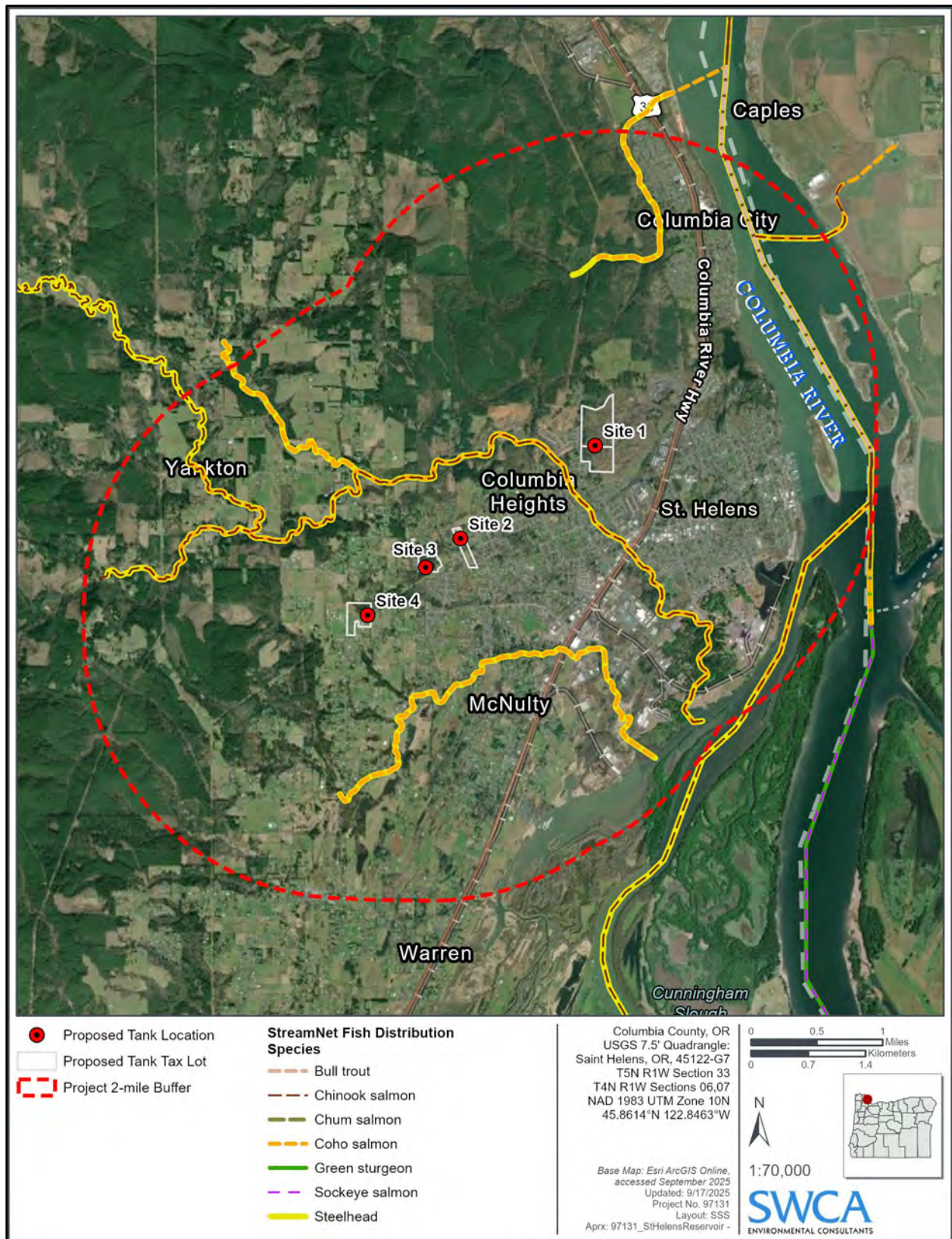


Figure 7. Fish distribution data within 2 miles of sites.

Bald and Golden Eagles

The bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are protected under the BGEPA, which prohibits the take of eagles, including their parts, nests, or eggs (16 United States Code [USC] 668–668d).

Bald eagles prefer habitat with large trees near rivers, lakes, marshes, and other large bodies of water where fish are abundant. Suitable habitat for bald eagle is present along the Columbia River and Multnomah Channel area. Local sightings have occurred near McCormick Park where Milton Creek feeds into the Multnomah Channel; this area contains suitable nesting habitat and is approximately 1.5 to 2.5 miles from the proposed tank sites, with Site 1 being the closest. No bald or golden eagle nests have been documented at any of the sites, and the only documented nest within 2 miles of the tank sites is from 2003, and is located within 2 miles of Site 1. Studies have found that urban areas are no longer as much of a deterrent for nesting eagles as once believed, as bald eagles are becoming more “urbanized” and part of the human environment (Castle et al. 2023). Site 1 is the only location near the Columbia River with large trees to support nesting bald eagles.

Golden eagles prefer grassland or shrubland habitat for foraging and typically nests and breed in areas of mountain cliffs or canyons adjacent to open desert or grassland vegetation communities. During the winter, golden eagles forage in open or shrubland habitats. No suitable nesting habitat is located near the site locations, and no nests have been documented within 2 miles of the sites by ORBIC. However, there is potential for individuals to use the areas for foraging.

If construction is proposed within the eagle nesting season (January 1–August 15), SWCA recommends conducting a survey for eagle nests within 1 mile of the project area to identify potential nests and maintain compliance with the BGEPA and MBTA.

Migratory Birds

Fifteen bird species are listed as Birds of Conservation Concern (BCC) in the USFWS IPaC resource list for the tank sites (see Appendix A) (Table 7). BCC are nongame migratory birds in greatest need of conservation attention and those that are likely to become candidates for listing under the ESA without conservation actions. IPaC identified the same BCC species for Sites 1 through 4.

Table 7. BCC with Potential to Occur at All Site Locations

Species	Habitat Description
Black swift <i>Cypseloides niger</i>	Black swifts are an aerial species that forages over forests and in open areas. They nest behind or next to waterfalls and wet cliffs, on sea cliffs and in sea caves, and occasionally in limestone caves. Breeds June 15 to September 10
California gull <i>Larus californicus</i>	California gulls occupy a wide range of habitats, including seacoasts, bays, estuaries, mudflats, marshes, irrigated fields, lakes, ponds, urban areas, landfills, and agricultural lands. Nesting typically occurs inland on open sandy or gravelly substrates, often on islands or along lake and pond shorelines, where scattered grasses are present. Nests are built directly on the ground, with a preference for relatively open areas featuring irregular terrain near shorelines. Breeds March 1 to July 31
Cassin's finch <i>Haemorhous cassinii</i>	Cassin's finches prefer open montane coniferous forest and mixed woodlands at mid- to high elevations, typically between 6,00 and 10,000 feet above mean sea level, where it favors pine, spruce, and fir forests. Breeds May 15 to July 15

Species	Habitat Description
Chestnut-backed chickadee <i>Poecile rufescens rufescens</i>	Chestnut-back chickadees occupy coniferous and mixed forests, primarily Douglas-fir forests in humid regions, less frequently in pine forest, oak woodlands, pine-oak associated forests, and thickets. They nest in tree cavities usually less than 9 feet above the ground. Breeds March 1 to July 31
Clark's grebe <i>Aechmophorus clarkii</i>	Clark's grebes nest on edges of large freshwater lakes and marshes whose edges have emergent vegetation, such as reeds and rushes. Breeds June 1 to August 31
Evening grosbeak <i>Coccothraustes vespertinus</i>	Evening grosbeaks inhabit coniferous and mixed coniferous, deciduous, and second growth forests and uncommonly, parks. This species nests within deciduous or coniferous trees. Breeds May 15 to August 10
Lesser yellowlegs <i>Tringa flavipes</i>	Lesser yellowlegs use open or semi-open woodlands and wet meadows interspersed with marshes, bogs, and ponds. Breeds elsewhere
Olive-sided flycatcher <i>Contopus cooperi</i>	Olive-sided flycatchers are found in forest and woodland habitats: taiga, subalpine coniferous forest, mixed coniferous-deciduous forest, burned-over forest, spruce or tamarack bogs and other forested wetlands, and along the forested edges of lakes, ponds, and streams. Most nesting sites contain dead standing trees, which are used as singing and feeding perches. Nests are placed most often in conifers, on horizontal limbs. Breeds May 20 to August 31
Oregon vesper sparrow <i>Poecetes gramineus affinis</i>	Oregon vesper sparrows are found in prairies and occasionally pastures. They nest on the ground in sparsely vegetated grasslands and savannas that include scattered trees or shrubs. Structural diversity is important as this species uses the taller perches for singing and open areas for foraging. Breeds April 21 to August 31
Red knot <i>Calidris canutus roselaari</i>	Red knots breed in areas of dry tundra, like hillsides with sparse vegetation. Outside of breeding season, they prefer intertidal marine habitats, primarily near coastal inlets, estuaries, and bays. Breeds elsewhere
Rufous hummingbird <i>Selasphorus rufus</i>	Rufous hummingbird breeding habitat includes coniferous forest, second growth forest, thickets, and brushy hillsides, with foraging extending into adjacent scrubby areas and meadows with abundant nectar flowers. Habitat is chiefly secondary succession communities and forest openings. Habitat in migration and winter includes open situations where flowers are present. Breeds April 15 to July 15
Short-billed dowitcher <i>Limnodromus griseus</i>	Short-billed dowitcher nest in grassy or mossy tundra and wet meadows, in muskeg. Outside of breeding, they prefer mudflats, estuaries, shallow marshes, pools, ponds, flooded fields and sandy beaches. Breeds June 1 to August 10
Western grebe <i>Aechmophorus occidentalis</i>	Western grebes nest on large freshwater lakes and marshes edged with reeds and rushes, less frequently along rivers. Nesting in tidal areas is unusual. On very large lakes, colonies may number in the hundreds of pairs. After the breeding season, many move first to lakes where they molt their wing feathers, becoming flightless during that period. Breeds June 1 to August 31
Western gull <i>Larus occidentalis</i>	Western gulls nest on rocky ledges or grassy slopes near beaches on offshore islands on relatively open areas with bare rock or low vegetation. Outside of breeding, they occupy the coastlines, sea, rocky shores and cliffs, bays, estuaries, beaches, garbage dumps. Breeds April 21 to August 25
Western screech-owl <i>Megascops kennicottii cardonensis</i>	Western screech-owls occupy woodlands, especially broadleaf and riparian woodlands, moist coniferous forest and woodlands on the northwestern coast. Typically found at lower elevations, they nest in natural tree cavities, abandoned woodpecker holes, or artificial nest boxes. Breeds March 1 to June 30

Source: Cornell Lab of Ornithology (2019), eBird (2025), NatureServe (2025), USFWS (2025a),

The MBTA prohibits incidental take of native birds. The USFWS maintains a list of all species protected by the MBTA (50 Code of Federal Regulations [CFR] 10.13) which includes more than 1,000 species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and

passerines and their parts, eggs, or nests (50 CFR 21.4). Take is defined by this regulation as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect” (50 CFR 10.12). Relevant to construction and operations activities, destruction of inactive migratory bird nests (i.e., those without viable eggs or nestlings) is not prohibited, provided that no possession occurs, and no permit or other regulatory authorization is required. Destruction or alteration of bird habitat that does not result in the direct taking of birds, nests, or eggs is also not prohibited by the MBTA.

The legal and regulatory interpretations of the MBTA are currently aligned to prohibit incidental take consistent with judicial precedent. Construction and operation of the project will be subject to MBTA compliance prohibiting incidental take. SWCA recommends avoiding surface use, ground disturbance, vegetation clearing, and disruptive maintenance activities within the nesting season for migratory birds (generally anywhere from February 1 through August 31). If construction is proposed within the migratory bird nesting season, SWCA recommends conducting a pre-construction survey for migratory bird nests within the construction footprint to identify potential nests and maintain compliance with the MBTA. Consultation with ODFW is also recommended to determine the most appropriate nesting season window to avoid during construction, which can vary depending on the species present (see Table 7).

ARCHAEOLOGICAL, HISTORICAL, AND CULTURAL RESOURCES

In September 2025, SWCA conducted archival research to identify all known and potential cultural resources and previously conducted cultural resource investigations within a 1-mile radius of the four tank sites and their associated parcel boundaries (study area). Based on a review of the Oregon State Historic Preservation Office (SHPO) online records database, Oregon Archaeological Records Remote Access (OARRA), there are no previously recorded cultural resources within any of the sites and one previously conducted investigation has occurred within the study area for Sites 1 through 4 (SHPO 2025).

All of the tank sites are on the traditional land of Kalapuya Indigenous peoples, specifically the Santiam Tribe, incorporated today in the Confederated Tribes of Grand Ronde (Zenk 1990) as well as the territory of the Confederated Tribes of Siletz Indians and the Confederated Tribes of the Umatilla Indian Reservation. Consultation with these Tribal confederations is recommended. An inadvertent discovery plan will likely be required by the Tribes during construction and additional protection standards, such as Tribal monitoring during ground disturbance, may apply if cultural resources are discovered or deemed likely to be present in the footprint of construction.

Previously Conducted Cultural Resource Investigations

In total, five cultural resource investigations have been conducted within the study area for Sites 1 through 4 (Table 8) (SHPO 2025). Only one of these investigations overlaps or intersects with the tank sites. One of the five investigations has been conducted within the last 10 years. Four of the five total investigations included pedestrian survey in their methodologies, and one investigation included subsurface testing. One investigation consisted of desktop analysis alone (Ames et al. 1992).

Table 8. Previous Cultural Resource Investigations Within the Study Area

SHPO No.	Methodology	Report Title <i>Citation</i>	Conducted By	Intersects Tank Site(s)?
18254	Pedestrian survey	Letter: Sone Circle on Bluff NW of St. Helens <i>Pierce 2002</i>	–	No
20025	Desktop analysis	Archeological Context Statement – Portland Basin <i>Ames, Parchman, and Hickey 1992</i>	Portland State University	Yes (all)
22482	Pedestrian survey	A Cultural Resources Survey for the OR1 Yankton Cellular Communications Tower Site, Columbia County, Oregon <i>Stipe 2009</i>	Tetra Tech, Inc.	No
23638	Pedestrian survey, subsurface testing	A Cultural Resources Survey of the St. Johns-St. Helens Tap at Tower 21/6 <i>Oliver and Schmidt 2010</i>	Bonneville Power Administration	No
28134	Pedestrian survey	Cultural Resources Survey for the Ross District Priority Poles Replacement Project in Columbia, Multnomah, and Washington Counties, Oregon <i>Hennessey and Perkins 2016</i>	Bonneville Power Administration	No

Previously Recorded Cultural Resources

The OARRA database shows there are no previously recorded cultural resources within the tank sites themselves (i.e., parcel boundary) and a single resource, the Berdahl Site (35CO19), a lithic scatter composed of approximately 120 projectile points in a plowed field, is within 1 mile of Site 4 (SHPO 2025) (Table 9). The Oregon Historic Sites Database shows no historic properties within the study area for any of the sites (Oregon Historic Sites Database 2025).

Table 9. Previously Identified Cultural Resources within the Study Area

Resource No.	Type	Description	NRHP Eligibility	Intersects Tank Site(s)?
35CO19	Precontact	Berdahl Site lithic scatter	Unevaluated	No

Note: NRHP = National Register of Historic Places.

Historical Map Review

The cultural resources historical map review was designed to determine if any historic-era resources, features, or structures are in the tank sites or surrounding areas. The earliest General Land Office (GLO) map for Site 1 in 1862 shows it within the land claim of Francis A. Clement with no infrastructural development intersecting or adjacent to the site (GLO 1862). The earliest GLO map for Sites 2, 3, 4 from 1854 shows the surrounding region undeveloped with clay loam soil (GLO 1854), a later map from 1866 shows Site 2 within land claim of Francis Perry. Sites 3 and 4 are on undeveloped, unclaimed parcels (GLO 1866).

A historical topographic map from 1943 (USGS 1943) shows the area immediately adjacent to Site 1 is largely undeveloped. The modern-day road infrastructure is not visible in topographic maps until 2014 (USGS 2014). The topographic map from 1957 (USGS 1954) shows the areas surrounding Sites 2, 3, and 4 as sparsely developed with only Sykes Road to the south of Sites 2 and 3 visible. It is not until 2014 that

the residential neighborhoods around Sites 2 and 3 are present in their modern configuration (USGS 2014). The athletics compound and subsequent county fairgrounds adjacent to Site 4 are present in the 1990 and 2014 topographic maps respectively (USGS 1990, 2014)

Aerial imagery from 1951 shows agricultural fields occupying all the proposed sites and surrounding areas. By 1970 the residential community and associated roadway infrastructure immediately adjacent to Sites 2 and 3 begin to appear, and 1995 the athletics field adjacent to Site 4 is visible. By 2014 the project area appears as it does in its current configuration (NETEROnline 2025).

Summary: Archaeological, Historical, and Cultural Resources

SWCA anticipates that archaeological, historic, and cultural resources could require surveys, studies, and agency coordination as part of the overarching land use permitting process. The results of the background review indicate that none of the sites have been surveyed for cultural resources with only a regional desktop analysis having occurred across the four sites. There are no previously documented resources within any of the sites, and while some surveys have occurred within the surrounding area, those did not result in any cultural resources being located. While the potential sites and the surrounding area have not been extensively surveyed, the probability of identifying cultural resources is considered low to moderate-low.

The project setting of St. Helens, Oregon, is adjacent to the Columbia River and contains perennial streams, tributaries, and springs. Indigenous peoples may have used the project sites to access springs and perennial water sources if they were available during the precontact era or they may have used upland areas seasonally to procure game and other subsistence resources. Archaeological evidence from environmentally similar areas in the Columbia River Basin suggests that precontact lithic scatters and isolates may be encountered on the ground surface within the proposed tank sites. If these cultural resources are present, the extent of disturbances to them caused by natural erosional processes and historical and modern farming and transportation activities in the area is unknown. These processes may limit the potential for the presence of intact archaeological sites within the project parcels, but such sites may be present on the ground surface in upland areas and drainages. Therefore, the probability of identifying precontact cultural resources is considered moderate across all four tank sites.

If there is a federal- or state-level regulatory nexus, formal consultation with interested Tribal entities and SHPO under Section 106 of the National Historic Preservation Act (NHPA) is required and would be the responsibility of the lead federal agency charged with issuing the federal permit (see Section 10). The lead federal agency may require surveys and assessment of identified cultural resources and avoidance or mitigation measures for significant resources. This may also include an assessment of potential indirect effects (e.g., viewshed, auditory) of potentially National Register of Historic Places (NRHP)-eligible sites near project activities.

VISUAL IMPACTS AND AESTHETICS

As previously discussed in Section 2, all of the tank sites are surrounded by either residential or public (fairgrounds and sports fields) land uses which may experience visual and aesthetic impacts from the proposed development. Community input on visual aspects of the project would likely be solicited and considered as part of the City or County local land use permitting processes outlined in Section 3, and further summarized in Section 10.

Site 1 is less than 0.25 mile from a residential neighborhood and may be visible to some residents; however, views of the tank may be screened by intervening forested vegetation to some degree.

Site 2 is in an undeveloped lot with herbaceous cover and is surrounded by dense residential areas to the east and south, and more sparse residential areas to the west and north. The nearest residences are approximately 70 to 100 feet away from the proposed tank location. The tank would be most visible to immediately neighboring residences and may become less visible to residences further removed due to intervening infrastructure and vegetation.

Site 3 is situated in an undeveloped, but forested lot, surrounded by dense residential areas to the southeast, and sparse residential areas to the northwest. The nearest residences are approximately 200 to 300 feet away from the proposed tank location. The tank may be visible to some residents; however, views of the tank may be screened by intervening forested vegetation to some degree.

Site 4 is at the east end of the Columbia County Fairgrounds, which includes a baseball field approximately 80 feet south of the proposed tank location and a racing track approximately 400 feet west of the tank location. Sparse residential areas also are present, primarily to the east and south of the tank location. The closest residences are approximately 50 to 100 feet from the proposed tank location. The tank would be visible to nearby residents and viewers from the county fairgrounds, particularly from the immediately adjacent baseball field. Views from the north (including the racing track) would likely be obstructed to some degree by intervening vegetation.

Overall, Sites 2 and 4 are expected to result in greater visual impacts compared to Sites 1 and 3 as they appear less likely to be visible based on the presence of intervening vegetation and the distance between tanks and nearby residents.

HAZARDOUS MATERIALS

A review was conducted through ODEQ and the Environmental Protection Agency (EPA) to determine if hazardous materials sites are present within the tank sites.

The EPA manages the identification, investigation, and remediation of Superfund sites to protect human health and the environment. Superfund sites are polluted locations in the United States that require long-term cleanup of hazardous material contamination. No EPA Superfund sites are in Columbia County, therefore none are near the site parcels (EPA 2025).

Brownfield sites are properties where the presence or potential presence of hazardous substances, pollutants, or contaminants may complicate their expansion, redevelopment, or reuse. These sites are typically previously developed land, often industrial or commercial, that is not currently in use due to environmental concerns but has the potential for redevelopment after proper assessment and cleanup. There are five brownfield sites within the City of St. Helens, and none of them are within or near any of the sites (ODEQ 2025). One private landfill occurs approximately 0.8 miles west of Site 4. This site is classified by ODEQ as a cleanup site based on documented contamination of nearby surface and groundwater from landfill leachate; however, the site is not designated as a superfund or brownfield site and no remedial actions have been prescribed. This site is not expected to present any constraints for the potential development of Site 4.

Based on review of the Oregon State Fire Marshall's Hazardous Substance Incidents database, there are nine recorded incidents within a 0.5-mile buffer of the sites (Table 10). Given that these incidents did not occur within the sites themselves, they are not expected to impact or be impacted by the project.

Table 10. Hazardous Substance Incidents near the Tank Sites

Incident Description	Address	Incident Date	Distance to Site (miles) (Site No.)
Unknown chemical	795 Columbia River Hwy, St. Helens	5/4/99	0.45 (Site 1)
Carbon monoxide incident	325 Hankins Dr, St. Helens	5/25/25	0.22 (Site 1)
Gas leak (natural gas or liquid natural gas [LPG])	61 Shore Dr, St. Helens	5/4/25	0.33 (Site 1)
Gas leak (natural gas or LPG)	59351 Mountain View Dr, St. Helens	2/5/25	0.05 (Site 2)
HazMat release investigation with no HazMat	58848 Parkwood Dr, St. Helens	10/27/24	0.46 (Site 2)
Gas leak (natural gas or LPG)	58740 Noble Ct, St. Helens	7/27/24	0.27 (Site 3)
Gas leak (natural gas or LPG)	75 Shore Dr, St. Helens	7/17/24	0.42 (Site 1)
HazMat release investigation with no HazMat	59894 Suncrest Dr, St. Helens	5/19/24	0.43 (Site 1)
Gas leak (natural gas or LPG)	35630 Valley View Dr, St. Helens	1/18/24	0.15 (Site 1)

PERMIT MATRIX

Table 11 lists the relevant federal, state, and local permits or approvals that may be required for each of the tank sites, based on the initial assessment of environmental and land use constraints presented herein. Since the constraints identified in this report are based solely on desktop data sources, additional field data collection is needed to verify the accuracy of mapped data sources, and additional coordination with permitting authorities is also needed to confirm applicable permitting requirements. Thus, permit requirements for each site are categorized in terms of their likelihood to be triggered (low, moderate, or high) to reflect the tentative nature of these initial findings. A blank cell means the permit is not anticipated to be triggered for the site (pending field/agency verification). Though the potential for a permit to be triggered may be low, field-verification may be required to confirm the permit is not needed.

SUMMARY AND CONCLUSION

The environmental and land use constraints that were found to be present are summarized for each tank site below and in Table 12. The anticipated field surveys and studies that would be required to support the permitting efforts for each site are also listed in Table 12 in red text.

Site 1

The development of Site 1 would require standard land use permits and environmental due diligence efforts related to wildlife and habitat; however, the overall complexity of anticipated land use and environmental permitting and due diligence efforts is anticipated to be low due to the avoidance of aquatic resources and a lack of any federal nexus.

Site 1 is considered a permitted use in its underlying zoning designation and would require a combined zoning review and site design review by the Planning Commission. Of the four sites, Site 1 is the only site that is explicitly listed as a permitted use in its underlying zoning designation, which provides a level of certainty that the proposed use would be compatible with the surrounding land uses that other sites do not have.

Table 11. Anticipated Permits and Approvals for Tank Sites

Agency	Permit or Approval	Regulation	Permit or Compliance Trigger	Permit or Compliance Process	Potential to be Triggered			
					Site 1	Site 2	Site 3	Site 4
Federal								
USACE	Removal-Fill Permit (IP or NWP)	CWA Section 404	Discharges of dredged or fill material into WOTUS, including their adjacent wetlands.	<p>Prior to application, conduct a survey of WOTUS (i.e., wetland and water delineation) for the proposed project footprint and request an approved jurisdictional determination to determine if a permit is required. A pre-application conference is recommended to obtain agency input and buy-off on the proposed permitting pathway prior to submittal of the application.</p> <p>If the project qualifies for a NWP (e.g. N WP 18, which applies to minor discharges <0.1 acres or < 25 cubic yards, or NWP 33 which applies to temporary construction, access, and dewatering activities), application submittal requirements include preconstruction notification and possibly a JPA. Timeline for review is approximately 60 days, with no opportunity for public comment.</p> <p>If the project requires an IP, application submittal requirements include a JPA, project drawings, an aquatic resources delineation report, and compensatory mitigation plan (if needed). USACE’s review includes opportunities for public comment and a public hearing can be requested by members of the public. Timeline for review is a minimum of 120 days from receipt of a complete application.</p> <p>A CWA Section 401 WQC from ODEQ is required before permit can be issued.</p>	–	Low	–	Moderate
USFWS	ESA Section 7 consultation	ESA Section 7	Actions that have a federal nexus (e.g., federal funding or federal permit) and may affect federally listed species or their critical habitat.	<p>Prior to consultation, complete site-specific habitat assessments to determine whether the project has the potential to affect any federally listed ESA species.</p> <p>If the project is “likely to adversely affect” a species, formal consultation would be needed, which entails preparation of a biological assessment (higher level of effort) that analyzes the project’s potential impacts on listed species. If USFWS concurs, they issue a biological opinion. Timeline for review is approximately 60 days after a complete application is submitted.</p> <p>If the project “may affect, but is not likely to adversely affect” species, informal consultation would be required, which entails preparation of a biological evaluation (lower level of effort). If USFWS concurs, they issue a Letter of Concurrence. Timeline for review is approximately 135 days after a complete application is submitted.</p>	Low	Low	Low	Low
USFWS	BGEPA compliance	BGEPA	Projects that may result in the take of eagles, including their parts, nests, or eggs.	<p>The compliance process is often self-directed and achieved by ensuring the avoidance of take by conducting pre-construction clearance surveys to confirm a lack of active eagle nest within 660 feet of construction activities.</p> <p>If needed, consultation regarding bald and golden eagles can be conducted during ESA Section 7 consultation. USFWS encourages development of an eagle conservation plan when incidental take may occur.</p>	Low	–	–	–
USFWS	MBTA compliance	MBTA	Projects and activities that have the potential to result in take of migratory birds.	<p>No permit; compliance only.</p> <p>A good faith effort to avoid and minimize impacts to migratory birds should be made by avoiding construction activities within the nesting season (generally February 1–August 31), and/or completion of pre-construction clearance surveys.</p>	High	High	High	High
State								
DSL	Removal-Fill permit	ORS 196.795–196.910 Oregon Administrative Rule (OAR) 141-85	Removal of material from, or placement of fill in, waters of the state (50 cubic yards or greater), or any amount of removal/fill in state-designated Essential Salmonid Habitat.	<p>Prior to application, conduct a wetland and water delineation for the proposed project footprint and request a jurisdictional determination to determine if a permit is required.</p> <p>Application submittal requirements include a JPA, project drawings, an aquatic resources delineation report, and compensatory mitigation plan (if needed). DSL’s review includes opportunities for public comment. Timeline for review is approximately 120 days from receipt of a complete application.</p>	–	Low	–	Moderate
ODEQ	CWA Section 401 WQC	CWA, 33 USC 1341 OAR 340-48	Discharge of fill material into or removal of substrate or sediment in WOTUS and waters of the state that also require a federal Removal-Fill Permit from the USACE.	<p>A pre-application consultation is recommended for large, complex projects prior to application submittal.</p> <p>Application submittal requirements include a WQC application and stormwater management plan. Can be submitted to ODEQ concurrently with federal CWA Section 404 permit application submittal to USACE.</p> <p>USACE’s public comment period for the CWA Section 404 permit would also apply to the associated CWA Section 401 WQC request.</p> <p>Timeline for review is similar to USACE’s CWA Section 404 permit (minimum 120 days after a complete application is submitted).</p>	–	Low	–	Moderate
ODEQ	1200-C Permit	ORS 468B.050	Construction Stormwater General Discharge Permit	<p>Application submittal requirements include an application form, project narrative, land use compatibility statement, and an erosion and sediment control plan (ESCP) that identifies the BMPs that will be used during construction to prevent or minimize erosion and control sediment runoff from the site.</p> <p>Activities that disturb 5 or more acres will be subject to a 14-calendar day public review period.</p> <p>Timeline for review is not specified by ODEQ and generally depends on the complexity of the project and quality of the application materials (i.e., ESCP).</p>	High	High	Low	High

Agency	Permit or Approval	Regulation	Permit or Compliance Trigger	Permit or Compliance Process	Potential to be Triggered			
					Site 1	Site 2	Site 3	Site 4
ODEQ	NPDES Permit	OAR 340-045	Discharges of pollutants into surface waters of the state.	Application submittal requirements include an application form, project narrative, and supporting studies that describe the type/method of discharge, and plans for treating and monitoring the water quality of the discharge. Timeline for review is not specified by ODEQ and generally depends on the complexity of the project and quality of the application materials (i.e., ESCP).	–	Moderate	–	Moderate
ODA	Listed Plant Permit or Consultation	ORS 564 OAR 603-73	Any land action on Oregon non-federal public lands which results in, or might result in, the taking of a threatened or endangered plant species.	Prior to consultation, complete site-specific surveys for listed plant species to verify presence/absence. If present, submit a survey report to ODA. ODA would review the report and provide comments within 90 days, including a determination on whether formal consultation or a permit is required. If consultation is required, an evaluation of potential impacts on listed plant species would be required. If a permit is required, submit application form and supporting documentation to ODA. ODA would review the application and request additional information as needed. Timeline for review is approximately 120 days from a complete application.	–	Moderate	–	–
SHPO	Section 106 Consultation/Concurrence	NHPA Section 106	Required if there are potential impacts to cultural and/or historical resources that are listed in or eligible for listing in the NRHP; consultation triggered by another federal discretionary action (e.g., USACE permit).	Prior to initiating consultation, complete records search, fieldwork, and cultural resources report. Lead federal agency would initiate and lead consultation efforts. Timeline for consultation would be included in the overall timeline for the lead federal agency permit, as issuance of the federal permit would be contingent on completion of NHPA Section 106 consultation obligations.	–	Low	–	Moderate
Local								
Columbia County	Zoning Review	CCZO Sections 500 and 1601	Development of “reservoirs and water impoundments” in the PF-80 zoning designation.	Application submittal requirements include application form, site plans (e.g., existing/proposed conditions, grading, landscape, architecture), and narrative (typically a burden of proof statement outlining how the proposed use meets applicable requirements of the code). Process would be combined with the site design review, which entails a mandatory pre-application conference followed by Planning Commission review and a public hearing. Timeline for review is not specified in code but is typically around 120 days after an application is deemed complete.	High	–	–	–
Columbia County	Determination of Similar Use (DSU)	CCZO Section 1000	Proposed uses in the CS-I zoning designation that are not explicitly permitted, but may qualify as “other uses found similar by the Planning Commission” .	Application must include a burden of proof narrative providing evidence of how the proposed use is similar to other uses permitted within the zone and is therefore in alignment with the purpose of the zone (CCZO 1001). Process would be combined with the site design review, which entails a mandatory pre-application conference followed by Planning Commission review and a public hearing. Timeline for review is not specified in code but is typically around 120 days after an application is deemed complete.	–	–	–	High
Columbia County	Type 2 Site Design Review	CCZO Section 1550	All new development of community or governmental uses which is not explicitly exempted.	Application submittal requirements include project narrative, site development plans (e.g., site layout, grading, landscape, architecture, access, etc.), impact assessment, and wetland mitigation plan (if applicable). Process entails a mandatory pre-application conference, followed by Planning Commission review and a public hearing. Timeline for review is not specified in code but is typically around 120 days after an application is deemed complete.	High	–	–	High
City of St. Helens	CUP	SHMC Sections 17.24; 17.32; and 17.100	Development of “major public facility” within the R7 zoning designation.	Application submittal requirements include application form, site plans (e.g., existing/proposed conditions, grading, landscape, architecture), and conditional use data and narrative (typically a burden of proof statement outlining the proposed use meets applicable requirements of the code). Process entails a mandatory pre-application conference, followed by Planning Commission review and a public hearing. Timeline for review is 120 days from receipt of a complete application.	–	High	High	–
City of St. Helens	Sensitive Land Permit	SHMC 17.44	Development (excluding those which are exempted) within significant wetlands, riparian corridors, and protective buffers, as defined under SHMC 17.40.	Application submittal requirements include a project narrative and impact analysis, burden of proof statement outlining how the project would comply with applicable standards in the SHMC, and detailed site plans and drawings. Mandatory pre-application conference, followed by review and approval by the Planning Director. Timeline for review is not specified in City code but is typically around 120 days after an application is deemed complete.	–	Low	–	–
City of St. Helens	Erosion Control and Sediment Prevention Permit	SHMC 18.36	Sites disturbing 5,000 square feet or greater, or sites disturbing 1,000 square feet that are within 50 feet of a water body or wetland.	Application submittal requirements include an application form, site plans, and an ESCP that identifies the BMPs that will be used during construction to prevent or minimize erosion and control sediment runoff from the site. Timeline for review is not specified in the City code.	–	High	High	–

Table 12. Summary of Environmental Siting Constraints at Tank Sites

Constraint	Site 1	Site 2	Site 3	Site 4
Land Ownership	Private	Private	Private	Public – County
Zoning	Columbia County PF-80: requires review by the Planning Director and site design review by the Planning Commission, including pre-application conference, and public hearing.	City of St. Helens R7: requires CUP review by the Planning Commission and site design review by the Planning Commission, including pre-application conference, and public hearing. Sensitive Lands Permit may also apply due to riparian zone impacts.	City of St. Helens R7: requires CUP review by the Planning Commission and site design review by the Planning Commission, including pre-application conference, and public hearing.	Columbia County CS-I: requires either a CUP or zoning variance, as well as site design review, all of which are reviewed by the Planning Commission, including pre-application conference, and public hearing. If needed, a zoning variance would require a strong rationale for the need, public interest, and compatibility of the project with surrounding uses and the comprehensive plan.
ODFW Habitat Categories	Estimated as Category 5 (1:1 mitigation ratio) Habitat assessment required	Estimated as categories 3, 5 (1:1 mitigation ratio) and Category 6 (minimize impacts) Habitat assessment required	Estimated as Categories 5 (1:1 mitigation ratio) and 6 (minimize impacts) Habitat assessment required	Estimated as Category 3 (1:1 mitigation ratio) and Category 6 (minimize impacts). Habitat assessment required.
Special-Status Species	3 species may occur Habitat for bald eagles Habitat assessment and nest survey required	4 species may occur Habitat assessment and sensitive plant survey required	0 species may occur	3 species may occur. Habitat assessment required.
Aquatic Resources	None	Tax lot contains 0.61 acre of wetlands and 317 linear feet of perennial stream, which may be avoidable, and 2.04 acres of upland protective buffers, a portion of which is likely to be impacted by the overflow path only Wetland/water delineation required. Potential permits for overflow path include a Sensitive Lands Permit (City) and an NPDES permit (ODEQ) for operational discharge.	None	Tax lot contains 0.36 acre of wetlands and 1,056 linear feet of intermittent stream, which may be avoidable, and an estimated 2 acres or less of upland protective buffers, a portion of which is likely to be impacted by the overflow path. Wetland/water delineation required. Potential permits for overflow path include riparian development permit (County) and an NPDES permit (ODEQ) for operational discharge.
Cultural Resources	No previously recorded cultural resources Probability of identifying cultural resources: low to moderate-low	No previously recorded cultural resources Probability of identifying cultural resources: low to moderate-low	No previously recorded cultural resources Probability of identifying cultural resources: low to moderate-low	No previously recorded cultural resources. Probability of identifying cultural resources: low to moderate-low.

Constraint	Site 1	Site 2	Site 3	Site 4
Visual Impacts	<0.25 mile from a residential neighborhood Existing vegetation could partially screen tank	70 to 100 feet from residences	200 to 300 feet from residences Existing vegetation could partially screen tank	50 to 100 feet from residences. Within viewshed of county fairgrounds, and visible from the adjacent baseball field.
Potential for Encountering Hazardous Materials	Low	Low	Low	Low.
Permitting Requirements	Low likelihood for 2 permits High likelihood for 4 permits	Low likelihood for 6 permits Moderate likelihood for 2 permits High likelihood for 4 permits	Low likelihood for 2 permits High likelihood for 3 permits	Low likelihood for 1 permit. Moderate likelihood for 5 permits. High likelihood for 4 permits.

Site 1 contains potentially suitable habitat for three ESA species (Columbia white-tailed deer, monarch butterfly, and Suckley's cuckoo bumble bee), several MBTA species, and one BGEPA species (bald eagle). Given the previously disturbed site conditions, most species are not anticipated to have a strong association with habitat on-site, and it is reasonable to assume that the need for incidental take permits under the ESA, MBTA, and BGEPA can be avoided through the completion of a site-specific habitat survey, designing the project to avoid sensitive habitat, and incorporation of wildlife-related BMPs (e.g., avoiding vegetation removal during nesting season). Some coordination with wildlife agencies at the state or federal level may be needed regarding special-status species.

In this initial constraints analysis, SWCA did not identify fatal flaws for Site 1. Siting and project layout will be important components of project planning and mitigating any resource issues described in this document.

Site 2

The development of Site 2 would require standard land use permits and environmental due diligence efforts related to aquatic resources, wildlife, and habitat. The overall complexity of anticipated land use and environmental permitting and due diligence efforts has the potential to be moderate due to presence of aquatic resources and the corresponding potential for a federal nexus.

The use of Site 2 as a tank site would be considered a conditional use per the City zoning designation and would require a CUP from the City involving a quasi-judicial review by the Planning Commission. Because the proposed use would be considered a conditional use per City zoning designation, Site 2 (and Site 3) may be subject to greater conditions of approval relative to Site 1. The conditional use is explicitly allowed in its designated zone, but would have less uncertainty in its compatibility with surrounding uses relative to Site 4, which may or may not be allowed in its underlying zoning designation.

Site 2 contains documented wetlands, waters, and associated protective upland buffers (covering approximately 22% of the total parcel acreage), which could either be avoided through project design, or if impacts are unavoidable, would trigger the need for removal-fill permits from local, state, and/or federal agencies. Formal wetland and water delineations are needed to determine the jurisdictional status of features and to facilitate the micro-siting of project components outside of these features and their regulated buffers, to the maximum extent possible. If impacts to wetlands and waters are unavoidable, but are minor (i.e., less than 0.1 to 0.5 acre or less than 50 cubic yards), the project may qualify for an NWP from USACE, and may also be exempt from DSL permit requirements. However, if impacts exceed NWP and DSL thresholds, the level of permitting needs from USACE, DSL, and ODEQ would greatly increase. Any permit from USACE would also create a federal nexus for the project, which could require consultation under Section 106 of the NHPA, unless effects to historic resources are dismissed through site-specific analysis and reporting. In either impact scenario (minor or not minor) coordination with the City would also be needed regarding sensitive land regulations and associated permitting requirements (SHMC 17.40 and 17.44). If unavoidable impacts are confined to upland buffers only (i.e., where the proposed overflow path is located) the City would require a sensitive lands permit for development in the buffer; however, removal-fill permits from USACE and DSL would not likely be required. Further, the site's proposed overflow discharge into a surface water may require an NPDES permit from ODEQ to ensure compliance with relevant water quality standards for the receiving water. The need for an NPDES permit would depend on the makeup of the discharge and whether it constitutes a "pollutant" per ODEQ's definition. For reservoirs specifically, water may need to be de-chlorinated prior to discharge to meet state water quality standards.

Site 2 contains potentially suitable habitat for three federal ESA species (northwestern pond turtle, monarch butterfly, and Suckley's cuckoo bumble bee), one state ESA species (Nelson's checkermallow),

and several MBTA species. Given the previously disturbed site conditions, most species are not anticipated to have a strong association with site habitats, and it is reasonable to assume that the need for incidental take permits under the ESA and MBTA can be avoided through the completion of a site-specific habitat survey, designing the project to avoid sensitive habitat, and incorporation of wildlife-related BMPs (e.g., avoiding vegetation removal during nesting season). Some coordination with wildlife and plant agencies at the state or federal level may be needed regarding special-status species.

In this initial constraints analysis, SWCA did not identify fatal flaws for Site 2. Siting and project layout will be important components of project planning and mitigating any resource issues described in this document.

Site 3

The development of Site 3 would require standard land use permits and environmental due diligence efforts related to wildlife and habitat; however, the overall complexity of anticipated land use and environmental permitting and due diligence efforts is anticipated to be low due to the avoidance of aquatic resources and a lack of any federal nexus.

The use of Site 3 as a tank site would be a conditional use per the City zoning designation and would require a CUP from the City involving a quasi-judicial review by the Planning Commission. Because the proposed use would be considered a conditional use per the City zoning designation, Site 3 (and Site 2) may be subject to greater conditions of approval relative to Site 1. The conditional use is explicitly allowed in its designated zone, but would have less uncertainty in its compatibility with surrounding uses relative to Site 4, which may or may not be allowed in its underlying zoning designation.

Site 3 contains potentially suitable habitat for several MBTA species, but lacks suitable habitat for ESA species. It is reasonable to assume that the need for incidental take permits under the MBTA can be avoided through the completion of a site-specific habitat survey, designing the project to avoid sensitive habitat, and incorporation of wildlife-related BMPs (e.g., avoiding vegetation removal during nesting season). Some coordination with wildlife agencies at the state or federal level may be needed regarding special-status species.

In this initial constraints analysis, SWCA did not identify fatal flaws for Site 3. Siting and project layout will be important components of project planning and mitigating any resource issues described in this document.

Site 4

Because Site 4 is not explicitly permitted in its underlying zoning designation, the development of Site 4 would require a DSU from the Planning Commission, which would involve a greater level of effort and uncertainty compared to other sites. Although the site's environmental due diligence efforts related to aquatic resources, wildlife, and habitat would be standard, the overall complexity of anticipated land use and environmental permitting and due diligence efforts has the potential to be high due to uncertainty surrounding land use compatibility as well as the presence of aquatic resources and the corresponding potential for a federal nexus.

The development of Site 4 would require a combined DSU and site design review by the Planning Commission. For the DSU, the burden falls upon the applicant to provide evidence that the proposed use is similar to other uses permitted within the zone and is therefore compatible and in alignment with the purpose of the zone.

Site 4 contains documented wetland and waters (covering approximately 1.6% of the total parcel averages), plus an estimated 2 acres or less of upland buffers, which could either be avoided through project design, or if impacts are unavoidable, would trigger the need for removal-fill permits from local, state, and/or federal agencies. Formal wetland and water delineations are needed to determine the jurisdictional status of features and to facilitate the micro-siting of project components outside of these features and their regulated buffers to the maximum extent possible. If impacts to wetlands and waters are unavoidable, but are minor (i.e., less than 0.1 to 0.5 acre or less than 50 cubic yards), the project may qualify for an NWP from USACE, and may also be exempt from DSL permit requirements. However, if impacts exceed NWP and DSL thresholds, the level of permitting needs from USACE, DSL, and ODEQ would greatly increase. Any permit from USACE would also create a federal nexus for the project, which could require consultation under Section 106 of the NHPA, unless effects to historic resources are dismissed through site-specific analysis and reporting. In either impact scenario (minor or not minor) coordination with the City would also be needed to determine if sensitive land regulations and associated permitting requirements (SHMC 17.40 and 17.44) apply to the project. If unavoidable impacts are confined to upland buffers only (i.e., where the proposed overflow path is located) the County may require a permit for development in the riparian zone; however, removal-fill permits from USACE and DSL would not likely be required. Further, the site's proposed overflow discharge into a surface water may require an NPDES permit from ODEQ to ensure compliance with relevant water quality standards for the receiving water. The need for an NPDES permit would depend on the makeup of the discharge and whether it constitutes a "pollutant" per ODEQ's definition. For reservoirs specifically, water may need to be de-chlorinated prior to discharge to meet state water quality standards.

Site 4 contains potentially suitable habitat for three ESA species (northwestern pond turtle, monarch butterfly, and Suckley's cuckoo bumble bee), and several MBTA species. Given the previously disturbed site conditions, most species are not anticipated to have a strong association with site habitats, and it is reasonable to assume that the need for incidental take permits under the ESA and MBTA can be avoided through the completion of a site-specific habitat survey, designing the project to avoid sensitive habitat, and incorporation of wildlife-related BMPs (e.g., avoiding vegetation removal during nesting season). Some coordination with wildlife agencies at the state or federal level may be needed regarding special-status species.

Based on this initial constraints analysis, the requirement for a DSU at Site 4 would increase the complexity of the permitting pathway, but would not be a fatal flaw. Additionally, siting and project layout will be important components of project planning and mitigating any resource issues described in this document.

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APPENDIX A

Aerial Imagery

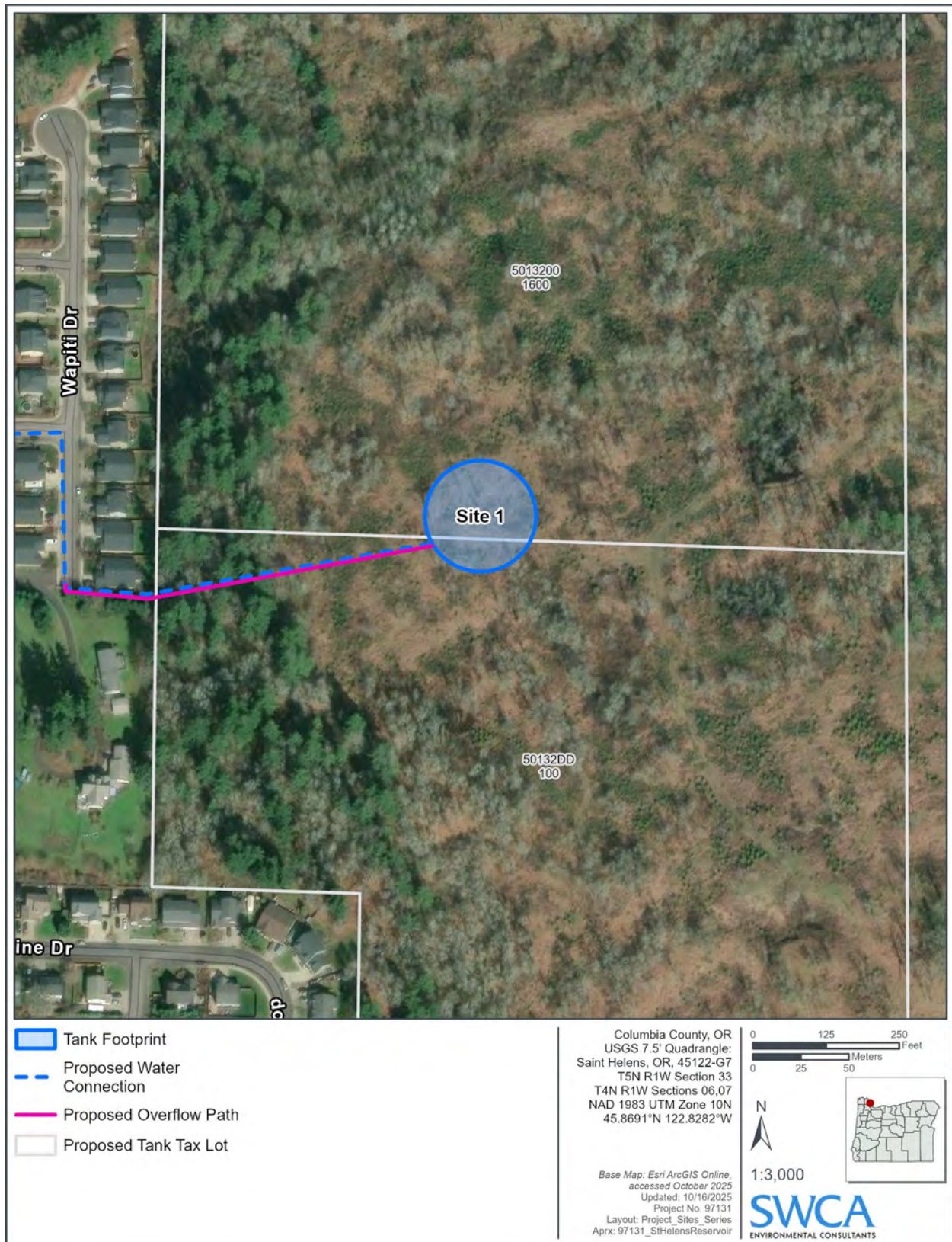


Figure A-1. Aerial imagery showing Site 1.



Figure A-2. Aerial imagery showing Site 2.



Figure A-3. Aerial imagery showing Site 3.

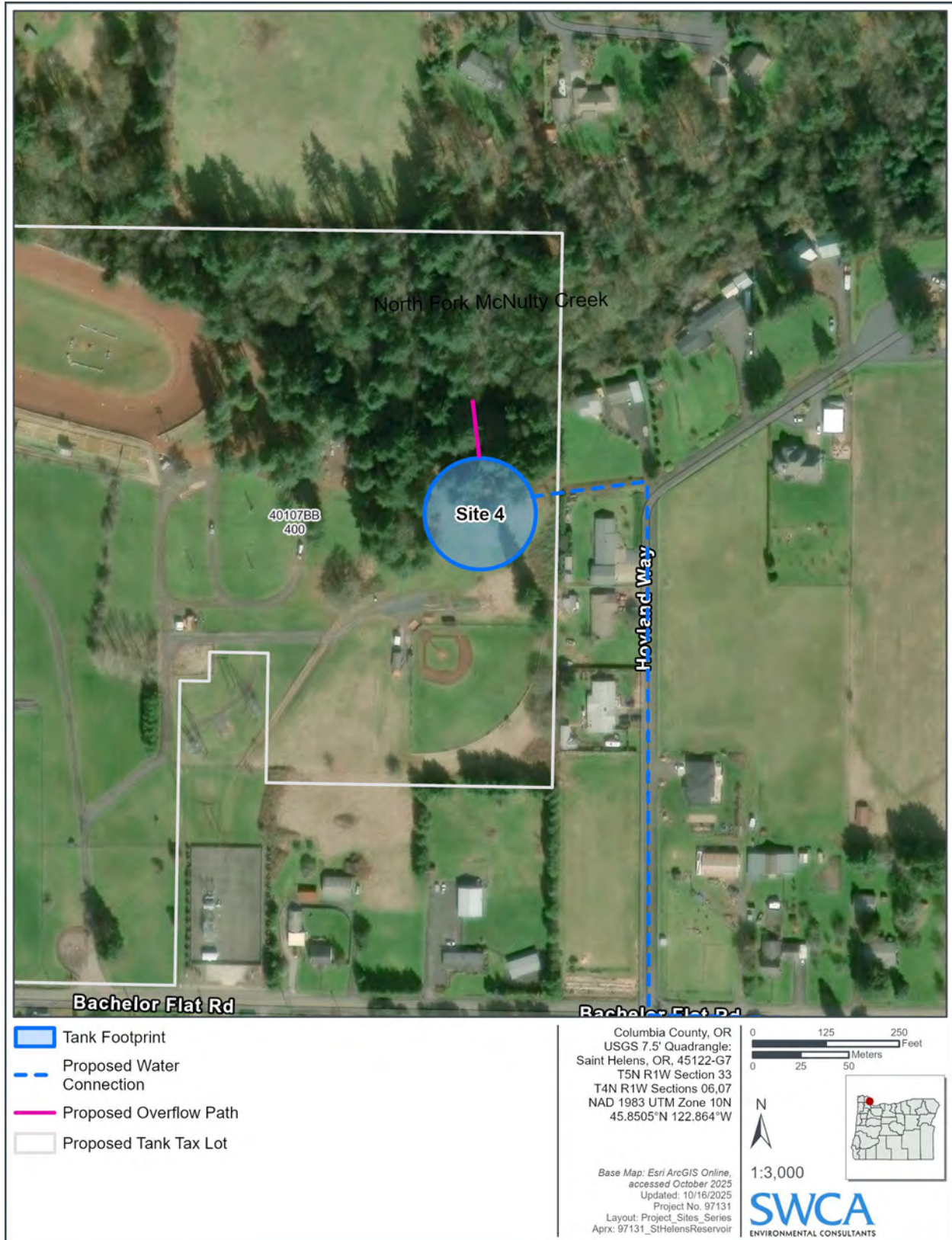


Figure A-4. Aerial imagery showing Site 4.

APPENDIX B

Information for Planning and Consultation Resource List

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Columbia County, Oregon



Local office

Oregon Fish And Wildlife Office

☎ (503) 231-6179

📠 (503) 231-6195

2600 Southeast 98th Avenue, Suite 100

Portland, OR 97266-1398

Item #4.

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
<p>Marbled Murrelet <i>Brachyramphus marmoratus</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/4467</p>	Threatened
<p>Northern Spotted Owl <i>Strix occidentalis caurina</i></p> <p>Wherever found</p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/1123</p>	Threatened
<p>Streaked Horned Lark <i>Eremophila alpestris strigata</i></p> <p>Wherever found</p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/7268</p>	Threatened
<p>Yellow-billed Cuckoo <i>Coccyzus americanus</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/3911</p>	Threatened

Reptiles

NAME	STATUS
<p>Northwestern Pond Turtle <i>Actinemys marmorata</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.</p> <p>https://ecos.fws.gov/ecp/species/1111</p>	Proposed Threatened

Insects

NAME	STATUS
<p>Monarch Butterfly <i>Danaus plexippus</i></p> <p>Wherever found</p> <p>There is proposed critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/9743</p>	Proposed Threatened

Suckley's Cuckoo Bumble Bee Bombus suckleyi

Proposed Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/10885>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are Bald Eagles and/or Golden Eagles in your [project](#) area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the [National Bald Eagle Management Guidelines](#). You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and

minimize eagle impacts. For bald eagle information specific to Alaska, please refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#).

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

If disturbance or take of eagles cannot be avoided, an [incidental take permit](#) may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the [Do I Need A Permit Tool](#). For assistance making this determination for golden eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Mar 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read ["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

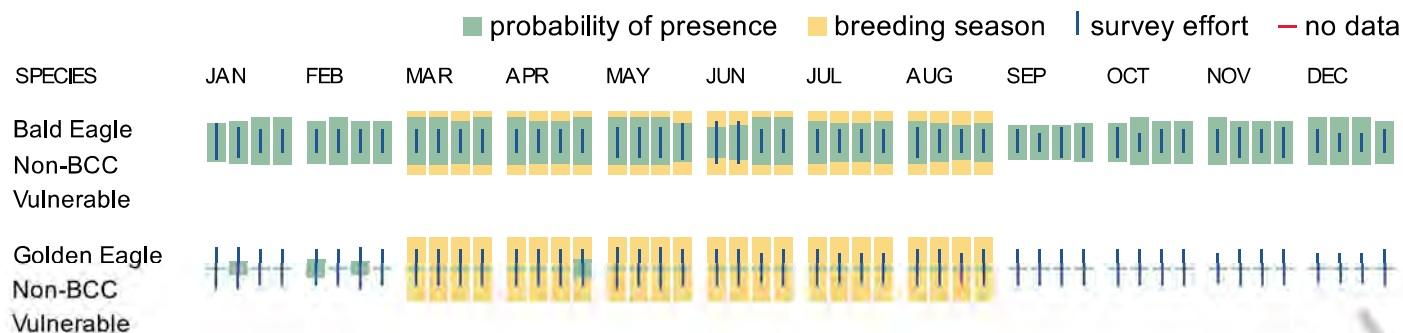
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA)¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-bird>

- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC

<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases [birds of concern](#), including [Birds of Conservation Concern \(BCC\)](#), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the [Nationwide avoidance and minimization measures for birds](#) document, and any other project-specific avoidance and minimization measures suggested at the link [Measures for avoiding and minimizing impacts to birds](#) for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles document](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31
Black Swift <i>Cypseloides niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31

Cassin's Finch *Haemorhous cassinii*

Breeds May 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9462>

Chestnut-backed Chickadee *Poecile rufescens rufescens*

Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Clark's Grebe *Aechmophorus clarkii*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak *Coccothraustes vespertinus*

Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle *Aquila chrysaetos*

Breeds Mar 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Lesser Yellowlegs *Tringa flavipes*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Olive-sided Flycatcher *Contopus cooperi*

Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3914>

Oregon Vesper Sparrow *Pooecetes gramineus affinis*

Breeds Apr 21 to Aug 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/5141>

Red Knot *Calidris canutus roselaari*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8880>

Rufous Hummingbird *Selasphorus rufus*

Breeds Apr 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8002>

Short-billed Dowitcher *Limnodromus griseus*

Breeds Jun 1 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9480>

Western Grebe *aechmophorus occidentalis*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/6743>

Western Gull *Larus occidentalis*

Breeds Apr 21 to Aug 25

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Western Screech-owl *Megascops kennicottii cardonensis*

Breeds Mar 1 to Jun 30

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (🟡)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

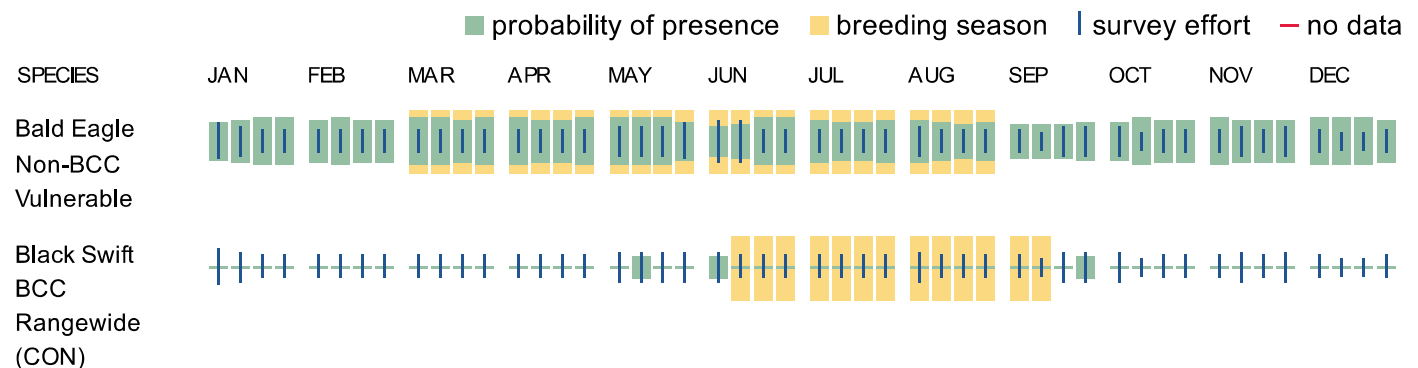
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

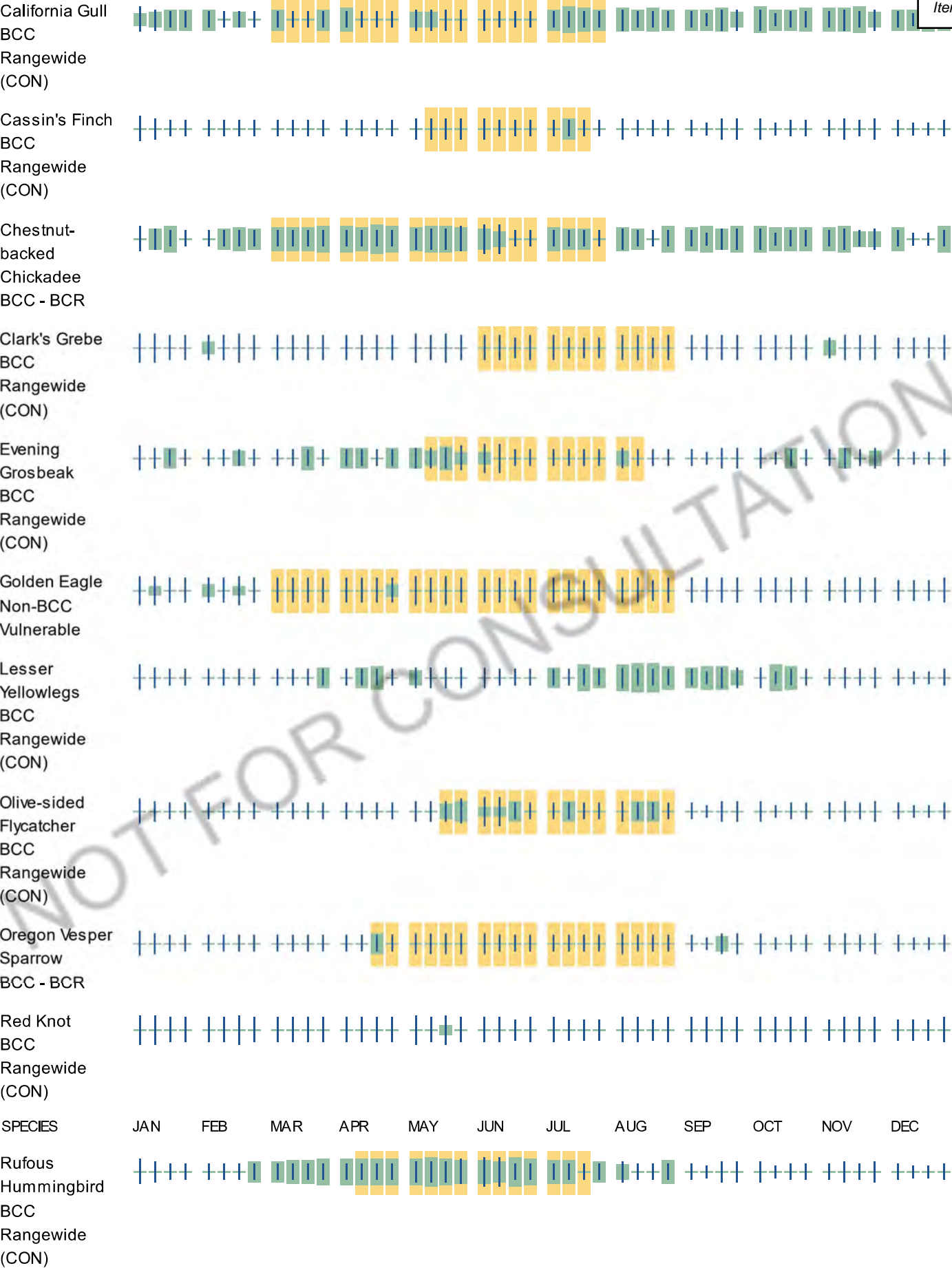
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

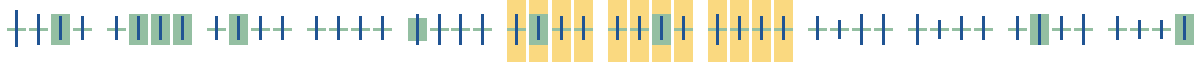




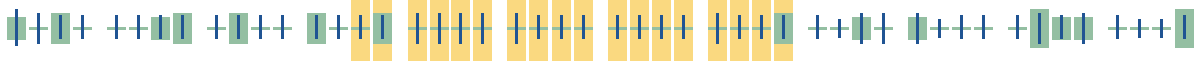
Short-billed
Dowitcher
BCC
Rangewide
(CON)



Western Grebe
BCC
Rangewide
(CON)



Western Gull
BCC
Rangewide
(CON)



Western
Screech-owl
BCC - BCR



Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Avoidance & Minimization Measures for Birds](#) describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the [Bald and Golden Eagle Protection Act](#) and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Bald and Golden Eagle Protection Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Columbia County, Oregon



Local office

Oregon Fish And Wildlife Office

☎ (503) 231-6179

📅 (503) 231-6195

2600 Southeast 98th Avenue, Suite 100

Portland, OR 97266-1398

Item #4.

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
<p>Marbled Murrelet <i>Brachyramphus marmoratus</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/4467</p>	Threatened
<p>Northern Spotted Owl <i>Strix occidentalis caurina</i></p> <p>Wherever found</p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/1123</p>	Threatened
<p>Streaked Horned Lark <i>Eremophila alpestris strigata</i></p> <p>Wherever found</p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/7268</p>	Threatened
<p>Yellow-billed Cuckoo <i>Coccyzus americanus</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/3911</p>	Threatened

Reptiles

NAME	STATUS
<p>Northwestern Pond Turtle <i>Actinemys marmorata</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.</p> <p>https://ecos.fws.gov/ecp/species/1111</p>	Proposed Threatened

Insects

NAME	STATUS
<p>Monarch Butterfly <i>Danaus plexippus</i></p> <p>Wherever found</p> <p>There is proposed critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/9743</p>	Proposed Threatened

Suckley's Cuckoo Bumble Bee Bombus suckleyi

Proposed Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/10885>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are Bald Eagles and/or Golden Eagles in your [project](#) area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the [National Bald Eagle Management Guidelines](#). You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and

minimize eagle impacts. For bald eagle information specific to Alaska, please refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#).

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

If disturbance or take of eagles cannot be avoided, an [incidental take permit](#) may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the [Do I Need A Permit Tool](#). For assistance making this determination for golden eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Mar 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read ["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

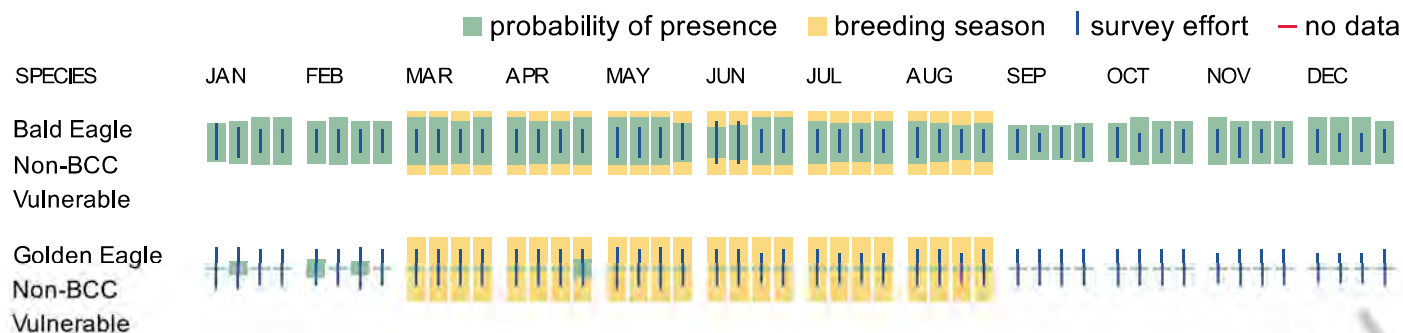
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA)¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-bird>

- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC

<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases [birds of concern](#), including [Birds of Conservation Concern \(BCC\)](#), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the [Nationwide avoidance and minimization measures for birds](#) document, and any other project-specific avoidance and minimization measures suggested at the link [Measures for avoiding and minimizing impacts to birds](#) for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles document](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31
Black Swift <i>Cypseloides niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31

Cassin's Finch *Haemorhous cassinii*

Breeds May 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9462>

Chestnut-backed Chickadee *Poecile rufescens rufescens*

Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Clark's Grebe *Aechmophorus clarkii*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak *Coccothraustes vespertinus*

Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle *Aquila chrysaetos*

Breeds Mar 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Lesser Yellowlegs *Tringa flavipes*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Olive-sided Flycatcher *Contopus cooperi*

Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3914>

Oregon Vesper Sparrow *Pooecetes gramineus affinis*

Breeds Apr 21 to Aug 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/5141>

Red Knot *Calidris canutus roselaari*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8880>

Rufous Hummingbird *Selasphorus rufus*

Breeds Apr 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8002>

Short-billed Dowitcher *Limnodromus griseus*

Breeds Jun 1 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9480>

Western Grebe *aechmophorus occidentalis*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/6743>

Western Gull *Larus occidentalis*

Breeds Apr 21 to Aug 25

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Western Screech-owl *Megascops kennicottii cardonensis*

Breeds Mar 1 to Jun 30

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (🟡)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

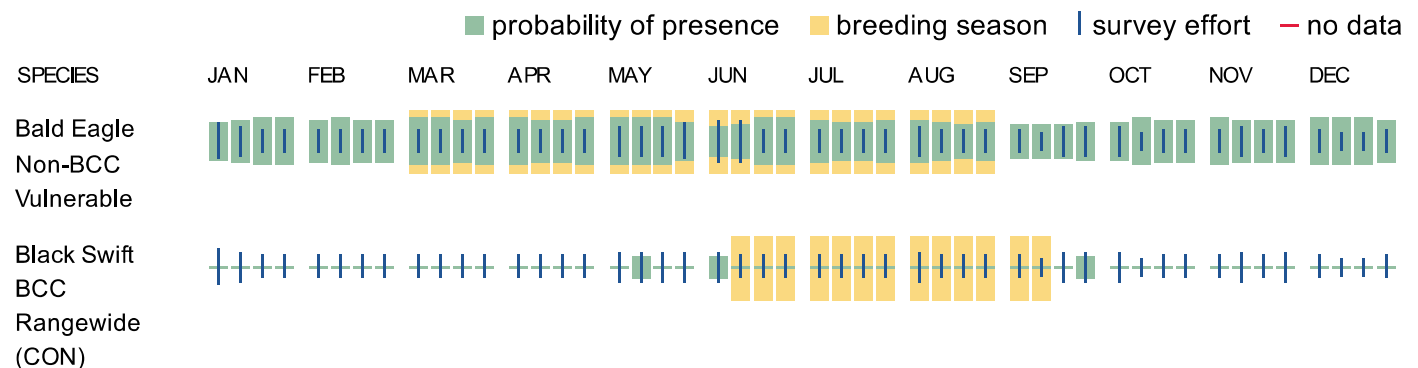
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

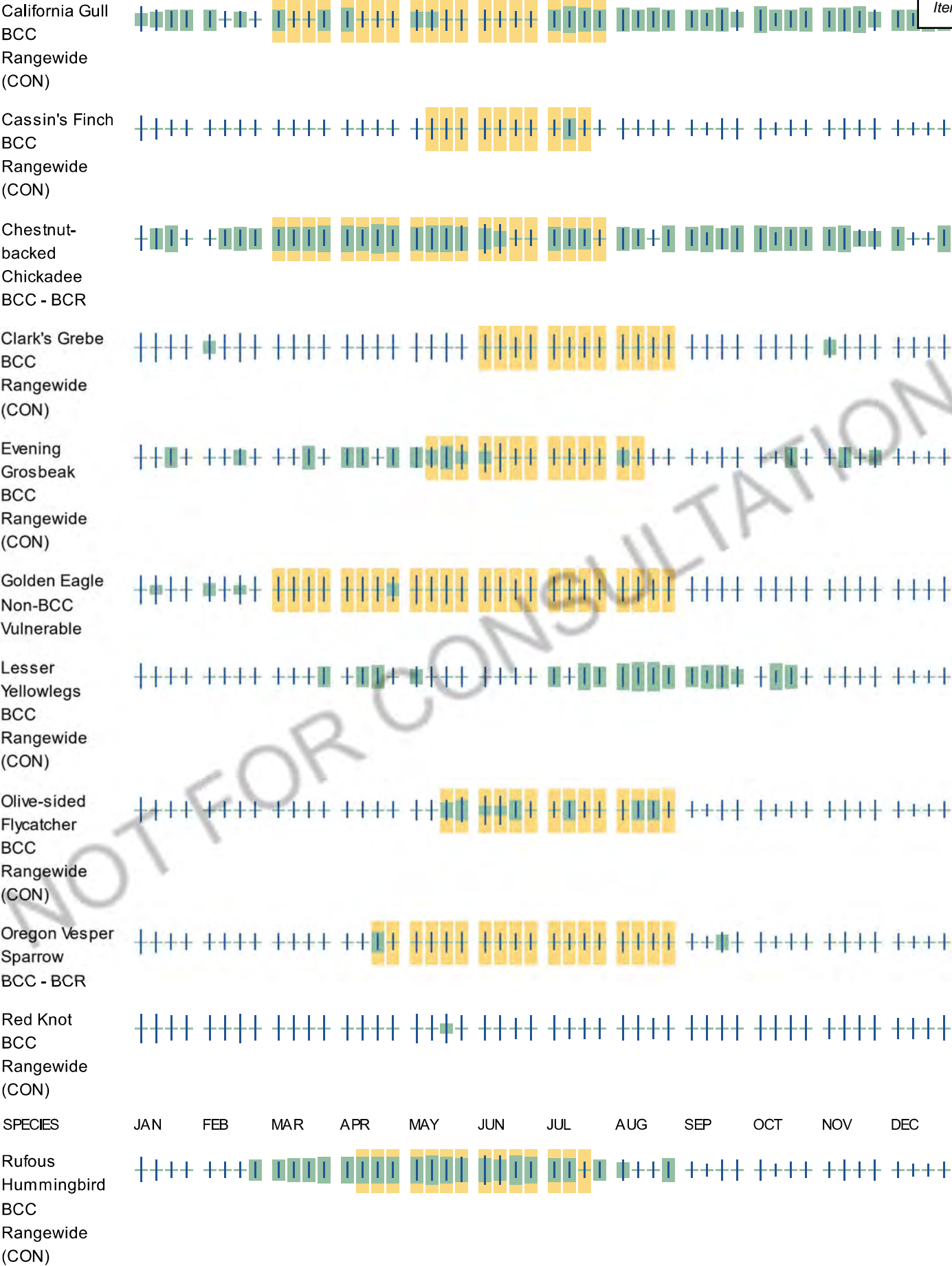
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

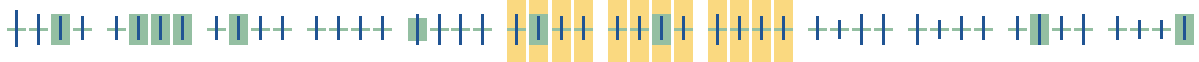




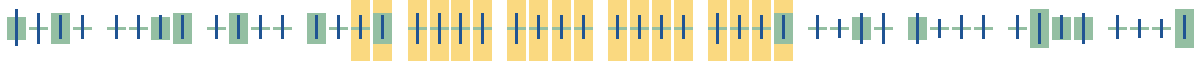
Short-billed
Dowitcher
BCC
Rangewide
(CON)



Western Grebe
BCC
Rangewide
(CON)



Western Gull
BCC
Rangewide
(CON)



Western
Screech-owl
BCC - BCR



Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Avoidance & Minimization Measures for Birds](#) describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the [Bald and Golden Eagle Protection Act](#) and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Bald and Golden Eagle Protection Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

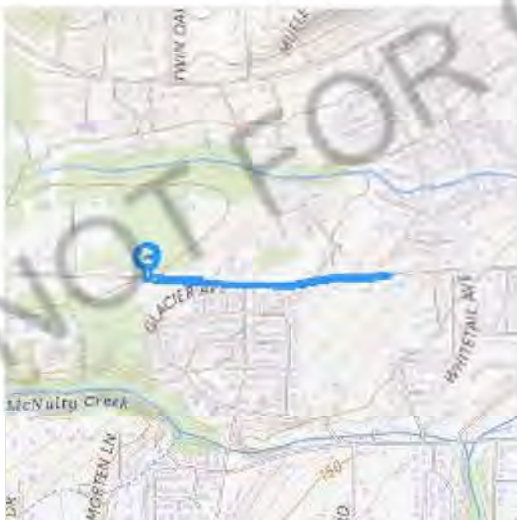
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Columbia County, Oregon



Local office

Oregon Fish And Wildlife Office

☎ (503) 231-6179

📅 (503) 231-6195

2600 Southeast 98th Avenue, Suite 100

Portland, OR 97266-1398

Item #4.

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
<p>Marbled Murrelet <i>Brachyramphus marmoratus</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/4467</p>	Threatened
<p>Northern Spotted Owl <i>Strix occidentalis caurina</i></p> <p>Wherever found</p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/1123</p>	Threatened
<p>Streaked Horned Lark <i>Eremophila alpestris strigata</i></p> <p>Wherever found</p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/7268</p>	Threatened
<p>Yellow-billed Cuckoo <i>Coccyzus americanus</i></p> <p>There is final critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/3911</p>	Threatened

Reptiles

NAME	STATUS
<p>Northwestern Pond Turtle <i>Actinemys marmorata</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.</p> <p>https://ecos.fws.gov/ecp/species/1111</p>	Proposed Threatened

Insects

NAME	STATUS
<p>Monarch Butterfly <i>Danaus plexippus</i></p> <p>Wherever found</p> <p>There is proposed critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/9743</p>	Proposed Threatened

Suckley's Cuckoo Bumble Bee Bombus suckleyi

Proposed Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/10885>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are Bald Eagles and/or Golden Eagles in your [project](#) area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the [National Bald Eagle Management Guidelines](#). You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and

minimize eagle impacts. For bald eagle information specific to Alaska, please refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#).

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

If disturbance or take of eagles cannot be avoided, an [incidental take permit](#) may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the [Do I Need A Permit Tool](#). For assistance making this determination for golden eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME

BREEDING SEASON

Bald Eagle *Haliaeetus leucocephalus*

Breeds Mar 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Golden Eagle *Aquila chrysaetos*

Breeds Mar 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read ["Supplemental Information on Migratory Birds and Eagles"](#), specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

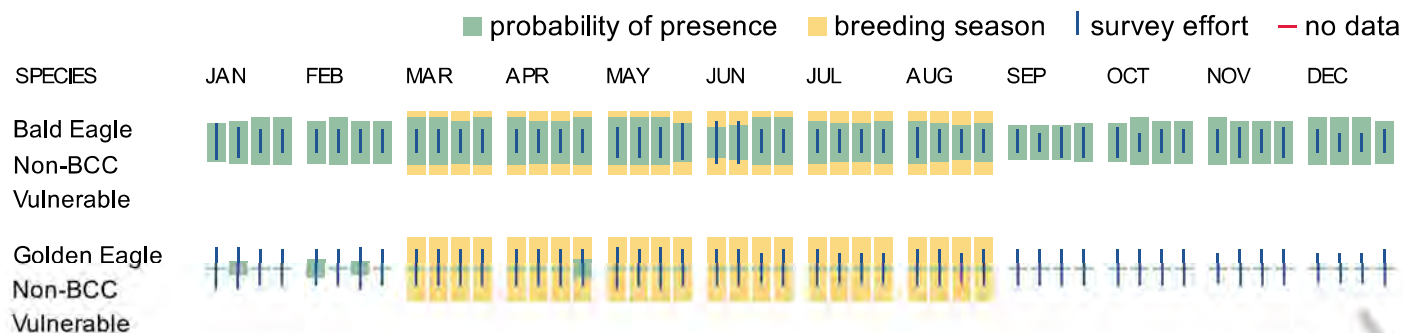
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

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The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA)¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-bird>

- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC

<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases [birds of concern](#), including [Birds of Conservation Concern \(BCC\)](#), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the [Nationwide avoidance and minimization measures for birds](#) document, and any other project-specific avoidance and minimization measures suggested at the link [Measures for avoiding and minimizing impacts to birds](#) for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles document](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31
Black Swift <i>Cypseloides niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31

Cassin's Finch *Haemorhous cassinii*

Breeds May 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9462>

Chestnut-backed Chickadee *Poecile rufescens rufescens*

Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Clark's Grebe *Aechmophorus clarkii*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak *Coccothraustes vespertinus*

Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle *Aquila chrysaetos*

Breeds Mar 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Lesser Yellowlegs *Tringa flavipes*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Olive-sided Flycatcher *Contopus cooperi*

Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3914>

Oregon Vesper Sparrow *Pooecetes gramineus affinis*

Breeds Apr 21 to Aug 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/5141>

Red Knot *Calidris canutus roselaari*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8880>

Rufous Hummingbird *Selasphorus rufus*

Breeds Apr 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8002>

Short-billed Dowitcher *Limnodromus griseus*

Breeds Jun 1 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9480>

Western Grebe *aechmophorus occidentalis*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/6743>

Western Gull *Larus occidentalis*

Breeds Apr 21 to Aug 25

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Western Screech-owl *Megascops kennicottii cardonensis*

Breeds Mar 1 to Jun 30

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (🟡)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

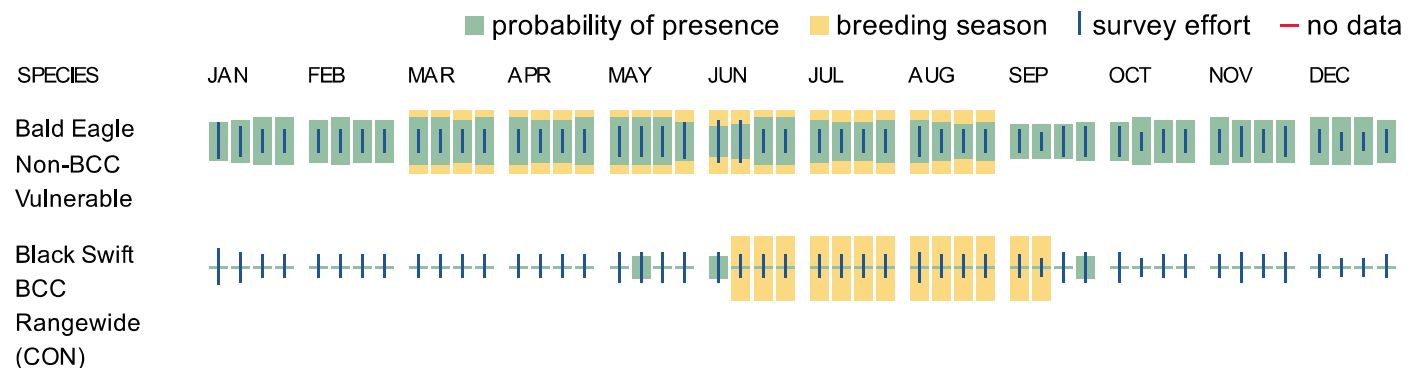
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

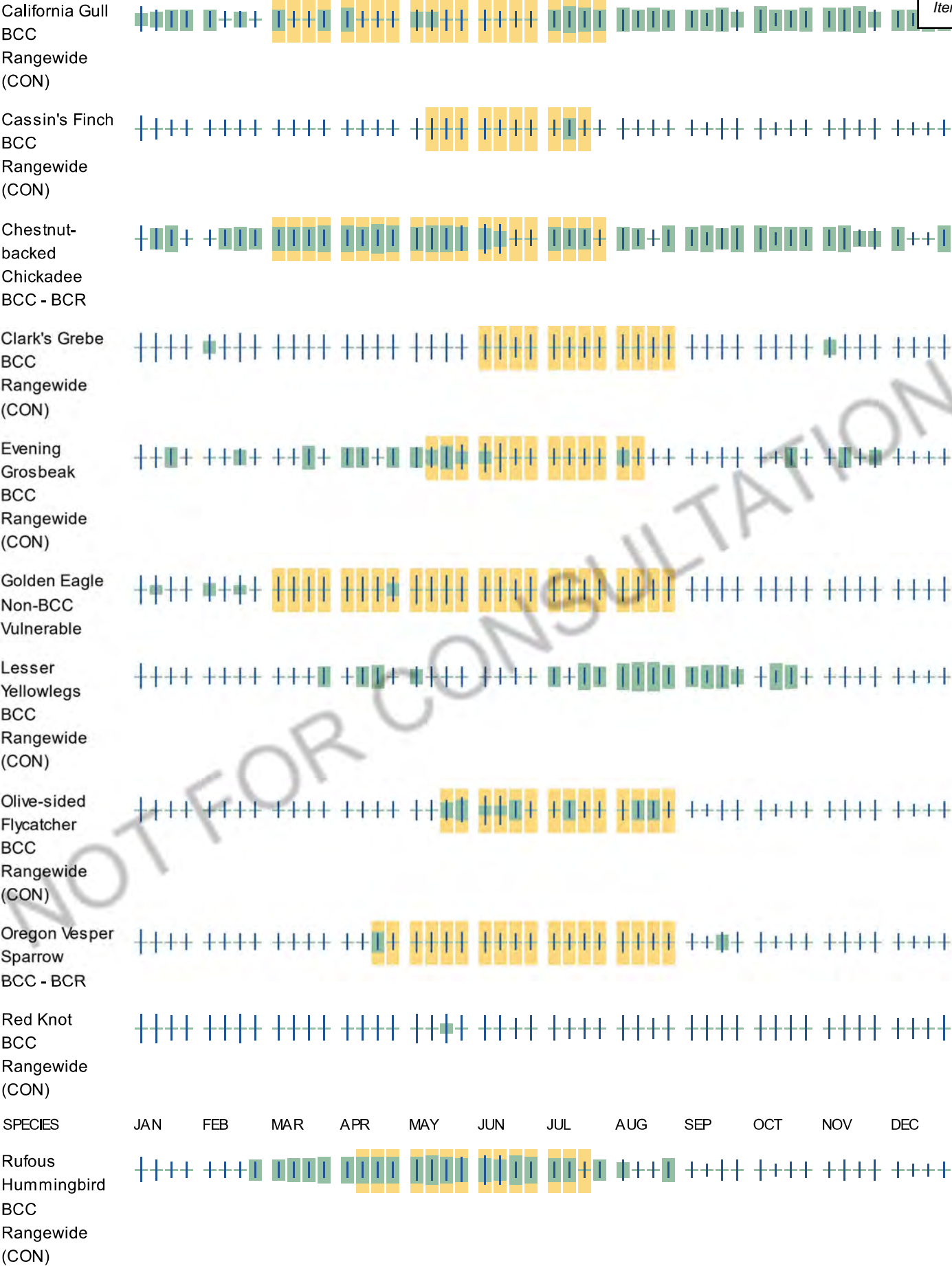
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

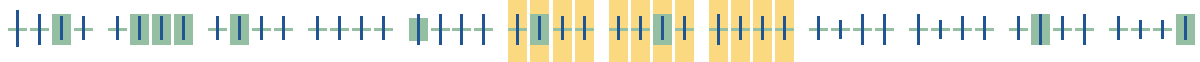




Short-billed
Dowitcher
BCC
Rangewide
(CON)



Western Grebe
BCC
Rangewide
(CON)



Western Gull
BCC
Rangewide
(CON)



Western
Screech-owl
BCC - BCR



Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Avoidance & Minimization Measures for Birds](#) describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the [Bald and Golden Eagle Protection Act](#) and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Bald and Golden Eagle Protection Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Columbia County, Oregon



Local office

Oregon Fish And Wildlife Office

☎ (503) 231-6179

📅 (503) 231-6195

2600 Southeast 98th Avenue, Suite 100

Portland, OR 97266-1398

Item #4.

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Columbian White-tailed Deer <i>Odocoileus virginianus leucurus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/154	Threatened

Birds

NAME	STATUS
Marbled Murrelet <i>Brachyramphus marmoratus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl <i>Strix occidentalis caurina</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1123	Threatened
Streaked Horned Lark <i>Eremophila alpestris strigata</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7268	Threatened
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Northwestern Pond Turtle <i>Actinemys marmorata</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Insects

NAME	STATUS
<p>Monarch Butterfly <i>Danaus plexippus</i></p> <p>Wherever found</p> <p>There is proposed critical habitat for this species. Your location does not overlap the critical habitat.</p> <p>https://ecos.fws.gov/ecp/species/9743</p>	Proposed Threatened
<p>Suckley's Cuckoo Bumble Bee <i>Bombus suckleyi</i></p> <p>No critical habitat has been designated for this species.</p> <p>https://ecos.fws.gov/ecp/species/10885</p>	Proposed Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are Bald Eagles and/or Golden Eagles in your [project](#) area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the [National Bald Eagle Management Guidelines](#). You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#).

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

If disturbance or take of eagles cannot be avoided, an [incidental take permit](#) may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the [Do I Need A Permit Tool](#). For assistance making this determination for golden eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
<p>Bald Eagle <i>Haliaeetus leucocephalus</i></p> <p>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p> <p>https://ecos.fws.gov/ecp/species/1626</p>	Breeds Mar 1 to Aug 31

Golden Eagle *Aquila chrysaetos*

Breeds Mar 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (I)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

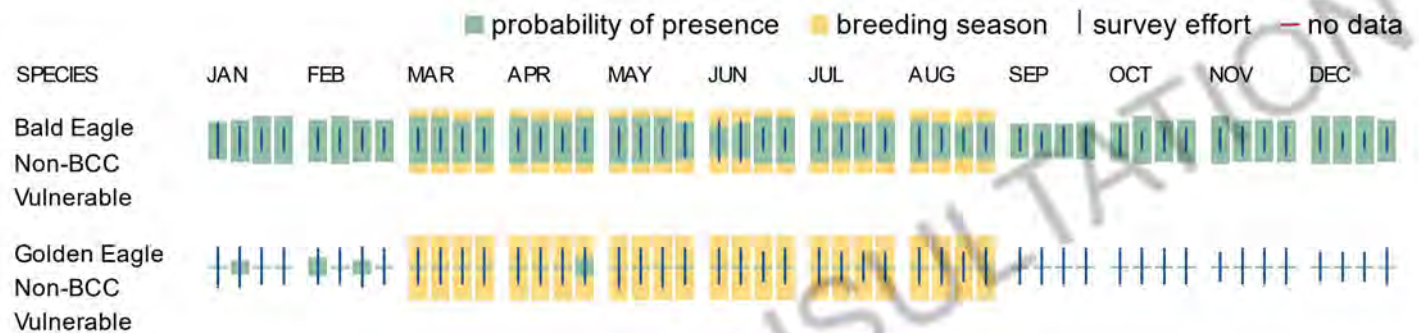
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases [birds of concern](#), including [Birds of Conservation Concern \(BCC\)](#), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the [Nationwide avoidance and minimization measures for birds](#) document, and any other project-specific avoidance and minimization measures suggested at the link [Measures for avoiding and minimizing impacts to birds](#) for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles document](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Mar 1 to Aug 31

Black Swift *Cypseloides niger*

Breeds Jun 15 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8878>

California Gull *Larus californicus*

Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cassin's Finch *Haemorhous cassinii*

Breeds May 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9462>

Chestnut-backed Chickadee *Poecile rufescens rufescens*

Breeds Mar 1 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Clark's Grebe *Aechmophorus clarkii*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak *Coccothraustes vespertinus*

Breeds May 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle *Aquila chrysaetos*

Breeds Mar 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Lesser Yellowlegs *Tringa flavipes*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Olive-sided Flycatcher *Contopus cooperi*

Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3914>

Oregon Vesper Sparrow *Pooecetes gramineus affinis*

Breeds Apr 21 to Aug 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/5141>

Red Knot *Calidris canutus roselaari*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8880>

Rufous Hummingbird *Selasphorus rufus*

Breeds Apr 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8002>

Short-billed Dowitcher *Limnodromus griseus*

Breeds Jun 1 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9480>

Western Grebe *aechmophorus occidentalis*

Breeds Jun 1 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/6743>

Western Gull *Larus occidentalis*

Breeds Apr 21 to Aug 25

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Western Screech-owl *Megascops kennicottii cardonensis*

Breeds Mar 1 to Jun 30

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (🟡)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

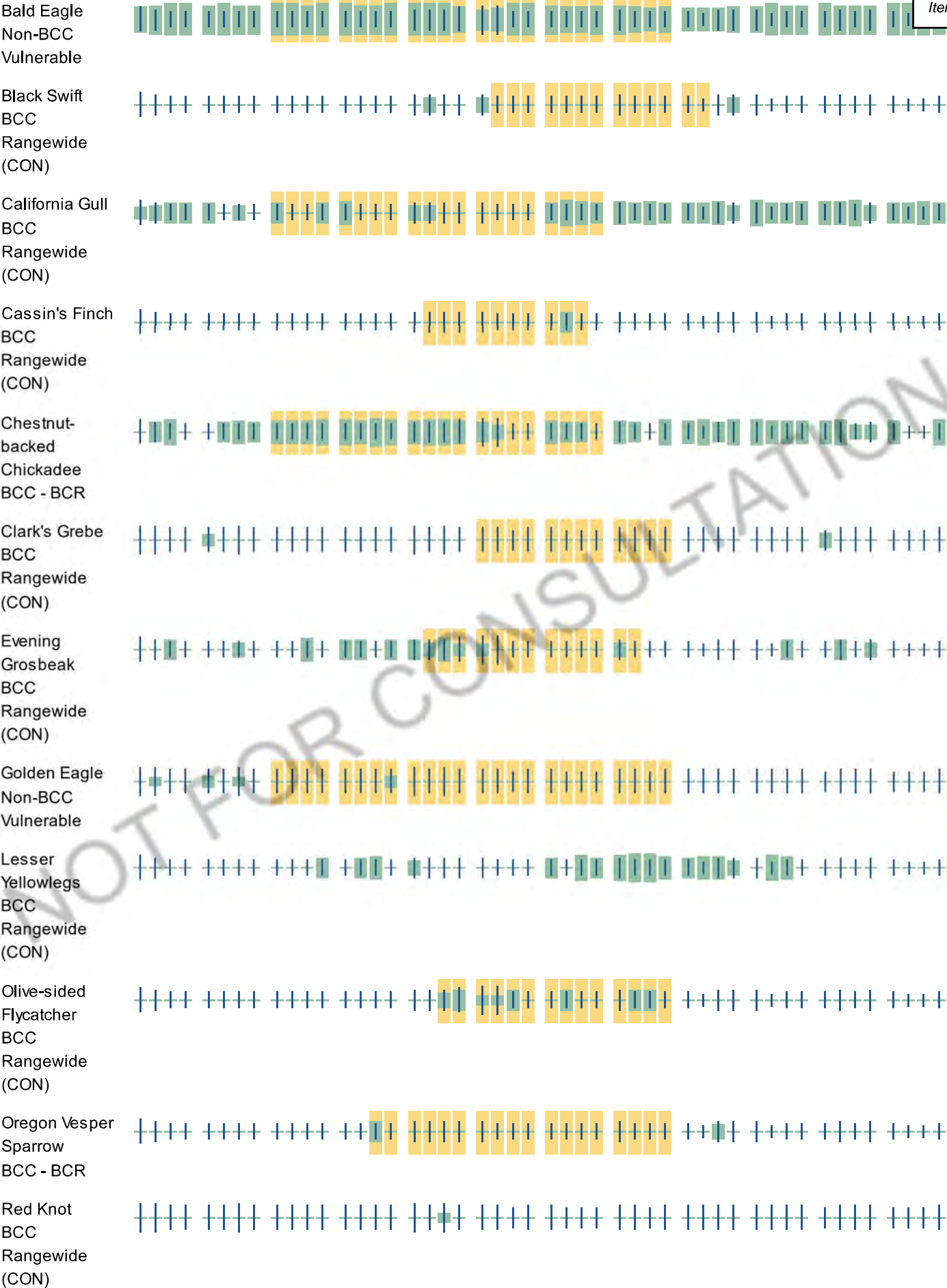
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence
 ■ breeding season
 | survey effort
 — no data

SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC



SPECIES

JAN

FEB

MAR

APR

MAY

JUN

JUL

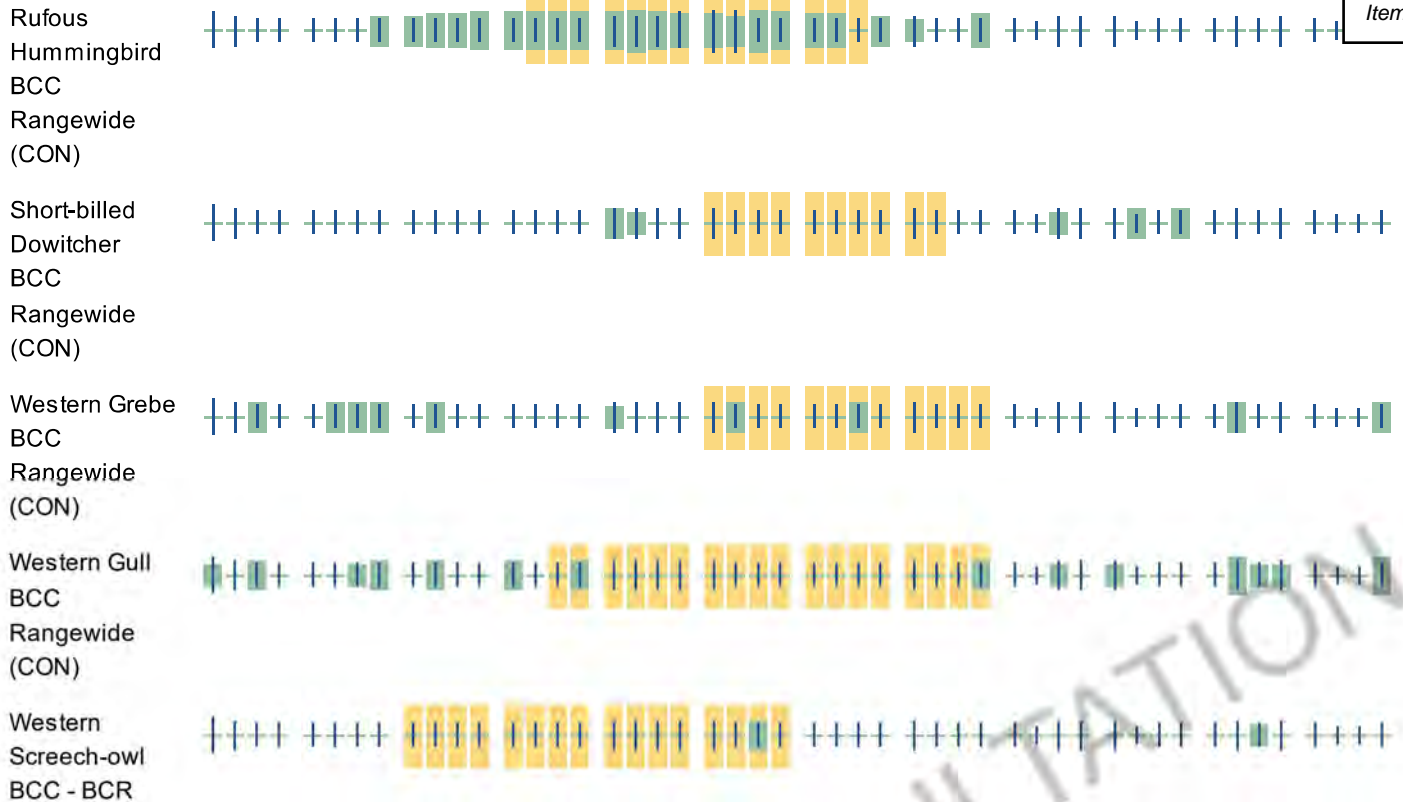
AUG

SEP

OCT

NOV

DEC



Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Avoidance & Minimization Measures for Birds](#) describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the [Probability of Presence Summary](#). [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the [Bald and Golden Eagle Protection Act](#) and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Bald and Golden Eagle Protection Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX E

SWCA Stakeholder Engagement Plan, October 2025

St. Helens Reservoir Siting Stakeholder Outreach Plan

OCTOBER 2025

PREPARED FOR
City of St. Helens

PREPARED BY
SWCA Environmental Consultants

ST. HELENS RESERVOIR SITING STAKEHOLDER OUTREACH PLAN

Prepared for

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265 Strand Street
St. Helens, Oregon 97051

SWCA Environmental Consultants
1800 NW Upshur St Unit 100
Portland, OR 97209
www.swca.com

SWCA Project No. 97131

October 2025

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PROJECT OVERVIEW

The City of St. Helens, Oregon (City), is investigating siting a new water reservoir with a storage capacity of at least 5.0 million gallons (MG) to support existing needs and future growth. The existing water system is supplied by two Ranney collector wells, located north of St. Helens in Columbia City. These wells draw water from shallow sand and gravel deposits near the Columbia River through a process called induced infiltration. After collection, the water is pumped to the City's water filtration facility, where it is filtered and then distributed throughout the city.

Currently, water is stored in three active reservoirs: a 2.5-MG reservoir, a 0.2-MG Green Tank and the 0.5-MG Elk Ridge Reservoir. The city's oldest reservoir, a 2.0-MG tank located at the same site as the 2.5-MG reservoir, is no longer in use due to significant leaks that could not be repaired.

In 2023, the City considered rehabilitating the 2.0-MG reservoir or replacing it with a new tank at the same location. However, this project was discontinued because the estimated costs were more than double the original budget, and the site was too small to accommodate a larger reservoir that would meet future water storage needs identified in the City's Water Master Plan.

With the 2.0-MG reservoir out of service, St. Helens currently faces a water storage shortfall of 0.8 MG. Looking ahead 20 years, this deficit is projected to grow to 2.8 MG.

STAKEHOLDER OUTREACH PURPOSE AND GOALS

This stakeholder outreach plan outlines efforts the City will take to provide information to the public about the project. Two main goals were identified for successful public outreach:

Goal 1: Ensure that the public is well informed about the project and siting process.

- Inform and educate community members with clear, easily understood, factual, and timely information regarding reservoir siting and any related regulatory processes
- Develop an effective process for project updates throughout the process
- Communicate milestones, decision points, and opportunities for input in advance to the public
- Ensure transparency by sharing relevant technical, environmental, and social information in plain, easy-to-understand language

Goal 2: Convey the importance and value of public, agency, and stakeholder understanding throughout the siting process.

- Establish and maintain open lines of communication
- Emphasize how community and stakeholder input helps shape project outcomes and ensures local needs are considered
- Provide reasonable opportunities for the public to ask questions about the project
- Demonstrate the City's commitment to listening, addressing concerns, and incorporating feedback where feasible

PROJECT SCHEDULE

Table 1 summarizes the proposed schedule for public outreach.

Table 1. Project Schedule

Milestone	Scheduled Completion (2025)
City review of: <ul style="list-style-type: none"> Draft stakeholder outreach plan Advertisement Mailing City provides mailing list and list of stakeholders	September 10–19
Final stakeholder outreach plan, advertisement, and mailing	October 3
Drilling results available	October 17
Submit advertisements for public meeting	October 31 for publication (1 week prior to meeting) (The <i>Columbia County Spotlight</i> is published every Friday. The deadline is for ads is noon, Friday, the week prior to publication.)
SWCA sends project mailings	October 31 (2 weeks prior to meeting)
City review of draft public meeting materials: <ul style="list-style-type: none"> Map boards Project handout or factsheet 	October 24–30
Final public meeting materials (SWCA begins printing materials)	October 24
Public meeting	November 13

POTENTIALLY INTERESTED PARTY IDENTIFICATION

Table 2 summarizes potentially interested audiences for stakeholder engagement.

Table 2. Stakeholder Roles and Influence

Stakeholder Group	Interest or Role	Potential Stakeholder Concerns or Needs	Level of Influence/Impact
Mayor and City Council	Decision-makers	Community support, project success	High
Local Residents (surrounding property owners)	Directly impacted	Property values, construction impacts	High
State Agencies (Oregon Department of Environmental Quality, Oregon Department of Health)	Regulatory oversight	Compliance, environmental protection	High
Local Governments or Agencies (Columbia County)	Regulatory oversight	Land use compatibility, environmental compliance	High
Local Governments or Agencies (Columbia Soil & Water Conservation District)	Environmental impacts	Water quality protection, and soil stability and erosion	Medium
Media	Information dissemination	Accurate, timely updates	Low

OUTREACH METHODS

Table 3 summarizes the public outreach activities and their anticipated schedule.

Table 3. Public Outreach Methods

Outreach Method	Description	Responsible	Target Date
Mailing List	Contact information for potentially interested parties will be maintained in a mailing list. This list will include individuals and organizations that may be affected by or have an interest in the project. It will serve as the primary distribution list for project-related communications and updates.	City, SWCA	3 weeks prior to public meeting
Public Mailing	Informational postcards will be mailed to adjacent landowners for up to four potential reservoir sites. Postcards will be sent prior to the public meeting, and will include information about the project and the public meeting, along with a link to the project website.	SWCA	2 weeks prior to public meeting
Public email blast	Informational emails will be emailed to adjacent landowners for the four potential reservoir sites considered. Emails will be sent prior to the public meeting and will include information about the project and the public meeting, along with a link to the project website.	City	2 weeks prior to public meeting
Newspaper Advertisement	Public meeting details will be advertised in the <i>Columbia County Spotlight</i> newspaper to broaden public awareness.	SWCA	Ad will run once: 1 week prior to public meeting
Public Meeting	One in-person public open house will occur on a weekday evening. Meeting materials will include sign-in sheets, informational boards, and a project handout or factsheet.	SWCA, Keller, City	November 13, 2025


APPENDIX F

Opinion of Most Probable Cost for Recommended Site

Client: City of St. Helens

Project: 5.0 MG Reservoir Siting Study



Project Title: 5.0 MG Reservoir Construction <u>Need for Project:</u> - Insufficient storage capacity is projected for the City and existing infrastructure is outdated and past design life. <u>Objective:</u> - Install a new 5.0 MG Reservoir to replace the 2.0 MG Reservoir, meet 2041 storage projections, and provide a surplus of 2.0 MG beyond the study period. <u>Design Considerations:</u> - Note costs are based on the Meadowview Drive location.	Location: Site 2 (Off Meadowview Drive) 
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General Line Item	Estimated Quantity	Unit	Unit Price	Item Cost (Rounded)	Total Cost (2025 Dollars)
Goods and Services					
New 5.0 MG Concrete Storage Reservoir (includes tank and foundation only)	1	LS	\$ 7,000,000	\$ 7,000,000	
Reservoir Site Preparation (Foundation Prep)	1	LS	\$ 300,000	\$ 300,000	
24-inch DIP Water Connection Pipe - Excavation, Backfill, Fittings	2,400	LF	\$ 460	\$ 1,104,000	
24-inch DIP Overflow Pipe - Excavation, Backfill, Valves, Hydrants, Fittings, Services	400	LF	\$ 460	\$ 184,000	
Altitude Valve at Existing Reservoir	1	LS	\$ 50,000	\$ 50,000	
General Site Improvements, Landscaping, and Grading	1	LS	\$ 100,000	\$ 100,000	
Asphalt Access Road	9,200	SF	\$ 6	\$ 57,000	
Gravel Road Surface On Site	13,200	SF	\$ 2	\$ 27,000	
Detention Pond (210'x50'x3')	1	LS	\$ 250,000	\$ 250,000	
Traffic Control w/ Flaggers	1	LS	\$ 50,000	\$ 50,000	
Frontage Improvements	1	LS	\$ 300,000	\$ 300,000	
Electrical and Controls	1	LS	\$ 250,000	\$ 250,000	
Tank Mixing System	1	LS	\$ 250,000	\$ 250,000	
Misc. Metals (Hatch, stairs, etc.)	1	LS	\$ 80,000	\$ 80,000	
				Construction Subtotal	\$ 9,422,000
Additional Elements (estimated % of above)					
Mobilization and Administration			10%	\$ 942,000	
Bonding			2.5%	\$ 236,000	
Contractor Overhead and Profit			15%	\$ 1,413,000	
Contingency			30%	\$ 2,827,000	
				Total Construction Subtotal	\$ 14,840,000
Plans and Contract Documents					
Engineering Design and Bid Phase Services			10%	\$ 1,484,000	
Engineering - Construction Contract Administration			5%	\$ 742,000	
Engineering -- Observation			5%	\$ 742,000	
Permitting			LS	\$ 50,000	
Geotechnical Investigation			LS	\$ 30,000	
Surveying			LS	\$ 25,000	
Environmental			LS	\$ 35,000	
Land Acquisition	12	AC	\$ 140,000	\$ 1,680,000	
Legal, Administrative, and Funding			2.0%	\$ 297,000	
				Total Project Costs (rounded)	\$ 19,930,000

The cost estimate herein is based on our perception of current conditions at the project location. This estimate reflects our opinion of probable costs at this time and is subject to change as the project design matures. Keller Associates has no control over variances in the cost of labor, materials, equipment, services provided by others, contractor's methods of determining prices, competitive bidding or market conditions, practices or bidding strategies. Keller Associates cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the cost presented herein.



QUARTERLY REPORT TO COUNCIL

Meeting Date: December 17, 2025
Prepared by: Crystal King
Department: Administration
Division: Communications
Reporting Period: September - November 2025
CC: City Administrator John Walsh



1. General Operations (QUARTER/YTD)

- **Press Releases: 13/38**
- **Social Media Posts: 286/1,258**
- **Newsletters: 15/41**
- **Media Request: 18/91**
- **Radio: 3/6**

Stats include reporting for all department/division support

2. Staffing & Personnel

- **Staffing support for other divisions:** Communications staff are providing ongoing monthly Planning Commission coverage with associate planner vacancy
- **Recent staff trainings:**
 - Before the Flashpoint: Building Trust and Leading through Crisis (3CMA)
 - Finding Our Commons: Reconnecting through Communications (3CMA)
 - Respectful Workplace Learning Plan (CIS)

3. Projects & Initiatives*

A. Key Projects

- **Extreme Weather Group (Winter Weather):** Two multi-agency meetings have been hosted by the City to coordinate resources and messaging for community winter weather needs
- **Launched Weekly Library Newsletter:** Communications staff have launched a new weekly newsletter for the St. Helens Public Library highlighting upcoming events and featurettes on Library programming, resources, and other interesting news
- **Miscellaneous Projects and Information Highlights:** Levitt Foundation grant voting, Pollution Prevention Week info campaign, Disaster Preparedness Month info campaign, Weekly Roundup department highlights, archive City event photos, Lights on Afterschool highlight, 2025 Spirit of Halloweentown media coverage tracker, Street Striping Project info, Romano Properties ENA announcement, recurring Recreation Program promos, i.e. Open Play, CPR classes, etc., GFOA budget award press release, research and coordination with CCMA on write up and highlights on fishing and shipping history in St. Helens, TMDL DEQ report review, street closure notice for cracked concrete panel repair, fall burn dates promo, Library local author efforts, Spirit of Halloweentown photos and media requests triaging, trick-or-treat safety reel for PD, Library genealogy conference promotion, Columbia County Board of Realtors waterfront presentation and coordination with staff, comms assistance for UB rate public meeting, phone outage alerts, newly adopted erosion prevention rules press

release, Reservoir Siting Project meeting promotion, Riverwalk ORPA award comms, APWA Streets and Utilities award comms, Oregon APWA conference presenter on construction comms, National Library Card Signup Month campaign, Staff length of service highlights, multi-department coordination and preparation for Trunk or Treat booth (event cancelled due to weather), Birding for Kids author event, Rec winter basketball signups, fall and winter food drive campaigns, Keep it Local shop local for the holidays campaign shares

B. Upcoming Projects

- **Year end highlights of City department accomplishments**
- **2026 If I Were Mayor Student Contest**
- **2026 calendar of recognition days/weeks/months**
- **TMDL Stormwater Pollution Prevention Video with Engineering**
- **Junior Citizens Activity Booklet modeled on NPS Junior Ranger Program**

* Communications projects are usually dictated by necessary support to other department/division projects. Please refer to corresponding department/division reports for more detailed project descriptions.

4. Upcoming Events & Important Dates

- Christmas Ships Parade and Holiday Event, December 13
 - Utility Rates Open House, December 11 at 6:30 p.m.
-

MONTHLY REPORT TO COUNCIL



Meeting Date: December 17, 2025
Prepared by: Shanna Duggan
Department: Administration
Division: Administration
Reporting Period: September 2025-December 2025
CC: City Administrator John Walsh

1. General Operations

- Started year three of operating the 21st CCLC Learning Centers. Operating three after-school programs with a total of 106 students each day.
- Started year seven of S.H.A.R.P Paid afterschool program.
- Grant reporting for year three of the 21st Century Community Learning Center [21st CCLC Information](#)
- Summer partnership with the St. Helens School District (SHSD) reporting and reimbursement
- Planning for Spring/Summer 2026
- Daily managing and opening the St. Helens Community Center for indoor play space
- Winter basketball league creation

2. Staffing & Personnel

- Completed Fall Oregon ASK Afterschool Training in November
- Continuing work with the SHSD on credit program with student workers
- Working on credentials through the Oregon Registry

3. Projects & Initiatives

A. Ongoing Key Projects

- Building afterschool programing for year three FY2025/2026 and year four FY2026/2027
- Expanding program spaces in partnership with the SHSD and other key community partners
- Investigating grant opportunities
- Building sustainable funding streams to support current programs and expanding
- Community connector for programs, grant opportunity and partnerships
- Quarterly community SWAP
- GRO Navigation Team
- Col. Co.- Early Learning Advisory Council
- Columbia County Health Coalition
- Columbia County Child Care Collaboration

B. Upcoming Projects

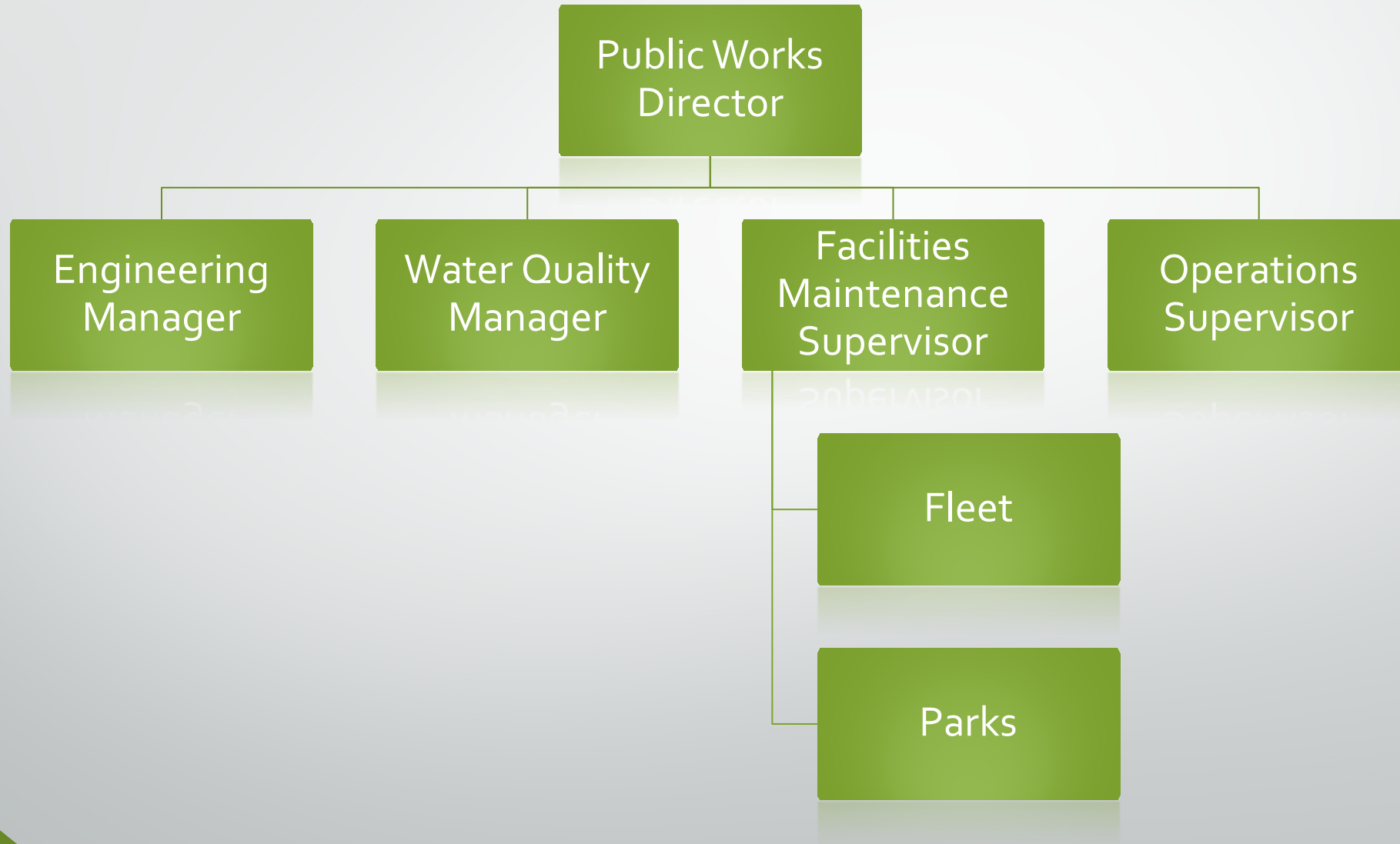
- Forming an advisory committee in accordance with the 21st CCLC Grant program
- Columbia County Childcare taskforce meetings working on a plan for Columbia County to build sustainability and infrastructure for the needs of St. Helens.

4. Upcoming Events & Important Dates

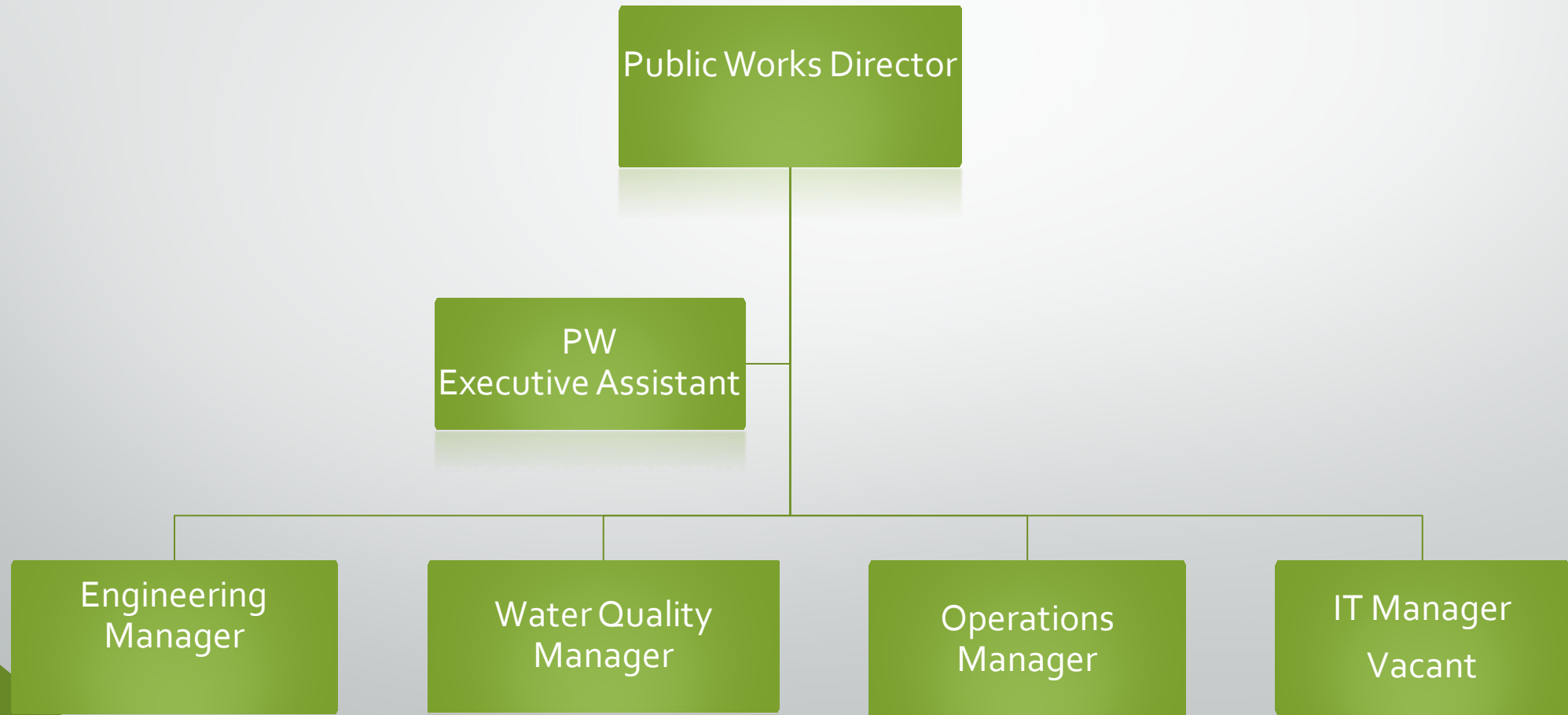
- Opening day youth basketball January 10th looking for volunteers for the scoreboards on the weekends

Current Organization Chart

Item #6.



Proposed Organization Chart





Public Works Operations Manager

DEPARTMENT: Public Works
DIVISION: Operations
SUPERVISOR: Public Works Director
CLASSIFICATION: Exempt (not overtime eligible)
UNION: No
CONFIDENTIAL: Yes

POSITION SUMMARY

The Public Works Operations Manager is a mid-level management position responsible for overseeing the day-to-day operations of the City's Public Works Operations Division, including managing maintenance and repair activities for infrastructure for city roads, sidewalks, storm systems, wastewater systems, water distribution systems, city fleet, ground facilities, and parks.

SUPERVISION RECEIVED

Works under the direction and guidance of the Public Works Director.

SUPERVISION EXERCISED

Exercises direct management of employees in Public Works Operations, Facilities Maintenance, Fleet, and Parks.

ESSENTIAL DUTIES AND RESPONSIBILITIES including the following but not limited to:

- Serves as a member of the Public Works Department management team.
- Plans, organizes, coordinates, supervises, and evaluates programs, plans, services, staffing, equipment, and infrastructure of the Public Works Operations, Parks, and Facility Maintenance Divisions.
- Hiring, training, and evaluating performance of field crews and supervisors within Public Works Operations, Facilities Maintenance, Fleet, and Parks.
- Prepare, recommend, oversee, and monitor Division budgets, track expenditures, and allocate funds for projects and operations.
- Evaluates divisional needs and formulates short and long-range plans to meet needs in all areas of responsibility, including, street, water, wastewater, drainage, fleet, parks and facilities maintenance.
- Coordinates maintenance activities of the City's infrastructure and utilities with other public and private service providers such as various cities, county, state, parks, power, and transportation agencies.
- Supervises the control and use of, and assumes responsibility for all materials, supplies, and equipment used in the maintenance, construction, and repair of city streets, water distribution, wastewater collection, storm drainage, fleet, parks and facilities.
- Advises the Public Works Director in matters relating to Division activities; provides information to various public groups and individuals regarding Public Works operations.
- Leads response to weather-related or infrastructure emergencies.

- Responds to public or other inquiries and complaints relative to divisional policies and procedures.
- Ensuring adherence to safety regulations, permitting requirements, and environmental standards.
- Manages the City water distribution system, collection system, stormwater system, streets, parks, facilities, and fleet. Maintains a variety of records relating to personnel, equipment, supplies, consumption, and reports.
- Determines work procedures, prepares work schedules, and expedites workflow. Examines work for exactness, neatness, and conformance to policies and procedures.
- Monitor performance metrics and identify areas for improvement within Public Works Operations.
- Ensure efficient service delivery across various divisions within the Public Works Department, Facilities Maintenance, and Parks.
- Coordinate and monitor construction or repair projects, including managing contracts with outside contractors.

MINIMUM QUALIFICATIONS

EDUCATION AND EXPERIENCE

- a. Associates degree; AND/OR
- b. Any combination of training and experience that would provide the required knowledge, skills, and abilities.
- c. Equivalent to completion of eight (8) years of increasingly responsible experience in public works, maintenance, fleet management, janitorial services, repair, and operations including two (2) years of which were supervisory in nature and included budgeting experience related to the construction, repair, and maintenance of municipal infrastructure, specifically: water distribution, wastewater collection, street, storm drainage systems, fleet, parks, facilities, and grounds maintenance as well as the operation of maintenance equipment used in the Division.

KNOWLEDGE, SKILLS, AND ABILITIES

- a. Thorough knowledge of equipment, facilities, materials, methods, and procedures used in the construction, operation, and maintenance of public works infrastructure related to street, water, wastewater, storm drainage, fleet, parks, and their associated systems.
- b. Thorough knowledge of City, State, and Federal laws pertaining to Public Works Operations.
- c. Knowledge of fiscal management, including Division budget preparation, expenditure control, and recordkeeping.
- d. Occupational hazards and standard safety precautions and practices.
- e. Skills to effectively supervise and motivate Division staff to meet the City's mission and departmental goals.
- f. Ability to determine priorities and make critical decisions.
- g. Principles and practices of employee supervision, including work planning, assignment review and evaluation, discipline, and the training of staff in work procedures.

- h. Techniques for providing a high level of customer service effectively dealing with the public, vendors, contractors, and City staff.
- i. Modern equipment and communication tools used for business functions and program, project, and task coordination.
- j. Computers and software programs to conduct, compile, and/or generate documentation.

SPECIAL REQUIREMENTS

- Must possess a valid state driver's license or ability to obtain one prior to employment.
- Must be able to maintain a satisfactory driving record.
- A CDL is highly desirable.
- AED/CPR certificate, or the ability to obtain one within 6 months of hire.
- On call availability including afterhours and weekends to respond to public works emergencies, inclement weather, disasters, and infrastructure challenges.

TOOLS AND EQUIPMENT USED

Motorized vehicles and construction equipment including dump truck, pickup truck, utility truck, street sweeper, Jetter/vac truck, CCTV van and equipment, backhoe, saws, pumps, generators, detection devices, and common hand and power tools. Personal computers, including word processing, spreadsheet, database, and computer-aided software; GIS; City vehicle; communication devices.

PHYSICAL DEMANDS

The physical demands herein are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform these essential job functions.

- **Physical Demands:** While performing the duties of this job, the employee is occasionally required to stand or sit; walk, use hands to finger, handle, feel or operate objects, tools, or controls; and reach with hands and arms. The employee is occasionally required to climb or balance; stoop, kneel, crouch, or crawl; talk or hear. The employee must occasionally push, pull, lift and/or move up to 50-100 pounds.
- **Vision:** Vision sufficient to read small print, computer screens, and other printed documents. Specific vision abilities required by this job include close vision, distance vision, color vision, peripheral vision, depth vision, depth perception, and the ability to adjust focus.

WORK ENVIRONMENT

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. Reasonable accommodation may be made to enable individuals with disabilities to perform the essential functions.

- **Environment:** Employees work in the field and are exposed to loud noise levels, cold and hot temperatures, inclement weather conditions, road hazards, vibration, confining workspace, chemicals, mechanical and/or electrical hazards, and hazardous physical substances and fumes. May be required to wear respiratory equipment. Employees may interact with members of the public or with staff under emotionally stressful conditions while interpreting and enforcing departmental policies and procedures.
- **Working Conditions:**
 - a. Position has normal business hours with occasional attendance at evening meetings and as required.
 - b. Adverse working conditions include exposure to seasonal weather changes including working in inclement weather.
- **Resource Accountability:**
 - a. Responsibility for the proper care of City equipment.
 - b. Records and inventory maintenance related to City fleet and equipment.

EMPLOYEE ACKNOWLEDGMENT

The duties listed above are intended only as illustrations of the various types of work that may be performed. The omission of specific statements of duties does not exclude them from the position if the work is similar, related, or a logical assignment to the position.

The job description does not constitute an employment agreement between the employer and employee and is subject to change by the employer as the needs of the employer and requirements of the job change.

I acknowledge that I have received a copy of the **Public Works Operations Manager** job description. I understand that it is my responsibility to adhere to the Essential Duties and Responsibilities as outlined within this job description.

My signature below is evidence that I have reviewed and concurred that the above detailed job description appropriately describes the work of the position, including essential job functions, the minimum education and experience required of the position, and the physical demands of the position.

Signatures:

Public Works Operations Manager

Date

Print Name: _____

Public Works Director

Date

From: [Dawn Richardson](#)
To: [Kathy Payne](#); [Lisa Scholl](#)
Subject: Leak Adjustment Request for Council
Date: Thursday, December 4, 2025 4:30:45 PM
Attachments: [image001.png](#)
[doc11117620251203162510.](#)

Good afternoon,

Customer Richard Brine is requesting a leak adjustment for 135 N 7th St. His leak occurred in February for \$6419.17 and March for \$2633.23. The property remained vacant for some time after the leak occurred, however it has since been fixed and he is ready to have service restored.

I have attached Richards submitted documentation.

- If we were to a full adjustment for the two months it would come out to \$8892.95
- If we were to a standard adjustment for the two months it would come out to \$6968.51 (this is our standard water adjustment with a full sewer adjustment since his leak did not go down/affect the sewer)

Please let me know if you need anything else for the 12/17 council meeting.

Thank you!

Dawn Richardson

Administrative Billing Specialist

City of St. Helens

Ph: 503-397-6272

www.sthelensoregon.gov



4. BILLING ADJUSTMENTS

Misread Meters

If a meter is misread, the City will refund any/all late fees and re-read the meter and adjust the bill accordingly for that period.

Leak Adjustments

- a) The water leak adjustment form is available on the City's website and at the Utility Billing counter. This form must be completed within 45 days of the billing date in question.
- b) The water leak adjustment form must be accompanied by a 3rd party statement (plumbing service, etc.) that says a leak was present and repaired and/or receipts for leak repair materials if completed by the homeowner.
- c) If the water leak adjustment is not approved by Utility Billing staff, Finance Director, or City Administrator, the customer will receive notification from the City with a specific reason why from the Finance Director. A customer can request an appeal process with City Council during a public meeting. If the water leak is approved, the City will use the customer's average seasonal usage for the previous 3 years as a base for consumption. If the customer does not have enough history to complete this, the City will use the previous one to three consecutive months of consumption to calculate the leak and volume adjustment amount. Once approved, the leak adjustment amount will be credited back to the customer's account and the customer will be notified by the City.
- e) The minimum credit issued will be \$15.00.

CITY OF ST. HELENS UTILITIES



275 Strand Street
St. Helens, OR 97051
Phone: 503-397-6272

Email: utilitybilling@sthelensoregon.gov

REQUEST FOR LEAK ADJUSTMENT

The City of St. Helens Utilities has a policy of issuing partial adjustment for water leaks that are repaired by customers in a timely manner. Adjustments issued are based on your average usage for the same period in previous years. This average is deducted from the total consumption used during the time of the leak and an adjustment 50% of the water overage will be credited to your account.

DESCRIBE THE REPAIRS OR SPECIFIC CIRCUMSTANCE OF YOUR REQUEST

~~At first I was mortified, then as time went by, I calmed down.~~
~~Now, I am at the point of resignation. I owe the City \$9103.23.~~
~~\$\$\$9,103.23, which represents 45,890 cubic feet of water. It went~~
~~under the house and apparently soaked into the soil. Please refer~~
~~to the billing for the period of 1-15 thru 2-15 2025 in particular~~
~~the Sewer-res-usage charge of \$3607.32 and the same charge for~~
~~the period of 2-15 thru 3-15 2025 for approximately \$2,000.00~~

I am requesting the my total obligation be reduced by \$5,600.00
as I did not use that aspect of my service (the water did not go
down the drain) ACCOUNT # 22-01536-003

ACCOUNT NAME: Richard Brine

PHONE NUMBER: _____

SERVICE ADDRESS: 135 North 7th Street

MAILING ADDRESS: _____

SIGNATURE: [Signature]

I have had Northwest Plumbing come out twice for an expense of
\$1,190.00 since September when the line was fixed. The second
time to fix a leaky faucet and make the drain compliant.
I have attached copies of the billing and pictures of the pipe
replaced. The 45,000 ~~gallons~~ cubic feet did not go out the sewer



Northwest Plumbing Services
PO Box 492
St. Helens, Oregon 97051
503-366-1323

BILL TO

Lance Brine
135 N 7th
Saint Helens, OR 97051 USA

INVOICE
38277954

INVOICE DATE
9/2/2025

JOB ADDRESS

Lance Brine
135 N 7th
Saint Helens, OR 97051 USA

Completed Date 9/2/2025

Customer PO #

Payment Term Due Upon Receipt

Due Date 9/2/2025

DESCRIPTION OF WORK

Northwest Plumbing Services (NWPS) repaired a leak in the galvanized water pipe located in the crawlspace.

TASK	DESCRIPTION	QTY	PRICE	TOTAL
1HOURLABOR	First Hour of Labor - Minimum Service Charge	1.00	\$185.00	\$185.00
LABOR PLB	Labor - Plumbing	2.00	\$185.00	\$370.00
MATERIAL	DESCRIPTION	QUANTITY	PRICE	TOTAL
988725	UPONOR LF4525050 1/2" PROPEX PEXXMNPT BRASS	1.00	\$4.42	\$4.42
39662	UPONOR Q4690512 1/2" PROPEX RING WHT	2.00	\$0.25	\$0.50
916612	UPONOR Q4775075 3/4"X1/2" PROPEX PLS PLASTIC COUPLING	1.00	\$3.16	\$3.16
86552	UPONOR Q4777575 3/4" PROPEX PLS PLASTIC COUPLING	1.00	\$1.76	\$1.76
86559	UPONOR Q4760750 3/4" PROPEX PLS PLASTIC 90 ELBOW	2.00	\$2.22	\$4.44
39664	UPONOR Q4690756 3/4" PROPEX RING	7.00	\$0.49	\$3.43
14151	UPONOR F1060750 3/4"X300' COIL AQUAPEX PIPE	7.00	\$0.91	\$6.37
236899	UPONOR F1040500 1/2"X100' COIL AQUAPEX PIPE, SOLD BY THE FOOT	0.01	\$48.60	\$0.49
4179	3/4" CTS X 3/4"- 6' WALL PREGLUE & SLIT FOAM PIPE INSULATION (R-4.7) IMCOA 6IL068078 (78DT)	10.00	\$1.69	\$16.90

PAYMENT



Northwest Plumbing Services
PO Box 492
St. Helens, Oregon 97051
503-366-1323

BILL TO

Lance Brine
135 N 7th
Saint Helens, OR 97051 USA

INVOICE
39965890

INVOICE DATE
11/24/2025

JOB ADDRESS

Lance Brine
135 N 7th
Saint Helens, OR 97051 USA

Completed Date 11/24/2025

Customer PO #

Payment Term Due Upon Receipt

Due Date 11/24/2025

DESCRIPTION OF WORK

Northwest Plumbing Services (NWPS) brought lav sink drain up to code, replaced the pop-up assembly on the lav sink, and supplied and installed one new Delta 100 kitchen faucet.

TASK	DESCRIPTION	QTY	PRICE	TOTAL
1HOURLABOR	First Hour of Labor - Minimum Service Charge	1.00	\$185.00	\$185.00
LABOR PLB	Labor - Plumbing	1.25	\$185.00	\$231.25
MATERIAL	DESCRIPTION	QUANTITY	PRICE	TOTAL
2798	1-1/2" ABS DWV SAN TEE	1.00	\$2.36	\$2.36
9218	1-1/2" ABS DWV LONG TURN 90	1.00	\$2.84	\$2.84
1968	1-1/2" ABS DWV 45	2.00	\$1.46	\$2.92
1053169	DEARBORN A9703WBG 1-1/2" P-TRAP ABS / BAGGED WITH TRUE BLUE WASHERS & REVERSIBLE J-BEND	1.00	\$2.14	\$2.14
4089	DEARBORN A9793E 1-1/2"X16" ABS DBL SLIP JOINT EXT TUBE	1.00	\$3.17	\$3.17
5960	EZ FLOW 10901 CP BRS POP UP ASSEMBLY	1.00	\$22.98	\$22.98
1006474	DELTA 100-DST 3 HOLE KITCHEN FAUCET 1.8 GPM	1.00	\$141.00	\$141.00

PAYMENT

Paid On	Type	Memo	Amount
11/25/2025	Check		\$593.66

LEAK ADJUSTMENT REQUEST - Residential

Item #7.

Prepared By: Dawn Richardson
 Customer Name: Richard Brine
 Account #: 22-01536-003

Date Filled Out: 11/26/25
 Date of Bill: 2/15/2025 (STANDARD)

Enter Billing Specifics:		<u>System Name</u>	<u>Detail</u>	<u>Amount</u>	<u>Volume</u>	<u>Rate</u>
RESIDENTIAL	{	Water	Consumption	2,752.71	45,890	5.9985 Residential
		Water	Fixed	12.05		
		Water	Utility Assist	-		No
		Sewer	Consumption	3,607.32	45,890	7.8608 Consumption
		Sewer	Fixed	20.12		Standard Fixed
		Public Safety	Fixed	10.00		
		Storm	Fixed	16.97	-	
Original Bill Amount =				6,419.17		

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<p>Adjustment Dollars: 4,968.39 Adj Water Volume 22,875 Adj Sewer Volume 1,305</p>	<p>Notes: Using last year and two months before leak for average as customer does not have a full 3 years of history. Northwest Plumbing went out to fix leak in galvanized pipe and also replaced faulty faucet. Calculated half of the water overage and full sewer since leak went into the ground and not our sewer system.</p>
<p>Finance Director Authorization & Date Above</p>	
<p>Entered By & Date Above</p>	

LEAK ADJUSTMENT REQUEST - Residential

Item #7.

Prepared By: Dawn RichardsonDate Filled Out: 11/26/25Customer Name: Richard BrineAccount #: 22-01536-003Date of Bill: 3/15/2025 (STANDARD)

Enter Billing Specifics:		<u>System Name</u>	<u>Detail</u>	<u>Amount</u>	<u>Volume</u>	<u>Rate</u>
RESIDENTIAL		Water	Consumption	1,114.10	18,573	5.9985 Residential
		Water	Fixed	12.05		
		Water	Utility Assist	-		No
		Sewer	Consumption	1,459.99	18,573	7.8608 Consumption
		Sewer	Fixed	20.12		Standard Fixed
		Public Safety	Fixed	10.00		
		Storm	Fixed	16.97	-	
Original Bill Amount =				2,633.23		

<u>Previous Years Average</u>			<u>LEAK ADJUSTMENT (50% Leak Amount)</u>				
<u>Month / Year</u>	<u>Consumption</u>		<u>System Name</u>	<u>Detail</u>	<u>Amount</u>	<u>Volume</u>	<u>Rate</u>
1/15/25	103		Water	Consumption	552.40	9,209	5.9985
12/15/24	190						
3/22/24	176						
Average =	156		Sewer	Consumption	1,447.72	18,417	7.8608
					2,000.12		

Adjustment Dollars: 2,000.12 Adj Water Volume 9,209 Adj Sewer Volume 1,305	Notes: Using last year and two months before leak for average as customer does not have a full 3 years of history. Northwest Plumbing went out to fix leak in galvanized pipe and also replaced faulty faucet. Calculated half of the water overage and full sewer since leak went into the ground and not our sewer system.
Finance Director Authorization & Date Above	
Entered By & Date Above	

LEAK ADJUSTMENT REQUEST - Residential

Item #7.

Prepared By: Dawn Richardson
 Customer Name: Richard Brine
 Account #: 22-01536-003

Date Filled Out: 11/26/25
 Date of Bill: 2/15/2025 (FULL)

Enter Billing Specifics:		<u>System Name</u>	<u>Detail</u>	<u>Amount</u>	<u>Volume</u>	<u>Rate</u>
RESIDENTIAL	{	Water	Consumption	2,752.71	45,890	5.9985 Residential
		Water	Fixed	12.05		
		Water	Utility Assist	-		No
		Sewer	Consumption	3,607.32	45,890	7.8608 Consumption
		Sewer	Fixed	20.12		Standard Fixed
		Public Safety	Fixed	10.00		
		Storm	Fixed	16.97	-	
Original Bill Amount =				6,419.17		

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<p>Adjustment Dollars: 6,340.48 Adj Water Volume 45,749 Adj Sewer Volume 1,305</p>	<p>Notes: Using last year and two months before leak for average as customer does not have a full 3 years of history.</p>
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LEAK ADJUSTMENT REQUEST - Residential

Item #7.

Prepared By: Dawn Richardson
 Customer Name: Richard Brine
 Account #: 22-01536-003

Date Filled Out: 11/26/25
 Date of Bill: 3/15/2025 (FULL)

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MEMORANDUM



To: Mayor and City Council

From: John Walsh, City Administrator

Date: December 17, 2025

Subject: AFFF Nationwide Class Action Settlement, Contingent Fee Agreement

Background: In September 2023, a nationwide class action products liability lawsuit was settled against Defendants 3M and Dupont and public water systems related to firefighting foam products (known as “aqueous film forming foam” or “AFFF”) containing perfluoroalkyl substances (“PFAS”) (including perfluorooctanoic acid (PFOA/C8), perfluorooctane sulfonate (PFOS), and any other related compounds). A \$13.1 billion settlement fund was created. The purpose of the fund is to compensate public water systems for the increased compliance costs related to new Environmental Protection Act (EPA) regulation as a result of AFFF chemicals manufactured by 3M and Dupont.

Oregon cities that have public water systems may be eligible under the original settlement to submit a claim and seek recovery under the class action settlement.

Recommendation: Baron Budd, P.C., an Environmental Law firm, is Plaintiff’s Counsel for the class action lawsuit, that brought about the \$13.1 billion settlement. Baron Budd is also highly experienced at helping municipalities submit claims and receive successful recovery under the class action settlement. Baron Budd proposes to represent the City on a contingent fee basis of 25% of the Net Recovery of any amount recovered by the City, after payment of costs, and with no out-of-pocket costs to the City. If there is no recovery, the City will not be required to reimburse the attorneys for costs and fees. In the event a recovery is less than the incurred costs and expenses, the City will not be required to reimburse attorneys for costs/expenses, above and beyond the recovery, and fees.

As an out of state law firm, Baron Budd, P.C. requires local counsel to represent an Oregon client. The City contracts with Jordan Ramis, P.C. for City Attorney services, which does not handle cases on a contingent fee basis. Wigod Law Office, who is serving as the City Attorney for the City of St. Helens under contract with Jordan Ramis, P.C., is able to represent the City in that capacity.

It is recommended to retain Barron Budd and Wigod Law to pursue recovery in the class action settlement claim process.

Recommended Motion: I move to approve the attached contingent fee agreement with Baron Budd and Wigod Law Office.

LEGAL SERVICES AGREEMENT

1. **IDENTIFICATION OF PARTIES.** This Agreement is made between City of St. Helens (“Client”) and the law firms of Baron & Budd, P.C., Cossich, Sumich, Parsiola & Taylor LLC and Wigod Law Firm (collectively referred to as “Attorneys”).
2. **RETENTION OF FIRM RATHER THAN PARTICULAR ATTORNEY.** By signing this Agreement, Client retains the law firms. Attorney services will be provided to Client by the firms and will not necessarily be performed by any particular attorney.
3. **AUTHORIZED REPRESENTATIVE OF CLIENT.** Client designates

as the authorized representative to direct Attorneys and to be the primary individual to communicate with Attorneys regarding the subject matter of Attorneys’ representation of Client under this Agreement. This designation is intended to establish a clear line of authority and to minimize potential uncertainty, but not to preclude communication between Attorneys and other representatives of Client.
4. **SCOPE AND DUTIES.** Attorneys will provide legal services to Client with respect to damages, compensation, and other relief to which Client may be entitled as a result of an Action to be filed by Attorneys on behalf of Client against the manufacturer(s) of firefighting foam products (known as “aqueous film forming foam” or “AFFF”) containing perfluoroalkyl substances (“PFAS”) (including perfluorooctanoic acid (PFOA/C8), perfluorooctane sulfonate (PFOS), and any other related compounds) that contaminate Client’s public water system and/or fire training center. Client hires Attorneys to provide legal services in connection with pursuing claims against all those responsible for damages Client suffered or will suffer. Attorneys shall provide those legal services reasonably required to represent Client and shall take reasonable steps to keep Client informed of progress and to respond to Client’s inquiries. Client shall be truthful with Attorneys, cooperate with Attorneys, and keep Attorneys informed of all factual developments. Attorneys will assist in negotiating liens but will not litigate them.
5. **LEGAL SERVICES SPECIFICALLY EXCLUDED.** Unless otherwise agreed in writing by Client and Attorneys, Attorneys will not provide legal services with respect to (a) defending any legal proceeding or claim against the Client commenced by any person unless such proceeding or claim is filed against the Client in the Action or (b) proceedings before any federal or state administrative or governmental agency, department, or board including, but not limited to, the United States Environmental Protection Agency. With Client’s permission, however, Attorneys may elect to appear at such administrative proceedings to protect Client’s rights. If Client wishes to retain Attorneys to provide any legal services not provided under this Agreement for additional compensation, a separate written agreement between Attorneys and Client will be required.
6. **JOINT RESPONSIBILITY.** Baron & Budd, P.C., Cossich, Sumich, Parsiola & Taylor LLC and Wigod Law Office assume joint legal responsibility to Client for the representation described in this Agreement, and all agree to be available for consultation with the client. Client approves of and consents to the participation of all firms in the representation.

7. **ATTORNEYS' FEES.** Client and Attorneys have agreed that Client will pay Attorneys a contingent fee for representing Client in this matter. The fee is not set by law but is negotiable between Attorneys and Client. Attorneys and Client agree that the contingent fee will be calculated as described below.

A. Calculation of Contingent Fee

Attorneys will receive a contingency fee of twenty-five percent (25%) of the gross recovery (as defined below).

The contingent fee is to be calculated based on Client's gross recovery before deduction of costs and expenses (as defined below). The contingent fee is calculated by multiplying the gross recovery by the applicable fee percentage

B. Definitions

"Costs" and "Expenses" include, but are not limited to, the following: process servers' fees, court reporters' fees, document management costs, messenger and other delivery fees, parking, investigation expenses, consultants' fees, expert witness fees, fees fixed by law or assessed by courts or other agencies, and other similar items, incurred by Attorneys in the course of representing Client.

"Document Management Costs" are the costs associated with collecting, copying, and storing documents relevant to the Action as discussed in paragraph 8, below. These costs include processing and hosting charges, hardware, software, and any other resources necessary to manage documents.

"Gross recovery" means the total recovery, whether obtained by settlement, arbitration award, court judgment following trial or appeal, or otherwise. "Gross recovery" shall include, without limitation, the following: (1) the then-present value of any monetary payments to be made to Client; and (2) the fair market value of any non-monetary property and services to be transferred and/or rendered for the benefit of Client; and (3) any attorney's fees recovered by Client as part of any cause of action that provides a basis for such an award. "Gross recovery" may come from any source, including, but not limited to, the adverse parties to the Action and/or their insurance carriers and/or any third party, whether or not a party to the Action.

Any court order establishing a fee award in Client's case controls the fee percentage that will be charged to Client. This includes orders entered in a specific case, in an MDL, or in a class action. Where a common benefit fee or class fee reduces the contractual fee percentage, the reduced fee percentage is divided pro rata among contracting Attorneys as set out in Paragraph 10.

If Client and Attorneys disagree as to the fair market value of any non-monetary property or services as described above, Attorneys and Client agree that a binding appraisal will be conducted to determine this value.

It is possible that payment to the Client by the adverse parties to the Action or their insurance carrier(s) or any third-party may be deferred, as in the case of an annuity, a structured settlement, or

periodic payments. In such event, gross recovery will consist of the initial lump sum payment plus the present value (as of the time of the settlement) of the total of all payments to be received thereafter. The contingent fee is calculated, as described above, by multiplying the net recovery by the fee percentage. The Attorneys' fees will be paid out of the initial lump-sum payment if there are sufficient funds to satisfy the Attorneys' fee. If there are insufficient funds to pay the Attorneys' fees in full from the initial lump sum payment, the balance owed to Attorney will be paid from subsequent payments to Client before there is any distribution to Client.

C. Reasonable Fee if Contingent Fee is Unenforceable or if Attorney is Discharged Before Any Recovery.

In the event that the contingent fee portion of this agreement is determined to be unenforceable for any reason or the Attorneys are prevented from representing Client on a contingent fee basis, Client agrees to pay a reasonable fee for the services rendered. If the parties are unable to agree on a reasonable fee for the services rendered, Attorneys and Client agree that the fee will be determined by arbitration proceedings before a neutral affiliated with the Judicial Arbitration and Mediation Services (JAMS); in any event, Attorneys and Client agree that the fee determined by arbitration shall not exceed twenty five percent (25 %) of the gross recovery as defined in this agreement.

D. Order or Agreement for Payment of Attorneys' Fees or Costs by Another Party.

If a court orders, or the parties to the dispute agree, that another party shall pay some or all of Client's attorneys' fees, costs, or both, Attorneys shall be entitled to the greater of (i) the amount of any attorney's fees awarded by the court or included in the settlement or (ii) the percentage or other formula applied to the recovery amount not including such attorney's fees.

8. COSTS AND EXPENSES.

A. General

In addition to paying legal fees, Client authorizes Attorneys to incur all reasonable costs and expenses and to hire any investigators, consultants, or expert witnesses. Attorneys will advance those costs and expenses. Attorneys will deduct those costs and expenses out of Client's recovery after attorney's fees have been calculated and deducted. If there is no recovery, Client will not be required to reimburse Attorneys for costs and fees. In the event a recovery is less than incurred costs and expenses, Client will not be required to reimburse Attorneys for costs/expenses, above and beyond the recovery, and fees.

B. Document Management Costs

Attorneys have explored two means of managing litigation documents:

- (1) Outsource to outside vendor. Attorneys contract with outside vendors to collect, copy, and store documents. Attorneys advance these costs, and Client reimburses Attorneys out of any recovery; or
- (2) Internal processing. Attorneys can create an internal document management system by obtaining computer software, hardware, and related resources necessary to collect, copy,

store, organize, and produce documents and data. This option obviates the need to outsource this work to an outside vendor.

Attorneys represent that the second option above, internal processing, is the better choice for promoting efficiency, saving Client costs, and limiting legal expenses. Client agrees that Attorneys may purchase the resources necessary to provide an internal document management system for Client, subject to cost review and approval by Client. Attorneys may, however, use outside vendors where costs or circumstances warrant.

9. **SHARED EXPENSES.** Client understands that Attorneys may incur certain expenses that jointly benefit multiple clients, including, for example, expenses for travel, experts, and copying. Client agrees that Attorneys may, in their discretion, divide such expenses equally or pro rata among such clients, and deduct Client's portion of those expenses from Client's share of any recovery. Prior client approval is not required for shared expenses.

10. **DIVISION OF ATTORNEYS' FEES.** At the conclusion of the case, if a recovery is made on behalf of Client, Client understands and agrees that the total Attorneys' contingent fee calculated under paragraph 7.A, above, will be divided among Attorneys as follows: Baron & Budd, P.C. will receive forty-two and one-half percent (42.5 %); Cossich, Sumich, Parsiola & Taylor will receive forty-two and one-half percent (42.5%), and Wigod Law Office will receive fifteen percent (15%). Where a common benefit fee or class fee reduces the contractual fee percentage, the reduced fee percentage is divided pro rata among contracting Attorneys in the percentages set out in this paragraph. Any fee awarded as a "common benefit" or "class" fee will not be divided among Attorneys but will remain the sole property of the firm(s) to which it is awarded.

11. **MULTIPLE REPRESENTATIONS.** Client understands that Attorneys do or may represent many other individuals with actual or potential PFAS litigation claims. Attorneys' representation of multiple claimants at the same time may create certain actual or potential conflicts of interest in that the interests and objectives of each client individually on certain issues are, or may become, inconsistent with the interests and objectives of the other. Attorneys are governed by specific rules and regulations relating to professional responsibility in representation of clients, and especially where conflicts of interest may arise from representation of multiple clients against the same or similar defendants, Attorneys must advise clients of any actual or potential conflicts of interest and obtain their informed written consent to our representation when actual, present, or potential conflicts of interest exist. Client has conferred with its own separate corporate or municipal counsel and has determined that it is in its own best interests to waive any and all potential or actual conflicts of interest which may occur as the result of Attorneys' current and continuing representation of other entities in similar litigation. By signing this agreement, Client states that (1) it has been advised of the potential conflicts of interest which may be or are associated with our representation of Client and other multiple claimants; (2) it nevertheless wants Attorneys to represent Client; and (3) Client consents to Attorneys' representation of others in connection with the PFAS litigation. Client remains completely free to seek other legal advice at any time even after signing this agreement.

12. **POWER OF ATTORNEY.** Client gives Attorneys a power of attorney to execute all reasonable and necessary documents connected with the handling of this cause of action, including pleadings, contracts, settlement agreements, compromises and releases, verifications, dismissals and

orders, and all other documents that Client could properly execute. Client's claims will not be settled without obtaining Client's consent.

13. **SETTLEMENT.** Attorneys will not settle Client's claim without the approval of Client, who will have the absolute right to accept or reject any settlement. Attorneys will notify Client promptly of the terms of any settlement offer received by Attorneys.

14. **AGGREGATE SETTLEMENTS.** Often times in cases where Attorneys represent multiple clients in similar litigation, the opposing parties or defendants attempt to settle or otherwise resolve all of Attorneys' cases in a group or groups, by making a single settlement offer to settle a number of cases simultaneously. There exists a potential conflict of interest whenever a lawyer represents multiple clients in a settlement of this type because it necessitates choices concerning the allocation of limited settlement amounts among the multiple clients. However, if all clients consent, a group settlement can be accomplished and a single offer can be fairly distributed among the clients by assigning settlement amounts based upon the strengths and weaknesses of each case, the relative nature, severity and extent of injuries, and individual case evaluations. In the event of a group or aggregate settlement proposal, Attorneys may implement a settlement program, overseen by a referee or special master, who may be appointed by a court, designed to ensure consistency and fairness for all claimants, and which will assign various settlement values and amounts to each client's case depending upon the facts and circumstances of each individual case. Client authorizes Attorneys to enter into and engage in group settlement discussions and agreements that may include Client's individual claims. Although Client authorizes Attorneys to engage in such group settlement discussions and agreements, Client retains the right to approve any settlement of Client's claims, and Attorneys are required to obtain Client's approval before settling Client's claims.

15. **ATTORNEYS' LIEN.** Attorneys will have a lien for attorneys' fees and costs advanced on all claims and causes of action that are the subject of the representation of Client under this Agreement and on all proceeds of any recovery obtained (whether by settlement, arbitration award, or court judgment).

16. **DISCHARGE OF ATTORNEYS.** Client may discharge Attorneys at any time by written notice effective when received by Attorneys. Unless specifically agreed by Attorneys and Client, Attorneys will provide no further services and advance no further costs on Client's behalf after receipt of the notice. If Attorneys appear as Client's attorneys of record in any proceeding, Client will execute and return a substitution-of-attorney form immediately on its receipt from Attorneys. In the event that Attorneys are discharged, for whatever reason, Client remains obligated to pay Attorneys the entire percentage as agreed in paragraph 7.A or a reasonable fee as described in paragraph 7.C and to reimburse Attorneys for all reasonable costs and expenses not later than thirty (30) days after the receipt of a final cost accounting from Attorneys.

17. **WITHDRAWAL OF ATTORNEYS.** Client and Attorneys agree that if, after investigation of the facts and research of the law, Attorneys believe that Client's claims are of limited merit, Attorneys may terminate this agreement with Client prior to and without filing suit. Termination releases Attorneys from any further action on Client's claim and discharges Attorneys from this Agreement. Termination will be effected via delivery service with signature receipt to the last address provided by Client to Attorneys. After filing suit, Attorneys may withdraw with Client's consent as permitted under the governing Rules of Professional Conduct. The circumstances under which the Rules permit such

withdrawal include, but are not limited to, the following: (a) the representation will result in violation of the rules of professional conduct or other law; (b) if withdrawal can be accomplished without material adverse effect on the interests of Client; (c) if Client persists in a course of action involving Attorneys' services that Attorneys reasonably believe is criminal or fraudulent or if Client has used Attorneys' services to perpetrate a crime or fraud; (d) if Client insists upon pursuing an objective that Attorneys consider repugnant or imprudent; (e) if Client fails substantially to fulfil an obligation to Attorneys regarding Attorneys' services and has given reasonable warning that Attorneys will withdraw unless the obligation is fulfilled; (f) the representation will result in an unreasonable financial burden on Attorneys; or (g) if other good cause for withdrawal exists. Upon termination of representation, Attorneys shall take steps to the extent reasonably practicable to protect Client's interests, will give reasonable notice to Client, will allow time for employment of other counsel, will surrender papers and property to which Client is entitled, and will refund any advance payment of fee that has not been earned. Notwithstanding Attorneys' withdrawal, Client will remain obligated to pay Attorneys at the agreed rate for all services provided, and to reimburse Attorneys for all costs advanced, before the withdrawal.

18. **RELEASE OF CLIENT'S PAPERS AND PROPERTY.** At the termination of services under this Agreement, Attorneys will release promptly to Client on request all of Client's papers and property. "Client's paper and property" includes correspondence, deposition transcripts, exhibits, experts' reports, legal documents, physical evidence, and other items reasonably necessary to Client's representation, whether Client has paid for them or not.

19. **INDEPENDENT CONTRACTOR.** The relationship to Client of Attorneys, and any associate counsel or paralegal provided through Attorneys, in the performance of services under this Agreement is that of Client to independent contractor and not that of Client to employee. No other wording in this Agreement shall stand in derogation of this subparagraph. The fees and costs paid to Attorneys for legal services rendered pursuant to this Agreement shall be deemed revenues of their law office practices and not as a remuneration for individual employment apart from the business of that law office.

20. **NOTICES.** Client agrees to receive communications and documents from Attorneys via email. Attorneys agree to receive communications and documents from Client via email. In the event that Client needs to send hardcopy documents or other physical materials, Client agrees to send those to Attorneys at the following addresses:

Baron & Budd, P.C.
3102 Oak Lawn Ave., Suite 1100
Dallas, Texas 75219

Cossich, Sumich, Parsiola & Taylor LLC
8397 Highway 23, Suite 100
Belle Chasse, Louisiana 770037

Wigod Law Office
7175 S.W. Beveland St. #210
Tigard, Oregon 97223

21. **DISCLAIMER OF GUARANTEE.** Although Attorneys may offer an opinion about possible results regarding the subject matter of this Agreement, Attorneys cannot guarantee any particular result. Client acknowledges that Attorneys have made no promises about the outcome and that any opinion offered by Attorneys in the future will not constitute a promise, guarantee, or warranty.
22. **ENTIRE AGREEMENT.** This Agreement contains the entire agreement of the parties. No other agreement, statement, or promise made on or before the effective date of this Agreement will be binding on the parties.
23. **SEVERABILITY IN EVENT OF PARTIAL INVALIDITY.** If any provision of this Agreement is held in whole or in part to be unenforceable for any reason, the remainder of that provision and of the entire Agreement will be severable and remain in effect.
24. **MODIFICATION BY SUBSEQUENT AGREEMENT.** The parties may agree to modify this Agreement by executing a new written agreement.
25. **DISPUTES ARISING UNDER AGREEMENT.** Client and Attorneys agree that any controversy, claim, or dispute (including issues relating to the fee) arising out of or relating to this Agreement, its performance, and/or its breach will be resolved by arbitration proceedings before a neutral associated with the Judicial Arbitration and Mediation Services (JAMS). Disagreement as to the fair market value of any non-monetary property or services, however, will be resolved in accordance with paragraph 7.C.
26. **ATTORNEY'S FEES AND COSTS IN ACTION ON AGREEMENT.** The prevailing party in any action or proceeding to enforce any provision of this Agreement will be awarded reasonable attorney's fees and costs incurred in that action or proceeding or in efforts to negotiate the matter.
27. **EFFECTIVE DATE OF AGREEMENT.** This Agreement is effective when the Client signs the Agreement. This Agreement applies to any services provided by Attorneys before its effective date.
28. **MULTIPLE COUNTERPARTS.** This Agreement will be effective whether or not executed in multiple counterparts.

This agreement and its performance are subject to the Texas Disciplinary Rules of Professional Conduct, the Louisiana Rules of Professional Conduct, and the Oregon Rules of Professional Conduct.

Agreed by:

City of St. Helens ("Client")

Scott Summy, Baron & Budd, P.C. (“Attorney”)

Phil Cossich, Cossich, Sumich, Parsiola & Taylor, LLC (“Attorney”)

Ashley Wigod, Wigod Law Office (“Attorney”)



STAFF REPORT

Meeting Date: December 17, 2025
 Author: John Walsh, City Administrator
 Department: City Administrator's Office
 Subject: Third Amendment to PSA with Arcadia Holdings
 Type of Item: Real Property Agreement

Background: The City entered into a Purchase and Sale Agreement with Arcadia Paper Mills, LLC, later assigned to Arcadia Holdings, LLC, on August 30, 2024, for the purchase and sale of real property located at 1300 Kaster Road to operate the paper manufacturing facility. The terms and conditions of the purchase and sale have been updated in Amendment No. 1, entered into on February 19, 2025, and Amendment No. 2 entered into on September 23, 2025.

The Parties desire to amend the Purchase and Sale agreement as follows:

- Update the final legal descriptions
- Update the legal descriptions contained in the easements
- Update the Seller Financing Documents, which include the Promissory Note, Deed of Trust, and Environmental Indemnity.
- Incorporate the final agreement for the Operating Covenants and Agreements (also known as the Ancillary Agreement) for Arcadia's use of the City's water right, including the following, and more further described in the Agreement:
 - Use of the City's Effluent Clarifier System
 - Use of the Water Intake System
 - The obligation to continue to operate the Fire Suppression System for the benefit of the adjacent properties
 - A one-time right to transfer the use of the agreement to a new mill operator for a fee or to an affiliate operator without a fee
 - Any other subsequent purchaser of the property must obtain permission from the City to use the City's water right
- The form of bill of sale will be confirmed by closing.
- The transaction is required to close by December 30, 2025, and the Parties are intending to close the transaction as soon as possible in advance of that date.

Recommendation: It is recommended that City Council approve Amendment No. 3 to the Purchase and Sale Agreement with Arcadia Holdings, LLC.

Recommended Motion:

1. I make a motion to approve Amendment No. 3 to the Purchase and Sale Agreement with Arcadia Holdings, LLC, and direct the City Administrator to take all necessary steps, including making any minor updates to the documents as needed, to prepare for and close the transaction.

THIRD AMENDMENT TO PURCHASE AND SALE AGREEMENT

This THIRD AMENDMENT TO REAL ESTATE PURCHASE AND SALE AGREEMENT (this “**Amendment**”), dated December __, 2025 (the “**Amendment Effective Date**”), is entered into by and between:

1. **ARCADIA HOLDINGS, LLC**, an Oregon limited liability company (“**Purchaser**”);
and
2. **THE CITY OF ST. HELENS, OREGON**, an Oregon municipal corporation (“**Seller**”).

The Purchaser and Seller are referred to herein as, the “**Parties**” and each, individually as, a “**Party**.”

WHEREAS, Purchaser’s predecessor-in-interest, Arcadia Paper Mills, LLC (“**Original Purchaser**”) and Seller entered into that certain Real Estate Purchase and Sale Agreement dated August 30, 2024 (as amended, the “**Agreement**”), as amended by that certain First Amendment thereto dated February 19, 2025 (“**First Amendment**”), and that Second Amendment thereto dated September 23, 2025 (the “**Second Amendment**”) with respect to certain real property described therein, located in St. Helens, Columbia County, Oregon; and

WHEREAS, Seller and Purchaser desire to amend the Agreement to as hereinafter set forth.

NOW, THEREFORE, in consideration of the mutual promises of the Parties as set forth herein, Seller and Purchaser hereby agree as follows:

1. **Recitals; Definitions.** The foregoing Recitals are incorporated into and made a part of this Amendment. All capitalized terms not defined in this Amendment have the meanings ascribed to them in the Agreement. All references to the “**Agreement**” contained in this Amendment and in the Agreement shall refer to the Agreement as amended by this Amendment.

2. **Legal Description of the Land.** The Agreement is hereby amended to provide that the legal description attached hereto as **Exhibit A-1** shall be the final legal description of the boundaries of the Land that is to be conveyed pursuant to the Agreement. **Exhibit A-1** attached hereto supersedes all other, prior descriptions of the boundaries of the Land (whether via the Approved Survey, the Second Amendment, or otherwise) among the Parties. **Exhibit A-2** attached hereto was prepared by AKS Engineering for Buyer and Seller as a survey mapping of the legal description attached hereto as **Exhibit A-1**, together with the location of certain easements showing on **Exhibit A-2**. **Exhibit A-2** replaces any prior mapping provided among the parties.

3. **Closing Documents Supersede Forms Attached to Agreement.** Attached hereto as **Exhibits B-1, B-2, and B-3** are updated draft forms of, respectively, the Promissory Note (with an updated note amount therein), Deed of Trust, Environmental Indemnity Agreement contemplated by Section 8 of the Agreement, as well as **Exhibit B-4**, the final draft Operating Covenants Agreement, and **Exhibit B-5**, the final draft Bill of Sale.

4. **Reaffirmation of Agreement.** All other terms and conditions of the Agreement remain as agreed upon and are hereby reaffirmed. This Third Amendment shall be deemed to be incorporated into the Agreement and subject to all other terms and conditions therein.

IN WITNESS WHEREOF, the Parties hereto have executed this Third Amendment to the Purchase and Sale Agreement, effective as of the Effective Date defined above.

SELLER:**CITY OF ST. HELENS, OREGON**

An Oregon municipal corporation

By: _____
Name: _____
Title: _____
Date Executed: _____

PURCHASER**ARCADIA HOLDINGS, LLC**

An Oregon limited liability company

By: _____
Name: _____
Title: _____
Date Executed: _____

Exhibit A-1
Final Legal Description of the Land

[See Attachment]

**AKS ENGINEERING & FORESTRY**

12965 SW Herman Road, Suite 100, Tualatin, OR 97062

P: (503) 563-6151

F: (503) 563-6152

AKS Job #11559-01

EXHIBIT**Adjusted Parcel 1 of Partition Plat No. 2020-03**

A portion of Parcel 1 of Partition Plat No. 2020-03, recorded as Instrument Number 2020-5170, Columbia County Records, located in the East One-Half of Section 9, and the West One-Half of Section 10, Township 4 North, Range 1 West, Willamette Meridian, City of St. Helens, Columbia County, Oregon, and being more particularly described as follows:

Commencing at the northwest corner of said Section 10; thence along the north line of said Section 10, South 88°24'43" East 418.70 feet to the northwesterly corner of Book 177, Page 23, Columbia County Records, and Book 178, Page 289, Columbia County Records; thence along the westerly line of said deeds on the following three (3) courses: South 22°44'17" West 226.63 feet, South 67°15'43" East 290.00 feet, South 22°44'17" West 304.86 feet to the southwesterly corner of said deeds and the Point of Beginning; thence along the southerly line of said deeds, South 67°15'43" East 415.00 feet; thence leaving said southerly line, South 60°37'13" East 45.30 feet to the northwesterly right-of-way line of Portland & Western Railroad (50.00 feet from centerline); thence along said northwesterly right-of-way line (variable width from centerline), South 67°15'43" East 25.00 feet; thence continuing along said northwesterly right-of-way line (25.00 feet from centerline), South 22°44'17" West 483.03 feet; thence leaving said northwesterly right-of-way line, North 67°16'05" West 210.28 feet; thence South 22°36'40" West 265.41 feet; thence South 26°39'01" West 74.89 feet; thence South 22°36'40" West 358.39 feet; thence North 67°08'46" West 259.55 feet to the northeasterly corner of Parcel 2 of said Partition Plat No. 2020-03; thence along the northeasterly line of said Parcel 2, North 67°08'46" West 307.77 feet to the northwesterly corner of said Parcel 2; thence leaving said northwesterly corner, North 67°08'46" West 271.82 feet; thence South 23°34'28" West 171.98 feet; thence North 66°11'51" West 132.94 feet; thence North 23°34'28" East 447.31 feet; thence North 66°25'32" West 300.00 feet; thence North 29°41'18" East 252.62 feet to the intersection of the southwesterly right-of-way line of Kaster Road (60.00 feet in width) and the southeasterly right-of-way line of Franklin Street (60.00 feet in width); thence along said southeasterly right-of-way line, North 30°33'22" East 160.00 feet to the northeasterly right-of-way line of Franklin Street; thence leaving said northeasterly right-of-way line, North 82°22'39" East 574.48 feet; thence North 88°22'28" East 492.86 feet to the Point of Beginning.

The above described tract of land contains 29.69 acres, more or less.

The Basis of Bearings for this description are based on said Partition Plat No. 2020-03.

10/23/2025

**REGISTERED
PROFESSIONAL
LAND SURVEYOR**

**OREGON
JANUARY 9, 2007
NICK WHITE
70652LS**

RENEWS: 6/30/26

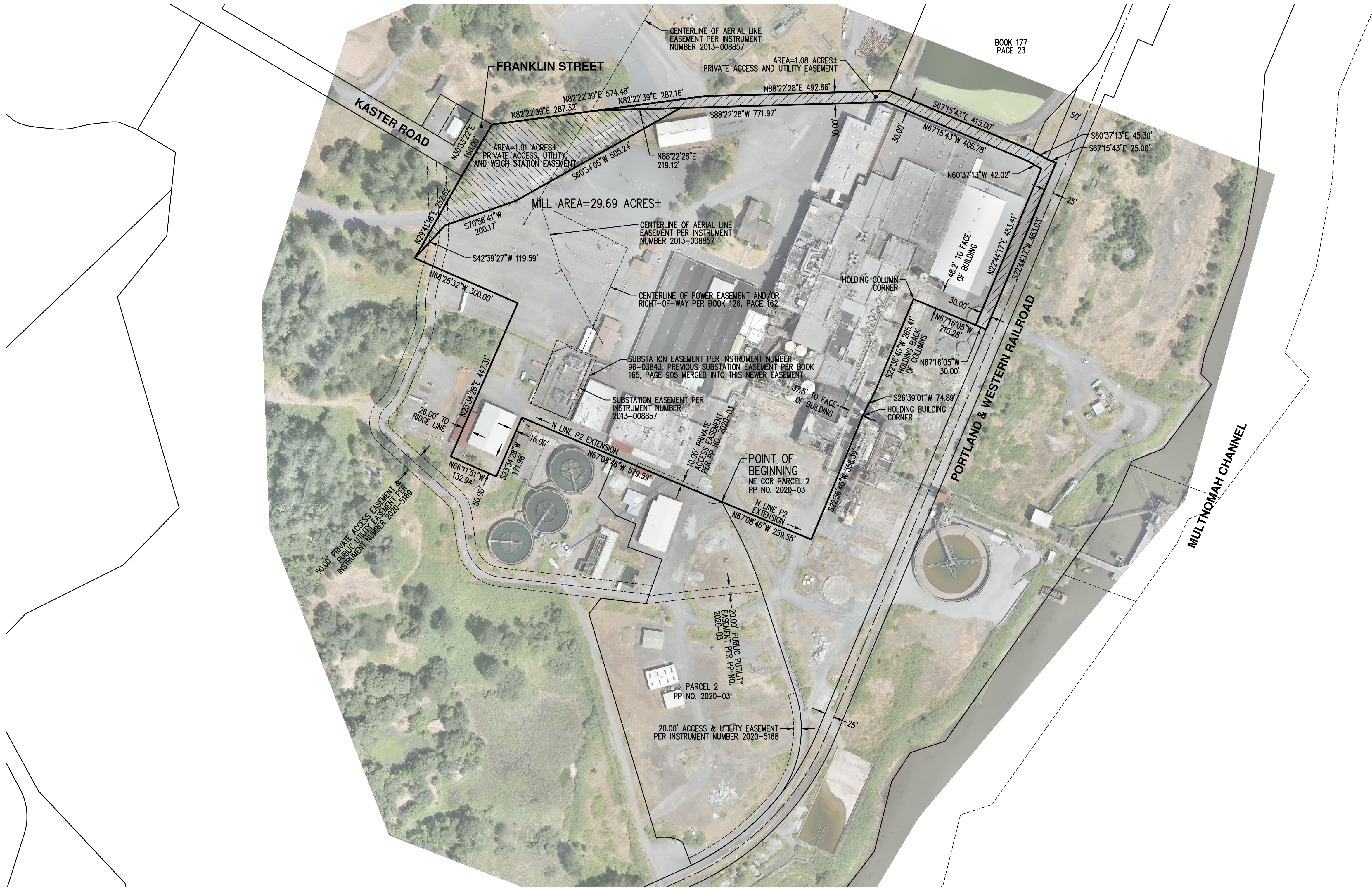
Exhibit A-2
Final Mapping of the Land and Select Easements

[See Attachment]

AKS DRAWING FILE: 11559-01_20250901 EXHIBITTING LAYOUT: E081

PREPARED FOR
ALLIED WEST PAPER CORPORATION
11101 ETIWANDA AVENUE
FONTANA, CA 92337

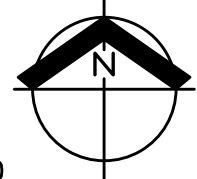
EXHIBIT MAP
A PORTION OF PARCEL 1 OF PARTITION PLAT NO. 2020-03,
LOCATED IN THE NORTHEAST 1/4 OF SECTION 9 AND THE NORTHWEST 1/4 OF SECTION 10,
TOWNSHIP 4 NORTH, RANGE 1 WEST, WILLAMETTE MERIDIAN,
CITY OF ST. HELENS, COLUMBIA COUNTY, OREGON



NOTE

1. AN EASEMENT FOR SLOPES BEYOND RAILROAD RIGHT-OF-WAY LINES PER BOOK 55, PAGE 55, NOT MAPPABLE.
2. A 20' WIDE POWER LINE EASEMENT AND/OR RIGHT-OF-WAY PER BOOK 124, PAGE 474 WHICH IS LOCATED ON PARCEL 1.

SCALE: 1"=150 FEET
150 0 30 75 150



DESIGNED BY:	
DRAWN BY:	WCB
MANAGED BY:	
CHECKED BY:	NSW
DATE:	9/15/2025
REGISTERED PROFESSIONAL LAND SURVEYOR	
<i>Nick White</i>	
OREGON JANUARY 9, 2007 NICK WHITE 7065215 RENEWS: 6/30/26	
REVISIONS	
JOB NUMBER 11559-01	
EXHIBIT 1	

Exhibit B-1
Promissory Note

[See Attachment]

PROMISSORY NOTE

\$3,376,063.67

December __, 2025

FOR VALUE RECEIVED, the undersigned (“Maker”) promise to pay to the order of CITY OF ST. HELENS, OREGON, a State of Oregon municipal corporation (herein “Holder”), at the time and place and in the manner provided herein, the principal sum of **Three Million Three Hundred Seventy Six Thousand Sixty Three and 67/100 Dollars** (\$3,376,063.67), together with interest and other sums as provided herein.

1. **Interest and Payment.**

1.1 **Interest Rate.** Maker promises to pay (on the schedule set forth in Section 1.2 below) interest accruing from and including the date hereof until maturity on the unpaid principal of this Note at a rate of eight percent (8.0%) per annum. Interest shall be computed on the basis of a three hundred sixty (360) day year, and a thirty (30) day month.

1.2 **Payments.** Maker shall not be obligated to commence making payments on principal or accrued interest hereunder until November 1, 2026. Commencing on November 1, 2026, and on the first day of each subsequent month up to and including March 1, 2027, Maker will pay monthly installments of interest only in the amount of \$81,025.53. Commencing on April 1, 2027, this Note shall be repaid in equal monthly installments of \$83,908.64 on account of outstanding principal, together with all interest that shall have accrued on such outstanding principal balance as of each monthly payment date. Payment installments under this Section 1.2 shall be due and payable on the first day of each succeeding calendar month thereafter until January 31, 2031, on which date any unpaid principal, together with all accrued, unpaid interest hereon, shall mature and become finally due and payable.

1.3 **Default Interest Rate.** After maturity (whether by acceleration or otherwise) or on and after an event of default under this Note, any principal and interest not paid shall bear interest at the annual rate of ten percent (10%) over and above the rate which would otherwise apply hereunder, or the maximum amount which may be legally charged as interest, whichever is the lesser, until paid.

1.4 **Late Charge.** If any payment due hereunder is not made within fifteen (15) days of the date when first due, Maker shall pay to Holder a late charge in an amount equal to ten percent (10%) of the amount of such payment. Holder's acceptance of such late charges shall not constitute a waiver of any existing or subsequent default hereunder. Such late charge shall not be assessed against any balloon payment due hereunder at maturity, to the extent that the balloon is in excess of the regular monthly installments due hereunder.

1.5 **Place and Time of Payment.** All payments specified herein shall be deemed made when actually received by Holder. All payments shall be made to Holder at 265 Strand Street, St. Helens, Oregon 97051 (as such address may be updated upon written notice delivered by Holder to Maker in accordance with Section 4.10 of the Deed of Trust below) and shall be made without offset and without prior notice or demand.

1.6 **Form and Application of Payments.** Payments shall be in lawful money of the United States of America and when received by Holder shall be applied first to all amounts due hereunder other than principal or interest, second to accrued interest, third to the portion of the principal balance then due, if any, then fourth as a principal payment.

1.7 **Prepayment.** If, prior to December 31, 2026, either (i) Maker prepays this Note voluntarily, or (ii) the maturity date of this Note is accelerated in connection with a default by Maker, then in either instance Maker shall pay to Holder a prepayment fee equal to 1.0% of the original principal balance hereunder (\$29,325.63). From and after January 1, 2027, Maker may prepay this Note in whole or in part at any time without penalty or fee.

2. **Default.**

Time is of the essence of this Note. A default shall occur if:

2.1 **Failure to Make Payments.** Maker fails to make any payment under this Note within fifteen (15) days of the date due.

2.2 **Other Failures.** Maker fails to perform any other obligation contained in this Note or any covenant contained in any instrument securing payment of this Note or executed in connection herewith by Maker or a related party within fifteen (15) days after notice from Holder specifying the nature of the default; provided, however, that if such failure cannot be cured within such fifteen (15) day period despite commercially reasonable efforts, then the cure period shall be extended to provide Maker with a reasonable opportunity (not to exceed forty-five (45) days) to cure such failure provided that Maker: (i) promptly commence such cure upon notice from Holder, and (ii) diligently pursues completion of such cure until such cure is complete.

2.3 **Bankruptcy.** Maker becomes insolvent, a receiver is appointed to take possession of all or a substantial part of Maker's properties, Maker makes an assignment for the benefit of creditors or files a voluntary petition in bankruptcy, or Maker is the subject of an involuntary petition in bankruptcy.

3. **Remedies.**

In the event of a default, Holder, at its option, may take any one or more of the following steps:

3.1 **Acceleration.** Declare the entire unpaid principal balance of this Note, all accrued unpaid interest on this Note and all other costs and expenses due hereunder, to be immediately due and payable, and exercise any remedy available to Holder under this Note or any instrument evidencing or securing payment of this Note.

3.2 **Other Remedies.** Pursue any other right or remedy provided in this Note or otherwise allowed by law.

Holder may pursue any such rights or remedies singly, together or successively. Exercise of any such right or remedy shall not be deemed an election of remedies. Failure to

exercise any right or remedy shall not be deemed a waiver of any existing or subsequent default nor a waiver of any such right or remedy.

4. **Attorneys' Fees and Collection Costs.**

In the event of default under this Note, the Maker agrees to pay all costs and expenses, to the extent such costs and expenses are reasonable, which may be incurred by the Holder with respect to such default, including (without limitation) costs and expenses of investigating the same and circumstances and events surrounding or relating thereto, fees charged by and expenses of professional consultants and advisers, including attorneys and accountants, costs of searching records, obtaining title reports, surveyor's reports, attorneys' opinions, title insurance costs, trustee's fees, and all other reasonable expenses incurred by the Holder that are necessary at any time in Holder's opinion for the protection of its interest and the enforcement of its rights. Attorneys' fees shall include reasonable costs and expenses of legal advice with respect to the event of default and rights and remedies of Holder, negotiations with the Maker and any other parties in interest, attorneys' fees and expenses with respect to any action which Holder may commence or in which it might appear, whether for the purpose of protecting or preserving Holder's rights or to realize upon the lien of any security interest upon real or personal property, or both, by foreclosure or otherwise, and all attorneys' fees and expenses in any review of or appeal from any action and any other proceeding. Maker also agrees to pay any attorneys' fees incurred by Holder in connection with any bankruptcy or similar proceedings wherein Maker (as defined in Section 2.3) is the "debtor."

5. **Governing Law, Usury; Severability.**

5.1 Governing Law and Usury. This Note shall be construed and enforced in accordance with the laws of the State of Oregon. Maker and Holder intend to comply strictly with the applicable usury laws now or hereafter governing the consideration received under this Note. If the applicable law is ever interpreted so as to render usurious any consideration called for, contracted for, charged, taken, reserved or received with respect to this Note, or if any prepayment by Maker or Holder's exercise of the option herein contained to accelerate the maturity of this Note results in Maker having paid any interest in excess of that permitted by law, Maker and Holder agree that all excess amounts collected by Holder shall be credited on the principal balance of this Note (or, if this Note has been paid in full, refunded to Maker) and the provisions of this Note shall be deemed reformed and the amounts thereafter collectible on this Note reduced, without the necessity of the execution of any new documents, so as to comply with the then applicable law, but so as to permit the recovery of the fullest amount otherwise called for hereunder. This Section 5.1 shall control and supersede any conflicting provision of this Note.

5.2 Severability. If any provision of this Note is found by a court of competent jurisdiction to be invalid or unenforceable as written, then the parties agree that: (a) such provision be enforceable to the full extent permitted by law, and (b) the invalidity or unenforceability of such provision shall not affect the validity and enforceability of the remainder of this Note.

6. Amendment.

This Note may not be amended, modified or changed, nor shall any provision of this Note be deemed waived, other than by an instrument in writing signed by the party against whom enforcement of any such waiver, amendment, change, or modification is sought.

7. Waivers; Joint and Several Liability.

Maker and all sureties and accommodation parties, without affecting their liability hereunder, hereby: (a) waive diligence, presentment, protest and demand, (b) waive notice of protest, of demand, of nonpayment, of dishonor and of maturity, and (c) consent to any extension or alteration of the time or terms of payment hereof, any and all renewals, extensions or modifications of the terms hereof, any release of all or any part of any security which may be given for the payment hereof, any acceptance of additional security of any kind, and any release of or resort to any party liable for payment hereof, any of which may be made without notice to any of said parties. All such parties, including Maker (as defined in Section 2.3 above) and each constituent person and entity of Maker, agree that they each shall be jointly and severally liable for full payment of this Note and agree to pay the full amount of the principal and interest of the indebtedness evidenced hereby. Unless and to the extent otherwise limited by the express terms of this Note, this Note is executed with recourse against the individual assets of all persons liable hereunder and against the separate properties and marital community estates of all persons who are personally liable on this Note, and the marital community estates of such persons' spouses.

8. Binding Agreement.

This Note shall be binding upon the heirs, lawful successors and assigns of Maker; provided, however, that in no event shall Maker be permitted to assign this Note without the prior written consent of Holder, which may be withheld, conditioned, or delayed in Holder's sole discretion.

9. Security.

This Note is secured by, among other instruments, a Deed of Trust of even date herewith, made by Maker in favor of Tigor Title Company of Oregon for the benefit of Holder and encumbering certain real property located in St. Helens, Oregon.

10. Warranties.

Maker warrants and represents to Holder that the proceeds of the loan evidenced hereby will be used for commercial purposes and will not be used for personal, consumer, residential or household purposes.

11. Construction.

This Note and the security documents and guaranties related hereto have been reviewed and negotiated by Maker, Holder and any guarantors with the benefit of or the opportunity to seek the assistance of legal counsel and shall not be construed against any party by presumption. The titles and captions contained in this Note are inserted for convenience and shall

not be deemed to define, limit, extend or modify any provision of this Note. All references to Holder herein shall include any successor or assign of Holder.

12. Notices.

Any notice required or permitted to be given under this Note may be given by depositing the same in the United States Mail, postage prepaid, by certified mail, return receipt requested, addressed to the Maker or Holder, as the case may be, at their respective addresses set forth in this Note. Either party may change its address for notices by giving the other party notice of the change. Any notice given in the manner set forth above shall be effective upon the expiration of two (2) business days after deposit in the United States Mail; notice given in any other manner shall be effective only upon receipt by the party for whom the same is intended.

UNDER OREGON LAW MOST AGREEMENTS, PROMISES, AND COMMITMENTS MADE BY LENDER CONCERNING LOANS AND OTHER CREDIT EXTENSIONS WHICH ARE NOT FOR PERSONAL, FAMILY, OR HOUSEHOLD PURPOSES OR SECURED SOLELY BY THE BORROWER'S RESIDENCE MUST BE IN WRITING, EXPRESS CONSIDERATION, AND BE SIGNED BY LENDER TO BE ENFORCEABLE.

[Signature On Following Page]

This Promissory Note has been executed as of the date and year first above written.

MAKER:

Arcadia Holdings, LLC

An Oregon limited liability company

By: _____

Name: _____

Title: _____

Maker Address:

1420 5th Ave Ste 3700

Seattle, WA 98101

Exhibit A to Promissory Note

Loan Amount: \$ 3,376,063.67
Interest Rate: 8%
of Mthly Pmt. Periods: 52.00

First 5 Mos. Pmt.: (81,025.53)
Amort. Pmt. (83,908.64)

** NOTE: Payments in the "Prin. Pmt. Due" columns for November 1, 2026, through March 1, 2027 are on account of previously-accrued, but unpaid, "carried" interest, and payments in the "Int. Pmt. Due" column reflect newly accrued interest on the loan's original principal balance of \$2,932,563.28. Payment of principal and interest commences on April 1, 2027, as provided in the Note.

	2025			2026			2027			2028		
	Principal	Interest Pmt.	Loan P & Car'd I.	Prin. Pmt. Due	Int. Pmt. Due	Loan P & Car'd I.	Prin. Pmt. Due	Int. Pmt. Due	Loan P & Car'd I.	Prin. Pmt. Due	Int. Pmt. Due	Loan P & Car'd I.
1-Jan	N/A	N/A	N/A	-	-	3,466,092.03	(58,518.44)	(22,507.09)	3,493,100.53	(65,185.43)	(18,723.21)	2,743,296.33
1-Feb	N/A	N/A	N/A	-	-	3,488,599.13	(58,518.44)	(22,507.09)	3,434,582.09	(65,620.00)	(18,288.64)	2,677,676.33
1-Mar	N/A	N/A	N/A	-	-	3,511,106.22	(58,518.44)	(22,507.09)	3,376,063.65	(66,057.47)	(17,851.18)	2,611,618.86
1-Apr	N/A	N/A	N/A	-	-	3,533,613.31	(61,401.55)	(22,507.09)	3,314,662.10	(66,497.85)	(17,410.79)	2,545,121.01
1-May	N/A	N/A	N/A	-	-	3,556,120.40	(61,810.90)	(22,097.75)	3,252,851.20	(66,941.17)	(16,967.47)	2,478,179.84
1-Jun	N/A	N/A	N/A	-	-	3,578,627.49	(62,222.97)	(21,685.67)	3,190,628.23	(67,387.45)	(16,521.20)	2,410,792.39
1-Jul	N/A	N/A	N/A	-	-	3,601,134.58	(62,637.79)	(21,270.86)	3,127,990.45	(67,836.70)	(16,071.95)	2,342,955.69
1-Aug	N/A	N/A	N/A	-	-	3,623,641.67	(63,055.37)	(20,853.27)	3,064,935.07	(68,288.94)	(15,619.70)	2,274,666.76
1-Sep	-	-	3,376,063.67	-	-	3,646,148.76	(63,475.74)	(20,432.90)	3,001,459.33	(68,744.20)	(15,164.45)	2,205,922.56
1-Oct	-	-	3,398,570.76	-	-	3,668,655.85	(63,898.92)	(20,009.73)	2,937,560.41	(69,202.49)	(14,706.15)	2,136,720.06
1-Nov	-	-	3,421,077.85	(58,518.44)	(22,507.09)	3,610,137.41	(64,324.91)	(19,583.74)	2,873,235.50	(69,663.84)	(14,244.80)	2,067,056.22
1-Dec	-	-	3,443,584.94	(58,518.44)	(22,507.09)	3,551,618.97	(64,753.74)	(19,154.90)	2,808,481.76	(70,128.27)	(13,780.37)	1,996,927.95

(First Day of each month)

	2029			2030			2031		
	Prin. Pmt. Due	Int. Pmt. Due	Loan P & Car'd I.	Prin. Pmt. Due	Int. Pmt. Due	Loan P & Car'd I.	Prin. Pmt. Due	Int. Pmt. Due	Loan P & Car'd I.
1-Jan \$	(70,595.79)	\$ (13,312.85)	1,926,332.16	(76,455.21)	(7,453.44)	1,041,560.36	(82,800.95)	(1,107.69)	83,352.94
1-Feb \$	(71,066.43)	\$ (12,842.21)	1,855,265.73	(76,964.91)	(6,943.74)	964,595.45	(83,352.96)	(555.69)	(0.02)
1-Mar \$	(71,540.21)	\$ (12,368.44)	1,783,725.52	(77,478.01)	(6,430.64)	887,117.44	-	-	-
1-Apr \$	(72,017.14)	\$ (11,891.50)	1,711,708.38	(77,994.53)	(5,914.12)	809,122.92			
1-May \$	(72,497.26)	\$ (11,411.39)	1,639,211.12	(78,514.49)	(5,394.15)	730,608.42			
1-Jun \$	(72,980.57)	\$ (10,928.07)	1,566,230.55	(79,037.92)	(4,870.72)	651,570.50			
1-Jul \$	(73,467.11)	\$ (10,441.54)	1,492,763.45	(79,564.84)	(4,343.80)	572,005.66			
1-Aug \$	(73,956.89)	\$ (9,951.76)	1,418,806.56	(80,095.27)	(3,813.37)	491,910.39			
1-Sep \$	(74,449.93)	\$ (9,458.71)	1,344,356.63	(80,629.24)	(3,279.40)	411,281.15			
1-Oct \$	(74,946.27)	\$ (8,962.38)	1,269,410.36	(81,166.77)	(2,741.87)	330,114.38			
1-Nov \$	(75,445.91)	\$ (8,462.74)	1,193,964.45	(81,707.88)	(2,200.76)	248,406.50			
1-Dec \$	(75,948.88)	\$ (7,959.76)	1,118,015.57	(82,252.60)	(1,656.04)	166,153.89			

(First Day of each month)

Exhibit B-2
Deed of Trust

[See Attachment]

AFTER RECORDING RETURN TO:

**DEED OF TRUST, ASSIGNMENT OF RENTS,
 SECURITY AGREEMENT, AND FIXTURE FILING**

Dated December ___, 2025

Grantor: Arcadia Holdings, LLC, an Oregon limited liability company

Trustee: Ticor Title Company of Oregon, an Oregon corporation

Beneficiary: City of St. Helens, an Oregon municipal corporation

ADDITIONAL STATUTORY NOTICES:

- (a) The address of the entity holding a lien or other interest created by this instrument is:
 265 Strand Street
 St. Helens, Oregon 97051
- (b) The tax account number(s) for the property subject to the lien or in which the interest is
 created is/are: 4109-00-00100 and 4109-00-00101
- (c) Type of transaction: Creation of deed of trust lien and security interests encumbering the
 property or properties described herein.
- (d) Consideration Amount: \$3,376,063.67 (loan amount secured by deed of trust lien)

THIS DOCUMENT CONSTITUTES A FIXTURE FILING IN ACCORDANCE WITH THE
 UNIFORM COMMERCIAL CODE.

DEED OF TRUST, ASSIGNMENT OF RENTS, SECURITY AGREEMENT, AND FIXTURE FILING

This Deed of Trust is made and executed this December_____, 2025, by **Arcadia Holdings, LLC**, an Oregon limited liability company, as grantor (“Grantor”), whose address is 1420 5th Ave Ste 3700, Seattle, Washington 98101, in favor of **Ticor Title Company of Oregon**, an Oregon corporation, as trustee (“Trustee”), whose address is 2534 Sykes Road, Suite C, St. Helens, Oregon 97051, for the benefit of **City of St. Helens**, an Oregon municipal corporation, as beneficiary (“Beneficiary”), whose address is 265 Strand Street, St. Helens, Oregon 97051.

Recitals

Grantor is the owner of fee simple title to the real property described on Exhibit A attached hereto. This Deed of Trust is given to secure payment and performance of a promissory note of even date herewith (the “Note”) made by Grantor and payable to Beneficiary in the principal sum of **Three Million Three Hundred Seventy Six Thousand Sixty Three and 67/100 Dollars** (\$3,376,063.67), together with interest as set forth therein. The final payment of principal under the Note is due and payable on January 31, 2031, subject to any extension privileges, if any, set forth in the Note.

This Deed of Trust is further given to secure: (i) payment and performance of any renewals, extensions, substitutions and modifications of the Note and future advances under the Note; and (ii) payment and performance of any other indebtedness or obligation of Grantor to Beneficiary now or hereafter arising under the terms hereof, the terms of the Note or the terms of any other agreement constituting additional security for the Note, including future advances.

Agreement

Therefore, for good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, the parties hereto agree as follows:

1. **Grant and Conveyance.** For the purposes set forth in the Recitals, Grantor irrevocably grants, conveys, bargains and sells to Trustee, in trust, with power of sale, all of Grantor’s right, title and interest, whether now owned or hereafter acquired, in and to the following described properties, and all income, revenues and profits derived from such items of property (all sometimes referred to herein collectively as the “Premises”):

1.1 **The Real Property.** The real property described on Exhibit A attached hereto, together with all rights, interests and hereditaments appurtenant thereto (the “Real Property”);

1.2 **The Improvements.** All buildings, structures, fixtures and other improvements of every kind and nature now or hereafter located on or about the Real Property, together with all renewals, replacements, substitutions, accessions, additions and products thereof (the “Improvements”);

1.3 **Intentionally Omitted.**

1.4 **Leases.** All of Grantor's right, title and interest in and to all lease, occupancy and rental agreements for occupants, tenants and lessees of the Real Property or Improvements, whether now or hereafter existing (the "Tenant Leases"); and

1.5 **Proceeds.** All insurance and condemnation proceeds and awards (including title insurance proceeds) related to the Premises or any interest in the Premises, regardless of form or generation and regardless of the source of payment, and all proceeds (of any generation) of any of the items of property included in the Premises (the "Proceeds").

The parties intend that Beneficiary shall have a security interest in all of the operating revenues of the Premises, whether those revenues are deemed to be derived from or related to the Real Property or the Improvements.

2. **Grantor's Covenants and Warranties.** Grantor warrants, covenants and agrees with and to Trustee and Beneficiary as follows:

2.1 **Title.** Grantor warrants that Grantor is the absolute legal and equitable owner of, and has good and marketable title to, the Real Property. This Deed of Trust is and shall remain a valid and enforceable first lien on the Premises free of all liens, claims, security interests, encumbrances, easements and restrictions except the special exceptions set forth in the mortgagee's policy of title insurance issued to and approved by Beneficiary in connection with this transaction (the "Permitted Exceptions"). Grantor has full power and authority to convey the Premises in the manner and form herein conveyed. Grantor and its successors and assigns shall warrant and defend such title to the Premises forever against all claims and shall promptly perform all of the obligations to be performed hereunder and under the Permitted Exceptions. Grantor shall furnish to Beneficiary written notice of any litigation, lien, or notice of default affecting the Premises when received. Grantor shall, at its cost, do all further acts, and shall execute and deliver all further documents as Beneficiary shall from time to time require to perfect, continue, assure, convey and confirm the Premises to the Trustee or Beneficiary.

2.2 **Payment and Performance.**

(a) Payment of Secured Obligations. The Note and all other obligations set forth in the Recitals, including all obligations and duties of Grantor hereunder, are collectively referred to as the "Secured Obligations." Grantor shall pay and perform as and when due all of the Secured Obligations without offset and without prior notice or demand, but in all events subject to all applicable notice and cure periods.

(b) Permitted Exceptions. Grantor shall pay and perform, as and when due, all obligations set forth in or evidenced or secured by the Permitted Exceptions and keep the same free from default.

(c) Payment of Taxes. Grantor shall pay, when prior to delinquency and prior to accrual of interest or penalties, all Taxes (as defined below) with respect to the

Premises. Upon demand, Grantor shall provide Beneficiary with evidence, satisfactory to Beneficiary, that such payments have been made. “Taxes” shall mean and include, without limitation, all personal and real property taxes, assessments and impositions, whether public or private, of any kind, levied, assessed or imposed upon the Premises or any portion thereof. In the event of default by Grantor under any instrument evidencing or securing payment of the Secured Obligations, Beneficiary, at its option, may require Grantor to maintain reserves for payment of Taxes or premiums on insurance required hereunder, or both. The reserve shall be created by initial payment and subsequent monthly payment to Beneficiary of an amount determined by Beneficiary to be sufficient to produce, at least thirty (30) days before they are due, amounts equal to or in excess of the Taxes or insurance renewal premiums to be paid. If, at the time payments are to be made, the reserve is insufficient or would be rendered insufficient, Grantor shall upon demand pay such additional sum as Beneficiary shall determine to be necessary. Beneficiary shall not be required to pay any interest with respect to any reserves and shall be entitled to commingle such reserves with other funds of Beneficiary, to the extent permitted to do so by applicable law.

2.3 Construction, Maintenance and Repair. Without limiting Grantor’s obligations under any other agreement executed in favor of Beneficiary, Grantor shall keep the Real Property and Improvements in good operating order, repair and condition, ordinary wear and tear excepted, and shall not commit or permit any waste thereof. Grantor, at its cost, shall make all repairs necessary to the Real Property and Improvements and shall complete and restore promptly and in good and workmanlike manner any portion of the same which may be damaged or destroyed, and pay, when due, all costs incurred in connection therewith regardless of whether sufficient proceeds are available to pay such costs; the same shall be restored and repaired so as to be at least equal in value and of substantially the same character as existed prior to such damage or destruction. Grantor shall not demolish any of the Improvements (including any real property fixtures), save and except for any redevelopment of the Property that has been approved by Grantor, in its reasonable discretion.

2.4 Compliance with Laws. Grantor shall comply with all laws, ordinances, regulations, easements, agreements, covenants, conditions and restrictions now or hereafter affecting the Premises or the use or operation thereof. Grantor shall not cause, permit or suffer any violation of any of the foregoing and shall pay all fees or charges of any kind in connection therewith. Grantor shall indemnify and hold Beneficiary, its officers, directors, employees, members and agents (the “Beneficiary Parties”), and the Premises, harmless from any claim, cost, damage or expense, including attorney fees and penalties, with respect to any breach or alleged breach of the covenants set forth in this Section 2.4.

2.5 Insurance.

(a) Obligation to Insure. Grantor shall provide, maintain and keep in force, at its own cost and expense, the following policies of insurance, and such other insurance (including, without limitation, flood and earthquake insurance) as Beneficiary reasonably may require from time to time against the same or other hazards:

(i) Property Insurance. Property insurance (including earthquake and flood coverages) against loss or damage to the Real Property and the Improvements by fire and any and all of the risks covered by insurance of the type known as of the date hereof

as “special form,” in an amount not less than one hundred percent (100%) of the full replacement cost of the Improvements, as determined from time to time by Beneficiary, without deduction for depreciation. The amount deductible from the loss payable for any casualty shall be approved by Beneficiary and such deductible shall be the obligation of Grantor. Such policy of insurance shall be maintained for and name Grantor and Beneficiary as insureds, as their respective interests may appear, and shall contain the “replacement cost endorsement,” and a lender’s loss payable endorsement in favor of Beneficiary in form reasonably acceptable to Beneficiary.

(ii) Liability Insurance. Comprehensive commercial general liability insurance, including Products and Completed Operations coverage, on an “occurrence basis” insuring against claims for bodily injury, death or property damage occurring in, on or about the Real Property and Improvements and adjoining streets, sidewalks and passageways arising out of or in any way connected with the use, occupancy, possession, ownership or condition of the same. The limits of such coverage shall be no less than Two Million Dollars (\$2,000,000) per occurrence. Such policy shall insure performance of Grantor’s indemnity obligations under this Deed of Trust and shall name Beneficiary as an additional insured, providing coverage for Beneficiary regardless of whether the asserted claim is also asserted against Grantor.

(iii) Builder’s Risk Insurance. During the course of any construction or repair at the Premises, builder’s risk insurance against all risks of physical loss, on a completed value basis, including collapse and transit coverage, with a deductible approved by Beneficiary, covering the total value of work performed and equipment, supplies and materials furnished, and containing the “permission to occupy upon completion of work” endorsement.

(b) Exculpation; General Provisions Related to All Policies. Neither Trustee nor Beneficiary shall be obligated to obtain insurance, nor be responsible for the collection of any insurance monies or for any insolvency of any insurer or insurance underwriter. All policies of insurance required by this Deed of Trust: (i) shall contain an endorsement or an agreement of the insurer that any loss shall be payable in accordance with the terms of such policy notwithstanding any act of negligence of Grantor or Beneficiary which might otherwise result in forfeiture of said insurance and further waiving all rights of setoff, subrogation, counterclaim or deductions against Beneficiary; (ii) shall be issued in amounts no less than those specified in this section and shall be issued by companies acceptable to Beneficiary; (iii) shall be issued by insurance companies reasonably acceptable to Beneficiary; and (iv) shall contain a provision that such policies will not be cancelled or amended, or be subject to any reduction in the scope or limits of coverage, without at least thirty (30) days prior written notice to Beneficiary.

(c) Delivery of Insurance Policies, Payment of Premiums. Grantor shall furnish Beneficiary with a copy of each policy of insurance required hereunder and a certificate of each policy of insurance required hereunder evidencing the required coverage, each such certificate setting forth the coverage, the limits of liability, the name of the carrier, the policy number and the expiration date. At least thirty (30) days prior to the expiration of each such policy, Grantor shall furnish Beneficiary evidence of the reissuance of such policy continuing insurance in force as required by this Deed of Trust. In the event any such insurance policy or evidence of

payment of premium are not so delivered to Beneficiary as required hereunder, Grantor, by executing this Deed of Trust, specifically requests Beneficiary to obtain and pay for, and Beneficiary may obtain and pay for, such insurance for such risks covering Beneficiary's interest in the Premises (without notice to or demand upon Grantor and without releasing Grantor from any obligation hereunder), and Grantor shall pay all premiums thereon promptly upon demand by Beneficiary, and until such payment is made by Grantor the amount of all such premiums together with interest thereon at the Advance Rate (defined in Section 2.10) from the date of payment by Beneficiary shall be secured by this Deed of Trust.

WARNING

UNLESS YOU (GRANTOR) PROVIDE US (BENEFICIARY) WITH EVIDENCE OF THE INSURANCE COVERAGE AS REQUIRED BY OUR CONTRACT OR LOAN AGREEMENT, WE MAY PURCHASE INSURANCE AT YOUR EXPENSE TO PROTECT OUR INTEREST. THIS INSURANCE MAY, BUT NEED NOT, ALSO PROTECT YOUR INTEREST. IF THE COLLATERAL BECOMES DAMAGED, THE COVERAGE WE PURCHASE MAY NOT PAY ANY CLAIM YOU MAKE OR ANY CLAIM MADE AGAINST YOU. YOU MAY LATER CANCEL THIS COVERAGE BY PROVIDING EVIDENCE THAT YOU HAVE OBTAINED PROPERTY COVERAGE ELSEWHERE.

YOU ARE RESPONSIBLE FOR THE COST OF ANY INSURANCE PURCHASED BY US. THE COST OF THIS INSURANCE MAY BE ADDED TO YOUR CONTRACT OR LOAN BALANCE. IF THE COST IS ADDED TO YOUR CONTRACT OR LOAN BALANCE, THE INTEREST RATE ON THE UNDERLYING CONTRACT OR LOAN WILL APPLY TO THIS ADDED AMOUNT. THE EFFECTIVE DATE OF COVERAGE MAY BE THE DATE YOUR PRIOR COVERAGE LAPSED OR THE DATE YOU FAILED TO PROVIDE PROOF OF COVERAGE.

THE COVERAGE WE PURCHASE MAY BE CONSIDERABLY MORE EXPENSIVE THAN INSURANCE YOU CAN OBTAIN ON YOUR OWN AND MAY NOT SATISFY ANY NEED FOR PROPERTY DAMAGE COVERAGE OR ANY MANDATORY LIABILITY INSURANCE REQUIREMENTS IMPOSED BY APPLICABLE LAW.

(d) Casualty Insurance Proceeds. If all or any part of the Premises is damaged or destroyed, then all proceeds of insurance shall be payable and paid to Beneficiary, and the net amount of the same (meaning all such proceeds received by Beneficiary less costs incurred by Beneficiary in the collection thereof, including, without limitation, attorney fees) shall be, at Beneficiary's election and in Beneficiary's sole and absolute discretion, either applied to the Secured Obligations or made available to Grantor to be used to restore the damaged property, as provided below.

(i) Application of Insurance Proceeds to Indebtedness. Any proceeds to be applied to the Secured Obligations shall be applied first against all amounts due

hereunder or under the Note other than principal or interest, second against accrued, unpaid interest on the Note, and third against the principal balance of the Note. No such application shall excuse or reduce the amount of any regular payment required under the terms of any document related to the Secured Obligations. Grantor hereby authorizes and directs any affected insurance company to make payment of such insurance proceeds directly to Beneficiary. If the Premises are materially damaged by a casualty and Beneficiary elects to apply insurance proceeds to the Secured Obligations pursuant to the terms hereof, then Beneficiary, at its option, may elect to accelerate the Secured Obligations and declare the same to be due and payable.

(ii) Disbursement of Insurance Proceeds for Restoration. If Beneficiary elects to permit Grantor to use insurance proceeds to rebuild the Premises, the disbursement of such proceeds shall be made by Beneficiary incrementally as work is completed and subject to such conditions as Beneficiary may impose in its absolute discretion. The proceeds to be made available for restoration will be the net proceeds remaining after deducting all expenses of collection of the proceeds, including attorney fees. The determination of Beneficiary whether to permit restoration will include, among other matters, a determination by Beneficiary, in its sole discretion, that restoration is feasible with the proceeds available and that restoration will result in reconstructed Premises equal in quality and condition to the Premises in existence prior to the destruction and that the value of the Premises as restored will exceed the unpaid balance of the Secured Obligations.

(iii) No Limit on Grantor's Obligations. Nothing herein contained shall excuse Grantor from repairing or maintaining the Premises, as provided in Section 2.3 or restoring all damage or destruction to the same, regardless of the existence, payment or adequacy of insurance proceeds.

(iv) Proof of Loss; Right to Settle. Grantor shall give prompt written notice to Beneficiary of any casualty to all or part of the Real Property or Improvements. Beneficiary may make proof of loss if Grantor fails to do so within thirty (30) days of the casualty, but in all events Beneficiary may make proof of loss within the time period required to protect the rights of the insureds under any policy of insurance if Grantor fails to do so. Beneficiary is authorized at its option to either: (A) settle and adjust any claim under such policies with the consent of Grantor (except that, after any event of default, no consent of Grantor shall be required), or (B) allow Grantor to agree with the insurance company or companies on the amount to be paid upon the loss; and in any case Beneficiary shall, and is authorized to, collect and receipt for any such insurance proceeds; and the reasonable expenses incurred by Beneficiary in the adjustment and collection of insurance proceeds shall be deducted from said proceeds and reimbursed to Beneficiary.

(e) Assignment of Insurance Policies Upon Foreclosure. Grantor assigns to Beneficiary all unearned premiums under all insurance policies required hereunder and agrees that in the event of foreclosure of this Deed of Trust or other transfer of title or assignment of the Premises in extinguishment, in whole or in part of the debt secured hereby, all right, title and interest of Grantor in and to all policies of insurance required hereunder shall inure to the

benefit of and pass to the successor in interest to Grantor or the purchaser or grantee of the Premises.

(f) Waiver and Release. All terms of the Secured Obligations shall be paid and performed without notice, demand, counterclaim, setoff, deduction or defense and without abatement, suspension, deferment, diminution or reduction.

2.6 Condemnation. The Grantor, immediately upon obtaining knowledge of any contemplated condemnation of the Premises or any portion thereof, or of the institution of any proceeding for the condemnation of the Premises or any portion thereof, shall notify Beneficiary of the pendency thereof. Grantor assigns, transfers and sets over to Beneficiary all compensation, rights of action, the entire proceeds of any award and any claim for damages for any of the Premises taken or damaged under the power of eminent domain or by condemnation or by sale in lieu thereof. Beneficiary may, at its option, commence, appear in and prosecute, in its own name, any action or proceeding, or make any compromise or settlement, in connection with such condemnation, taking under the power of eminent domain or sale in lieu thereof. After deducting therefrom all of its expenses, including attorney fees, the net proceeds of the award which have been paid to Beneficiary shall be applied to the payment of the indebtedness secured hereby, or, at the election of Beneficiary, in Beneficiary's sole and absolute discretion, may be made available to Grantor for restoration or rebuilding of the Premises if such restoration is feasible in such a way as to restore the Premises to the same use and at least the condition and quality as the Premises existed prior to the condemnation, the value of which shall exceed the sum of the then unpaid balance of the debt secured hereby. Any such condemnation proceeds made available to Grantor by Beneficiary shall be advanced to Grantor under a disbursement system designated by Beneficiary. To the extent that such proceeds are paid to Beneficiary but are either not made available to Grantor under the preceding sentence, or are not used by Grantor for such purpose within one hundred eighty (180) days, such proceeds shall be applied to the indebtedness and obligations secured hereby in the manner set forth in Section 2.5(d)(i). Beneficiary, at its option, may declare the Secured Obligations to be entirely due and payable if the condemnation materially affects the Premises or the use thereof and the proceeds are not made available to Grantor for rebuilding. Grantor agrees to execute such further assignments of any compensation, award, damages, right of action and proceeds as Beneficiary may require. Notwithstanding the foregoing, in no event shall the terms of this Section 2.6 be deemed to relieve Beneficiary of any liability that may exist pursuant to the PSA (if any) in connection with a breach of Beneficiary's representations and warranties contained therein.

2.7 Liens and Encumbrances. Grantor shall pay, prior to delinquency, all obligations, lawful claims or demands of any person which, if unpaid, might result in, or permit the creation of, a lien or encumbrance on the Premises or any portion thereof, including all claims of contractors, laborers, suppliers and others for work or labor performed or materials or supplies furnished or rented in connection with any work, alteration, improvement of or construction upon the Premises; provided, however, that in the event Grantor disputes the amount or validity of any claim which constitutes a lien or encumbrance on the Premises, Grantor may contest such claim provided, that: (a) Grantor gives to Beneficiary prior written notice of such contest; (b) Grantor causes such lien to be removed, by bond or deposit as allowed by applicable law, from the Premises within fifteen (15) days of the filing of such lien or claim; (c) Beneficiary's interest in the Premises

and/or the lien of this Deed of Trust are not, in Beneficiary's sole opinion, jeopardized thereby; and (d) Grantor promptly pays any amount ultimately determined to be due.

2.8 Indemnification. Grantor shall appear in and defend any suit, action or proceeding that, in the sole judgment of Beneficiary, may affect the value of the Premises, the title to the Premises or the rights and powers of Trustee or Beneficiary. Grantor shall indemnify Beneficiary, the Beneficiary Parties and Trustee from and against any claim, loss, cost, damage or expense (including attorney fees) arising out of or related to this Deed of Trust, the Premises or the condition (whether now existing or hereafter arising) thereof. The indemnity obligations of Grantor shall survive the reconveyance or foreclosure hereof.

2.9 Sale of Premises. In addition to any other right available hereunder, at law or in equity, Beneficiary may declare all sums secured hereby immediately due and payable if, without Beneficiary's prior written consent: (a) Grantor sells, assigns, transfers, conveys, contracts or agrees to sell (as by execution of a land sale contract), enters into a complete lease, a master lease, or a ground lease with respect to, encumbers, mortgages, assigns for security purposes, or otherwise disposes of, hypothecates or alienates, voluntarily or involuntarily, all or any part of the Premises or any interest of Grantor therein, except as allowed under the terms hereof; (b) Grantor suffers title to or any interest in the Premises to be divested, whether voluntarily or involuntarily; (c) if any party comprising Grantor is a partnership (general or limited) or a joint venture and any portion of any general partnership interest of any general partner or joint venture interest of such party is sold, transferred, mortgaged or otherwise disposed; (d) if Grantor is any form of cotenancy and any portion of the interest of any cotenant is sold, transferred, mortgaged or otherwise disposed; (e) if Grantor or any general partner of Grantor or any cotenant of Grantor is a privately held corporation (*i.e.*, a corporation whose stock is not publicly traded on a stock exchange) or a limited liability company and twenty-five percent (25%) or more, in the aggregate, of the capital stock or ownership of any such corporation or limited liability company is sold, transferred, hypothecated or otherwise disposed; or (f) if any party comprising Grantor is a trust, and such trust is dissolved or liquidated or extraordinary distributions of the assets of such trust are made. The foregoing acts are herein referred to as a "Sale" and a Sale without the prior written consent of Beneficiary shall be an Event of Default hereunder. Beneficiary may withhold such consent in its sole and absolute discretion. Any consent by Beneficiary to one Sale shall not constitute a waiver of Beneficiary's rights hereunder with respect to any subsequent Sale. In the event of a Sale which is a conveyance without the prior written approval of Beneficiary, the Beneficiary may, without notice to the Grantor, deal with such successor or successors in interest with reference to this Deed of Trust and the Note in the same manner as with Grantor, without in any way releasing, discharging or otherwise affecting the liability of Grantor hereunder or under the Note or any other document evidencing or securing any Secured Obligation. No Sale shall affect Grantor's obligation to perform each term and provision hereof, nor release Grantor from any liability hereunder.

2.10 Advances. If Grantor shall fail to perform (and such failure continues beyond all applicable notice and cure periods) any of the covenants contained herein, in the Note, in any instrument constituting additional security for the Note, in any Permitted Exception, or in any document evidencing or securing any Secured Obligation, Beneficiary may, but without obligation to do so, make advances to perform same on behalf of Grantor, and all sums so advanced shall be secured by this Deed of Trust. Grantor shall repay on demand all sums so advanced in its

behalf with interest at the rate of eighteen percent (18%) per annum or the highest rate permitted to be charged by applicable law, whichever is the lesser (the "Advance Rate"), from the date of expenditure until the date repaid. Nothing herein contained shall prevent any such failure to perform on the part of Grantor from constituting an Event of Default and no exercise by Beneficiary of any right hereunder shall constitute a waiver of such Event of Default.

2.11 **Time.** Beneficiary, Grantor and Trustee agree that time is of the essence with respect to all their respective obligations under this Deed of Trust.

2.12 **Assignment of Rents, Leases and Income from Operations.** As additional security, Grantor assigns to Beneficiary all rents, income, revenues and profits arising from the Premises, and all of Grantor's right, title and interest in and to the Tenant Leases, including rent, if any, which flow directly from the Premises and all rents, and room rates derived from any operations on the Premises. Grantor shall have the right to collect, retain and use rentals from the Premises prior to an Event of Default. This assignment shall not operate to place the responsibility for the control, care, management, or repair of the Premises upon Beneficiary. Upon an Event of Default, Beneficiary shall have the right, at its election, independently or through a receiver, to collect the rents, income and profits arising from the Premises, without impairing any other right of Beneficiary. Grantor covenants and agrees that it shall promptly and faithfully perform, or cause to be performed, all of the covenants, conditions and agreements contained in all Tenant Leases that may exist from time to time on the part of the lessor thereunder to be kept and performed. Beneficiary shall have no obligation to collect rents or any other items of income or to perform any obligation with respect to any Tenant Lease that may exist from time to time. Following the occurrence of any Event of Default, Beneficiary may require Grantor to hold all rents and any items of income described herein in trust for Beneficiary, without commingling, and deliver the same to Beneficiary. In the event Beneficiary or a receiver collects rents or such items of income, then Grantor irrevocably appoints Beneficiary as its attorney-in-fact, deemed coupled with an interest, to demand, collect, receive, receipt for, sue for and recover all rents and income, to negotiate checks in connection with the foregoing, and to settle or compromise claims related to any Tenant Leases that may exist from time to time.

2.13 **Intentionally Omitted.**

2.14 **Inspections.** Beneficiary, and its agents, representatives and workmen, are authorized, but not obligated, to enter at any reasonable time upon or in any part of the Premises for the purpose of inspecting the same, and for the purpose of performing any of the acts it or Grantor is authorized to perform under the terms of this Deed of Trust.

2.15 **Imposition of Tax.** The enactment of any tax upon this Deed of Trust (whether chargeable against an owner, mortgagee or holder of an indebtedness) or upon all or any part of the Secured Obligations shall constitute an Event of Default, and Beneficiary may exercise any remedy available to it in the case of an Event of Default, unless Grantor: (a) lawfully pays the tax or charge, or reimburses Beneficiary therefor, and (b) agrees, in writing, within thirty (30) days after notice from Beneficiary that the tax law has been enacted, to pay the tax or charge or reimburse Beneficiary therefor.

2.16 **Land Use Matters.** Grantor warrants that: (a) the Real Property and Improvements do and shall at all times comply with the applicable zoning ordinance and comprehensive plan (and any overlay zoning ordinances or other land use control laws and ordinances), and all applicable land use permits and approvals, and (b) the Improvements and uses thereof are and shall be uses permitted as of right. Grantor shall not cause any zone change or comprehensive plan change with respect to the Real Property or the Improvements, submit the Premises to any form of condominium or planned community ownership, cause or allow any subdivision or partition with respect to the Premises or consent to the inclusion of the Premises in a special or local improvement district, without in each instance, obtaining the prior written consent of Beneficiary, which may be withheld by Beneficiary in its sole and absolute discretion.

2.17 **Utilities.** Grantor shall pay or cause to be paid when due all utility charges which are incurred by Grantor or others for the benefit of or for service to the Premises or which may become a charge or lien against the Premises for gas, electricity, water, sewer or other utility services furnished to the Premises and all other assessments or charges of a similar nature, whether public or private, affecting the Premises or any portion thereof.

3. **DEFAULT.**

3.1.1 **Events of Default.** The following, in addition to all other acts, events, and conditions declared to be events of default herein, are events of default hereunder ("Events of Default"):

(a) The occurrence of any event of default with respect to the Note or any other instrument or agreement which evidences or secures any of the Secured Obligations other than this Deed of Trust.

(b) Failure by Grantor to make any payment to Beneficiary when due in accordance with the terms of this Deed of Trust; provided, however, that no more frequently than once in any twelve (12) month period, Beneficiary shall provide Grantor with written notice of a default under this Section 3.1.1.(b) and a five (5) day period after such notice within which to cure the default identified in the notice.

(c) Failure by Grantor to perform any of the terms, covenants and conditions set forth in this Deed of Trust, other than the obligations mentioned in Sections 3.1(a) and (b), within fifteen (15) days of receipt of written notice from Beneficiary regarding the same; provided, however, that if such failure cannot be cured within such fifteen (15) day period despite commercially reasonable efforts, then the cure period shall be extended to provide Grantor with a reasonable opportunity (not to exceed forty-five (45) days) to cure such failure provided that Grantor (i) promptly commence such cure upon notice from Beneficiary, and (ii) diligently pursues completion of such cure until such cure is complete. Notwithstanding the foregoing, Grantor will not be granted a notice and cure period under this subsection (c) that would jeopardize Beneficiary's interest in the Premises or Beneficiary's ability to collect all amounts secured hereby.

(d) Breach of any warranty or representation given by Grantor to Trustee or Beneficiary.

(e) Without implying consent of Beneficiary to the creation of any lien encumbering the Premises, institution of foreclosure or other proceedings (either judicial or nonjudicial) to enforce any security interest or other lien or encumbrance (junior or senior) of any kind upon the Premises or any portion thereof or interest therein.

(f) Grantor or any successor or assign thereof: (i) files a voluntary petition in bankruptcy or for an arrangement or reorganization pursuant to the Federal bankruptcy statutes, or any similar law, state or Federal ("Bankruptcy Proceeding"); (ii) is the object of any involuntary Bankruptcy Proceeding which is not stayed or dismissed within sixty (60) days of filing; (iii) is adjudicated a bankrupt or declared insolvent in any Bankruptcy Proceeding; (iv) has a trustee or receiver appointed for it or has any court take jurisdiction of any of its property in any reorganization, arrangement, dissolution or liquidation proceeding, unless such trustee or receiver is discharged or if such jurisdiction be relinquished or vacated within thirty (30) days of appointment or commencement; or (v) makes an assignment for the benefit of its creditors or consents to an appointment of a receiver or trustee of any of its property.

(g) The occurrence or existence of any default (after passage of any applicable cure period) under any Permitted Exception.

3.2 Remedies. In addition to any other rights and remedies provided herein, in the Note, in any document evidencing or securing the Secured Obligations, or available at law or in equity, Beneficiary shall have the following rights and remedies upon the occurrence of any Event of Default:

(a) Acceleration. Beneficiary, by written notice given to Grantor, may declare the entire principal of the Note then outstanding, and all accrued and unpaid interest thereon, and all other Secured Obligations, to be due and payable immediately.

(b) Possession and Receiver. The Trustee or Beneficiary, personally or by its agents or attorneys, or through a duly appointed receiver, may enter into and upon all or any part of the Premises, and each and every part thereof, and may exclude the Grantor and its agents wholly therefrom; and may possess, use, operate, manage, improve and control the Premises. Trustee or Beneficiary shall be entitled to collect and receive all earnings, revenues, issues, profits and income of the Premises whether or not Beneficiary, Trustee, or a receiver is then in possession of the Premises. Beneficiary shall be entitled to the appointment of a receiver as a matter of right, whether or not the apparent value of the Premises exceeds the indebtedness secured hereby, and any receiver appointed may serve without bond. Employment by Beneficiary shall not disqualify a person from serving as a receiver. The exercise of any right under this Section 3.2(a) shall not be deemed an election of remedies nor a "pending action" so as to preclude the exercise of any other right or remedy.

The amounts borrowed from or advanced by Beneficiary shall bear interest at the Advance Rate from the date of expenditure until repaid, and such amounts and interest shall be an indebtedness of Grantor secured hereby.

(c) Uniform Commercial Code. Beneficiary shall have all of the remedies of a secured party under the Uniform Commercial Code as adopted in the State of Oregon

and any other applicable law. To the extent permitted by law, Grantor expressly waives any notice of sale or other disposition and notice of the exercise of any other right or remedy of Beneficiary arising by reason of an Event of Default hereunder, and to the extent any such notice is required and cannot be waived, Grantor agrees, for the purpose of this paragraph only, that if such notice is mailed, postage prepaid, to the Grantor at the above address at least five (5) days before the time of the sale or disposition, such notice shall be deemed reasonable and shall fully satisfy any requirement for giving of said notice.

(d) Sale. The Trustee may, and upon the written request of Beneficiary, shall, and the Beneficiary may to the extent permitted by law, with or without entry, personally or by its agents or attorneys as far as applicable:

(i) Sell the Premises and otherwise exercise the power of sale granted herein as a nonjudicial foreclosure of this Deed of Trust in the manner provided by applicable laws pertaining to the foreclosure of deeds of trust;

(ii) Institute proceedings for the complete or partial judicial foreclosure of this Deed of Trust as a mortgage in the manner provided by applicable law; and/or

(iii) Apply to any court of competent jurisdiction for the appointment of a receiver for the Premises to operate the same and collect all the earnings, revenues, issues, profits and income therefrom.

(e) Proceeds. In the event of any judicial or nonjudicial foreclosure sale made under or by virtue of Section 3.2(d), the entire outstanding principal of and interest on the Note, if not previously due and payable, and all other sums secured hereby, immediately thereupon shall become due and payable. The proceeds of any sale made under or by virtue of this Section 3.2(e), together with any other sums which then may be held by the Trustee or Beneficiary under this Deed of Trust shall be applied in the manner provided by law. Upon any judicial or nonjudicial sale made under or by virtue of this Section 3.2(e), the Beneficiary may bid for and acquire the Premises or any part thereof and in lieu of paying cash therefor may make settlement for the purchase price by crediting upon the indebtedness of the Grantor secured by this Deed of Trust the net sales price after deducting therefrom the expenses of the sale and the cost of the action and any other sums which the Beneficiary is authorized to deduct under this Deed of Trust.

(f) Tenancy at Will. In the event Grantor remains in possession of the Premises after the same have been sold as provided herein or after Beneficiary otherwise becomes entitled to possession of the same, Grantor shall become a tenant at will of Beneficiary or the purchaser of the Real Property and shall pay, while in possession, a reasonable rental for use of the Real Property and Improvements.

(g) Remedies Not Exclusive. No remedy granted herein is intended to be exclusive of any other remedy provided herein or at law or in equity, but each shall be cumulative. Each such remedy may be exercised singly, collectively or seriatim, and as often as may be deemed expedient by Trustee or Beneficiary. If there exists additional security for the performance of the obligations secured hereby, Beneficiary, at its sole option and without limiting or affecting any rights or remedies hereunder, may exercise any of the rights and remedies to which

it may be entitled hereunder either concurrently with whatever other rights it may have in connection with such other security or in such order as it may determine.

4. MISCELLANEOUS TERMS AND CONDITIONS.

4.1 **Acceptance of Trust; Notice.** The Trustee accepts this trust when this Deed of Trust, duly executed and acknowledged, is recorded. Trustee is not obligated to notify any party hereto of pending sale under any other deed of trust or of any action or proceeding in which Grantor, Beneficiary or Trustee shall be a party unless Trustee brings such action.

4.2 **Powers of Trustee.** Trustee or Beneficiary may from time to time apply in any court of competent jurisdiction for aid and direction in the execution of the trusts hereunder and the enforcement of the rights and remedies available hereunder, and Trustee or Beneficiary may obtain orders or decrees directing or confirming acts in the execution of said trusts. Grantor shall pay to Trustee reasonable compensation and reimbursement for services and expenses in the administration of the trusts created hereunder, including reasonable attorney fees, but in no event more than allowed by any applicable statute. Grantor agrees to and does indemnify Trustee and Beneficiary against all losses, claims, demands and liabilities which either may incur, suffer or sustain in the execution of the trusts created hereunder or in the performance of any act required or permitted hereunder or by law.

4.3 **Substitution of Trustee.** By a writing signed and acknowledged by Beneficiary and filed for record in the office of the recorder of the county in which the Real Property is situated, Beneficiary from time to time may appoint another trustee to act in the place and stead of Trustee or any successor.

4.4 **Leases.** In the event Beneficiary shall institute judicial proceedings to foreclose the lien hereof, and shall be appointed as a mortgagee in possession of the Premises, Beneficiary, during such time as it shall be mortgagee in possession, shall have, and Grantor hereby gives and grants to Beneficiary, the right, power and authority to make and enter into leases of the Premises or any portion thereof for such rents and for such periods of occupancy and upon such conditions and provisions as such mortgagee in possession may deem desirable, and Grantor expressly acknowledges and agrees that the term of any such lease may extend beyond the date of any sale of the Premises hereunder, it being the intention of Grantor that, while Beneficiary is a mortgagee in possession of the Premises, Beneficiary shall be deemed to be and shall be the attorney-in-fact of Grantor for the purpose of making and entering into leases of parts or portions of the Premises for the rents and upon the terms, conditions and provisions deemed desirable by Beneficiary. The power and authority hereby given and granted by Grantor to Beneficiary shall be deemed to be coupled with an interest and shall not be revocable by Grantor.

4.5 **Marshaling of Assets.** Grantor hereby expressly waives all rights to require a marshaling of assets by the Trustee or Beneficiary or to require Trustee or Beneficiary to first resort to the sale of any portion of the Premises which might have been retained by Grantor before foreclosing upon and selling any other portion thereof.

4.6 **Nonwaiver.** By accepting payment of any sum secured hereby after its due date or late performance of any obligation secured hereby, Beneficiary shall not waive its right

against any person obligated directly or indirectly hereunder or on any indebtedness hereby secured either to require prompt payment or performance when due of all other sums and obligations so secured or to declare a default for failure to make such payment. No exercise of any right or remedy by Trustee or Beneficiary hereunder shall constitute a waiver of any other right or remedy allowed herein, in any other document evidencing or securing any Secured Obligation, or at law or in equity. No delay or omission of the Trustee or Beneficiary in the exercise of any right, power or remedy accruing hereunder or arising otherwise shall impair any such right, power or remedy, or be construed to be a waiver of any default or acquiescence therein.

4.7 Rules of Construction. When the identity of the parties or the context of a provision makes it appropriate, the neuter gender shall include the feminine and masculine, and the singular shall include the plural. The headings of each section are for information and convenience only and shall not limit or affect the contents of any provisions hereof.

4.8 Severability. If any term of this Deed of Trust or the application thereof to any person or circumstance shall be invalid or unenforceable to any extent, the remainder of this Deed of Trust shall not be affected thereby, and each term of this Deed of Trust shall be valid and enforceable to the fullest extent permitted by law.

4.9 Successors in Interest; Joint and Several Liability. Subject to the limitations set forth in Section 2.9, this Deed of Trust applies to, inures to the benefit of, and is binding not only on the parties hereto, but on their heirs, executors, administrators, successors and assigns. If Grantor is comprised of more than one person or entity, then all obligations of Grantor hereunder are joint and several and each party comprising Grantor agrees and promises to pay the Secured Obligations. The term “Beneficiary” shall mean the holder and owner of the Note secured hereby, whether or not named as Beneficiary herein.

4.10 Notices. All notices to be given pursuant to this Deed of Trust shall be in writing and shall be sufficient if personally delivered or deposited in the United States Mail, postage prepaid, certified or registered mail, return receipt requested, addressed to the party to whom directed at its address shown above. Notices (as distinguished from payments) will be deemed received when personally delivered or two (2) days after deposit in the United States Mail. Any party may change its address set forth herein by giving ten (10) days prior written notice thereof to all other parties.

4.11 Modifications. This Deed of Trust may not be amended, modified or changed except by a written instrument signed by the parties hereto.

4.12 Attorney Fees. If any litigation or arbitration is instituted to enforce or interpret any provision hereof, or to foreclose this Deed of Trust, the prevailing party shall be entitled to collect, in addition to all other amounts and relief, its court costs, title search costs, and other reasonable attorney fees, incurred both at and in preparation for trial and any appeal or review, such amount to be set by the court before which the matter is heard. Without limitation on and in addition to the foregoing, Grantor agrees to reimburse Beneficiary for all such costs and fees which Beneficiary may incur in connection with any bankruptcy or similar proceeding wherein the Grantor, or any guarantor, surety or accommodation party is the “debtor,” including

(without limitation) issues peculiar to Federal bankruptcy law. If Beneficiary is the prevailing party, such costs and attorney fees shall be secured by this Deed of Trust.

4.13 Priority of Trust Deed. The terms of the obligation secured hereby may provide that the interest rate, payment terms or balance due may be indexed, adjusted or renewed. The priority of this Deed of Trust shall not be affected by renegotiation or adjustment of the interest rate provided in the Note (which may increase or decrease the amount of periodic payments or extend or shorten the term of this Deed of Trust), any increase in the underlying obligation as a result of deferment of all or a portion of interest payments and the addition of such payments to the outstanding balance of the obligation, or the execution of new agreements which reflect such changes.

4.14 Commercial Trust Deed. This Deed of Trust is a commercial trust deed and is not a residential trust deed, as the phrase “residential trust deed” is defined in ORS 86.705, and the provisions of ORS 86.705 through 86.815 applicable to the foreclosure of commercial trust deeds shall apply to this Deed of Trust at the option of Beneficiary. Grantor warrants that the loan secured hereby is for commercial purposes and is not for residential, household, personal or consumer purposes.

4.15 Mutual Negotiation. Beneficiary and Grantor confirm that they have mutually negotiated this Deed of Trust and that none of the terms or provisions of this Deed of Trust shall be presumptively construed against either party.

4.16 Report of Real Estate Transaction. Grantor has made or provided for making, or will make or provide for making, on a timely basis, any reports or returns required under Section 6045(e) of the Internal Revenue Code of 1986 as amended (the “Code”) (and any similar reports or returns required by state or local law) relating to the Premises, notwithstanding the fact that the primary reporting responsibility may fall on Beneficiary, counsel for Beneficiary, or another party. Grantor’s obligations under this paragraph will be deemed to be satisfied if proper and timely reports and returns required under this paragraph are filed by a title company or real estate broker involved in the real estate transaction relating to the Premises, but nothing contained herein shall be construed to require such returns or reports to be filed by Beneficiary or counsel for Beneficiary.

4.17 Assignment by Beneficiary. Beneficiary may assign this Deed of Trust in whole or in part to any person and may grant participation in any of its rights under this Deed of Trust, without notice and without affecting Grantor’s liability under this Deed of Trust. In connection with any proposed assignment, participation or similar arrangement, Beneficiary may make available to any person all credit and financial data furnished or to be furnished to Beneficiary by Grantor or any guarantor of the Note. Grantor agrees to provide to the person designated by Beneficiary any information as such person may reasonably require to form a decision regarding the proposed assignment, participation or other arrangement.

[Signature and acknowledgement on the following page.]

Executed as of the date first above written.

GRANTOR:

Arcadia Holdings, LLC,
an Oregon limited liability company

By: _____

Name: _____

Title: _____

STATE OF _____)
County of _____) ss.

This instrument was acknowledged before me this _____ day of December, 2025, by _____, the _____ of **Arcadia Holdings, LLC**, an Oregon limited liability company, on behalf of the company.

NOTARY PUBLIC FOR _____
My Commission Expires: _____

Exhibits:

A – Legal Description

Exhibit A
Legal Description

[See Attachment]

**AKS ENGINEERING & FORESTRY**

12965 SW Herman Road, Suite 100, Tualatin, OR 97062

P: (503) 563-6151

F: (503) 563-6152

AKS Job #11559-01

EXHIBIT**Adjusted Parcel 1 of Partition Plat No. 2020-03**

A portion of Parcel 1 of Partition Plat No. 2020-03, recorded as Instrument Number 2020-5170, Columbia County Records, located in the East One-Half of Section 9, and the West One-Half of Section 10, Township 4 North, Range 1 West, Willamette Meridian, City of St. Helens, Columbia County, Oregon, and being more particularly described as follows:

Commencing at the northwest corner of said Section 10; thence along the north line of said Section 10, South 88°24'43" East 418.70 feet to the northwesterly corner of Book 177, Page 23, Columbia County Records, and Book 178, Page 289, Columbia County Records; thence along the westerly line of said deeds on the following three (3) courses: South 22°44'17" West 226.63 feet, South 67°15'43" East 290.00 feet, South 22°44'17" West 304.86 feet to the southwesterly corner of said deeds and the Point of Beginning; thence along the southerly line of said deeds, South 67°15'43" East 415.00 feet; thence leaving said southerly line, South 60°37'13" East 45.30 feet to the northwesterly right-of-way line of Portland & Western Railroad (50.00 feet from centerline); thence along said northwesterly right-of-way line (variable width from centerline), South 67°15'43" East 25.00 feet; thence continuing along said northwesterly right-of-way line (25.00 feet from centerline), South 22°44'17" West 483.03 feet; thence leaving said northwesterly right-of-way line, North 67°16'05" West 210.28 feet; thence South 22°36'40" West 265.41 feet; thence South 26°39'01" West 74.89 feet; thence South 22°36'40" West 358.39 feet; thence North 67°08'46" West 259.55 feet to the northeasterly corner of Parcel 2 of said Partition Plat No. 2020-03; thence along the northeasterly line of said Parcel 2, North 67°08'46" West 307.77 feet to the northwesterly corner of said Parcel 2; thence leaving said northwesterly corner, North 67°08'46" West 271.82 feet; thence South 23°34'28" West 171.98 feet; thence North 66°11'51" West 132.94 feet; thence North 23°34'28" East 447.31 feet; thence North 66°25'32" West 300.00 feet; thence North 29°41'18" East 252.62 feet to the intersection of the southwesterly right-of-way line of Kaster Road (60.00 feet in width) and the southeasterly right-of-way line of Franklin Street (60.00 feet in width); thence along said southeasterly right-of-way line, North 30°33'22" East 160.00 feet to the northeasterly right-of-way line of Franklin Street; thence leaving said northeasterly right-of-way line, North 82°22'39" East 574.48 feet; thence North 88°22'28" East 492.86 feet to the Point of Beginning.

The above described tract of land contains 29.69 acres, more or less.

The Basis of Bearings for this description are based on said Partition Plat No. 2020-03.

10/23/2025

**REGISTERED
PROFESSIONAL
LAND SURVEYOR**

**OREGON
JANUARY 9, 2007
NICK WHITE
70652LS**

RENEWS: 6/30/26

Exhibit B-3
Environmental Indemnity Agreement

[See Attachment]

ENVIRONMENTAL INDEMNITY AGREEMENT

THIS ENVIRONMENTAL INDEMNITY AGREEMENT (this “Indemnity Agreement”) is executed and delivered as of December ____, 2025 (“Effective Date”), by Arcadia Holdings, LLC, an Oregon limited liability company (“Indemnitor”), to and for the benefit of the City of St. Helens, an Oregon municipal corporation (“Lender”).

RECITALS:

A. Lender has agreed to make a loan available to Indemnitor, as borrower, in the amount of **Two Million Nine Hundred Thirty Two Thousand Five Hundred Sixty Three and 28/100 Dollars** (\$2,932,563.28) (the “Loan”), to finance the acquisition of certain real property located in Columbia County, Oregon (as described more particularly on **Exhibit A** attached hereto, the “Property”).

B. In connection with the Loan, Indemnitor has executed and delivered to Lender a promissory note in favor of Lender of even date herewith (the “Note”) and certain other documents relating to the Loan and the Property (the “Loan Documents”). The Loan Documents include a Deed of Trust, Assignment of Rents, Security Agreement, and Fixture Filing (the “Deed of Trust”). This Indemnity Agreement is not secured by the Deed of Trust.

C. As a condition to making the Loan, Lender requires that Indemnitor indemnify Lender upon the occurrence of certain events as detailed below.

D. Lender has relied on the statements and agreements contained herein in agreeing to make the Loan.

AGREEMENTS:

In consideration of the Recitals set forth above and hereby incorporated herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Indemnitor hereby agrees as follows:

1. **Definitions.** Initially capitalized terms used and not otherwise defined herein shall have the meanings respectively ascribed to them in the Deed of Trust.

2. **Covenants.** Indemnitor shall, during the Term (as defined below):

(a) comply, and cause all other persons on or occupying the Property to comply, with any and all current and future federal, state, and local environmental laws, statutes, rules, regulations, and ordinances as the same shall be amended and modified from time to time, including, but not limited to, requirements under common law, state law, including but not limited to ORS 465.200 et seq.), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), the Clean Water Act (CWA), the Clean Air Act (CAA), and all rules and regulations of the U.S. Department of Agriculture, the Environmental Protection Agency and the Food and Drug Administration, as the same relate to produce, pesticides, herbicides,

“hazardous substances,” “hazardous waste,” “toxic substances,” pollutants and contaminants regulated or controlled thereby (“Environmental Laws”);

(b) not install, use, generate, manufacture, store, treat, release or dispose of, nor permit the installation, use, generation, storage, treatment, release or disposal of, hazardous substances, hazardous waste, toxic substances, pesticides, herbicides, pollutants, contaminants and all other substances regulated or controlled by Environmental Laws (“Hazardous Material”) on, under or about the Property, except for Hazardous Material safely and lawfully used in the operation and use of the Property;

(c) promptly after becoming aware of the same, advise Lender in writing of:

(i) any and all proceedings or notices relating to Environmental Laws (“Environmental Proceedings”);

(ii) the presence of any Hazardous Material on, under or about the Property of which Lender has not previously been advised in writing, and which is not otherwise permitted under Section 3(b) above;

(iii) any remedial action taken by, or on behalf of, Indemnitor in response to any Hazardous Material on, under or about the Property or to any Environmental Proceedings of which Lender has not previously been advised in writing;

(iv) the discovery by any Indemnitor of the presence of any Hazardous Material on, under or about any real property adjoining or in the vicinity of the Property of which Lender has not previously been advised in writing; and

(v) the discovery by any Indemnitor of any occurrence or condition on any real property adjoining or in the vicinity of the Property that could cause the Property or any part thereof to be subject to any restrictions on the ownership, occupancy, transferability or use of the Property under any Environmental Laws;

(d) provide Lender with copies of all reports, analyses, notices, licenses, approvals, orders, correspondences or other written materials in its possession or control relating to the environmental condition of the Property or real property adjoining the Property or Environmental Proceedings promptly following receipt, completion or delivery of such materials by or to Indemnitor;

(e) not create or permit to continue in existence any lien (whether or not such lien has priority over the lien created by the Deed of Trust) upon the Property imposed pursuant to any Environmental Laws; and

(f) not change or alter the present use of the Property if such change or modification will result in the presence of Hazardous Material on the Property in question at such a level that would increase the potential liability for Environmental Proceedings.

3. **Right of Entry and Disclosure of Environmental Reports.** From the Effective Date through to the date of repayment in full of the Loan (principal and accrued interest) plus one (1)

year (“Term”), Indemnitor hereby grants to Lender, its agents, employees, consultants and contractors, an irrevocable license and authorization to enter upon and inspect the Property at reasonable times and upon reasonable advance notice to avoid adversely impacting Indemnitor’s activities on and about the Property, and conduct such environmental testing, including, without limitation, subsurface testing, soils and groundwater testing, and other tests which may physically invade the Property, as Lender, in its reasonable discretion, determines are necessary or desirable. With respect to invasive testing, such as soil borings, Lender shall consult with Indemnitor in advance of such tests. Lender agrees, however, that it shall not conduct any such testing, unless (a) Lender reasonably believes that such test may disclose the presence or release of Hazardous Material occurring after the Effective Date, (and Lender shall provide to Indemnitor information to support such reasonable belief), or (b) an environmental test conducted by or on behalf of Lender deems further testing necessary. Without limiting the generality of the foregoing, Indemnitor agrees that Lender shall have the right to appoint a receiver to enforce this right to enter and inspect the Property to the extent such authority is provided under applicable law. All reasonable out-of-pocket costs and expenses incurred by Lender in connection with any inspection or testing conducted in accordance with this Section 3 shall be paid by Indemnitor. The results of all investigations and reports prepared by Lender pursuant to this Indemnity Agreement shall be and at all times remain the property of Lender; however, Lender shall make available to Indemnitor upon request copies of all such reports. Lender hereby reserves the right, and Indemnitor hereby expressly authorizes Lender to make available to any party in connection with a sale of the Property by Lender if Lender has succeeded to the ownership thereof (whether through foreclosure, conveyance in lieu thereof or otherwise) any and all reports, whether prepared by Lender or prepared by Indemnitor and provided to Lender (collectively, the “Environmental Reports”) which Lender may have with respect to the Property. Indemnitor consents to Lender notifying any party under such circumstances of the availability of any or all of the Environmental Reports and the information contained therein. Indemnitor further agrees that Lender may disclose such Environmental Reports to any governmental agency or authority if Indemnitor reasonably believes it is required to disclose any matter contained therein to such agency or authority; provided, that Lender shall give Indemnitor at least forty-eight (48) hours prior written notice before so doing unless disclosure is required earlier. Indemnitor acknowledges that Lender cannot control or otherwise assure the truthfulness or accuracy of the Environmental Reports, and that the release of the Environmental Reports, or any information contained therein, to prospective bidders at any foreclosure sale of the Property may have a material and adverse effect upon the amount which a party may bid at such sale. Indemnitor agrees that Lender shall not have any liability whatsoever as a result of delivering any or all of the Environmental Reports or any information contained therein to any third party, and Indemnitor hereby releases and forever discharges Lender from any and all claims, damages, or causes of action arising out of connected with or incidental to the Environmental Reports or the delivery thereof.

4. **Indemnitor’s Remedial Work.** Subject to the provisions of Section 3 above, Indemnitor shall promptly perform, or with respect to the corrective actions described in the Reports, if any, cause to be performed any and all necessary remedial work (“Remedial Work”) in response to any Environmental Proceedings or the presence, storage, use, disposal, transportation, discharge or release of any Hazardous Material under or about any of the Property in accordance with Environmental Laws; provided, however, that Indemnitor shall perform or cause to be performed such Remedial Work so as to minimize any impairment to Lender’s security under the Loan Documents. All Remedial Work shall be conducted:

(a) in a diligent and timely fashion by licensed contractors acting under the supervision of a consulting environmental engineer;

(b) pursuant to a detailed written plan for the Remedial Work approved by any public or private agencies or persons with a legal or contractual right to such approval, including without limitation the Department of Environmental Quality pursuant to Section 5.C of the PPA (as defined below);

(c) with such insurance coverage pertaining to liabilities arising out of the Remedial Work as is then customarily maintained with respect to such activities; and

(d) only following receipt of any required permits, licenses or approvals.

The selection of the Remedial Work contractors and consulting environmental engineer, the contracts entered into with such parties, any disclosures to or agreements with any public or private agencies or parties relating to Remedial Work and the written plan for the Remedial Work (and any changes thereto) shall each be subject to Lender's prior written approval, which shall not be unreasonably withheld or delayed. In addition, Indemnitor shall submit to Lender, promptly upon receipt or preparation, copies of any and all reports, studies, analyses, correspondence, governmental comments or approvals, proposed removal or other Remedial Work contracts and similar information prepared or received by Indemnitor in connection with any Remedial Work, or Hazardous Material relating to the Property. All costs and expenses of such Remedial Work shall be paid by Indemnitor, including, without limitation, the charges of the Remedial Work contractors and the consulting environmental engineer, any taxes or penalties assessed in connection with the Remedial Work and Lender's reasonable out-of-pocket costs incurred in connection with monitoring or review of such Remedial Work. Lender shall have the right but not the obligation to join and participate in, as a party if it so elects, any legal proceedings or actions initiated in connection with any Environmental Proceedings.

5. Lender acknowledges and agrees that: (a) Indemnitor is party to a Prospective Purchaser Agreement ("PPA") entered into with the Oregon Department of Environmental Quality in the form of an Order on Consent (DEQ No. 25-08) pursuant to ORS 465.327; (b) the PPA will be recorded in the deed records of Columbia County, Oregon upon Indemnitor's acquisition of title to the Property; (b) the PPA relates to the pre-existing environmental matters at the Property; (c) the benefits and burdens of the PPA run with the land; (d) this Indemnity Agreement does not supersede

or replace the PPA as it relates to such pre-existing Hazardous Materials on the Property; and (e) during the Term as defined in this Indemnity Agreement, the use of the Property, including without limitation the performance of any Remedial Work, shall be subject to any applicable requirements of the PPA. **Indemnity.**

Except as provided otherwise herein (including Section 3 above), Indemnitor shall protect, indemnify, defend and hold Lender and any successors to Lender's interest in the Property, and any other person or entity who acquires any portion of the Property at a foreclosure sale or otherwise through the exercise of Lender's rights and remedies under the Loan Documents, and all members, directors, officers, employees and agents of all of the aforementioned indemnified parties, harmless from and against any and all actual or potential claims, liabilities, damages (direct or indirect), losses, fines, penalties, judgments, awards, costs and expenses (including, without limitation, reasonable attorneys' fees and costs and expenses of investigation) (collectively, "Expenses") which arise out of or relate in any way to any breach of any representation, warranty or covenant contained herein, or any Environmental Proceedings arising after the date of this Agreement or any use, handling, production, transportation, disposal, release or storage of any Hazardous Material in, under or on the Property from and after the date of this Agreement, whether by Indemnitor or any other person (save and except for Lender and its successors, assigns, and their agents), including, without limitation:

- (a) all foreseeable and all unforeseeable Expenses arising out of:
 - (i) Environmental Proceedings or the use, generation, storage, discharge or disposal of Hazardous Material by Indemnitor and any agent of Indemnitor;
 - (ii) any residual contamination affecting any natural resource or the environment; or
 - (iii) any exercise by Lender of any of its rights and remedies hereunder; and
- (b) the costs of any required or necessary investigation, assessment, testing, remediation, repair, cleanup, or detoxification of the Property and the preparation of any closure or other required plans.

Indemnitor's liability to the aforementioned indemnified parties shall arise upon the earlier to occur of (1) discovery of any Hazardous Material on, under or about the Property, or (2) the institution of any Environmental Proceedings, and not upon the realization of loss or damage, and Indemnitor shall pay to Lender from time to time, immediately upon request, an amount equal to such Expenses, as reasonably determined by Lender. Indemnitor's liability to the aforementioned indemnified parties shall expire on the one (1) year anniversary of the repayment in full of the Loan, regardless of the date on which such liability arises pursuant to the previous sentence. In addition, in the event any Hazardous Material is removed, or caused to be removed from the

Property, by Indemnitor, Lender or any other person, the number assigned by the U.S. Environmental Protection Agency to such Environmental Proceedings or any similar identification shall in no event be in the name of Lender or identify Lender as a generator, arranger or other designation. The foregoing indemnity shall not include Expenses arising solely from Hazardous Material which (x) first existed on the Property prior to the date when Indemnitor or its affiliates took possession of and operation of the Property pursuant to that certain "License to Enter the Premises" attached as Exhibit B to that certain First Amendment to Purchase and Sale Agreement dated February 19, 2025 between Lender and Arcadia Paper Mills, LLC, an Oregon limited liability company, or (y) first exist on the Property following the date on which the Lender takes title to the Property, whether by enforcement of the Deed of Trust, deed-in-lieu thereof or otherwise.

6. **Remedies Upon Default.** In addition to any other rights or remedies Lender may have under this Indemnity Agreement, at law or in equity, in the event that Indemnitor shall fail to timely comply with any of the provisions hereof, or in the event that any representation or warranty made herein proves to be false or misleading in any material respect, then, in such event, after (i) delivering written notice to Indemnitor, which notice specifically states that Indemnitor has failed to comply with the provisions of this Indemnity Agreement; and (ii) the expiration of the earlier to occur of the sixty (60) day period after receipt of such notice or the cure period, if any, permitted under any applicable law, rule, regulation or order with which Indemnitor shall have failed to comply; provided, Lender shall have the right to provide less than sixty (60) days' written notice in the event Lender determines in its reasonable business judgment that the lapse of sixty (60) days without cure would or could jeopardize the interests of Lender; and provided, further, where Indemnitor is allowed sixty (60) days to cure a failure, such sixty (60) period shall be extended so long as Indemnitor demonstrates that it has promptly commenced cure and is diligently pursuing such cure to completion, but in no event longer than one hundred eighty (180) days. Following the applicable period described in the preceding sentence, Lender may declare an uncured Event of Default under the Loan Documents and exercise any and all remedies provided for therein, and/or do or cause to be done whatever is reasonably necessary to cause the Property to comply with all Environmental Laws and other applicable laws, rules, regulations or orders and the cost thereof shall constitute an Expense hereunder and shall become immediately due and payable without notice and with interest thereon at the Default Rate until paid. Indemnitor shall give to Lender and its agents and employees reasonable access to the Property for the purpose of effecting such compliance and hereby specifically grant to Lender a license, effective upon expiration of the applicable period as described above, if any, to do whatever is necessary to cause the Project to so comply, including, without limitation, to enter the Property and remove therefrom any Hazardous Material or otherwise comply with any Environmental Laws. Any license issued by Indemnitor pursuant to this Section 6 shall terminate at the expiration of the Term, unless extended by mutual written agreement by Indemnitor and Lender.

7. **Obligations.** The obligations set forth herein (including the provisions of Section 3), including, without limitation, Indemnitor's obligation to pay expenses hereunder, are collectively referred to as, the "Environmental Obligations". Except as provided in Section 3, notwithstanding any term or provision contained herein or in the Loan Documents, the Environmental Obligations are unconditional. Indemnitor shall be fully liable for the Environmental Obligations hereunder, and such liability shall not be limited to the original principal amount of the Loan. In the event of more than one Indemnitor the obligations set forth herein shall be joint and several and the

representations and covenants contained herein shall apply to each Indemnitor as if separately stated. Subject to the definition of Term above as applied to any Indemnitor obligation pursuant to this Indemnity Agreement, the Environmental Obligations shall survive the repayment of the Loan and any foreclosure, deed-in-lieu of foreclosure or similar proceedings by or through which Lender or any of its affiliates, nominees, successors or assigns or any other person bidding at a foreclosure sale may obtain title to the Property or any portion thereof. Notwithstanding anything to the contrary herein, the Environmental Obligations shall not include any liability arising from the acts or omissions of Lender as tenant under the Lease or as the owner of the Property prior to Indemnitor's acquisition of the Property from Lender.

8. **Waiver.** No waiver of any provision of this Indemnity Agreement nor consent to any departure by Indemnitor therefrom shall in any event be effective unless the same shall be in writing and signed by Lender and then such waiver or consent shall be effective only in the specific instance and for the specific purpose for which given. No notice to or demand on Indemnitor shall in any case entitle Indemnitor to any other or further notice or demand in similar or other circumstances.

9. **Exercise of Remedies.** Subject to the definition of Term above as applied to any Indemnitor obligation pursuant to this Indemnity Agreement, no failure on the part of Lender to exercise and no delay in exercising any right or remedy hereunder, at law or in equity, shall operate as a waiver thereof, and Lender shall not be estopped to exercise any such right or remedy at any future time because of any such failure or delay; nor shall any single or partial exercise of any such right or remedy preclude any other or further exercise of such right or remedy or the exercise of any other right or remedy.

10. **Assignment.** Lender may assign their interest under this Indemnity Agreement to any successor to its respective interests in the Property or the Loan Documents. This Indemnity Agreement may not be assigned or transferred, in whole or in part, by Indemnitor and any purported assignment by Indemnitor of this Indemnity Agreement shall be void ab initio and of no force or effect.

11. **Counterparts.** This Indemnity Agreement may be executed in any number of counterparts and by different parties in separate counterparts, each of which when so executed and delivered shall be deemed to be an original and all of such counterparts taken together shall constitute but one and the same instrument.

12. **Governing Law.** This Indemnity Agreement shall be governed by, and shall be construed in accordance with, the laws of the State of Oregon.

13. **Modifications.** This Indemnity Agreement may be amended or modified only by an instrument in writing which by its express terms refers to this Indemnity Agreement and which is duly executed by Indemnitor and consented to in writing by Lender.

14. **Attorneys' Fees.** In the event that either Lender or Indemnitor commences litigation for the interpretation, enforcement, termination, cancellation or rescission of this Indemnity Agreement, or for damages for the breach of this Indemnity Agreement by either Lender or Indemnitor, the

winning party in such event shall be entitled to its reasonable attorneys' fees, court, and other costs incurred in connection therewith.

15. **Interpretation.** This Indemnity Agreement has been negotiated by parties knowledgeable in the matters contained herein, with the advice of counsel, is to be construed and interpreted in absolute parity, and shall not be construed or interpreted against any party by reason of such party's preparation of the initial or any subsequent draft of the Loan Documents or this Indemnity Agreement.

16. **Severability.** If any term or provision of this Indemnity Agreement shall be determined to be illegal or unenforceable, all other terms and provisions in this Indemnity Agreement shall nevertheless remain effective and shall be enforced to the fullest extent permitted by law.

17. **Other Laws.** Nothing in this Indemnity Agreement, and no exercise by Lender of its rights or remedies under this Indemnity Agreement, shall impair, constitute a waiver of, or in any way affect Lender's rights and remedies with respect to Indemnitor under any Environmental Laws, including without limitation, contribution provisions or private right of action provisions under such Environmental Laws.

[SIGNATURE APPEARS ON THE FOLLOWING PAGE]

The headings of each section herein are for convenience only and do not limit or construe the contents of any provisions of this Indemnity Agreement.

IN WITNESS WHEREOF, Indemnitor has caused this Indemnity Agreement to be executed as of the day and year first above written.

INDEMNITOR:

Arcadia Holdings, LLC,
an Oregon limited liability company

By: _____

Name: _____

Title: _____

EXHIBIT A**Legal Description of Property**

Adjusted Parcel 1 of Partition Plat No. 2020-03

A portion of Parcel 1 of Partition Plat No. 2020-03, recorded as Instrument Number 2020-5170, Columbia County Records, located in the East One-Half of Section 9, and the West One-Half of Section 10, Township 4 North, Range 1 West, Willamette Meridian, City of St. Helens, Columbia County, Oregon, and being more particularly described as follows:

Commencing at the northwest corner of said Section 10; thence along the north line of said Section 10, South 88°24'43" East 418.70 feet to the northwesterly corner of Book 177, Page 23, Columbia County Records, and Book 178, Page 289, Columbia County Records; thence along the westerly line of said deeds on the following three (3) courses: South 22°44'17" West 226.63 feet, South 67°15'43" East 290.00 feet, South 22°44'17" West 304.86 feet to the southwesterly corner of said deeds and the Point of Beginning; thence along the southerly line of said deeds, South 67°15'43" East 415.00 feet; thence leaving said southerly line, South 60°37'13" East 45.30 feet to the northwesterly right-of-way line of Portland & Western Railroad (50.00 feet from centerline); thence along said northwesterly right-of-way line (variable width from centerline), South 67°15'43" East 25.00 feet; thence continuing along said northwesterly right-of-way line (25.00 feet from centerline), South 22°44'17" West 483.03 feet; thence leaving said northwesterly right-of-way line, North 67°16'05" West 210.28 feet; thence South 22°36'40" West 265.41 feet; thence South 26°39'01" West 74.89 feet; thence South 22°36'40" West 358.39 feet; thence North 67°08'46" West 259.55 feet to the northeasterly corner of Parcel 2 of said Partition Plat No. 2020-03; thence along the northeasterly line of said Parcel 2, North 67°08'46" West 307.77 feet to the northwesterly corner of said Parcel 2; thence leaving said northwesterly corner, North 67°08'46" West 271.82 feet; thence South 23°34'28" West 171.98 feet; thence North 66°11'51" West 132.94 feet; thence North 23°34'28" East 447.31 feet; thence North 66°25'32" West 300.00 feet; thence North 29°41'18" East 252.62 feet to the intersection of the southwesterly right-of-way line of Kaster Road (60.00 feet in width) and the southeasterly right-of-way line of Franklin Street (60.00 feet in width); thence along said southeasterly right-of-way line, North 30°33'22" East 160.00 feet to the northeasterly right-of-way line of Franklin Street; thence leaving said northeasterly right-of-way line, North 82°22'39" East 574.48 feet; thence North 88°22'28" East 492.86 feet to the Point of Beginning.

The above described tract of land contains 29.69 acres, more or less.

The Basis of Bearings for this description are based on said Partition Plat No. 2020-03.

10/23/2025



Exhibit B-4
Operating Covenants Agreement

[See Attachment]

OPERATING COVENANTS AND AGREEMENTS (Arcadia Mill Property, St. Helens Industrial Park)

This Operating Covenants and Easements Agreement (“**Agreement**”) is made and entered into effective as of _____, 2025 (“**Effective Date**”), by and between (i) **Arcadia Paper Mills, LLC**, a State of Oregon limited liability company (“**Arcadia**”), and (ii) **The City of St. Helens, Oregon**, an Oregon municipal corporation (“**St. Helens**”). Hereafter, St. Helens and Arcadia are sometimes referred to each as, a “**Party**” and collectively as, the “**Parties**.”

RECITALS

WHEREAS, contemporaneously with the delivery of this Agreement, St. Helens has sold and conveyed to Arcadia the real property legally described on Exhibit A-1 attached hereto (the “**Arcadia Property**”) pursuant to the terms of that certain Purchase and Sale Agreement between St. Helens and Arcadia dated August 30, 2024 (as amended, the “**PSA**”);

WHEREAS, St. Helens owns certain real property adjacent to the Arcadia Property legally described on Exhibit A-2 attached hereto (the “**City Property**”), and St. Helens generally has a right and interest in maintaining certain rights and controls with respect to the land located at the property generally known as the “St. Helens Industrial Business Park,” which includes the Arcadia Property and City Property.

WHEREAS, pursuant to the terms of Section 8 of the PSA, the Parties agreed to execute and deliver at the closing of the sale of the Arcadia Property an agreement regarding the matters set forth in this Agreement.

WHEREAS, in connection with the boundary line adjustment process undertaken to create the Arcadia Property, St. Helens executed and recorded a “Declaration of Easements (Blanket Easement to Use Mill-Serving Improvements)” benefitting and burdening City Property and the Arcadia Property and recorded as Instrument No. _____ in the real property records of the Columbia County (Oregon) Clerk’s Office (the “**Blanket Easement**”). Pursuant to the terms of the Blanket Easement, any “Mill-Serving Improvements” (as defined therein) serving more than just the Arcadia Property must be subject to agreements with the owners of the other served properties regarding the use, maintenance, repair, and replacement of such improvements. This Agreement is intended to serve such purpose with Arcadia for so long as Arcadia owns the Arcadia Property. Upon any “Transfer Event” (as defined in Section 10(c) of this Agreement below), the rights granted to Arcadia pursuant to Sections 1 and 2 of this Agreement shall immediately expire, as provided herein below in greater detail, unless such rights expire earlier by their terms.

OPERATIVE PROVISIONS

NOW, THEREFORE, in consideration of the foregoing Recitals, which Recitals are incorporated herein by this reference, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and in consideration of mutual covenants contained herein, St. Helens and Arcadia hereby agree as follows:

1. Effluent Clarifier System License.

(a) Grant of Temporary License. Arcadia is hereby granted a temporary license (the “**Effluent Clarifier License**”) to use the primary effluent clarifier and support equipment located upon the City Property, including, without limitation, the pump and piping system supporting the larger effluent clarifier system (collectively, the “**St. Helens Effluent Clarifier System**”). The St. Helens Effluent Clarifier System is located on real property described on Exhibit B attached hereto. The Effluent Clarifier License shall commence on the Effective Date and expire on the earliest to occur of (i) the fifth (5th) anniversary of the Effective Date, (ii) such earlier date as Arcadia may cease its use and operation of the St. Helens Effluent Clarifier System, or (iii) upon any Transfer Event (the “**License Period**”). The Effluent Clarifier License is only granted in connection with the use and operation of the Arcadia Property. Arcadia’s use of the St. Helens Effluent Clarifier System shall not (and shall not in the future be permitted to), at any time, violate the terms, conditions, requirements, and limitations set forth in any permits related to the use, operation, and maintenance of the St. Helens Effluent Clarifier System.

(b) Maintenance of St. Helens Effluent Clarifier System. For so long as Arcadia uses the St. Helens Effluent Clarifier System, Arcadia shall be responsible for all maintenance and repair, at its sole cost and expense, which may be reasonably necessary or appropriate in order to keep such system in good condition and repair. Prior to undertaking any non-emergency maintenance, repair, or replacement work on the St. Helens Effluent Clarifier System, Arcadia shall provide St. Helens with two (2) weeks’ prior written notice of such proposed work; *provided, however*, that if the need for such work could not be reasonably anticipated by a prudent owner more than 2-weeks in advance of the date when such work is to be conducted, Arcadia shall provide the City with as much prior written notice as is reasonably possible under the circumstances. In the event that emergency repair or replacement work is reasonably necessary, such that prior written notice to St. Helens is not reasonably possible, then Arcadia shall provide St. Helens with notice of the work conducted and specific emergency situation that gave rise to such work within twenty four (24) hours after commencing such emergency work. St. Helens shall have the right to either approve proposed work or require such modifications of Arcadia’s proposed maintenance and repair work as St. Helens may deem appropriate in its reasonable discretion (and, to the extent St. Helens is not given notice of any particular item of work until after the work is completed, in such instances St. Helens may advise Arcadia of its disapproval of Arcadia conducting such work in the future). In the event of any breach of Arcadia’s obligations under this Section 1(b), and such breach continues for five (5) business days after St. Helens’ written notice to Arcadia of such breach (provided that no notice shall be required in the event of an emergency), then in addition to the rights and remedies set forth in Section 17 below, St. Helens shall be permitted to engage in all necessary maintenance and repair work and receive immediate reimbursement from Arcadia for such costs and expenses, plus a 10% service charge.

(c) Construction of Arcadia Effluent Clarifier System. During the License Period, Arcadia intends to design and build a new effluent treatment system on the Arcadia Property (the “**Arcadia Effluent Clarifier System**”). The construction, operation, maintenance, repair, and replacement of the Arcadia Effluent Clarifier System will require an easement to connect the discharge of the Arcadia Effluent Clarifier System to the discharge pipe of the St.

Helens Effluent Clarifier System (such easement being discussed in greater detail in subsection (d) below). In no event shall the Arcadia Effluent Clarifier System be allowed to connect to the “input” side of the St. Helens Effluent Clarifier System, and any such system design will not comply with, and will be deemed a violation of, the requirements of this Agreement. The Arcadia Effluent Clarifier System must bypass the St. Helens Effluent Clarifier System and connect to a new system on the “discharge” side of the existing clarifier system, such connection and system being subject to the reasonable prior review and approval by St. Helens, such approval not to be unnecessarily withheld or delayed. In the event that St. Helens has, or anticipates (in its discretion) having the in future, other users utilizing the St. Helens Clarifier System after the Arcadia Clarifier System’s installations and connections to the St. Helens Clarifier System, then Arcadia shall install a separate flow meter so that Arcadia’s effluent can be monitored and billed separately from other users.

(d) Arcadia Effluent Clarifier System to the discharge pipe of the St. Helens Effluent Clarifier System. Arcadia’s connection to (and use of) the St. Helens Effluent Clarifier System shall not (and shall not in the future be permitted to), at any time, violate the terms, conditions, requirements, and limitations set forth in any permits related to the use, operation, and maintenance of the St. Helens Effluent Clarifier System.

(e) Arcadia Effluent Clarifier System-Related Easements. If the terms and conditions of subsection (c) above have been previously complied with, then only in such event upon commencement of construction of the Arcadia Effluent Clarifier Systems St. Helens shall grant to Arcadia (“**Arcadia System Easement**”), for the benefit of the Arcadia Property, the easement attached hereto as Exhibit C. The Arcadia System Easement addresses connecting the Arcadia Effluent Clarifier System to the discharge side of the existing St. Helens Effluent Clarifier System, subject to the terms and limitations set forth in subsection (c) above and the other terms and conditions set forth in the Arcadia System Easement. The Arcadia System Easement will be executed and recorded promptly

2. Water Intake System. Arcadia and St. Helens acknowledge and agree that they have deemed it in the best interests of both parties for St. Helens to delegate to Arcadia, for the duration of the Arcadia Ownership Period, primary operational control over (and use of) the river water intake pumps, screen(s), fresh water clarifiers (Clarifloculators), the fresh water filter plant, and supporting equipment (the “**Water Intake System**”) that provide fire suppression and process water to the Arcadia Property, subject to the terms, conditions, and limitations set forth in this Agreement. The “**Arcadia Ownership Period**” refers to the time period commencing on the Effective Date of this Agreement, and expiring immediately upon the occurrence of any Transfer Event (as defined in Section 10(c) below). All of Arcadia’s rights to control and use the Water Intake System pursuant to the terms of this Section 2 shall immediately expire and be of no further force or effect immediately upon the expiration of the Arcadia Ownership Period, and St. Helens shall assume exclusive control over the use of the Water Intake System at such time. In connection with the assumption of control of the Water Intake System:

(a) Existing Blanket Easement. The Parties acknowledge that the “Pump House Easement” contemplated by the PSA is not necessary because the requisite easement rights have been previously created by the Blanket Easement (such Blanket Easement rights shall be

exercised in accordance with and subject to the terms, conditions, and agreements set forth in this Agreement).

(b) Operational Oversight. Notwithstanding the rights granted to Arcadia pursuant to this Section 2, St. Helens retains all powers (i) to oversee and reasonably manage or direct Arcadia's control and operation of the Water Intake System, (ii) direct the allocation and delivery of water among the properties (other than the Arcadia Property) served by the Water Intake System, and (iii) engage in any maintenance, repair, or replacement activities that St. Helens deems appropriate to protect its Water Intake System, upon reasonable prior notice to Arcadia. Any breach of this subsection (b) by Arcadia, or any failure to permit St. Helens to exercise its retained rights under this subsection (b) in a timely manner, shall constitute a breach of this Agreement allowing St. Helens to (x) resume control over and operation of the Water Intake System for such time as St. Helens deems reasonably necessary, and (y) exercise such other rights and remedies as may exist pursuant to Section 17 below.

(c) Maintenance. Arcadia shall be responsible for all maintenance and repair to the Water Intake System, at its sole cost and expense, which may be reasonably necessary or appropriate in order to keep such Water Intake System in good condition and repair. St. Helens may, from time to time, require that Arcadia engage in such activities as St. Helens in its reasonable discretion may deem appropriate for keeping the Water Intake System in good condition and repair. Prior to undertaking any such maintenance and repair, Arcadia shall provide St. Helens with reasonable prior written notice of such proposed work (and in any event at least two (2) weeks' advance notice, except in the event of an emergency), and St. Helens shall have the right to either approve such proposed work or require such modifications to Arcadia's proposed maintenance and repair work as St. Helens may deem appropriate in its reasonable discretion. In the event of any breach of Arcadia's obligations under this Section 2(c), and such breach continues for five (5) business days after St. Helens' written notice to Arcadia of such breach (provided that no notice shall be required in the event of an emergency), then in addition to the rights and remedies set forth in Section 17 below, St. Helens shall be permitted to engage in all necessary maintenance and repair work and receive immediate reimbursement from Arcadia for such costs and expenses, plus a 10% service charge.

(d) Critical Nature of St. Helens' Rights. Arcadia acknowledges that, because the Water Intake System serves properties other than the Arcadia Property, compliance with the terms and provisions of this Section 2 are of critical importance to St. Helens and breach of the terms of this Section 2 may cause irreparable harm and damages to the parties served by the Water Intake System.

3. Agreement to Supply Water to Arcadia Property.

(a) St. Helens owns a water right issued by and identified in the records of the Oregon Water Resources Department as Water Right Certificate No. =85053, which certificate authorizes certain use of water for industrial purposes at the real property identified therein (the "**City Water Right**"). The transfer of such right is not part of this transaction, and St. Helens is retaining all of its rights under the City Water Right.

(b) Subject to the terms and conditions set forth in this Agreement, St. Helens agrees to provide Arcadia with water supply for use only as fire suppression and process water in connection with the operation of the paper mill located on the Arcadia Property (and no other use shall be permitted), in a maximum amount equal to no more than fifty percent (50%) of the total gallons per day of water supply that, pursuant to the City Water Right, St. Helens is permitted from time to time to draw from the Columbia River and deliver to the Arcadia Property and surrounding parcels of land (such amount of water allowed to be drawn by St. Helens being called the “**City’s River Water Allocation**”). According to the face of the City Water Right, the maximum rate/volume of allowed use is 65.0 cubic feet (approximately Forty Million (40,000,000) gallons per day). To the extent that St. Helens is permitted to draw its maximum allocation, this would result in no more than Twenty Million (20,000,000) gallons per day being available to Arcadia pursuant to the terms of this water supply agreement. Should St. Helens receive notification that the City’s River Water Allocation will be reduced in any given year, such that the maximum amount of water supply available to Arcadia pursuant to the terms of this Section 3(b) will be reduced, then St. Helens agrees to notify Arcadia within five (5) business days of receipt of such notice.

(c) Arcadia’s use and receipt of water supply pursuant to this Section 3, and the provision of water supply to Arcadia pursuant to the terms of this Section 3, shall be subject to all applicable statutes, codes, and other governmental regulations, including without limitation St. Helens Municipal Code Chapter 13 (collectively, “**all Applicable Laws**”). As a condition of receiving utility service, Arcadia shall agree to comply with all ordinances, rules and regulations related to such water service, and provide all requisite application paperwork required by local ordinances. In no event shall St. Helens be obligated to provide water supply pursuant to this Section 3 for any use other than fire suppression and process water in connection with operation of the paper mill on the Arcadia Property, and the right to receive water supply under this Section 3 shall immediately terminate and be of no further force or effect upon the cessation of operation of the paper mill on the Arcadia Property (other than temporary closures during any repair or restoration of the improvements on the Arcadia Property, provided such repair or restoration work is conducted in a continuous and diligent manner).

4. Fire Protection System. The fire protection system located upon the Arcadia Property (the “**Fire Protection Water System**”) is designed for the operation of the paper mill and currently provides fire protection water to that certain adjacent property legally described on Exhibit C, which is currently connected to the Fire Protection Water System (“**Connected 3rd Party Property**”). Arcadia must continue to operate the Water Intake System and the Fire Protection Water System specifically in a manner that continuously provides fire protection water to the Connected 3rd Party Property in the same manner as has been provided to such properties to-date. Arcadia shall only be relieved of its obligation under the previous sentence upon such date and time as Arcadia and all owners of the Connected 3rd Party Property reach an agreement to enable the separation of the Fire Protection Water System from the Connected 3rd Party Property (such agreement shall, among other matters, provide for provision of fire protection water to the Connected 3rd Party Property until the systems are separated and the Connected 3rd Party Property are receiving fire protection water in compliance with all Applicable Laws). Notwithstanding the foregoing, Arcadia’s obligations stated above shall be limited only to using the existing piping from the Arcadia Property to the Connected 3rd Party Property consistent with St. Helens’ current

practices at the Arcadia Property. Arcadia intends, initially, to operate the Fire Protection Water System within the requirements of Factory Mutual insurance, as provided by Arcadia's insurance provider. At all times, Arcadia shall operate the Fire Protection Water System: (i) in accordance with all requirements of its insurance providers insuring the Property from time-to-time, (ii) in accordance with all applicable local and state fire codes and regulations and other Applicable Laws; and (iii) by having on-site and third-party 24/7 fire monitoring. Notwithstanding any provision of this Agreement to the contrary, St. Helens shall have no obligation to oversee Arcadia's use, control, maintenance, repair, and replacement of the Water Intake System and Fire Protection Water System, as all liability and responsibility with respect to such systems shall lie with Arcadia. Notwithstanding the foregoing, if St. Helens requires (in its sole discretion) access to the following items, in order to preserve any legal rights of St. Helens or to protect against any legal liabilities asserted against St. Helens, then in such event Arcadia shall make the following available for St. Helens' review Arcadia's: (i) fire protection monitoring system, (ii) fire protection preventative maintenance logs, and (iii) access to the pump houses and related equipment. Arcadia is solely responsible for, and expressly assumes all liability and obligations arising in connection with, the provision of fire protection water to the Connected 3rd Party Property served by the Fire Protection Water System; Arcadia assumes no responsibility, liability, or obligation with respect to the provision of fire protection water to any property other than the Connected 3rd Party Property. In the event that any interruptions in the Fire Protection Water System service must occur from time to time during the year, on account of necessary maintenance and repair activities, Arcadia will provide St. Helens with reasonable prior notice of such interruptions.

5. Permits.

(a) **Stormwater Permit Compliance.** Arcadia is obligated to comply with all applicable stormwater permitting requirements that may exist from time to time, and Arcadia shall be solely responsible for addressing at its sole cost and expense all matters related thereto (including, without limitation, the overseeing of all active onsite actions needed to comply with the Arcadia Property's stormwater management plan), to maintain documentation regarding the same, and to provide St. Helens with copies of the same on such intervals as the City may require.

(b) With respect to any and all permits held or required in connection with the use and operation of the Arcadia Property (collectively, "**Permits**"), whether held in Arcadia's name or St. Helens', Arcadia shall bear sole liability in connection with any violations of or non-compliance with any such Permits, and shall indemnify and hold harmless St. Helens against all claims, costs, losses, and expenses arising in connection with such violations and non-compliances occurring during the time period when such Permits are being exercised by Arcadia.

6. Indemnity. Arcadia shall indemnify, defend (with counsel reasonably satisfactory to St. Helens), and hold St. Helens and its officers, directors, employees, members, partners, and shareholders (collectively, the "**St. Helens Indemnitees**") harmless from and against any and all claims, damages, losses, liabilities, fees, fines, penalties, actions, causes of action, costs and expenses (including without limitation reasonable attorneys' fees and costs) (collectively, the "**Claims**") to the extent arising from or related to: (i) any violations and/or alleged violations of the National Pollutant Discharge Elimination System (NPDES) permit for the Clarifier System

arising after the Effective Date caused by the acts or omissions of Arcadia (including, without limitation, any costs by St. Helens incurred in responding to verified violations arising during Arcadia's exclusive operation of the Clarifier System); (ii) Arcadia's operation of the Water Intake System and the Fire Protection Water System; (iii) the provision of fire protection water (or failure to provide fire protection water) to the Connected 3rd Party Property served by the Fire Protection Water System, until such time as the Fire Protection Water System is altered and/or replaced in a manner so as to provide that the only real property served by the Fire Protection System is the Arcadia Property; and (iv) any verified violations or non-compliance with any Permits.

7. Notices. Any notice, consent or other communication permitted or required by this Agreement shall be in writing, and shall be given to each party, at the address for such party that is registered with the Oregon Secretary of State as the party's principal place of business in the State (or, in the case of the St. Helens, at the then-current address of the St. Helens city hall offices, attention: City Administrator), in the following manner: (a) personal delivery; (b) reputable overnight delivery service with proof of delivery; (c) United States Mail, postage prepaid, registered or certified mail, return receipt requested; (d) legible facsimile transmission (provided, that documentation of completed transmission is retained); or (e) by PDF attachment to e-mail. Such notice shall be deemed to have been given or delivered upon the date of actual receipt or delivery (or refusal to accept delivery), as evidenced by the notifying party's receipt of written or electronic confirmation of such delivery, refusal, or delivery failure despite use of the correct email notice address, if received by the party to be notified between the hours of 8 a.m. and 5 p.m. Pacific time on any business day, with delivery made after such hours to be deemed received on the following business day.

8. Severability. Invalidity of any of the provisions contained in this Agreement, or of the application thereof to any person by judgment or court order, shall in no way affect any of the other provisions hereof or the application thereof to any other person and the same shall remain in full force and effect.

9. Negation of Partnership. None of the terms or provisions of this Agreement shall be deemed to create a partnership between or among the Parties in their respective businesses or otherwise, nor shall it cause them to be considered joint venturers or members of any joint enterprise. Neither Party shall have the right to act as an agent for the other.

10. Transfer or Assignment; Successors and Assigns; Termination of Rights upon Transfer.

(a) In no event shall any of the rights and interests of Arcadia under this Agreement be assignable or otherwise transferrable. The rights and interests under this Agreement may only be exercised by the fee title owner of the Arcadia Property. Following the occurrence of any Transfer Event (as that term is defined below), this Agreement shall immediately terminate and be of no further force and effect; provided, however, that any liability for defaults and/or amounts due and payable pursuant to this Agreement shall survive such termination. The occurrence of any "Transfer Event" (as defined below) without strict adherence to the terms and provisions of this Section 10 shall constitute a default by Arcadia under this Agreement. .

(b) If Arcadia wishes to enter into a transaction or undertake any other action that would cause or result in a Transfer Event, then Arcadia shall provide prior written notice to St. Helens of such proposed transaction or other actions and whether or not the Arcadia Property will be operated as an operational paper mill after giving effect to the Transfer Event.

(c) If the Arcadia Property will be operated as an operating paper mill after giving effect to the Transfer Event, then Arcadia may make a payment of \$1,000,000 to St. Helens (the “**Transfer Fee**”) and St. Helens will undertake the following actions: (i) St. Helens will submit Arcadia’s request to a formal city approval process, and such approval shall not be unreasonably withheld, conditioned, or delayed by St. Helens, provided that Arcadia demonstrate to St. Helens’ reasonable satisfaction the financial and operation capability of the new owner of the Arcadia Property to sustain and operate the mill thereon in accordance with all Applicable Laws and commercially reasonable operating standards; *provided, however*, that such approval shall be subject to all Applicable Laws; (ii) if such approval is granted, it shall be one-time in nature and only be valid with respect to the specific Transfer Event tendered for approval by St. Helens; and (iii) if such approval is granted, St. Helens shall enter into a new written agreement with the new owner of the Arcadia Property (or with Arcadia, if the Transfer Event changes ownership of Arcadia as defined in the definition of “Transfer Event”) containing the same water supply usage rights and limitations (upon essentially the same terms and conditions as are contained in this Agreement, including, without limitation, the requirement that such water supply be used only in connection with operation of the paper mill at the Arcadia Property), and such agreement will also entail terms and conditions regarding the use, operation, and maintenance of the water intake system, effluent systems, and easement or license rights. If St. Helens does not approve the Transfer Event, in its reasonable discretion, then St. Helens shall provide Arcadia with a written determination including reasonably specific details regarding the grounds for such disapproval and guidance on how such disapproval items can be rectified or otherwise addressed, and Arcadia may re-submit its request for approval. If at any point in the approval process Arcadia elects to withdraw its approval request with respect to a Transfer Event, then its \$1,000,000 payment shall be reimbursed immediately by St. Helens.

(d) The terms of subsection (c) shall in no event be deemed to require Arcadia to pay the aforementioned Transfer Fee and submit to the foregoing process with respect to a Transfer Event that will result in the future owner operating a paper mill. Arcadia may request that St. Helens consider approving a Transfer Event in St. Helens’ sole, absolute and exclusive discretion, and such approval shall be subject to such terms, conditions, requirements, and other matters as St. Helens may determine in its sole, absolute, and exclusive discretion. In no event shall Arcadia have any right under this Agreement to challenge or contest such decision; provided, however, that the foregoing shall not be deemed to waive any legal rights of Arcadia arising from sources other than pursuant to this Agreement.

(e) If the Arcadia Property will cease to be operated as an operating paper mill after giving effect to the Transfer Event, then Arcadia may submit a request to St. Helens stating that St. Helens spend between sixty (60) and one hundred twenty (120) days (as determined in St. Helens’ reasonable discretion based upon the course of negotiations) negotiating a new agreement with the proposed new owner of the Arcadia Property (or with Arcadia, if the Transfer Event changes ownership of Arcadia as defined in the definition of “Transfer Event”), which shall

address water supply at the Arcadia Property and such other matters (including, without limitation, the division of responsibilities around operation of all relevant utility and operating systems at and around the Arcadia Property) as St. Helens deems appropriate in its sole, absolute, and exclusive discretion.

(f) For purposes of this Agreement, the term “**Transfer Event**” shall refer to any of the following transactions: any sale, transfer, conveyance, or ground lease of all or any portion of the Arcadia Property, or any sale or other transfer of a controlling ownership interest (whether such transfer or sale is of a direct controlling interest, or an indirect controlling interest) in, or the power to control, Arcadia.

(g) Notwithstanding anything to the contrary in this Agreement, Arcadia may assign or transfer this Agreement, in whole but not in part, without the prior written consent of the other Party, to any “Affiliate of Arcadia” (as defined below); provided, that Arcadia delivers to St. Helens reasonable documentation evidencing the applicable Affiliate relationship within five (5) business days after such permitted affiliate assignment or transfer occurs. Any assignment in accordance with this Section 10(g) shall not relieve Arcadia of its obligations hereunder unless expressly agreed in writing by St. Helens.

The term “**Affiliate of Arcadia**” shall mean, with respect to any specified entity, any other entity that directly or indirectly Controls, is Controlled by, or is under common Control with such specified entity. For purposes of this definition, the term “**Control**” (including, with correlative meanings, the terms “Controlled by” and “under common Control with”) shall mean the possession, directly or indirectly, of the power to solely direct or cause the direction of the management and policies of such entity, whether through the ownership of voting securities, by contract, or otherwise, provided, however, that notwithstanding the foregoing, in no event shall “Control” be deemed to exist if the party holding a controlling ownership interest in Arcadia ceases to own a controlling ownership interest in the proposed “Affiliate.”]

11. Effect of Agreement. This Agreement, including but not limited to any Exhibits which are a part of this Agreement, supersede any prior agreements between the Parties concerning the subject matter hereof, and no oral statements, representations or prior written matter relating to the subject matter hereof, but not contained in this Agreement, shall have any force or effect.

12. Captions And Headings. The captions and headings in this Agreement are for reference only and shall not be deemed to define or limit the scope or intent of any of the terms, covenants, conditions, or agreements contained herein.

13. Time Period Computation; Time of the Essence. Time is of the essence in performance of the obligations set forth herein. All time periods in this Agreement shall be deemed to refer to calendar days unless the time period specifically references “Business Days.” A “**Business Day**” shall mean any day other than a Saturday, a Sunday, or a federal or an Oregon state holiday, or any local holiday where the County Record’s office in the county where the Arcadia Property is located is closed.

14. Authority. Each Party represents to the other that the person executing this Agreement on its behalf has authority to sign this Agreement on behalf of the corporation, limited

liability company, or other entity for which he or she is signing, and that his or her signature binds said entity to the terms and provisions of this Agreement.

15. Controlling Law; Election to Arbitrate. This Agreement shall be governed by and interpreted in accordance with the laws of the State of Oregon, and exclusive venue shall lie with the state and federal courts located in the State of Oregon. The Parties agree that any and all disputes, claims or controversies or claim arising out of or relating to this Agreement or the breach, termination, enforcement, interpretation or validity thereof, including the determination of the scope or applicability of this agreement to arbitrate arising out of or relating to this Agreement shall be submitted to JAMS, or its successor, for arbitration utilizing JAMS' expedited arbitral rules, for final and binding arbitration. The seat of the arbitration will be Portland, Oregon, and all JAMS arbitration procedures and processes shall be conducted in person in Portland, Oregon. The language to be used in the arbitral proceeding will be English. Judgment upon the award rendered by the Arbitrator(s) may be entered by any court having jurisdiction thereof.

WITHOUT LIMITING THE EFFECT OF THE FOREGOING, IN THE EVENT THAT THE PARTIES' ELECTION TO ARBITRATE IS FOUND TO BE UNENFORCEABLE WITH RESPECT TO ANY DISPUTE, CLAIM, OR CONTROVERSY, THEN ANY LAWSUIT OR OTHER PROCEEDING INITIATED BY A PARTY HERETO UNDER OR WITH RESPECT TO SUCH A DISPUTE, CLAIM, OR CONTROVERSY, THE PARTIES EACH WAIVE ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY.

16. Attorney's Fees. Any party to this Agreement who is the prevailing party in any legal proceeding against any other party brought in connection with this Agreement or transaction shall be entitled to recover court costs and reasonable attorney fees, and all other litigation expenses, including deposition costs, travel and expert witness fees, from the non-prevailing party.

17. Default; Remedies. If there is any violation or threatened violation by any Party of any of the terms, covenants or conditions of this Agreement, the non-defaulting Party shall have all rights available at law or in equity, including without limitation the right to enjoin such violation or threatened violation in a court of competent jurisdiction. All rights and remedies of the Parties under this Agreement are cumulative, and no one of them shall be exclusive of any other. Subject to the terms of this Agreement, a Party shall have the right to enforce, by proceedings at law or in equity, all covenants and agreements now or hereafter imposed or created by the provisions of this Agreement, or any amendment thereto, including the right to prevent or enjoin the violation of any such covenants and agreements and the right to recover damages for such violation.

18. No Waiver. Failure by a Party hereto to enforce any covenant, condition or restriction herein contained, shall not be deemed a waiver of such right on any such future breach of the same or any other covenant, condition, or restriction contained herein.

19. Amendments. This Agreement may be modified or amended, in whole or in part, only by agreement in writing, executed and acknowledged by all Parties hereto. Any such amendments shall only be effective upon recording in the Columbia County (Oregon) Clerk's Office public records.

[Signatures appear on next page]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

Arcadia

Arcadia Paper Mills, LLC, a State of Oregon limited liability company

By: _____
Name: _____
Title: _____
Date: _____

St. Helens

The City of St. Helens, Oregon, an Oregon municipal corporation

By: _____
Name: _____
Title: _____
Date: _____

ACKNOWLEDGMENT

STATE OF _____)
 _____)
 COUNTY OF _____)

This record was acknowledged before me on _____ by _____ as
 _____ of **The City of St. Helens, Oregon**, an Oregon municipal corporation.

(SEAL)

Notary Public Signature

 Title of Office

My commission expires: _____

ACKNOWLEDGMENT

STATE OF _____)
 _____)
 COUNTY OF _____)

This record was acknowledged before me on _____ by _____ as
 _____ of **Arcadia Paper Mills, LLC**, a State of Oregon limited liability company .

(SEAL)

Notary Public Signature

 Title of Office

My commission expires: _____

Exhibit A
Legal Description of Arcadia Property

Exhibit B

Clarifier License Parcel

Exhibit C
Arcadia System Easement Form

Exhibit B-5

Bill of Sale

[See Attachment]

Special Warranty Bill of Sale

This Bill of Sale is made as of December __, 2025 (the “**Effective Date**”), by THE CITY OF ST. HELENS, OREGON, an Oregon municipal corporation (“**Seller**”) in favor of ARCADIA PAPER MILLS, LLC, an Oregon limited liability company (“**Arcadia Mills**”). This Bill of Sale is made pursuant to the Real Estate Purchase and Sale Agreement (as subsequently amended and assigned, the “**Agreement**”) dated August 30, 2024, by and between Seller and Arcadia Mills, with Arcadia Mills’ interest as “**Purchaser**” pursuant to the Agreement having been assigned to Arcadia Holdings, LLC (the “**Purchaser**”). As contemplated by the Second Amendment to the Agreement, Purchaser has been permitted to designate Arcadia Mills as the transferee of the “**Personal Property**” (as that term is defined in the Agreement) that is to be conveyed by Seller pursuant of the terms of the Agreement. Any capitalized term used but not defined in this Bill of Sale shall have the meaning set forth in the Agreement.

1. Conveyance. For good and valuable consideration, as contemplated and detailed in the Agreement, the receipt and adequacy of which Seller hereby acknowledges, Seller hereby irrevocably sells, assigns, transfers, conveys, grants, bargains, and delivers to Buyer, all of its right, title, and interest in and to the tangible Personal Property described in the Agreement (“**Tangible Personal Property**”). Seller represents and warrants that Seller: (i) is the owner of the Tangible Personal Property, (ii) is conveying title to all Tangible Personal Property free and clear of all encumbrances, debts, mortgages, attachments, pledges, charges, claims, and liens, and (iii) has the legal right to convey the Property.

2. Disclaimer of Warranties. EXCEPT FOR THE WARRANTIES SET FORTH HEREIN ABOVE, SELLER MAKES NO REPRESENTATION OR WARRANTY WHATSOEVER WITH RESPECT TO THE TANGIBLE PERSONAL PROPERTY, INCLUDING ANY (a) WARRANTY OF MERCHANTABILITY; (b) WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE; (c) WARRANTY OF TITLE; OR (d) WARRANTY AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS OF A THIRD PARTY; WHETHER ARISING BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE, OR OTHERWISE. BY ACCEPTING THIS BILL OF SALE, BUYER ACKNOWLEDGES THAT IT HAS NOT RELIED ON ANY REPRESENTATION OR WARRANTY MADE BY SELLER, OR ANY OTHER PERSON ON SELLER'S BEHALF, EXCEPT AS SPECIFICALLY PROVIDED IN THE AGREEMENT.

3. Further Assurances. Seller, for itself and its successors and assigns, hereby covenants and agrees that, at any time and from time to time on Buyer's written request, Seller will do, execute, acknowledge, and deliver or cause to be done, executed, acknowledged, and delivered, all such further acts, deeds, assignments, transfers, conveyances, powers of attorney, and assurances as may be reasonably required by Buyer in order to assign, transfer, set over, convey, assure, and confirm unto and vest in Buyer and its successors and assigns title to the assets sold, conveyed, and transferred by this Bill of Sale.

[Signature Page Follows]

Seller has executed and delivered this Bill of Sale effective as of the Effective Date.

SELLER:

The City of St. Helens, Oregon,
an Oregon municipal corporation

By: _____
Name: _____
Title: _____

Acknowledged and Accepted by:

Arcadia Mills:

Arcadia Paper Mills, LLC
an Oregon limited liability company

By: _____
Name: _____
Title: _____

Acknowledged and Approved by:

Purchaser:

Arcadia Holdings, LLC
an Oregon limited liability company

By: _____
Name: _____
Title: _____



Memorandum

To: Mayor and City Council

From: John Walsh, City Administrator

Subject: **Administration & Community Development Dept. Report**

Date: December 17, 2025

Business License Report attached.

John 12/3/25

Item #10.

ID	PERIOD	NAME	LICENSE CODE	BALANCE
00116	1/04/26- 1/04/27	HIEBERT FAMILY DENTAL PC	DENTAL DENTAL CARE	0.00
00122	1/05/26- 1/05/27	JOHNSTUN INJURY LAW LLC	LAW LAW OFFICES	0.00
00139	1/04/26- 1/04/27	PELLHAM CUTTING	MISC MISCELLANEOUS	0.00
00141	1/04/26- 1/04/27	COLUMBIA HEARING CENTER	PHYSICIA PHYSICIAN/HEALTH CAR	0.00
00149	11/04/25-11/04/26	AERO INVESTMENT STRATEGIES	MANUF MANUFACTURING	0.00
00154	1/05/26- 1/05/27	FANCY NAILS BY CINDY	BEAUTYSH BEAUTY/BARBER SHOP	0.00
00173	1/05/26- 1/05/27	SHERLOCKS GROCERY	GROCERY GROCERY	0.00
00180	1/05/26- 1/05/27	*AUTOMOTIVE SERVICES	AUTO AUTO REPAIR	0.00
00194	1/05/26- 1/05/27	HOCRAFFER LAW P.C.	LAW LAW OFFICES	0.00
00195	1/04/26- 1/04/27	MORE POWER COMPUTERS INC	COMPUTE COMPUTER	0.00
00199	1/05/26- 1/05/27	WELL WITHIN ACUPUNCTURE	HEALTHCA HEALTH CARE CENTER	0.00
00209	1/05/26- 1/05/27	K & B STORAGE	STORAGE STORAGE UNITS	0.00
00232	1/04/26- 1/04/27	FOREST PARK ADULT CARE HOME	HOME HOME HEALTH CARE	0.00
00256	1/04/26- 1/04/27	ST HELENS MARINA	FOODCART FOOD TRUCK	0.00
00277	1/05/26- 1/05/27	GENOA HEALTHCARE	PHARMACY PHARMACY	0.00
00285	1/05/26- 1/05/27	ROYALTY PRODUCTS LLC	STORAGE STORAGE UNITS	0.00
00286	1/05/26- 1/05/27	*ERIKS TRANSMISSION SERVICES	AUTO AUTO REPAIR	0.00
00295	1/04/26- 1/04/27	SOLAGEN INCORPORATED	MANUF MANUFACTURING	0.00
00297	1/05/26- 1/05/27	AVAMERE AT ST. HELENS	ASSTLIVE ASSISTED LIVING FACI	0.00
00301	1/11/26- 1/11/27	JUSTICE ALLICANCE COL CNTY LLC	LAW LAW OFFICES	0.00
00434	1/30/26- 1/30/27	VEE-LEE AMUSEMENT	AMUS AMUSEMENT GAMES	0.00
00450	1/31/26- 1/31/27	ADAIR HOMES INC	CONTGEN CONTRACTOR-GENERAL	0.00
00454	1/31/26- 1/31/27	FELTONS HEATING & COOLING INC	CONTMECH CONTRACTOR-MECHANICA	0.00
00460	1/31/26- 1/31/27	WOOD FAMILY HEATING LLC	CONTMISC CONTRACTOR-MISC.	0.00
00468	1/30/26- 1/30/27	AMERICAN SPRINKLERS INC	CONTMISC CONTRACTOR-MISC.	0.00
00471	1/31/26- 1/31/27	KONE INC	MISC MISCELLANEOUS	0.00
00472	1/31/26- 1/31/27	ALPHA ENVIRONMENTAL SERVICES	CONSULT CONSULTING	0.00
00596	2/22/26- 2/22/27	CREEKSIDE JUNIOR ACADEMY LLC	CHILDCAR CHILD CARE	0.00
00995	10/16/25-10/16/26	FAMILY RESOURCE HOME CARE	HEMOCARE HOME CARE	0.00
01007	11/20/25-11/20/26	RESCUE ROOTER JACK HOWK PLMBG	CONTPLUM CONTRACTOR-PLUMBING	0.00
01154	11/07/25-11/07/26	JNJ MECHANICAL	REPAIR REPAIR - GENERAL	0.00
01284	12/03/25-12/03/26	BANYEN THAI KITCHEN LLC	RESTAURA RESTAURANT	0.00
01285	12/11/25-12/11/26	*BOYET & FILIPINA SHIP/LOGIST	MAILBOX MAIL BOXES/PKG. SHIP	0.00
01380	10/03/25-10/03/26	YO PLACE EATS & TREATS	CATER CATERING/MISC FOOD E	0.00
01388	10/26/25-10/26/26	ADVOCATE ACCESS NW INC.	MISC MISCELLANEOUS	0.00
01397	12/11/25-12/11/26	RIVERSIDE GRILL & CATERING LLC	RESTAURA RESTAURANT	0.00
01402	1/04/26- 1/04/27	*COLUMBIA SEPTIC SERVICES LLC	SEPTIC SEPTIC SERVICE	0.00
01403	1/04/26- 1/04/27	GENERAL SHEET METAL	CONTGEN CONTRACTOR-GENERAL	0.00
01502	10/30/25-10/30/26	HAPPY GARDEN CHINESE REST	RESTAURA RESTAURANT	0.00
01503	11/05/25-11/05/26	GET YOUR GOOSE! LLC	RESTAURA RESTAURANT	0.00
01505	11/05/25-11/05/26	RECLAIM CREATIONS	MISC MISCELLANEOUS	0.00
01506	11/05/25-11/05/26	THE DAVEY TREE EXPERT CO	TREES TREES	0.00
01507	11/07/25-11/07/26	*BLISS CARE RESIDENTIAL SRVCS	ASSTLIVE ASSISTED LIVING FACI	0.00

LICENSE CODE	TOTAL	BALANCE
AMUS AMUSEMENT GAMES	1	0.00
ASSTLIVE ASSISTED LIVING FACI	2	0.00
AUTO AUTO REPAIR	2	0.00
BEAUTYSH BEAUTY/BARBER SHOP	1	0.00
CATER CATERING/MISC FOOD E	1	0.00
CHILDCAR CHILD CARE	1	0.00
COMPUTE COMPUTER	1	0.00
CONSULT CONSULTING	1	0.00
CONTGEN CONTRACTOR-GENERAL	2	0.00
CONTMECH CONTRACTOR-MECHANICA	1	0.00
CONTMISC CONTRACTOR-MISC.	2	0.00
CONTPLUM CONTRACTOR-PLUMBING	1	0.00
DENTAL DENTAL CARE	1	0.00
FOODCART FOOD TRUCK	1	0.00
GROCERY GROCERY	1	0.00
HEALTHCA HEALTH CARE CENTER	1	0.00
HOME HOME HEALTH CARE	1	0.00
HOMECARE HOME CARE	1	0.00
LAW LAW OFFICES	3	0.00
MAILBOX MAIL BOXES/PKG. SHIP	1	0.00
MANUF MANUFACTURING	2	0.00
MISC MISCELLANEOUS	4	0.00
PHARMACY PHARMACY	1	0.00
PHYSICIA PHYSICIAN/HEALTH CAR	1	0.00
REPAIR REPAIR - GENERAL	1	0.00
RESTAURA RESTAURANT	4	0.00
SEPTIC SEPTIC SERVICE	1	0.00
STORAGE STORAGE UNITS	2	0.00
TREES TREES	1	0.00
TOTAL ALL CODES:	43	0.00

*** SELECTION CRITERIA ***

License Range: thru ZZZZZZZZZZ
License Codes: All
Balance: 999999999R thru 9999999999
Fee Codes: All
Fee Paid Status: Paid and Unpaid
Origination Dates: 0/00/0000 thru 99/99/9999
Effective Dates: 0/00/0000 thru 99/99/9999
Expiration Dates: 0/00/0000 thru 99/99/9999
Renewal Dates: 0/00/0000 thru 99/99/9999
Payment Dates: 0/00/0000 thru 99/99/9999
Print Dates: 0/00/0000 thru 99/99/9999
License Status: Active
Termination Code:
Paid Status: Paid
City Limits: Inside and Outside
Printed: No
Comment Code:

** END OF REPORT **