



# City of Stevenson

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7121 E Loop Road, PO Box 371

Stevenson, Washington 98648

## December 2023 Planning Commission Meeting

Monday, December 11, 2023

6:00 PM

### A. Preliminary Matters

#### 1. Public Comment Expectations:

In Person: Attendees at City Hall should follow current CDC and State guidance regarding use of masks, social distancing, and attendance.

Webinar: <https://us02web.zoom.us/j/85637388112> Conference Call: +1 253 215 8782 or +1 346 248 7799 ID #: 856 3738 8112

Commenters must raise their hand and be acknowledged by the Chair. Individual comments may be cut off after 3 mins. Disruptive individuals may be required to leave the meeting. Persistent disruptions may result in the meeting being recessed and continued at a later date.

Tools: \*6 to mute/unmute & \*9 to raise hand

#### 2. Public Comment Period: (For items not located elsewhere on the agenda)

#### 3. Minutes: November 13, 2023 Planning Commission Meeting Minutes

### B. New Business

#### 4. Shoreline Permit Request: (SHOR2023-01 Rock Cove Hospitality)

- a. Appearance of Fairness Disclosures
- b. Presentation by Staff
- c. Presentation by Applicant

- d. Continue Public Hearing
  - 1. Comments in Favor
  - 2. Comments in Opposition
  - 3. Comments Neither in Favor nor Opposition
  - 4. Close Public Hearing
- e. Commission Deliberation
- f. Decision

### **C. Old Business**

- 5. **Subcommittee Reports:** Updates from Subcommittee leads and discussions on Downtown Parking and Annexation Policy
- 6. **Planning Commission Work Plan:** Scheduling the Upcoming Work based on City Council's Strategic Plan

### **E. Adjournment**

#### **7. Thought of the Month:**

- Street Connectivity/Mixed-Use Development:

<https://www.cnu.org/publicsquare/2023/11/22/connected-streets-are-needed-support-mixed-use-study-reports>

- Floodplains:

<https://fema.maps.arcgis.com/apps/MapSeries/index.html?appid=40e7274ea63747ffb69f2aa5732d8e78>

- 8. **Staff & Commission Reports:** Septic/Sewer Discussion, Parks Planning, Trees, Online Building Permitting

### **D. Discussion**

**DRAFT Minutes**  
**Stevenson Planning Commission Meeting**  
**Monday, November 13, 2023**  
**6:00 PM**

**Planning Commission Chair Breckel** called the meeting to order at 6:01 p.m. A quorum was present.

**MEMBERS PRESENT**

PC Chair Jeff Breckel; Commissioner Anne Keesee, Auguste Zettler. Commissioners Hales and Ray were not in attendance.

**STAFF PRESENT**

Community Development Director Ben Shumaker, Planning & Public Works Assistant Tiffany Andersen

**GUESTS PRESENT**

Dean Maldonado and Brad Kilby

**PUBLIC PRESENT**

Mary Repar, Thomas McCloskey, Elise Skara

**A. Preliminary Matters**

**1 Public Comment Expectations**

Shumaker explained use of tools for remote participants: \*6 to mute/unmute & \*9 to raise hand. Commenters must raise their hand and be acknowledged by the Chair. Individual comments may be limited to 3 minutes. Disruptive individuals may be required to leave the meeting. Persistent disruptions may result in the meeting being recessed and continued at a later date.

**2 Public Comment Period**

(For items not located elsewhere on the agenda)

Mary Repar commented she had emailed the Planning Commission a copy of a remand order that the Chinidere development was subject to, and the conditions contained within. Commissioners stated they had not received it. It was noted the project had generated a fair amount of comment and discussion.

Comments about parking access were received from Thomas McCloskey and Elise Skara.

**The agenda was amended to move item 5 forward without objection.**

**3 October 9th, 2023 Minutes**

The Planning Commission meeting minutes from October 9<sup>th</sup>, 2023 were approved unanimously as presented.

**B. New Business**

**4 Planning Commission Work Plan**

Scheduling the Upcoming Work based on City Council's Strategic Plan (discussion followed movement of agenda items 5 & 6)

**PC Chair Breckel** noted two commissioners were absent.

Mary Repar requested adding climate change response and street tree planning to the work plan.

**Shumaker** suggested he would share the website to help the Planning Commission decide what contributions the PC could make to the City Council strategies. He noted review of Comprehensive Plan Amendments and Conditional Use Permits and compliance are always on the Planning Commission's work schedule. He stated housing is an important issue to consider.

PC Chair Breckel commented sewer extensions and annexation were also topics likely to come before the Commission.

### **C. Old Business**

#### **5 Shoreline Permit Request:**

#### **Substantial development request (moved prior to agenda item 3) (SHOR2023-01 Rock Cove Hospitality)**

The Planning Commission was asked to review a proposal by FDM Development for a water-enjoyment commercial use on the shorelands of Rock Cove. The applicants requested a continuance in order to provide additional information to agency requests.

#### **a. Appearance of Fairness Disclosures**

**Shumaker** explained and administered the Appearance of Fairness Doctrine due to the public hearing remaining open from the October 9<sup>th</sup>, 2023 Planning Commission meeting. The Appearance of Fairness Doctrine is a rule of law requiring government decision-makers to conduct non-court hearings and proceedings in a way that is fair, impartial and unbiased in both appearance and fact. Any conflicts of interest must be disclosed to ensure fairness and impartiality. Disclosures include any financial interest in the final outcome, any outside (ex-parte) communications made with any party of interest or anything else that could be construed as a conflict or affects any decision making. Decision makers can be challenged by applicants regarding any perceived conflicts of interest.

None of the Planning Commissioners present disclosed any ex-parte communications concerning the application, and none reported any financial conflicts or other matters that would impede a fair and impartial decision. There were no challenges by the applicant or the public.

Prior to the decision making regarding a continuance Mary Repar asked if the public would have a chance to review anything new the applicants had submitted, and was assured it would be possible.

**Planning Commission Chair Breckel** confirmed comments from other state agencies were being considered. He noted some of the comments did not seem to recognize the site under review as being a brownfield/former industrial site.

**b. Presentation by Staff**

**Shumaker** advised the agencies developed questions based on ecological and environmental concerns.

**c. Presentation by Applicant**

**Dean Maldonado**, the FDM project developer, stated a number of concerns raised from agencies were recent, and he was experiencing delays in getting responses from sub-contractors he needed to do the work to answer the concerns.

Following comments **Commissioner Zettler** motioned to continue the public hearing for the Rock Cove Hospitality permit until the December 2023 Planning Meeting. It was seconded by **Commissioner Keesee** and passed unanimously.

Brad Kilby provided final comments on the work being done with ELS to respond to the recent agency requests.

**Shumaker** noted with the public hearing remaining open Commissioners were still subject to the Appearance of Fairness.

**Planning Commission Chair Breckel requested the Parking Study (item 6) be moved forward in the agenda. There were no objections.**

**6 Downtown Parking Committee**

**Community Development Director Ben Shumaker** provided details on the recent parking inventory and usage studies done in 2021 and 2023. Several questions were needing to be answered on curbside ADA parking spaces, overall parking inventory, and potential parking regulation changes, if any. Community surveys were provided to residents and business owners.

He shared a number of slides and explained the purpose of the study. It was determined many more ADA parking sites needed to be established. He also provided an explanation on best practices for maximizing parking space utilization. He anticipates having a draft parking plan recommendation for the Planning Commission to consider at the December 2023 PC meeting, and presented potential options that may be included. Additional public involvement opportunities will be available.

@7:26 p.m. remote connection was lost, regained at 7:35 p.m.

**D. Discussion**

**7 Thought of the Month**

**Walkability Planning:** [cnu.org/publicsquare/2023/10/05/when-planners-walk-wild-side](https://cnu.org/publicsquare/2023/10/05/when-planners-walk-wild-side)

**Adaptive Reuse:** [planning.org/planning/2023/fall/can-pickleball-mania-revitalize-dying-shopping-malls/](https://planning.org/planning/2023/fall/can-pickleball-mania-revitalize-dying-shopping-malls/)Community Submission - Walla Walla Design Standards

## 8 Staff & Commission Reports

**Shumaker** presented brief updates on the following items:

**Septic/Sewer** The subcommittee is meeting. Financing of installation costs, online permitting, GIS mapping, growth forecasting, industrial use and more are being discussed.

**Parks Planning** is underway. The City is leading a coalition on behalf of the county, port, school district and pool. Have a contract with consultants, similar to shoreline access plan. A draft plan may be presented in early 2024. Parks are conditional use so the PC may need to consider.

**Wastewater Treatment Plant** is still under construction due to equipment and parts delays. Completion was expected in August 2023.

## 8. Adjournment

**PC Chair Breckel** declared the meeting adjourned at 8:23 p.m.

**Minutes recorded by Johanna Roe.**

**TO:** City of Stevenson  
Planning Commission  
C/o Ben Shumaker – City Planner

**FROM:** Harper Houf Peterson Righellis, Inc.  
Brad Kilby, AICP

**DATE:** November 28, 2023

**RE:** Rock Cove Hospitality Project

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The applicant and property owner appreciate the opportunity to provide additional information to the Planning Commission to address the questions and concerns raised at the October 9<sup>th</sup> planning commission hearing, as well as letters from the Washington Department of Ecology and the Department of Fish and Wildlife related to the Shoreline Substantial Development Permit (SSDP) for the Rock Cove project.

The concerns raised by the Washington State departments of Ecology (DOE) and the Washington State Department of Fish and Wildlife (WDFW) are related to the location of, and the proposed impacts to the FWPCA functionally isolated buffer. Kate'Lyn Wills, a biologist and environmental scientist with Ecological Land Services has prepared a letter attached as *appendix 1* to this letter, responding to the concerns raised in their comment letters. It is noted that ELS determined the location of the buffer on site based on historical use, and the best available science. Throughout the many iterations of design that this project has gone through including the previously approved design, our team has always been guided by the sites' designation as "active waterfront" within the City's Shoreline Management Plan.

The proposed development takes place on a site that was previously utilized as the Hegewal Veneer Mill, which operated on the site from 1952 to 1973. An aerial photomap taken of the site while in operation is on display at the Columbia Gorge Interpretive Center Museum and is provided below, showing the sawmill, machine shop, gravel driveways, and wigwam burners developed on the site. After the mill closed, evidence of the development remained on site, including cleared vegetation and impervious surfacing (gravel and concrete). The current landowner has not placed any riprap on the property or shoreline. The riprap that is currently located along the shoreline of the property was likely placed there to protect the mill operations and would have likely pre-dated the Washington State Shoreline Management Act.



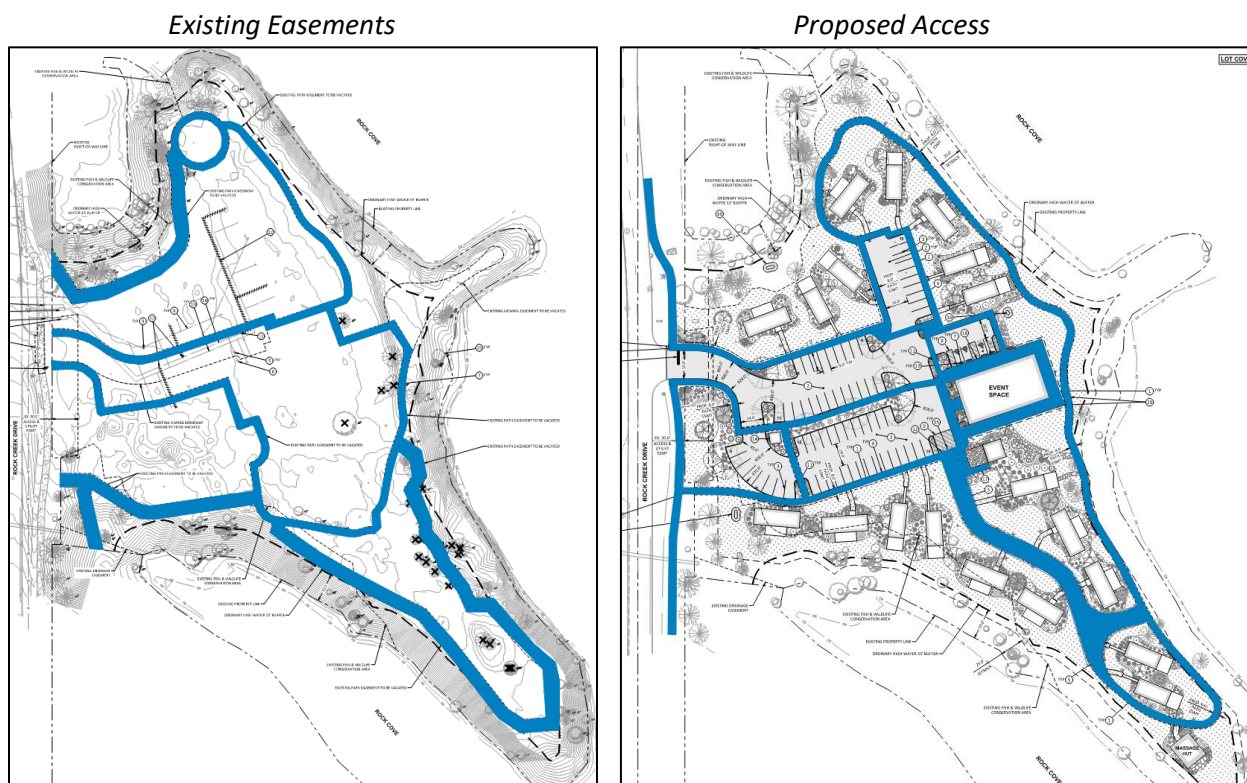
It was confusing to the property owner that the letters from both DOE and WDFW failed or neglected to reference the earlier alternatives that were considered for developing the property. According to the owner and design engineers, there have been several alternatives considered for developing the site, one of which has already obtained prior City approval. Nevertheless, after considering the two agency letters, the public testimony and Planning Commission concerns raised at the hearing on October 9<sup>th</sup>, the development team is providing a revised site plan (*appendix 2*) to reduce the impact to the FWHCA buffer which includes removal of the southwesterly cabin and the relocation or reorientation of several of the cabins to minimize intrusion into the designated FWHCA buffer. Further, all of the northern cabins and trail have been relocated outside of the buffer area. Please see the revised site plan provided as *appendix 2* to this letter.

The revised site plan results in a 15.8% decrease in impacts to the buffer and with implementation of the proposed enhancement plan provided with the *May 2023 ELS report*, will fully compensate for any impacts to the FWHCA ensuring there is no net loss of ecological function as a result of this project. Further, revised site plan has less area impact on the total project site than the previously approved site plan (SHOR2020-01) as well as previous versions of the site plan considered by the development team. The site plan submitted to the City of Stevenson with initial application had a lot coverage of 27,983 square feet, or approximately 10.6% of the site. With the proposed revisions in *appendix 2*, the new lot coverage has been reduced to 24,834 square feet, or approximately 9.5%.



## Shoreline Public Access

City staff and the Planning Commission focused on local connectivity in the prior approval to ensure public access to the shoreline. There was also discussion related to a pedestrian crossing across the ravine to connect to an existing easement located on the property south of this site. Since the proposed use on the project site is considered a water-enjoyment commercial use, the SMA and Stevenson SMP require that the site must be open to the general public and the shoreline-oriented space within the project must be devoted to the specific aspects of the use that foster shoreline enjoyment. The project site has been thoughtfully designed to provide public access and pathways through and around the site to ensure open access to the shoreline and Rock Cove. The provided pathways are aligned similarly with the existing public access easements on the site (see below for the pedestrian easements and proposed pedestrian access marked in blue).



The proposed site plan actually increases the amount of public access on to the and to Rock Cove with the proposed development. Please note that the site plan on the right above does not illustrate the proposed loss of the south westerly cabin and reorientation of other cabins that is reflected in the revised site plan provided with this document as *appendix 2*, but it does illustrate the proposed access locations on the site.

Related to the crossing of the ravine to connect the site to the property located south of the project site, we are providing an exhibit for a pedestrian bridge as *appendix 3* along with the following concerns design concerns from the project engineer and a rough order of magnitude cost to realize the crossing. First, the pathway would need to be an approximately 220-foot-long bridge to span the ravine and connect to the easement located on the adjacent property to the south. This span would not include the

needed construction of the pathway further onto the adjacent property, which would also require a structured walkway (bridge) due to steep grades.

The approximate grade difference across the two sides of the bridge is 13 feet, resulting in a 6% average slope along the walkway. To meet ADA requirements, the bridge would need consecutive ramp runs with landings for the entire length. The bridge's height would vary as it crosses the existing ravine, which, in the exhibit, roughly follows the property boundary. As it crosses the ravine's centerline, the bridge deck would sit up to +20 feet above the existing grade. The majority of the bridge would fall into the FWHCA and the bridge spans between bridge abutments were assumed to be spaced at 50' increments to minimize the impact to these areas.

The costs estimated to construct a pedestrian bridge platform in this location would be approximately \$450/ square foot. At a length of 220 feet and a width of 8 feet, the cost would come up to approximately \$792,000. The bridge would require foundations at either end and where landings are needed to meet ADA and at least 6 abutments to support the platform. The costs for the foundations and abutments are estimated to be approximately \$180,000. The total cost to provide the crossing would be approximately \$972,000. It's important to note that the bridge is almost entirely located within an environmental conservation area and there is a proposed connection to the property located along the existing pedestrian path adjacent to Rock Creek Drive. The proposed access is a viable alternative that minimizes impacts to the environmental area while continuing to provide pedestrian access from this site to the property located south of the site.

We appreciate you allowing the design team additional time to address the comments and concerns raised by staff and the agencies and look forward to discussing the project with you at the December 11<sup>th</sup> continued public hearing. Please do not hesitate to contact me if you have any questions or need any additional information. You can reach me on my cell at (503) 866-9845. Thank you for your time.

**Harper Houf Peterson Righellis, Inc.**



Brad Kilby, AICP  
Planning Manager



December 8, 2023

City of Stevenson  
Planning Commission  
C/o Ben Shumaker, City Planner  
7121 East Loop Road  
Stevenson, WA 98648

Subject: Rock Cove Hospitality Mitigation Addendum

Dear Mr. Shumaker,

This letter has been prepared to address changes to the Rock Cove Hospitality site plan and to address comments from Washington Department of Fish and Wildlife (WDFW) and the Department of Ecology (Ecology). This letter is a supplement to the *Critical Areas and FWHCA Report for Rock Creek Cove Hospitality* updated on May 3, 2023 (ELS 2023). Based on results and comments from a hearing with the City of Stevenson on October 9, 2023, the Rock Cove Hospitality site plan was revised to reduce the proposed impacts to the Fish and Wildlife Habitat Conservation Area (FWHCA) buffer for the Columbia River (Rock Cove) which is a Shoreline of Statewide Significance (Type S). Alternative designs and their impact on the economic feasibility of the project are also discussed.

### ***Critical Area Recap***

According to the Stevenson Code of Ordinances (SCO) Table 18.13.095-1, Rock Cove is afforded a 150-foot FWHCA buffer. The SCO further designates under 18.13.095(D)(3), that this FWHCA buffer may be functionally isolated by “lawns, walkways, driveways, other mowed or paved areas, and areas which are functionally separated from a FWHCA and do not protect the FWHCA from adverse impacts due to pre-existing roads, structures, or vertical separation”. There is existing rip rap along the majority of the shoreline bank for stabilization, as well as existing mowed and maintained areas within the site that are functionally separated from the FWHCA. The area landward of these features shall be excluded from the FWHCA buffer per the RCO. The remaining, reduced FWHCA buffer areas are moderately degraded due to lack of protection and the presence of non-native and invasives plant species. These reduced FWHCA buffer areas (not including areas waterward of the existing rip rap) shall be enhanced in accordance with 18.13.095(D)(5) and 18.13.095(F) as detailed in the May 2023 report (ELS 2023). The Stevenson Shoreline Master Program (SMP), additionally designates this site as Active Waterfront which, according to Table 5.1, is afforded a 33-foot shoreline setback for commercial lands uses for water related/water enjoyment purposes. Existing conditions can be seen in Figure 1.

### ***Mitigation Sequencing-Compliance with RCO 18.13.055***

The proposed project includes the development of 19 recreational dwellings, an event space, massage hut, parking area, and paved walkway partially within the remaining reduced FWHCA buffer. Due to the

shape, size, and location of the peninsula the site is located on, it is highly constricted on all sides by the FWHCA buffer. The revised site plan maximizes the available buildable area to the greatest extent practicable while meeting parking and access requirements, utility requirements, shoreline use requirements per the SMP, and while remaining aesthetically pleasing which is desirable for all shoreline uses. All impacts to the FWHCA buffer on the northern portion of the site have been **avoided**. Additionally, the project proposes to use the existing walking path along Rock Cove Drive for public access rather than constructing a new bridge or trail through the FWHCA, thereby avoiding additional impacts. The recreational dwellings on the southern portion of the site have been repositioned, with the total number reduced by one, **minimizing** the total proposed impacts. The total impact proposed in the May 2023 report was 0.19 acres with a proposed 1.12 acres of FWHCA buffer enhancement equating to an approximate enhancement ratio of 1:5.9 (Figure 2). The revised site plan proposes 15.8 percent less impacts totaling 0.16 acres with a 3.45 percent increase in enhancement area with 1.16 acres of FWHCA buffer enhancement equating to a 19.2 percent increase in enhancement ratio at approximately 1:7.3 (Figures 2 and 3). According to the SCO Table 18.13.095-3, a ratio of only 1:1 for enhancement of the FWHCA is required. The impacts cannot be **reduced over time** as they are permanent structures and impervious surfaces; however, proper maintenance of the proposed structures and impervious surfaces will prevent any further impact. In addition to the enhancement measures specified in the May 2023 report (ELS 2023), a total of \$5,280 will be paid to the Lower Columbia Fish Enhancement fund to compensate for the 0.16 acres of impacts to the FWHCA. This in-lieu mitigation will fully **compensate** for the impacts ensuring there is no net loss of ecological function as a result of this project. The updated planting table below should be utilized instead of the table listed in the May 2023 report (ELS 2023) as the plant counts have been updated to reflect the adjusted size of the enhancement areas. Plant species have also been updated to reflect Skamania County’s “recommended plants for screening” for the Columbia River Gorge National Scenic Area (<https://www.skamaniacounty.org/departments-offices/community-development/planning-division/national-scenic-area>). The enhancement areas will be maintained and **monitored** for a period of 5 years. If dead or failed plants are identified during monitoring, corrective actions will be implemented to meet the minimum performance standards as detailed in the May 2023 report (ELS 2023) to ensure compliance.

**Table 1: Recommended Plants for Screening of the Enhancement Areas**

Common Name	Scientific Name and FAC Status	Stock	Spacing (feet)	Quantity
<i>Trees</i>				
Red alder	<i>Alnus rubra</i> (FAC)	Gallon	10 feet on-center	<b>126</b>
Black cottonwood	<i>Populus balsamifera</i> (FAC)			<b>126</b>
Sitka willow	<i>Salix sitchensis</i> (FACW)		6 feet on-center	<b>175</b>
Pacific ninebark	<i>Physocarpus capitatus</i> (FACW)			<b>175</b>
Oceanspray	<i>Holodiscus discolor</i> (FACU)			<b>175</b>
Pacific dogwood	<i>Cornus nuttallii</i> (FACU)			<b>175</b>
			<b>Total</b>	<b>952</b>

*Plants more suited for wet conditions (FACW) should be located closer to the ordinary high water mark (OHWM) of Rock Cove while plants more suited for upland conditions (FACU) should be located further from the OHWM.*

### ***In-Lieu Mitigation***

After development of the proposed project including the enhancement of all of the FWHCA, there is no room left onsite for any mitigation activities. Additionally, the SCO states that the enhanced buffer shall not count as mitigation and the buffer cannot be further reduced through onsite mitigation. Therefore, the 0.16 acres of impacts to the FWHCA will be mitigated via a one-time payment to the Lower Columbia Fish Enhancement fund. As there is not an established price per impact acre associated with this fund, the pricing of comparable funds in other jurisdictions was investigated. A similar fund in Clark County that is utilized for impacts to riparian habitat and in-water areas called the Cumulative Effects Fund has an established cost of donation of \$33,000 per acre of impact. Utilizing this cost, the applicant proposes to pay a total of \$5,280 to the Lower Columbia Fish Enhancement fund to compensate for the 0.16 acres of impacts to the FWHCA.

### ***Alternatives Analysis***

At the hearing on October 9, 2023, City Staff and the Planning Commission discussed the possibility of a pedestrian crossing that utilized the existing easement shown on the prior approval. The current proposed design utilizes the existing path along Rock Cove Drive to connect the site to the property to the south. The existing path is located within the street right-of-way and because it is existing, no further impact to the FWHCA would be necessary. This design was chosen as the most practical, efficient, and cost-effective method of providing public access to the site.

The applicant has provided two design alternatives for the public access connection. However, when the construction expenses associated with each alternative, coupled with the financial setback resulting from the elimination of a dwelling unit, the costs associated with enhancing the entire FWHCA onsite, and the in-lieu mitigation expense are considered, the economic feasibility of the project is significantly compromised. Brad Kilby of HHPR provided exhibits of each alternative and included a rough description of how the project would be accomplished and projected costs. The alternatives are summarized below.

The first alternative proposes crossing the ravine via a pedestrian bridge. The pedestrian bridge would span over 220 feet in length, have a width of 8 feet, have a minimum of six abutments for support, and cost approximately \$972,000. The entirety of the bridge would be located within the existing pedestrian easement and within the FWHCA. This alternative would require additional mitigation.

The second alternative proposes a paved pedestrian path at grade higher upslope from the bridge crossing. The paved pedestrian path would span approximately 200 feet in length, have a width of 8 feet, require an approximately 6-foot tall retaining wall along the downslope side, and cost approximately \$200,000. The entirety of the paved pedestrian path would be located within the FWHCA. This alternative would require additional mitigation.

### ***Responses to WDFW Comments***

In a letter dated October 6, 2023, a number of recommendations were made by Amaia Smith of WDFW. Below the recommendations are listed in *italics* with responses by ELS following in regular font.

- *We do not recommend developing within 100ft of the ordinary high-water line to protect the pollutant removal function.*

Although ELS acknowledges WDFW's new riparian guidance standards, they have not been recognized in the SCO nor the SMP so adherence to these guidelines is not currently required. Due to the shape, size, location of the peninsula, and the existing site conditions (functionally isolated FWHCA buffer) complete avoidance of development within 100 feet of the OHWM isn't practical nor would it allow the project to be feasible. The guidance does state that "the riparian setback should encompass the width of the existing riparian vegetation community", and in this case it does. The entire vegetation community onsite exists within the FWHCA buffer area shown in Figure 1. This area will be enhanced via invasive species removal and installation of native plants with species recommended by Skamania County for screening of the Columbia River Gorge National Scenic Area. Due to these factors, it is ELS' opinion that this project will protect the pollutant removal functions to the greatest extent possible.

- *Implementing Best Management Practices (BMPs) will meet shoreline access objectives while protecting riparian ecosystem functions.*

This project will utilize certain BMPs to protect ecosystem functions. An adequate number of trash receptacles will be installed throughout the site and along the walking path to minimize human impacts on the surrounding natural areas. Additionally, the enhancement areas will be protected with fencing and signage designed to prohibit access by humans and pets. These areas will be further protected via a conservation covenant. Other construction BMPs will be utilized during site development such as installing orange construction fencing and silt fencing along the edge of the work area, applying native grass seed to temporarily disturbed areas, stabilizing work area entrances via installation of gravel, and making a water truck available to prevent wind erosion and dust blowing during construction.

- *We discourage any road surfaces within 100ft of the active floodplain/channel.*

No new roads are proposed as a part of this project. The proposed parking area will have curbs and stormwater grates to collect any runoff. No tire particles will be able to discharge to Rock Cove.

- *If the existing rip rap is being used as justification to lessen riparian protection, WDFW recommends further review to determine if the rip rap was legally permitted and installed.*

The existing rip rap is more than 10 years old and although ELS is not aware of when or if it was permitted, it is not being used as a justification to lessen riparian protection. Protection and enhancement of the entire remaining FWHCA buffer is proposed as part of this project. Removing the rip rap and replacing it with a bioengineered solution is not financially feasible nor is it a requirement by the SCO or the SMP. Additionally, removal of the rip rap would pose erosion and water quality hazards that could not feasibly be contained and would likely cause greater harm to the riparian and aquatic habitat.

- *WDFW wants to avoid a situation where structures are approved for development near waters that will require future emergency protection.*

Due to the presence of existing rip rap along the shoreline area that experiences greatest exposure to water movement, future erosion is unlikely. This site will not require any greater emergency protection than any other water related development in this area.

### **Responses to Ecology Comments**

In an email dated October 3, 2023, Meghan Tait of Ecology expressed a few concerns related to the project. Below the concerns are summarized in *italics* with ELS responses following in regular font.

- *Ecology does not think the maintained vegetation areas shown in Figure 1 should qualify as functional isolation.*  
According to the SCO 18.13.095(D)(3), lawns and other mowed areas can be considered as functional separation from FWHCA buffers. These areas have been mowed and maintained since the year 2000 as can be seen on Google Earth aerial imagery. Additionally, these areas were photographed in January of 2020 in preparation of the original draft of the critical areas report by ELS (Photoplate 3 and 4). It is ELS' opinion that the provided evidence meets the requirement in the SCO and that these areas do indeed meet the definition of functional isolation.
- *Ecology states any area where the remaining buffer is less than 50% shall be enhanced unless the area is utilized for water-dependent uses.*  
All of the remaining buffer, even if greater than 50 percent, is proposed for enhancement. The only area of further "reduction" (impacts) is in the southern enhancement area where the recreational dwellings are proposed. This project is considered "water related/water enjoyment", which is comparable with the term, "water dependent". There is an existing boat launch area that will serve to provide access to the water for facility patrons. Due to the purpose of these recreational dwellings to provide short-term accommodations for patrons who are utilizing the facilities for water enjoyment, it is ELS' opinion that this project meets the requirements of the SCO and the impacts to the FWHCA should be allowed.
- *Ecology states the enhanced buffer area shall not count as mitigation and the buffer area cannot be further reduced through averaging or onsite mitigation.*  
Averaging is not proposed as a part of this project. No further (non-water dependent/related) reduction of the FWHCA buffer is proposed. A total of \$5,280 (the cost for 0.16 acres at \$33,000 per acre) will be paid to the Lower Columbia Fish Enhancement fund to compensate for the 0.16 acres of impacts to the FWHCA.
- *Ecology states that it should be demonstrated how this project follows mitigation sequencing requirements and achieves no net loss.*  
See the Mitigation Sequencing and the In-Lieu Mitigation sections earlier in this letter.
- *Ecology states that vegetation removal within shoreline jurisdiction requires mitigation at the mitigation ratios listed in the SMP Table 6.2*  
A nominal quantity of shrubs will be removed from the impact areas shown on Figure 3. These shrubs consist of native groundcover and understory, non-native vegetation, and invasive species such as Himalayan blackberry. According to Table 6.2 of the SMP, the required mitigation ratio is 1:1 for these vegetation types. A total of \$5,280 (the cost for 0.16 acres at \$33,000 per acre) will be paid to the Lower Columbia Fish Enhancement fund to compensate for the 0.16 acres of impacts to the FWHCA which lie within shoreline jurisdiction.

- *Ecology states that it is unclear how the project will meet the requirement of the SMP to provide public access for water enjoyment.*

The proposed project is a public facility that will provide access to the public during daylight hours. The walking trails and boat launch area can be utilized by the public without reserving a recreational dwelling.

Please feel free to contact me at [kt@eco-land.com](mailto:kt@eco-land.com) if you have any questions regarding the above letter.

Sincerely,



Kate'Lyn Wills  
Biologist/Environmental Scientist V

Enclosures:

Figure 1: Existing Conditions

Figure 2: Proposed Conditions – April 2023

Figure 3: Proposed Conditions – November 2023

Photoplates 1-4



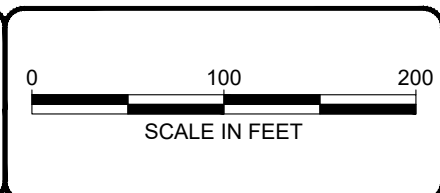


**LEGEND:**

- Site Boundary
- Parcel Boundary
- OHWM
- Stream with Flow Direction
- 100' FWHCA Buffer for Type F
- Functionally Isolated FWHCA Buffer for Type S (150')
- 33' Shoreline Setback
- 200' Shoreline Jurisdiction
- Culvert
- Oak Tree Location
- Existing Graveled or Concrete Surfacing
- Existing Rip Rap
- Existing Gravel Boat Launch

**NOTE(S):**

1. Aerial from Google Earth™. (2018)
2. OHWM line was determined through a joint effort by Ecological Land Services and Washington Department of Ecology on December 30, 2019. OHWM flags were professionally surveyed by S&F Land Services December 30-31, 2019.
3. SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts. It is ELS' opinion that existing maintained vegetation areas and rip rap functionally isolate the FWHCA.



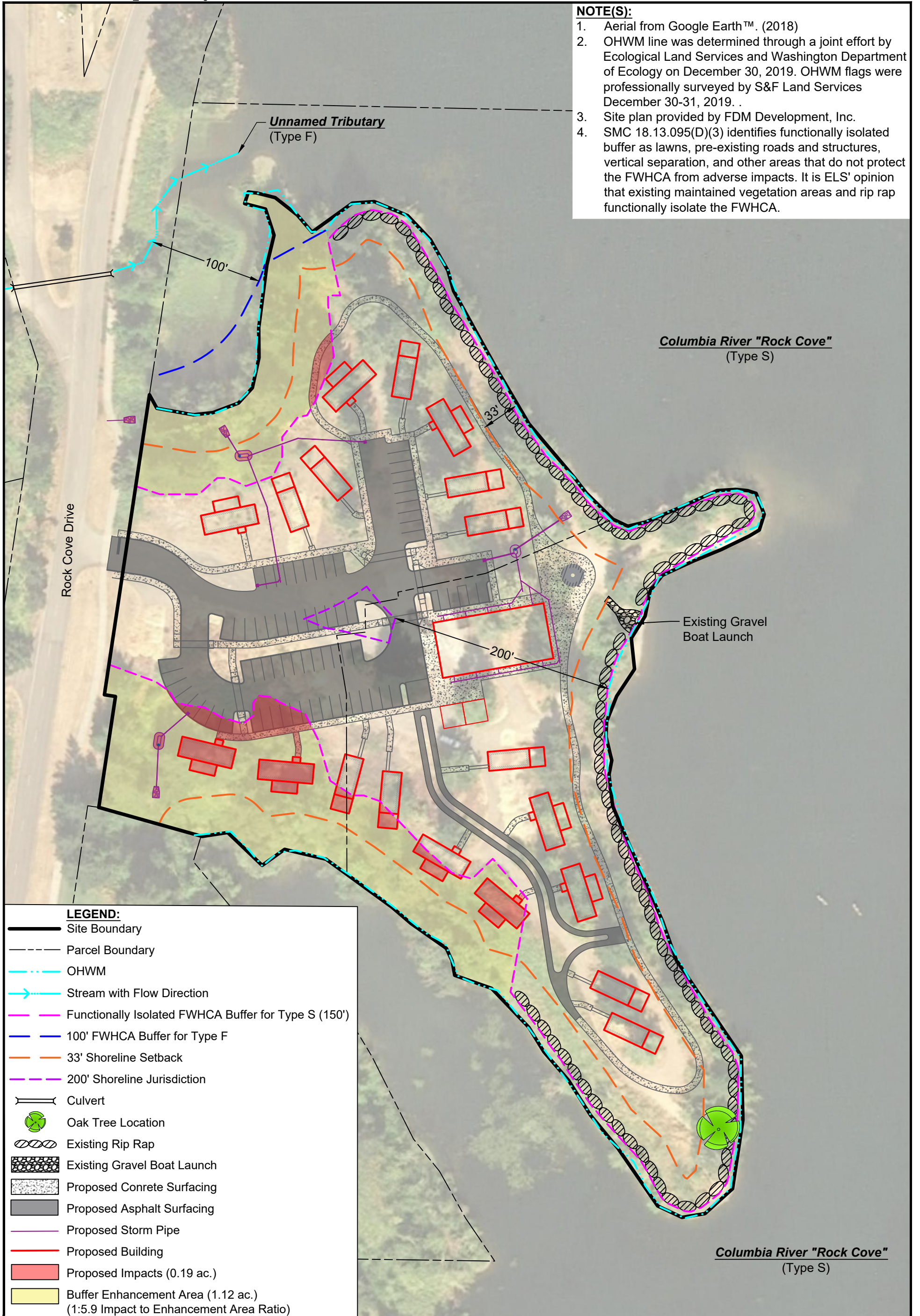
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DATE: 12/8/23  
 DWN: EF  
 REQ. BY: KT  
 PRJ. MGR: KT  
 CHK: JKJ  
 PROJECT NO:  
 2682.02

Figure 1  
 EXISTING CONDITIONS  
 Rock Cove Addendum  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.

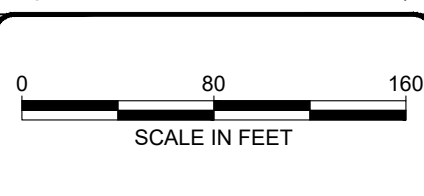
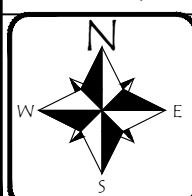
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3. Site plan provided by FDM Development, Inc.
4. SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts. It is ELS' opinion that existing maintained vegetation areas and rip rap functionally isolate the FWHCA.



**LEGEND:**

- Site Boundary
- Parcel Boundary
- OHWM
- Stream with Flow Direction
- Functionally Isolated FWHCA Buffer for Type S (150')
- 100' FWHCA Buffer for Type F
- 33' Shoreline Setback
- 200' Shoreline Jurisdiction
- Culvert
- Oak Tree Location
- Existing Rip Rap
- Existing Gravel Boat Launch
- Proposed Concrete Surfacing
- Proposed Asphalt Surfacing
- Proposed Storm Pipe
- Proposed Building
- Proposed Impacts (0.19 ac.)
- Buffer Enhancement Area (1.12 ac.) (1:5.9 Impact to Enhancement Area Ratio)



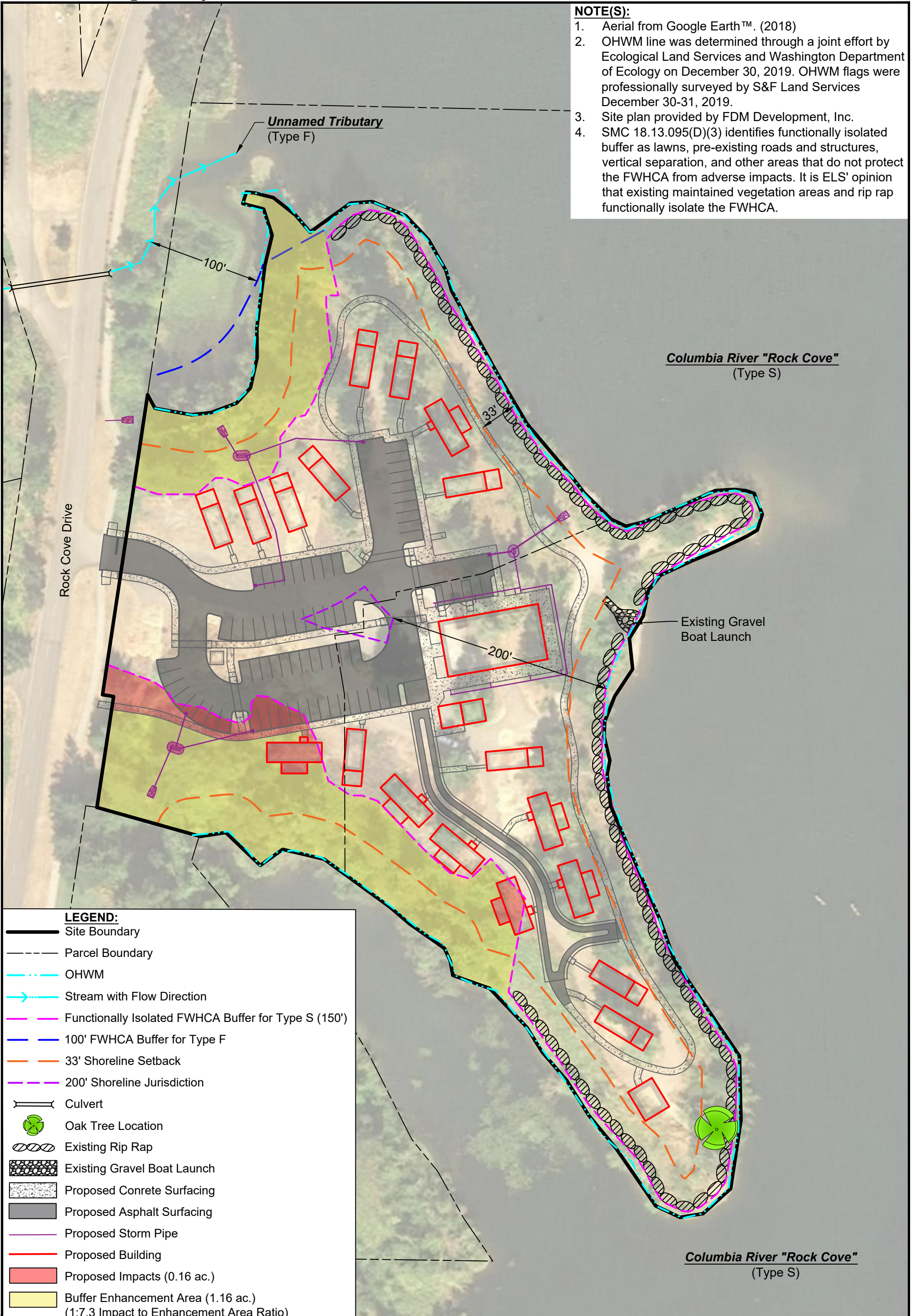
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 CHK: JKJ  
 PROJECT NO:  
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Figure 2  
 PROPOSED CONDITIONS - APRIL 2023  
 Rock Cove Addendum  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.

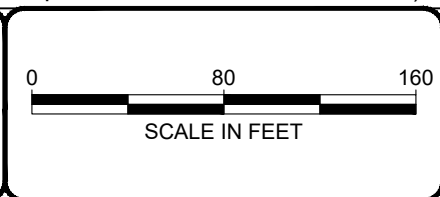
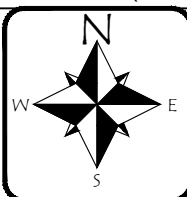
**NOTE(S):**

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2. OHWM line was determined through a joint effort by Ecological Land Services and Washington Department of Ecology on December 30, 2019. OHWM flags were professionally surveyed by S&F Land Services December 30-31, 2019.
3. Site plan provided by FDM Development, Inc.
4. SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts. It is ELS' opinion that existing maintained vegetation areas and rip rap functionally isolate the FWHCA.



**LEGEND:**

- Site Boundary
- - - Parcel Boundary
- OHWM
- Stream with Flow Direction
- Functionally Isolated FWHCA Buffer for Type S (150')
- 100' FWHCA Buffer for Type F
- 33' Shoreline Setback
- 200' Shoreline Jurisdiction
- Culvert
- ⊗ Oak Tree Location
- ⊗ Existing Rip Rap
- ⊗ Existing Gravel Boat Launch
- ⊗ Proposed Concrete Surfacing
- ⊗ Proposed Asphalt Surfacing
- Proposed Storm Pipe
- Proposed Building
- Proposed Impacts (0.16 ac.)
- Buffer Enhancement Area (1.16 ac.)  
(1:7.3 Impact to Enhancement Area Ratio)



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Figure 3  
PROPOSED CONDITIONS - NOVEMBER 2023  
Rock Cove Addendum  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 7E, W.M.



**Photo 1. Inflow point of the unnamed tributary via concrete culvert.**



**Photo 2. Unnamed tributary flowing toward Rock Cove.**



**Photo 3. Overview of unnamed tributary's confluence with Rock Cove.**



**Photo 4. Mud flat adjoining Rock Cove.**



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MGR: ARBA  
PR#: 2682.02

**Photoplate 1**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



**Photo 1. Vegetated shoreline on the north end of the study area.**



**Photo 2. Vegetated shoreline extending toward the unnamed tributary.**



**Photo 3. Riprap on the eastern shoreline, facing north.**



**Photo 4. Riprap on the eastern shoreline, facing south.**



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**Photoplate 2**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



**Photo 1. Graveled boat launch on the east side of the study area.**



**Photo 2. Vegetated shoreline on the west side, facing south.**



**Photo 3. Vegetated shoreline and mud flat in the southwest portion of the study area, facing south.**



**Photo 4. Groomed vegetation in the center of the study area.**



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**Photoplate 3**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



**Photo 1. Existing concrete and gravel surfacing.**



**Photo 2. Existing concrete and gravel surfacing.**



**Photo 3. Groomed vegetation in the center of the study area.**



**Photo 4. Existing gravel road.**



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**Photoplate 4**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



June 17, 2020

Mr. Ben Schumaker  
Planning Director  
City of Stevenson  
Stevenson, WA 98648

RE: Rock Creek Cove Hospitality Site – Critical Areas Review

Mr. Shumaker:

Olson Environmental (OE) has reviewed the Critical Areas Report dated June 16, 2020 to determine compliance with the City of Stevenson Municipal Code 18.13 which addresses Critical Areas and Natural Resource Lands. The report was prepared by Ecological Land Services (ELS) for the Applicant which is FDM Development. The Applicant is proposing a mixed-use hospitality development on the former Hegewald Lumber Mill site located between Rock Creek Drive and Rock Creek Cove. ELS identified riparian habitat associated with Rock Cove within the project area, therefore SMC 18.13.095 (Fish and Wildlife Habitat Conservation Areas – FWHCA) applies to this development. The Applicant is proposing minor encroachments into the riparian buffer which requires a Critical Areas Permit as outlined in SMC 18.13.035. In addition, an Oregon white oak tree was identified at the southeast end of the study area. This tree is not proposed to be removed for this project. The project area is also within a designated shoreline which is not part of this review. OE's findings are as follows:

#### Fish and Wildlife Habitat Conservation Areas Critical Areas Report

Critical Area report requirements are outlined in SMC 18.13.050 and specifically for FWHCA in SMC 18.13.095(C). ELS has identified a Type F stream in the north of the study area as shown in Figure 2 of their report. Rock Cove which surrounds three sides of the project area is a shoreline of the state (Type S) water. According to SMC Table 19.13.095-1, Type F streams have a 100 foot riparian buffer and Type S waters have a 150 foot riparian buffer. Riprap occurs along approximately 65 percent of the shoreline and maintained vegetation areas occur north and south of the existing entrance to the property (Fig. 2). The Applicant has presented the case that the riprap and maintained vegetation areas functionally isolate the 150 foot Type S riparian buffer (Fig. 2) based on SMC 18.13.095(D)(3) which identifies functionally isolated buffers as lawns, walkways, driveways, other mowed or paved areas, and areas which are functionally separated from a FWHCA and do not protect the FWHCA from



adverse impacts due to pre-existing roads, structures, or vertical separation, shall be excluded from buffers otherwise required by this chapter. If existing developments cause the width of the remaining buffer to be less than 50 percent of the base buffer, both conditions shall apply:

- a. If the reduced buffer exists in degraded condition, the reduced buffer shall be enhanced in accordance with 18.13.095D.5, unless the area in question is utilized for activities consistent with water dependent uses
- b. The buffer cannot be further reduced by averaging or on-site mitigation.

OE concurs that based on this definition the riprap functionally isolates the 150 foot buffer as shown in Figure 2. The maintained vegetation areas may functionally isolate however more detail needs to be provided to make that justification.

The remaining buffer in the riprap areas is less than 50 percent (75') of the base buffer (150'). If the maintained vegetation areas are considered functionally isolated the remaining buffer area north of the existing entrance and a portion of the buffer in the south-central portion of the project area are less than 50 percent (see attached graphic).

Based on ELS' description of the buffer at least portions of the remaining buffer are degraded. Therefore, SMC 18.13.095(D)(3)(a & b) apply. The degraded buffer in those areas where less than 50 percent of the base buffer remains shall be enhanced and the buffer cannot be further reduced by on-site mitigation.

OE recommends that the Applicant provide a more detailed habitat assessment report that includes the requirements of SMC 18.13.050, SMC 18.13.095(B)(1) and 18.13.095(C)(1) prior to final approval.

### Conceptual Mitigation Plan

The Applicant has provided a conceptual mitigation plan that outlines the enhancement of the remaining riparian buffer and onsite mitigation for further reducing the buffer for the development. Very little detail is provided in the conceptual plan. Based on the information provided above only the buffer areas that have not been reduced by 50 percent by functional isolation can be further reduced through onsite mitigation. As per SMC 18.13.095(D)(5) onsite mitigation can be used to reduce the base buffer to 70 percent of the base buffer. For this project that would reduce the 150 foot base buffer to 105 feet. To reduce the buffer further requires off-site mitigation. As per SMC 18.13.095(D)(6), the riparian buffer can be reduced to 33 percent of the base buffer width through off-site mitigation. This would reduce the base buffer from 150 feet to 49.5 feet. It is OE's opinion that this project can meet the buffer reduction criteria by utilizing the off-site mitigation option which would allow the development

to occur outside of the 50 foot setback as required under the City's SMP. The Applicant shall provide a detailed mitigation plan that includes the requirements of SMC 18.13.095(D)(6) and 18.13.095(F). The Applicant has previously been provided a list of off-site mitigation options that would meet the requirements of SMC 18.13.095(D)(6).

Should you have questions or need more information, please contact me.

Regards,

*Kevin L. Grosz*  
Kevin L. Grosz, S.P.W.S.  
Project Manager  
Wetland/Wildlife Biologist

# DRAFT

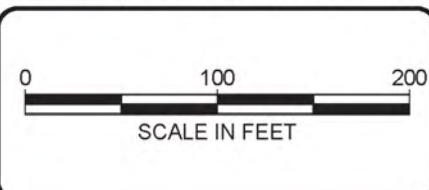


**LEGEND:**

- Site Boundary
- OHWM
- Stream with Flow Direction
- FWHCA Buffer for Type F
- Functionally Isolated FWHCA Buffer for Type S
- Reduced FWHCA Buffer For Type S (105')
- Shoreline Management Plan Setback
- Culvert
- Oak Tree Location
- Proposed Graveled Surfacing
- Proposed Storm Line
- Proposed Storm Outfall
- Proposed Impacts (0.12 ac.)
- Buffer Enhancement Area (1.03 ac.)  
(1:8.6 Impact to Enhancement Area Ratio)
- Associated Habitat Improvement (1.43 ac.)

**NOTE(S):**

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3. Site Plan provided by FDM Development, Inc.



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Figure 3  
PROPOSED CONDITIONS MAP  
Rock Cove CAR  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 7E, W.M.

# DRAFT

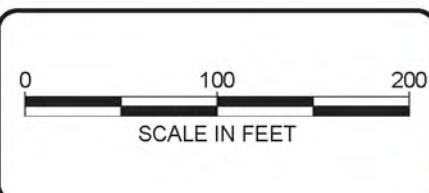


**LEGEND:**

- Site Boundary
- OHWM
- Stream with Flow Direction
- FWHCA Buffer for Type F
- Functionally Isolated FWHCA Buffer for Type S
- Shoreline Management Plan Setback
- Culvert
- Oak Tree Location
- Existing Graveled or Concrete Surfacing
- Existing Rip Rap

**NOTE(S):**

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Figure 2  
 EXISTING CONDITIONS SITE MAP  
 Rock Cove CAR  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.

November 22, 2023

Brad Kilby, AICP  
Planning Manager  
Harper Houf Peterson Righellis Inc.  
205 SE Spokane Street, Suite 200  
Portland, Oregon 97202

Subject: Rock Cove Hospitality Mitigation Addendum

Dear Mr. Kilby,

This letter has been prepared to address changes to the Rock Cove Hospitality site plan and to address comments from Washington Department of Fish and Wildlife (WDFW) and the Department of Ecology (Ecology). This letter is a supplement to the *Critical Areas and FWHCA Report for Rock Creek Cove Hospitality* updated on May 3, 2023 (ELS 2023). Based on results and comments from a hearing with the City of Stevenson on October 9, 2023, the Rock Cove Hospitality site plan was revised to reduce the proposed impacts to the Fish and Wildlife Habitat Conservation Area (FWHCA) buffer for the Columbia River (Rock Cove) which is a Shoreline of Statewide Significance (Type S).

***Critical Area Recap***

According to the Stevenson Code of Ordinances (SCO) Table 18.13.095-1, Rock Cove is afforded a 150-foot FWHCA buffer. The SCO further designates under 18.13.095(D)(3), that this FWHCA buffer may be functionally isolated by “lawns, walkways, driveways, other mowed or paved areas, and areas which are functionally separated from a FWHCA and do not protect the FWHCA from adverse impacts due to pre-existing roads, structures, or vertical separation”. There is existing rip rap along the majority of the shoreline bank for stabilization, as well as existing mowed and maintained areas within the site that are functionally separated from the FWHCA. The area landward of these features shall be excluded from the FWHCA buffer per the RCO. The remaining, reduced FWHCA buffer areas are moderately degraded due to lack of protection and the presence of non-native and invasives plant species. These reduced FWHCA buffer areas (not including areas waterward of the existing rip rap) shall be enhanced in accordance with 18.13.095(D)(5) and 18.13.095(F) as detailed in the May 2023 report (ELS 2023). The Stevenson Shoreline Master Program (SMP), additionally designates this site as Active Waterfront which, according to Table 5.1, is afforded a 33-foot shoreline setback for commercial lands uses for water related/water enjoyment purposes. Existing conditions can be seen in Figure 1.

***Mitigation Sequencing-Compliance with RCO 18.13.055***

The proposed project includes the development of 19 recreational dwellings, an event space, massage hut, parking area, and paved walkway partially within the remaining reduced FWHCA buffer. Due to the shape, size, and location of the peninsula the site is located on, it is highly constricted on all sides by the

FWHCA buffer. The revised site plan maximizes the available buildable area to the greatest extent practicable while meeting parking and access requirements, utility requirements, shoreline use requirements per the SMP, and while remaining aesthetically pleasing which is desirable for all shoreline uses. All impacts to the FWHCA buffer on the northern portion of the site have been **avoided**. The recreational dwellings on the southern portion of the site have been repositioned, with the total number reduced by one, **minimizing** the total proposed impacts. The total impact proposed in the May 2023 report was 0.19 acres with a proposed 1.12 acres of FWHCA buffer enhancement equating to an approximate enhancement ratio of 1:5.9 (Figure 2). The revised site plan proposes 15.8 percent less impacts totaling 0.16 acres with a 3.45 percent increase in enhancement area with 1.16 acres of FWHCA buffer enhancement equating to a 19.2 percent increase in enhancement ratio at approximately 1:7.3 (Figures 2 and 3). According to the SCO Table 18.13.095-3, a ratio of only 1:1 for enhancement of the FWHCA is required. Due to the proposed enhancement ratio being significantly greater than the required 1:1 ratio, the impact will be fully **rectified** onsite and in-kind. The impacts cannot be **reduced over time** as they are permanent structures and impervious surfaces; however, proper maintenance of the proposed structures and impervious surfaces will prevent any further impact. The enhancement measures specified in the May 2023 report (ELS 2023) at the ratio listed above, will fully **compensate** for the impacts ensuring there is no net loss of ecological function as a result of this project. The updated planting table below should be utilized in lieu of the table listed in the May 2023 report (ELS 2023) as the plant counts have been updated to reflect the adjusted size of the enhancement areas. Plant species have also been updated to reflect Skamania County’s “recommended plants for screening” for the Columbia River Gorge National Scenic Area (<https://www.skamaniacounty.org/departments-offices/community-development/planning-division/national-scenic-area>). The enhancement areas will be maintained and **monitored** for a period of 5 years. If dead or failed plants are identified during monitoring, corrective actions will be implemented to meet the minimum performance standards as detailed in the May 2023 report (ELS 2023) to ensure compliance.

**Table 1: Recommended Plants for Screening of the Enhancement Areas**

Common Name	Scientific Name and FAC Status	Stock	Spacing (feet)	Quantity
<b>Trees</b>				
Red alder	<i>Alnus rubra</i> (FAC)	Gallon	10 feet on-center	<b>126</b>
Black cottonwood	<i>Populus balsamifera</i> (FAC)			<b>126</b>
Sitka willow	<i>Salix sitchensis</i> (FACW)		6 feet on-center	<b>175</b>
Pacific ninebark	<i>Physocarpus capitatus</i> (FACW)			<b>175</b>
Oceanspray	<i>Holodiscus discolor</i> (FACU)			<b>175</b>
Pacific dogwood	<i>Cornus nuttallii</i> (FACU)			<b>175</b>
			<b>Total</b>	<b>952</b>

*Plants more suited for wet conditions (FACW) should be located closer to the ordinary high water mark (OHWM) of Rock Cove while plants more suited for upland conditions (FACU) should be located further from the OHWM.*

**Responses to WDFW Comments**

In a letter dated October 6, 2023, a number of recommendations were made by Amaia Smith of WDFW. Below the recommendations are listed in *italics* with responses by ELS following in regular font.

- *We do not recommend developing within 100ft of the ordinary high-water line to protect the pollutant removal function.*

Although ELS acknowledges WDFW's new riparian guidance standards, they have not been recognized in the SCO nor the SMP so adherence to these guidelines is not currently required. Due to the shape, size, location of the peninsula, and the existing site conditions (functionally isolated FWHCA buffer) complete avoidance of development within 100 feet of the OHWM isn't practical nor would it allow the project to be feasible. The guidance does state that "the riparian setback should encompass the width of the existing riparian vegetation community", and in this case it does. The entire vegetation community onsite exists within the FWHCA buffer area shown in Figure 1. This area will be enhanced via invasive species removal and installation of native plants with species recommended by Skamania County for screening of the Columbia River Gorge National Scenic Area. Due to these factors, it is ELS' opinion that this project will protect the pollutant removal functions to the greatest extent possible.

- *Implementing Best Management Practices (BMPs) will meet shoreline access objectives while protecting riparian ecosystem functions.*

This project will utilize certain BMPs to protect ecosystem functions. An adequate number of trash receptacles will be installed throughout the site and along the walking path to minimize human impacts on the surrounding natural areas. Additionally, the enhancement areas will be protected with fencing and signage designed to prohibit access by humans and pets. These areas will be further protected via a conservation covenant. Other construction BMPs will be utilized during site development such as installing orange construction fencing and silt fencing along the edge of the work area, applying native grass seed to temporarily disturbed areas, stabilizing work area entrances via installation of gravel, and making a water truck available to prevent wind erosion and dust blowing during construction.

- *We discourage any road surfaces within 100ft of the active floodplain/channel.*

No new roads are proposed as a part of this project. The proposed parking area will have curbs and stormwater grates to collect any runoff. No tire particles will be able to discharge to Rock Cove.

- *If the existing rip rap is being used as justification to lessen riparian protection, WDFW recommends further review to determine if the rip rap was legally permitted and installed.*

The existing rip rap is more than 10 years old and although ELS is not aware of when or if it was permitted, it is not being used as a justification to lessen riparian protection. Protection and enhancement of the entire remaining FWHCA buffer is proposed as part of this project. Removing the rip rap and replacing it with a bioengineered solution is not financially feasible nor is it a requirement by the SCO or the SMP. Additionally, removal of the rip rap would pose erosion and water quality hazards that could not feasibly be contained and would likely cause greater harm to the riparian and aquatic habitat.

- *WDFW wants to avoid a situation where structures are approved for development near waters that will require future emergency protection.*

Due to the presence of existing rip rap along the shoreline area that experiences greatest exposure to water movement, future erosion is unlikely. This site will not require any greater emergency protection than any other water related development in this area.

### **Responses to Ecology Comments**

In an email dated October 3, 2023, Meghan Tait of Ecology expressed a few concerns related to the project. Below the concerns are summarized in *italics* with ELS responses following in regular font.

- *Ecology does not think the maintained vegetation areas shown in Figure 1 should qualify as functional isolation.*

According to the SCO 18.13.095(D)(3), lawns and other mowed areas can be considered as functional separation from FWHCA buffers. These areas have been mowed and maintained since the year 2000 as can be seen on Google Earth aerial imagery. Additionally, these areas were photographed in January of 2020 in preparation of the original draft of the critical areas report by ELS (Photoplate 3 and 4). It is ELS' opinion that the provided evidence meets the requirement in the SCO and that these areas do indeed meet the definition of functional isolation.

- *Ecology states any area where the remaining buffer is less than 50% shall be enhanced unless the area is utilized for water-dependent uses.*

All of the remaining buffer, even if greater than 50 percent, is proposed for enhancement. The only area of further "reduction" (impacts) is in the southern enhancement area where the recreational dwellings are proposed. This project is considered "water related/water enjoyment", which is comparable with the term, "water dependent". There is an existing boat launch area that will serve to provide access to the water for facility patrons. Due to the purpose of these recreational dwellings to provide short-term accommodations for patrons who are utilizing the facilities for water enjoyment, it is ELS' opinion that this project meets the requirements of the SCO and the impacts to the FWHCA should be allowed.

- *Ecology states the enhanced buffer area shall not count as mitigation and the buffer area cannot be further reduced through averaging or onsite mitigation.*

Due to the majority of the FWHCA buffer being functionally isolated by existing uses and structures prior to this proposed project, and for the reasoning listed in the bullet point above, no additional mitigation is necessary besides the enhancement of the remaining FWHCA buffer. This proposed project exceeds the required 1:1 mitigation ratio required for enhancement by the SCO with a ratio of approximately 1:7.3. Averaging is not proposed as a part of this project. No further (non-water dependent/related) reduction of the FWHCA buffer is proposed.

- *Ecology states that it should be demonstrated how this project follows mitigation sequencing requirements and achieves no net loss.*

ELS provided evidence of mitigation sequencing and how the project achieves no net loss in the third paragraph of this letter.

- *Ecology states that vegetation removal within shoreline jurisdiction requires mitigation at the mitigation ratios listed in the SMP Table 6.2*



A nominal quantity of shrubs will be removed from the impact areas shown on Figure 3. These shrubs consist of native groundcover and understory, non-native vegetation, and invasive species such as Himalayan blackberry. According to Table 6.2 of the SMP, the required mitigation ratio is 1:1 for these vegetation types. This proposed project exceeds the required 1:1 mitigation ratio required for enhancement by the SCO with a ratio of approximately 1:7.3, therefore, vegetation proposed for removal within shoreline jurisdiction will be fully compensated for.

- *Ecology states that it is unclear how the project will meet the requirement of the SMP to provide public access for water enjoyment.*

The proposed project is a public facility that will provide access to the public during daylight hours. The walking trails and boat launch area can be utilized by the public without reserving a recreational dwelling.

Please feel free to contact me at [kt@eco-land.com](mailto:kt@eco-land.com) if you have any questions regarding the above letter.

Sincerely,



Kate'Lyn Wills  
Biologist/Environmental Scientist V

Enclosures:

Figure 1: Existing Conditions

Figure 2: Proposed Conditions – April 2023

Figure 3: Proposed Conditions – November 2023

Photoplates 1-4

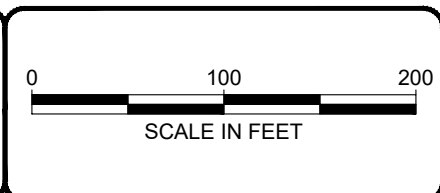


**LEGEND:**

- Site Boundary
- Parcel Boundary
- OHWM
- Stream with Flow Direction
- 100' FWHCA Buffer for Type F
- Functionally Isolated FWHCA Buffer for Type S (150')
- 33' Shoreline Setback
- 200' Shoreline Jurisdiction
- Culvert
- Oak Tree Location
- Existing Graveled or Concrete Surfacing
- Existing Rip Rap
- Existing Gravel Boat Launch

**NOTE(S):**

1. Aerial from Google Earth™. (2018)
2. OHWM line was determined through a joint effort by Ecological Land Services and Washington Department of Ecology on December 30, 2019. OHWM flags were professionally surveyed by S&F Land Services December 30-31, 2019.
3. SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts. It is ELS' opinion that existing maintained vegetation areas and rip rap functionally isolate the FWHCA.



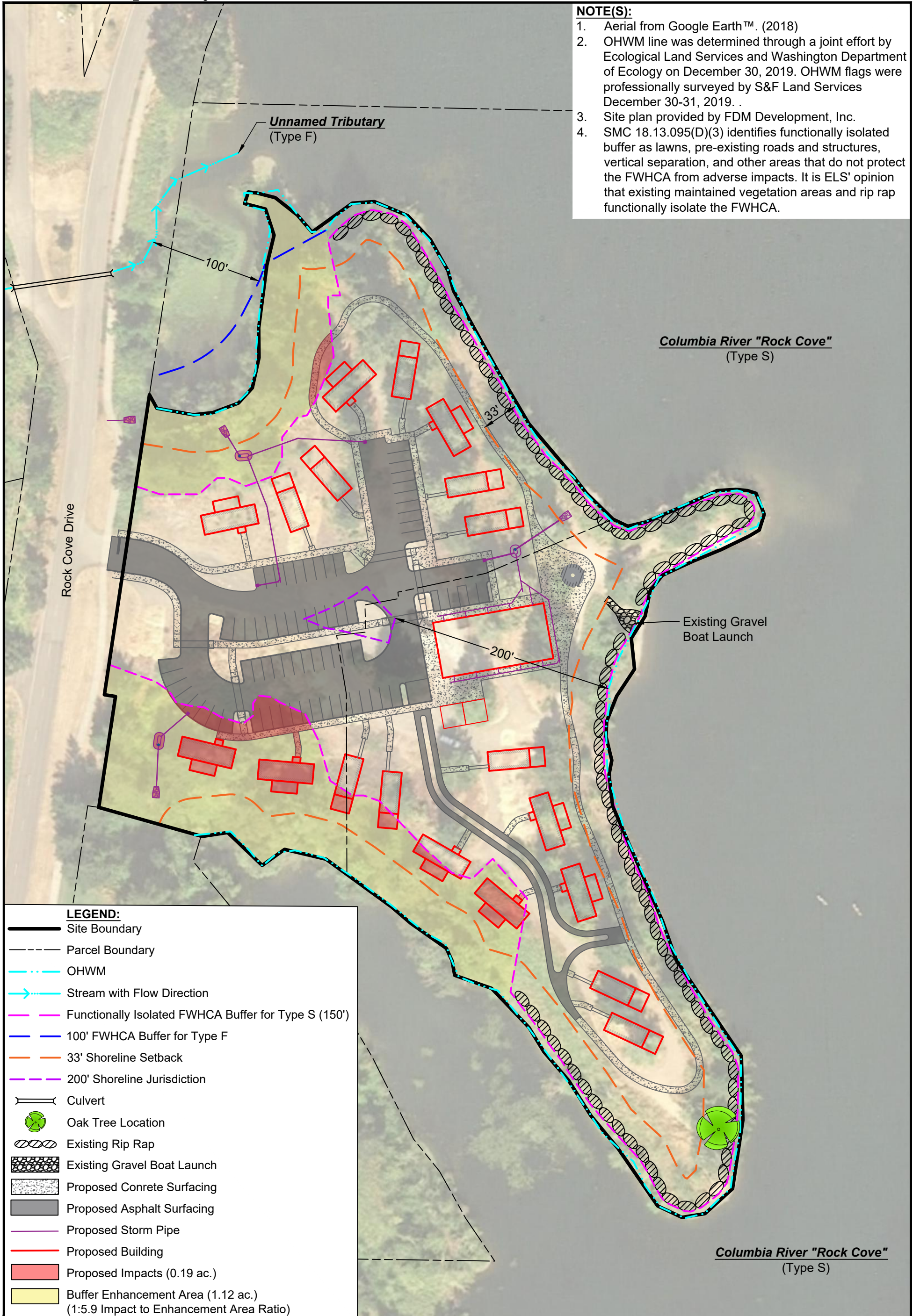
1157 3rd Ave., Suite 220A  
 Longview, WA 98632  
 Phone: (360) 578-1371  
 Fax: (360) 414-9305  
 www.eco-land.com

DATE: 11/22/23  
 DWN: EF  
 REQ. BY: KT  
 PRJ. MGR: KT  
 CHK: JKJ  
 PROJECT NO:  
 2682.02

Figure 1  
 EXISTING CONDITIONS  
 Rock Cove Addendum  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.

**NOTE(S):**

1. Aerial from Google Earth™. (2018)
2. OHWM line was determined through a joint effort by Ecological Land Services and Washington Department of Ecology on December 30, 2019. OHWM flags were professionally surveyed by S&F Land Services December 30-31, 2019. .
3. Site plan provided by FDM Development, Inc.
4. SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts. It is ELS' opinion that existing maintained vegetation areas and rip rap functionally isolate the FWHCA.



Rock Cove Drive

Unnamed Tributary  
(Type F)

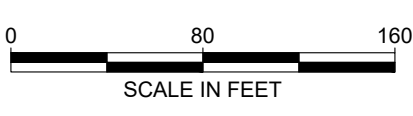
Columbia River "Rock Cove"  
(Type S)

Existing Gravel Boat Launch

Columbia River "Rock Cove"  
(Type S)

**LEGEND:**

- Site Boundary
- - - Parcel Boundary
- OHWM
- Stream with Flow Direction
- Functionally Isolated FWHCA Buffer for Type S (150')
- 100' FWHCA Buffer for Type F
- 33' Shoreline Setback
- 200' Shoreline Jurisdiction
- Culvert
- ⊗ Oak Tree Location
- ⊗ Existing Rip Rap
- ⊗ Existing Gravel Boat Launch
- ▨ Proposed Concrete Surfacing
- ▨ Proposed Asphalt Surfacing
- Proposed Storm Pipe
- ▭ Proposed Building
- ▭ Proposed Impacts (0.19 ac.)
- ▭ Buffer Enhancement Area (1.12 ac.)  
(1:5.9 Impact to Enhancement Area Ratio)



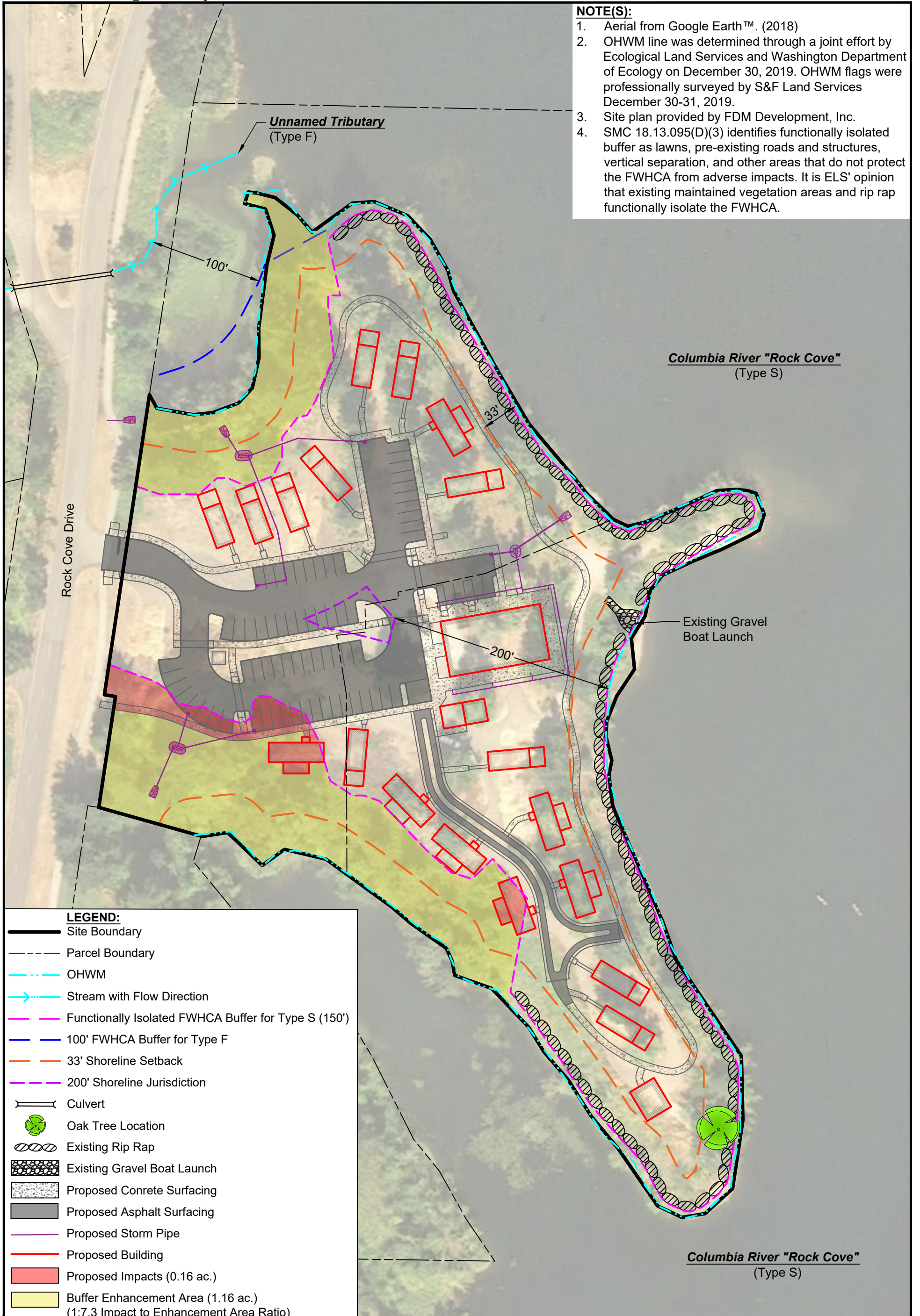
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Fax: (360) 414-9305  
www.eco-land.com

DATE: 11/22/23  
DWN: EF  
REQ. BY: KT  
PRJ. MGR: KT  
CHK: JKJ  
PROJECT NO:  
2682.02

Figure 2  
PROPOSED CONDITIONS - APRIL 2023  
Rock Cove Addendum  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 7E, W.M.

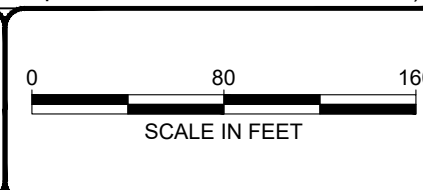
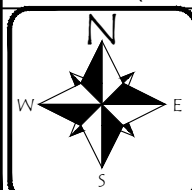
**NOTE(S):**

1. Aerial from Google Earth™. (2018)
2. OHWM line was determined through a joint effort by Ecological Land Services and Washington Department of Ecology on December 30, 2019. OHWM flags were professionally surveyed by S&F Land Services December 30-31, 2019.
3. Site plan provided by FDM Development, Inc.
4. SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts. It is ELS' opinion that existing maintained vegetation areas and rip rap functionally isolate the FWHCA.



**LEGEND:**

- Site Boundary
- - - Parcel Boundary
- OHWM
- Stream with Flow Direction
- Functionally Isolated FWHCA Buffer for Type S (150')
- 100' FWHCA Buffer for Type F
- 33' Shoreline Setback
- 200' Shoreline Jurisdiction
- Culvert
- ⊗ Oak Tree Location
- ⊗ Existing Rip Rap
- ⊗ Existing Gravel Boat Launch
- ⊗ Proposed Concrete Surfacing
- ⊗ Proposed Asphalt Surfacing
- Proposed Storm Pipe
- Proposed Building
- Proposed Impacts (0.16 ac.)
- Buffer Enhancement Area (1.16 ac.)  
(1:7.3 Impact to Enhancement Area Ratio)




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 DWN: EF  
 REQ. BY: KT  
 PRJ. MGR: KT  
 CHK: JKJ  
 PROJECT NO:  
 2682.02

Figure 3  
 PROPOSED CONDITIONS - NOVEMBER 2023  
 Rock Cove Addendum  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.



**Photo 1. Inflow point of the unnamed tributary via concrete culvert.**



**Photo 2. Unnamed tributary flowing toward Rock Cove.**



**Photo 3. Overview of unnamed tributary's confluence with Rock Cove.**



**Photo 4. Mud flat adjoining Rock Cove.**



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DWN: ARBA  
MGR: ARBA  
PR#: 2682.02

**Photoplate 1**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



**Photo 1. Vegetated shoreline on the north end of the study area.**



**Photo 2. Vegetated shoreline extending toward the unnamed tributary.**



**Photo 3. Riprap on the eastern shoreline, facing north.**



**Photo 4. Riprap on the eastern shoreline, facing south.**



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DWN: ARBA  
MGR: ARBA  
PR#: 2682.02

**Photoplate 2**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



**Photo 1. Graveled boat launch on the east side of the study area.**



**Photo 2. Vegetated shoreline on the west side, facing south.**



**Photo 3. Vegetated shoreline and mud flat in the southwest portion of the study area, facing south.**



**Photo 4. Groomed vegetation in the center of the study area.**



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DWN: ARBA  
MGR: ARBA  
PR#: 2682.02

**Photoplate 3**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



**Photo 1. Existing concrete and gravel surfacing.**



**Photo 2. Existing concrete and gravel surfacing.**



**Photo 3. Groomed vegetation in the center of the study area.**



**Photo 4. Existing gravel road.**

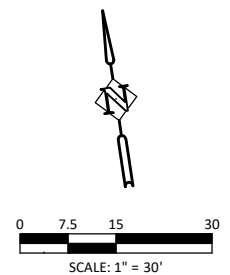
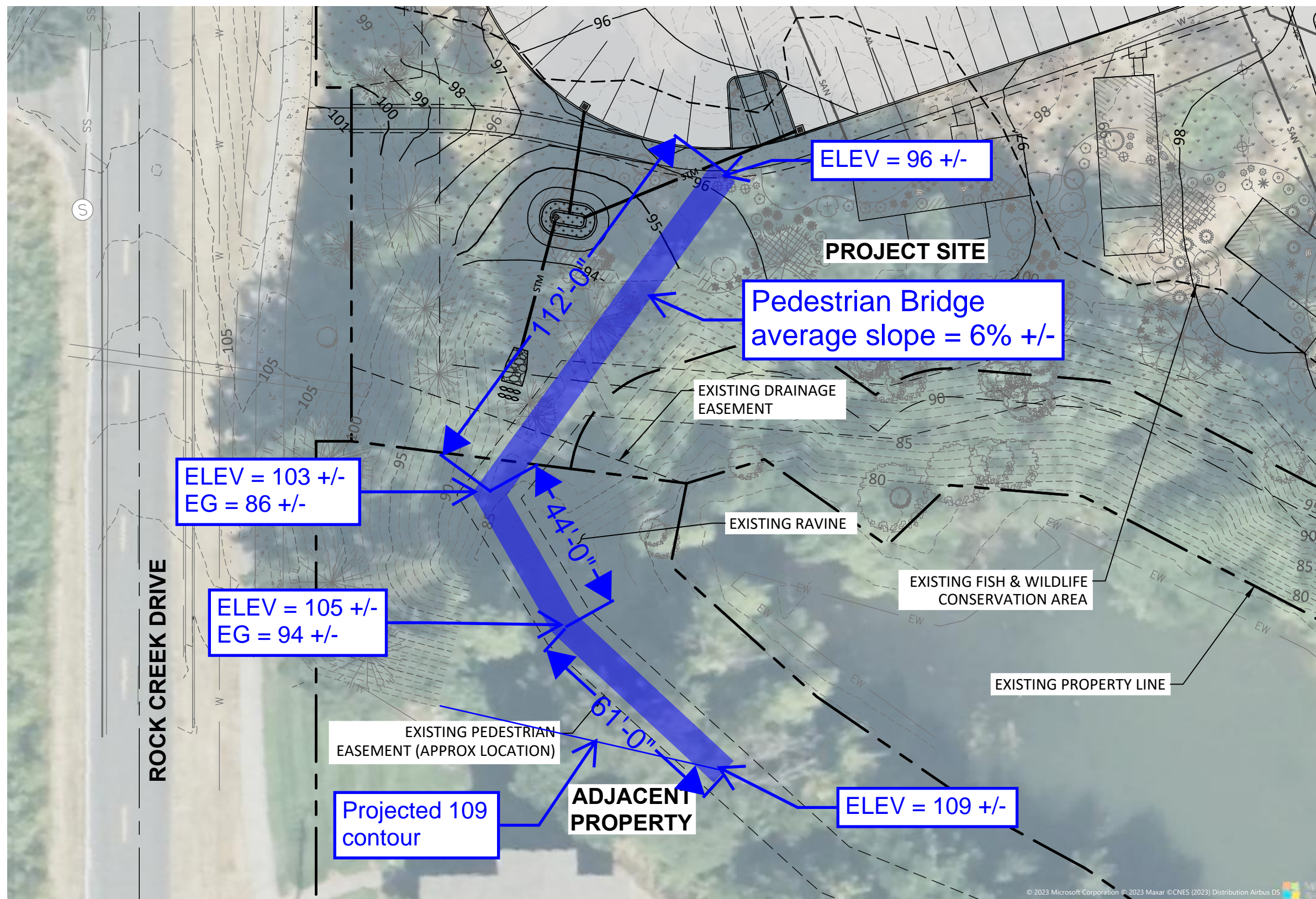


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DATE: 1/17/20  
DWN: ARBA  
MGR: ARBA  
PR#: 2682.02

**Photoplate 4**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



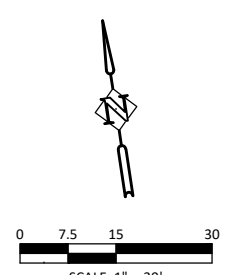
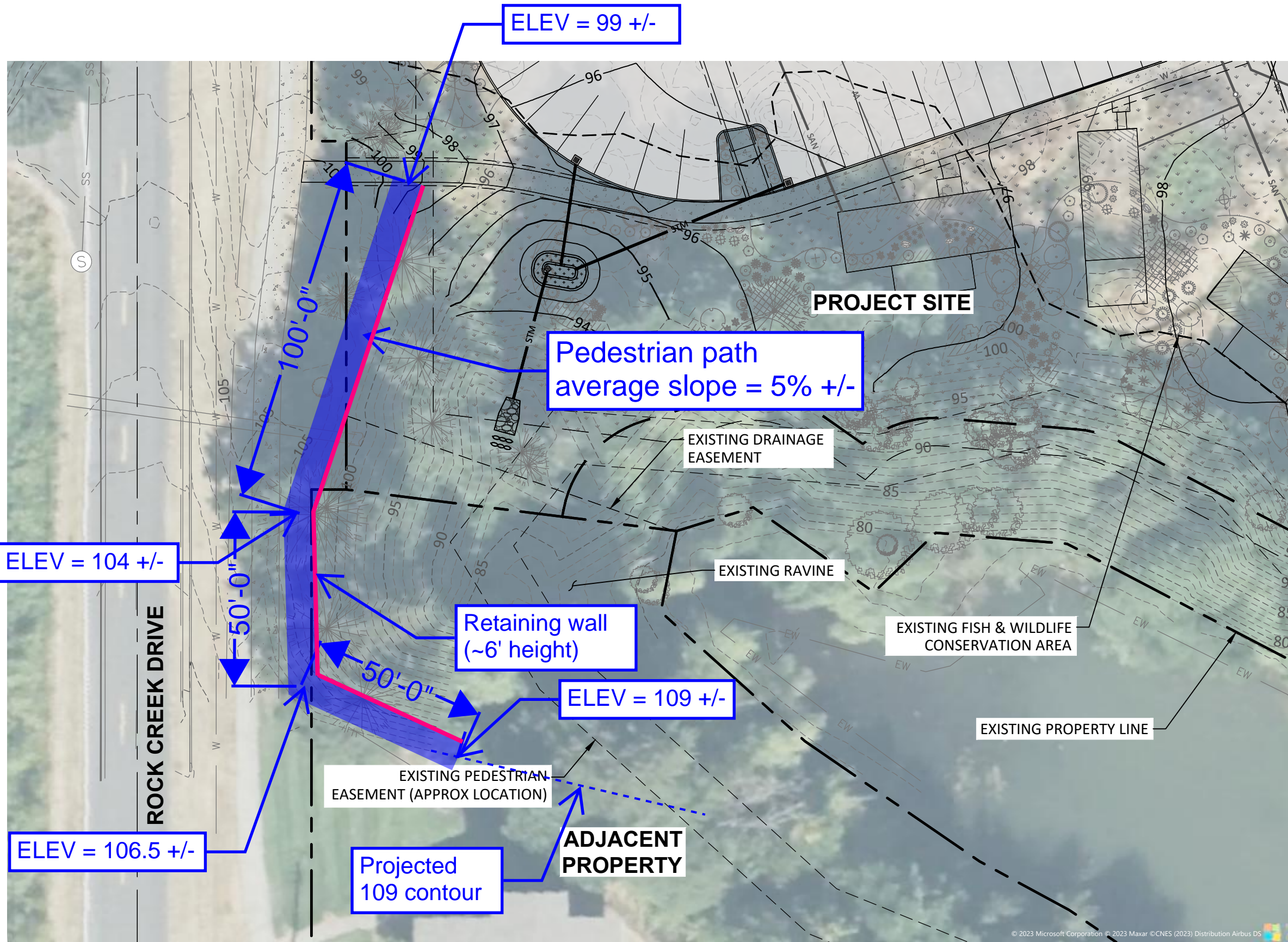


PUBLIC PATHWAY EXHIBIT  
**ROCK CREEK COVE HOSPITALITY**  
 STEVENSON, WASHINGTON

**Harper Houf Peterson Righellis Inc.**  
 ENGINEERS + PLANNERS  
 LANDSCAPE ARCHITECTS + SURVEYORS  
 205 SE Spokane Street, Suite 200, Portland, OR 97202  
 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

DESIGNED:	HHPR
DRAWN:	HHPR
CHECKED:	HHPR
DATE:	10/23/2023

SHEET NO.  
**EX**  
 JOB NO. FDM-01



PUBLIC PATHWAY EXHIBIT  
**ROCK CREEK COVE HOSPITALITY**  
 STEVENSON, WASHINGTON

**Harper Houf Peterson Righellis Inc.**  
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 LANDSCAPE ARCHITECTS + SURVEYORS  
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DESIGNED:	HHPR
DRAWN:	HHPR
CHECKED:	HHPR
DATE:	10/23/2023

SHEET NO.  
**EX**  
 JOB NO. FDM-01

October 27, 2023

**City of Stevenson Planning Commission**

C/o Ben Shumaker  
7121 E. Loop Road  
Stevenson, WA 98648

RE: SDP 968 SW Rock Creek Drive; Applicant's Request for Continuance (**Sent via e-mail**)

Dear Commissioners:

This letter is a formal request on behalf of Dean Maldonado of FDM Development Inc. to continue the Stevenson Planning Commission hearing scheduled for November 13, 2023 to your regular December meeting to allow FDM Development and their consultants to prepare formal responses to the Washington Department of Ecology and Washington Department of Fish and Wildlife comments submitted prior to your last hearing.

This continuance would also provide the civil engineering consultant with additional time to thoroughly vet the trail connection to the property located south of the subject site. We already know that the amended application results in a reduction to the number of proposed units by at least one, but our environmental consultant needs additional time to prepare their responses. In the amended plan, the site plan and building footprints are expected to change slightly to minimize impacts to the fish habitat conservation areas.

The site plan is being amended to reflect the changes and we are planning to resubmit the materials to the City for Ben's consideration the week of November 8th.

Please place this letter and its enclosure before the Stevenson Planning Commission and in the official Planning Department file for this Application. Thank you. Please contact me at (503)221-1131 or e-mail me at [Bradk@hhpr.com](mailto:Bradk@hhpr.com) if you have any questions or need any additional information.

Sincerely,

HARPER HOUF PETERSON RIGHELLIS INC.  
Brad Kilby, AICP



Planning Manager



# City of Stevenson

## Planning Department

(509)427-5970

7121 E Loop Road, PO Box 371  
Stevenson, Washington 98648

**TO:** Planning Commission  
**FROM:** Ben Shumaker  
**DATE:** October 9<sup>th</sup>, 2023  
**SUBJECT:** Shoreline Substantial Development Permit – SHOR2023-02 - Rock Cove Hospitality

---

### **Introduction**

The Planning Commission is asked to review a proposal by FDM Development for a water-enjoyment commercial use on the shorelands of Rock Cove. The proposal is subject to review under SMC 18.08 and the Stevenson Shoreline Master Program (SMP). Complete application for the proposal was accepted on August 11, 2023 (Attachment 1). A template decision has been prepared (Attachment 2). The template is not a recommendation of approval as some key items of discussion are appropriate based on the site's history and public comments received on the project (Attachment 3).

The proposal is similar to a project approved by the City under the previous SMP SHOR2020-01. Underground site infrastructure was installed, however, the previous permit expired and the project was subsequently redesigned.

### **Key Discussions**

Three topics warrant additional Planning Commission Discussion.

Cultural Resources – A cultural resources report was prepared to advance the 2020 project. The report recommended inclusion of inadvertent discovery procedures during construction. Public comments were solicited on the cultural resources report, and the City received a request to require the presence of a monitor during construction activities. The City Council disregarded the request when they issued the Shoreline Permit. The Planning Commission is faced with the same decision in its review under the new SMP. Pink highlighted text is available should the Planning Commission seek to require cultural resource monitoring.

Mitigation Sequence – Before fish and wildlife habitat conservation areas are disturbed, proposals must do their best to avoid, then minimize, then rectify and compensate for impacts. Public comments from State agencies challenge the proposed efforts to avoid and minimize impacts. Staff expects applicant testimony to address these comments and is ready to draft findings and conditions if necessary to assist the Planning Commission discussion of the topic.

Off-Site Mitigation – The proposal includes enhancement of fish and wildlife habitat conservation areas. The enhancement is required by the Stevenson Critical Areas Code because riprap at the site reduces the regulatory base habitat buffer area to less than 50% of what it would be on a greenfield site. With the enhancement requirement, the code removes the opportunity for additional on-site mitigation. The application proposes on-site mitigation to compensate for buffer impacts. This would effectively double count mitigation efforts. The issue was brought to the City's attention via public comments and staff expects applicant testimony to address alternate—off-site—mitigation for the project impacts. Staff is ready to draft findings and conditions if necessary to assist the Planning Commission's discussion after testimony is received

Public Access – The proposal includes visual public access to Rock Cove via pedestrian pathways. The proposal alters the location of existing public easements to better suit the site’s redesign. The proposal also involves reducing and/or not developing public access where some easements already exist. The reduction makes it difficult to assess the approval criteria, in part because the issue of “feasibility” as that term is defined in the SMP is not addressed. Staff anticipates applicant testimony related to this topic and is prepared to draft findings and conditions if necessary to assist the Planning Commission discussion.

**Effect**

The project is very close to satisfying all applicable criteria, however additional information is necessary before a permit can be justified. Depending on the information provided at the hearing and the Planning Commission’s preferences, a decision could be made tonight. Alternatively, the record could be left open and the public hearing continued to a future date.

Prepared by,

Ben Shumaker  
Zoning Administrator

Attachment

- Application
- Template Decision
- Written Public Comments
- Public Access History
- Public Comment Responsiveness Summary (Available at the Meeting)



# SHORELINES APPLICATION

Mail: PO Box 371, Stevenson, Washington 98648 Email: [planning@ci.stevenson.wa.us](mailto:planning@ci.stevenson.wa.us) Phone: (509)427-5970

**Applicant/Contact:** Brad Kilby, AICP

Mailing Address: 205 SE Spokane Street, Suite 200 Portland, OR 97202

Phone: 503-221-1131 E-Mail Address: bradk@hhpr.com

**Property Owner** (when applicable): Dean Maldonado

Mailing Address: PO Box 353 Ridgefield, WA 98642

Phone: 360-719-0276 E-Mail Address: dean@fdmdevelopment.com

If There are Additional Property Owners, Please Attach Additional Pages and Signatures as Necessary

## Submittal Requirements

*Applicants must provide the following information for all Shoreline Proposals.  
The City will not accept applications without the required information.*

- Application Fee (\$ \_\_\_\_\_)
- Agreement to Pay Outside Consulting Fees (When applicable)
- Documentation of Preapplication Meeting
- Completed Application Signed by the Property Owner
- Associated Permit Applications (When applicable)

*The following information is required as a complete application for **Minor Project Authorization**. Minor Project Authorizations are exempt from Shoreline Substantial Development Permit requirements but not exempt from compliance with the City's Shoreline Management Program.*

- A Narrative** describing why the project qualifies for consideration as an MPA
- A Statement of Compliance** with applicable sections of the SMP
- Such Additional Information** outlined as necessary in the preapplication meeting documentation or in response to the application as-submitted

*The following information is required as a complete application for **Shoreline Substantial Development Permits and Shoreline Conditional Use Permits**. Shoreline Substantial Development Permits assure proposals' consistency with the provisions of the Shorelines Management Act and the SMP. Shoreline Conditional Use Permits provide a system which allows flexibility in the use regulations of the SMP while assuring consistency with the Shorelines Management Act and the SMP.*

- A Complete Site Plan** including parcel boundary, OHWM, vegetation characterization, critical areas locations, and dimensions and locations of all existing and proposed structures and improvements
- A Narrative** describing the proposal in detail and how the proposal is consistent with the SMP

Continued on Page 2



SUBMIT TO:  
City Hall  
7121 E Loop Road

# Shorelines Application

- Project Construction Details** (e.g., building elevations, construction timelines, grading plans, (re)vegetation plans, etc.)
- Technical Assessments, Management Plans, and Mitigation Plans** as necessary and prepared by qualified professionals
- Such Additional Information** outlined as necessary in the preapplication meeting documentation or in response to the application as-submitted

*In addition to the information required for Shoreline Substantial Development Permits, the following information is required as a complete application for applications **Shoreline Variances**. Shoreline Variances grant relief from specific bulk, dimensional or performance standards set forth in the SMP. Shoreline Variances do not vary the allowed use of a shoreline.*

- A Site Plan** indicating where development could occur without a variance and the physical features and circumstances on the property that provide the basis for a variance request and the location of adjacent structures and uses.
- A 3D, SketchUp-compatible Model** of the proposal in context with City-provided adjacent models

## Property Information

*Applicants must provide the following information for all Shoreline Proposals.  
The City will not accept applications without the required information.*

**Property Address** (Or Nearest Intersection): 968 SW Rock Creek Drive

**Tax Parcel Number:** 02070100130200 and 300      **Zoning:** CR

**Shoreline Waterbody:** Rock Cove      **Shoreline SED:** \_\_\_\_\_

**Water Supply Source:**  City     Well      **Sewage Disposal Method:**  City     Septic

**Proposed Shoreline Uses:** Commercial

**Proposed Shoreline Modifications:** \_\_\_\_\_

*As proponents and/or the property owners of the real property described in this proposal, our signatures indicate our approval of this proposal, with the understanding that the proposal is subject to review, approval, and/or denial under SMC Title 18 and the Shoreline Master Program.*

*I/we hereby provide written authorization for the City to reasonably access to the subject property to examine the proposal and carry out the administrative duties of the Stevenson Municipal Code.*

Incomplete applications will not be accepted. • Ensure all required submittals are included.

**Brad Kilby**

Digitally signed by Brad Kilby  
DN: c=US, E=bradk@thpr.com, O="Harper Houf Peterson  
Rights, Inc.", OU=Planning, CN=Brad Kilby  
Reason: I am the author of this document  
Date: 2023.05.22 09:16:37-0700

**Signature of Applicant:** \_\_\_\_\_

**Date:** 05/22/23

**Signature of Property Owner:** Dean McDonald

**Date:** 5/19/2023

For Official Use Only:

Date Application Received: \_\_\_\_\_

Date Application Complete: \_\_\_\_\_

**Rock Creek Cove Hospitality**  
**Revised Land Use Application Narrative & Findings Document**  
Site Plan Review, Substantial Shoreline Development Permit, and Plat Vacation

---

**Owner:** Dean Maldonado  
FDM Development Inc.  
dean@fdmdevelopment.com  
(360) 719-0276

**Engineer:** Bruce Haunreiter, P.E.  
Harper Houf Peterson Righellis Inc.  
1220 Main Street, Suite 150  
Vancouver, WA 98660  
bruce@hhpr.com  
(360) 750-1131

**Planner:** Brad Kilby, AICP  
Harper Houf Peterson Righellis Inc.  
205 SE Spokane Street, Suite 200  
Portland, OR 97202  
bradk@hhpr.com  
(503) 221-1131

**Tax Lot Number:** 02070100130300 and 02070100130200

**Parcel Size:** 6.4 acres

**Zoning Designation:** Commercial Recreation (CR)

**Summary of Request:** The applicant proposes to construct 19 cabins that will serve as nightly and weekly lodging, as well as an event space to be used for private weddings, reunions, and parties. On-site parking, public pedestrian access, landscaping, and enhancements to the riverbank will also be provided. Additionally, a plat vacation is proposed to provide a more cohesive property under one ownership group.

**Date:** August 11, 2023





## TABLE OF CONTENTS

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<b>I. Project Overview</b>	<b>3</b>
<i>Existing Conditions</i>	3
<i>Vicinity Map</i>	3
<i>Proposal</i>	3
<b>II. Response to Applicable Development and Code Standards</b>	<b>4</b>
<i>Chapter 16:02: Short Plats and Short Subdivisions</i>	4
<i>Chapter 17.25: Trade Districts</i>	4
<i>Chapter 17.42: Parking and Loading Standards</i>	8
<i>Chapter 18.13: Critical Areas and Natural Resource Lands</i>	11
<b>III. Response to Applicable Stevenson shoreline master program and Approval Criteria</b>	<b>13</b>
<i>Chapter 3: Shoreline Environment Designation Provisions</i>	13
<i>Chapter 4: General Provisions for All Shoreline Activities</i>	14
<i>Chapter 5: Shoreline Use Regulations</i>	21
<i>Chapter 6: Shoreline Modification Provisions</i>	29
<b>IV. Conclusion</b>	<b>31</b>

# I. PROJECT OVERVIEW

## EXISTING CONDITIONS

The project site is located off SW Rock Creek Drive, north of the existing Rock Cove Assisted Living Community, and includes parcels 02070100130200 and 02070100130300. The site is approximately 6.40 acres in size and zoned Commercial Recreation (CR) on the Stevenson Zoning Map. The development area is currently undeveloped (no buildings on site) but retains improvements from prior industrial land uses that include concrete and gravel surfaces, gravel roads accessing various points of the site, a graveled boat launch, and riprap embankments that span a majority of the shoreline.

## VICINITY MAP



## PROPOSAL

The project seeks to complement the existing tourism industry in Stevenson by proposing 19 cabins available for nightly and weekly rental. An event space will anchor the development and provide wide views of Rock Cove and the Columbia River Gorge. The development seeks to attract both local and regional visitors, with venue space available for weddings, company parties, family reunions, and corporate retreats.

In addition to the cabins and event space, the applicant proposes to restore water-side portions of the property for enhanced publicly accessible observation and enjoyment. This will equal to approximately 1.12 acres of buffer improvement along the shoreline.

## II. RESPONSE TO APPLICABLE DEVELOPMENT AND CODE STANDARDS

**Note:** Responses to all applicable development standards are included below. Sections that are not applicable or do not require a response may be omitted from the narrative text.

### CHAPTER 16:02: SHORT PLATS AND SHORT SUBDIVISIONS

#### SECTION 16.02.270: ANCILLARY PROCEEDINGS – PLAT VACATION

- A. *Whenever any person is interested in the vacation of any short plat or any portion thereof, or any area designated or dedicated for public use, that person shall file an application for vacation with the council. The application shall set forth the reasons for vacation and shall contain signatures of the owner(s) of that portion of the short plat subject to vacation. If the short plat is subject to restrictive covenants which were filed at the time of the approval of the short plat, and the application for vacation would result in the violation of a covenant, the application shall contain an agreement signed by all parties subject to the covenants providing that the parties agree to terminate or alter the relevant covenants to accomplish the purpose of the vacation of the short plat or portion thereof.*
- B. *When the vacation application is specifically for a city road, the procedures for road vacation in RCW Chapter 35.79 and the city's road vacation procedures shall be utilized for the road vacation. When the application is for the vacation of the short plat together with the roads and/or streets, the procedure for vacation in this section shall be used, but vacations of roads may not be made that are prohibited under RCW 35.79.*
- C. *The council shall give notice as provided in Section 16.02.110(C) and shall conduct a public hearing on the application for vacation and may approve or deny the application for vacation of the short plat after determining the public use and interest to be served by the vacation of the short plat. If any portion of the land contained in the short plat was dedicated to the public for public use or benefit, such land, if not previously deeded to the city, shall be deeded to the city unless the council shall set forth findings that the public use would not be served in retaining title to such lands.*

**Response:** The applicant is proposing a plat vacation on the project site to provide a more cohesive land use pattern. All of the land contained in the plat after the vacation will be under a single ownership group. All required procedures for a plat vacation, including a public hearing, will be complied with by the property owner.

### CHAPTER 17.25: TRADE DISTRICTS

#### SECTION 17.25.040: USES

<b>Use</b>	<b>CR</b>
<i>Overnight Lodging (Hotel)</i>	<i>Permitted</i>
<i>Food Service</i>	<i>Permitted</i>
<i>Arts, Entertainment, and Recreation Uses (Public Assembly)</i>	<i>Permitted</i>

**Response:** The applicant proposes 19 cabins that will be available as overnight lodging, as well as an event space with a kitchen that is available for private events. All three of these uses are permitted in the Commercial Recreation zoning district as shown in Table 17.25.040 above.

**SECTION 17.25.050: TRADE DENSITY**

A. *Density and Lot Size.* The maximum density and minimum lot dimensions for Trade Districts are contained in Table 17.25.050-1: Trade Density Standards.

<b>Table 17.25.050-1: Trade Density Standards</b>					
<b>District</b>	<b>Use</b>	<b>Minimum Lot Area</b>	<b>Minimum Lot Width</b>	<b>Minimum Lot Depth</b>	<b>Maximum Lot Coverage</b>
CR	All	10,000 square feet	-	-	35%
Proposed		262,334 square feet	~450 feet	~580 feet	10.6% (27,983 square feet)

**Response:** The project site is 6.4 acres in size, or approximately 262,334 square feet. The lot is irregularly shaped due to its location adjacent to Rock Cove, with a width of approximately 450 feet and a depth of approximately 580 feet. The applicant is proposing interior lot landscaping, including trees, shrubs, and ground covering, as well as enhancement of the 1.2 acres of the property’s shoreline with additional native vegetation. In total, the lot coverage on the project site is approximately 10.6% or 27,983 square feet. Please see the attached landscape plan and site plan for details on lot dimension and coverage.

**SECTION 17.25.060: TRADE DIMENSIONAL STANDARDS**

- A. *Compliance Required.* All structures in Trade Districts must comply with:
1. *The applicable dimensional standards contained in Table 17.25.060-1: Trade Dimensional Standards.*
  2. *All other applicable standards and requirements contained in this title.*

<b>Table 17.25.060-1: Trade Dimensional Standards</b>									
<b>District</b>	<b>Minimum Height of Building</b>	<b>Maximum Height of Building</b>	<b>Minimum Setbacks</b>				<b>Maximum Setbacks</b>		
			<b>Front</b>	<b>Side (Interior)</b>	<b>Side (Street)</b>	<b>Rear</b>	<b>Rear</b>	<b>Front</b>	<b>Side (Street)</b>
CR	N/A	35 feet	25 ft	0 ft	20 ft	0 ft	20 ft	N/A	N/A
Proposed	32 feet		~60ft	~40 ft	N/A	~45 ft	~45ft	~60 ft	N/A

**Response:** The site has been designed to comply with all setback requirements to the maximum extent possible, while also provided a sufficient buffer from the ordinary high water line and the existing fish and wildlife conservation area. All minimum setbacks of the CR zone are met, while some of the maximum setbacks are greater than generally allowed to accommodate the critical natural areas and Rock Cove that surround the site. Please see the attached site plan, Sheet C2.00, for details on setbacks and site layout.

**SECTION 17.25.070: TRADE DISTRICT DESIGN**

A. *CR Design*



1. *Buildings shall be appropriately scaled and compatible with their locations and surrounding environment, including adjacent buildings, landscaping, water bodies and other natural features.*

**Response:** The applicant is proposing two different styles of cabins ranging from 629 square feet to 853 square feet. Each residential building and the larger event space are scaled to be compatible with all other buildings on site in height and mass. Please see the attached site plan and building elevations for details.

2. *Exterior building materials and finishes shall be compatible with the unique setting of the Columbia River Gorge. Preference should be given to nonglossy finishes and earthtone colors.*

**Response:** The proposed building materials will be primarily wood, and any paint or color used will be selected to compliment the surrounding nature by being earth toned. Please see the attached elevations for details on proposed building materials.

3. *Outdoor storage shall be visually screened by landscaping, fences, walls or enclosures.*
4. *Refuse containers shall be fully enclosed and covered. Enclosures shall be constructed of materials compatible with the main structure.*

**Response:** All storage areas will be visually screened from view by either landscaping or a wall.

5. *Screening and buffering shall be provided between dissimilar uses to minimize negative impacts, such as those from noise, traffic, lighting and glare.*

**Response:** The entire site will be used as a nightly and weekly lodging and event space. There are no dissimilar uses on the project site that will require additional screening or buffering.

6. *Screening and buffering shall be located along the perimeter of a lot or parcel.*

**Response:** Landscaping is provided along the entire perimeter of the site, including along Rock Creek Drive. Please see the attached landscape plan for details.

7. *The location and number of access points to the site, their relationship to existing streets and traffic, the interior circulation patterns, and the separation between pedestrians and vehicles shall be designed to maximize safety and convenience.*

**Response:** The applicant is proposing one vehicular access point on the site from Rock Creek Drive, the only street that borders the project site. The on-site vehicular circulation has been designed to provide easy access to visitors and employees, while keeping cars separate from pedestrians by providing sidewalks connecting all buildings and amenities on site. Please see the attached site plan, Sheet C2.00, for details.

8. *Pedestrian sidewalks, pathways and access ways shall be located and constructed to minimize conflicts with vehicular traffic and natural hazards.*
9. *Safety crossings and adequate sight lines shall be provided at pathway intersections with roads.*

**Response:** All proposed pedestrian pathways on site are proposed to be a minimum of eight feet wide and separated from the on-site vehicular parking and circulation by a curb. Where the pedestrian pathways cross

vehicular drive aisles, a clearly marked crosswalk will be provided. Please see the attached site plan, Sheet C2.00, for details.

*10. Roads, buildings and other structural improvements shall be located and designed to minimize grading and modification of existing landforms and natural characteristics.*

**Response:** The site has been designed and structures laid out to take into account the natural topography and features of the site. The parking area and cabin layout has been designed to limit grading to the maximum extent possible, while limiting any impact to the water edge. Please see the attached site plan, Sheet C2.00, for details.

*11. Developments shall not contribute to the instability of a parcel or to adjoining lands.*

**Response:** None of the proposed improvement will cause instability to the project site or adjacent properties.

*12. Surface drainage systems shall be designed so as not to adversely affect neighboring properties, roads or water bodies.*

**Response:** Surface drainage has been designed to prevent any draining to the neighboring properties or adjacent roads and water bodies. The applicant is proposing multiple stormwater facilities on the project site, including catch basins, rock outflows, and storm cleanouts. Please see the attached stormwater plan, Sheet C4.00, for details on surface drainage systems.

*13. Developments within the designated shoreline areas of the CR district shall provide ample public visual and physical access to the water.*

**Response:** The project site is located within the shoreline area of the CR zoning district and the applicant has designed the site to include a path on the eastern perimeter of the property to allow for visual and physical access to the water. This will be accessible to visitors and customers of the cabins. Please see the attached site plan, Sheet C2.00, for details on the path and access to Rock Cove.

#### **SECTION 17.25.100: TRADE DISTRICT LANDSCAPING**

##### **A. CR Landscaping.**

*1. Minimum landscaping shall include 100% of the area between the building line and the street right-of-way line excluding drives, parking areas and pathways.*

**Response:** All areas of the site not proposed for cabins, parking and maneuvering areas, pedestrian pathways and trails, or the event space are proposed to be landscaped. Please see the attached preliminary landscape plan for details.

*2. New trees, shrubs, groundcover and other materials shall be compatible with other nearby landscaping.*

*3. New plantings shall be of such size, condition and density that they are initially effective.*

**Response:** The proposed groundcover, shrubs, and conifer and deciduous trees will be chosen to be compatible with the surrounding landscaping and vegetation and be survive successfully after being planted.

4. *Wherever practical, natural vegetation and existing grade should be retained.*

**Response:** To the maximum extent practical, the natural vegetation on site is being preserved. This includes all land on site between the ordinary high water mark buffer and the shoreline. Please see the attached preliminary landscape plan for details.

5. *In areas where vegetation plays an important role in erosion control, aesthetic considerations or slope stabilization, any vegetation removed during construction, excavation or grading shall be promptly replaced.*

**Response:** All native existing native vegetation is being preserved between the shoreline and the ordinary high water mark buffer. This will ensure erosion control of the site during construction of the proposed development.

6. *Trees and shrubs which are intended to be retained on a site shall be protected during construction.*

**Response:** All tree and vegetation protection measures will be utilized during site grading and construction for vegetation proposed to be retained on the development site.

#### **SECTION 17.25.130: TRADE DISTRICTS PARKING AND LOADING**

A. *CR Parking and Loading.*

1. *Off-street parking shall be provided in accordance with the requirements of SMC 17.42 Parking and Loading Standards.*

**Response:** All applicable standards of Chapter 17.42 are met with the proposed off-street parking lot. Please see the response in Chapter 17.42 of this narrative for details on compliance.

2. *Parking areas, aisles, loading aprons and access ways shall be paved with an all-weather surface of a strength adequate for the traffic expected and shall be well drained.*

**Response:** All proposed parking areas, drive aisles, loading areas and accessways are paved with an all-weather surface of a strength adequate for the expected traffic and needed drainage on site.

### **CHAPTER 17.42: PARKING AND LOADING STANDARDS**

#### **SECTION 17.42.040: SIZE AND ACCESS REQUIREMENTS**

A. *Each off-street parking space shall have a minimum width of 9 feet and a minimum length of 18 feet, except that each off-street parking space for compact vehicles shall have a minimum width of 8 feet and a minimum length of 16 feet.*

**Response:** All standard parking spaces on the project site are proposed to be 20 feet long and nine feet wide. Please see the attached site plan, Sheet C2.00, for details on the proposed parking spaces.

*B. Aisles shall have a minimum width of 20 feet.*

**Response:** The drive aisle on the project site is 24 feet wide, complying with the minimum width of 20 feet. Please see the attached site plan, Sheet C2.00, for details.

*C. Up to one-third of the required off-street parking spaces on a site may be sized and designated for compact vehicles.*

**Response:** None of the off-street parking spaces on site are proposed to be compact.

*D. Each parking space shall be of usable shape and condition.*

**Response:** All proposed off-street parking spaces on site are of a usable shape and comply with the minimum dimensional standards of 17.42.040(A). Please see the attached site plan, Sheet C2.00, for details.

#### **SECTION 17.42.060: JOINT USE OF PARKING PERCENTAGE OF AREA PERMITTED**

*The planning commission may authorize the joint use of parking facilities for the following uses or activities under conditions specified:*

- A. Up to 50% of the parking facilities required by this chapter for a theater, bowling alley, restaurant, retail, service or other similar uses, may be supplied by the off-street parking provided by other types of uses or by a community parking lot.*
- B. Reserved.*
- C. Up to 100% of the parking facilities required by this chapter for a church, auditorium, stadium, or sport arena incidental to a public, private or parochial school may be supplied by the off-street parking facilities serving primarily uses or by a community parking lot.*
- D. Up to 100% of the parking facilities required by this chapter for a hotel may be supplied by the off-street parking provided by other types of uses or by a community parking lot.*

**Response:** The primary use proposed on the project site is cabins, falling under the use of a hotel. However, the applicant is also proposing an event space, most similar to an auditorium use in the City of Stevenson Development Code. Auditoriums are permitted to provide up to 100% of the parking required by the off-street parking facilities serving the primary use. Because the hotel is the primary use on site, the applicant is proposing a single off-street parking lot to serve both the cabins and the event space on site.



**SECTION 17.42.080: OFF-STREET FACILITIES – LOCATION REQUIREMENTS**

*Off-street facilities shall be located as specified in this section. Where a distance is specified, such distance shall be the maximum walking distance measured from the nearest point of the parking facility to the nearest point of the building that such facility is required to serve:*

- A. *For a single-family dwelling: on the home lot with the building they are required to serve;*
- B. *For multiple dwellings: 150 feet;*
- C. *For retail, food service, and hotel uses: 1,000 feet;*
- D. *For all other uses: 300 feet.*

**Response:** The proposed parking area is located within ten feet of the nearest cabin and event space, complying with the above distance standards. Please see the attached site plan, Sheet C2.00, for details.

**SECTION 17.42.090: TABLE OF MINIMUM STANDARDS – OFF-STREET PARKING**

- A. *Off-street parking shall be provided in accordance with Table 17.42.090-1: Off-Street Vehicle Parking Requirements.*

<b>Table 17.42.090-1: Off-Street Vehicle Parking Requirements</b>	
<i>Use</i>	<i>Unspecified or All Other Districts (including CR)</i>
<i>Hotel</i>	<i>1 for each sleeping unit plus 1 space for each 2 employees on the evening shift</i>

**Response:** The proposed use will include nightly and weekly lodging for local and regional tourism, similar to a hotel use. Under Table 17.42.090-1, hotel uses require one parking space for each sleeping unit plus one space for each two employees on the evening shift. The applicant is proposing a total of 71 parking spaces which will sufficiently serve the 19 hotel cabins, employees, and any event hosted at the development site. Please refer to the attached site plan, Sheet C2.00, for details on proposed off-street parking.

**SECTION 17.42.100: LOADING AND UNLOADING AREAS**

- A. *Subject to subsection E of this section, whenever the normal operation of any development requires that goods, merchandise or equipment be routinely delivered to or shipped from that development, a sufficient off-street loading and unloading area must be provided in accordance with this section to accommodate the delivery or shipment operations in a safe and convenient manner.*

**Response:** The proposed project will include cabins available for nightly and weekly rentals, as well as an associated event space to be used by individuals, families, or businesses staying at the site. A permanent loading space is not anticipated to be needed, as there will be no regular delivery of goods, merchandise, or equipment delivered to the development.



## CHAPTER 18.13: CRITICAL AREAS AND NATURAL RESOURCE LANDS

### SECTION 18.13.095: CRITICAL AREA – FISH AND WILDLIFE HABITAT CONSERVATION AREAS

#### C. FWHCA Reports.

1. *Preliminary Assessments. In order to determine the extent of the appropriate buffers on a site when the nature of the fish and wildlife habitat conservation area is unclear, the applicant may submit a preliminary habitat assessment report as prepared by a qualified professional in accordance with SMC 18.13.050 - Critical area reports—Requirements. This report shall suffice for the purpose of the development application if no habitat buffer impacts are proposed. In addition to the minimum requirements for critical area reports contained in SMC 18.13.050, a preliminary FWHCA report should also contain the following information:*
  - a. *Confirmation or correction of the classifications for the FWHCA and/or stream type as defined in this chapter;*
  - b. *Characterization of riparian (streamside) vegetation species, composition, and habitat function;*
  - c. *Description of the soil types adjacent to and underlying the stream, using the Soil Conservation Service soil classification system;*
  - d. *Identification of the qualities of the area that are essential to maintain feeding, breeding, and nesting, and an assessment of potential project impacts to the use of the site by the species;*
  - e. *A discussion of any federal, state, or local species/habitat management recommendations, including the WDFW habitat management recommendations that have been developed for the identified species or habitat;*
  - f. *Recent photographs of the property, including detailed photographs of the habitat resource in question;*
  - g. *An outline of standard buffer widths, available buffer reductions, or potential opportunities for enhancement/mitigation.*

**Response:** Ecological Land Services, Inc. (ESL) prepared a Critical Areas Report and Conceptual Mitigation Plan for the preliminary review of this application that includes all of the above information. The City’s environmental consultant, Olson Environmental LLC, provided review and comments on this report dated and provided findings that concur with the FWHCA buffer isolation. Please see the attached report for details.

#### D. Habitat Buffer Widths.

1. *Base Buffer Widths. The following buffer widths have been established in accordance with the best available science. They are based on category of fish and wildlife habitat conservation area.*
2. *Buffer Averaging. Buffer averaging to allow reasonable use of a parcel may be permitted when all of the following are met: [...]*

**Response:** The project site area is designated as a fish and wildlife habitat conservation area (FWHCA) and has Type F waters is 100 feet and Type S waters is 150 feet. There are no proposed buffer reductions for this project and the applicant is proposing all development to occur outside of the Shoreline Management Plan Setback and approximately 0.19 acres of improvements within the FWHCA Buffer for Type S. However, the applicant is proposing 1.12 acres of buffer enhancements (a 1:5.9 impact to enhancement area ratio).

3. *Functionally Isolated Buffers. Lawns, walkways, driveways, other mowed or paved areas, and areas which are functionally separated from a FWHCA and do not protect the FWHCA from adverse impacts due to pre-existing roads, structures, or vertical separation, shall be excluded from buffers otherwise required by this chapter. If existing developments cause the width of the remaining buffer to be less than 50% of the base buffer, both of the following conditions shall apply:*
  - a. *If the reduced buffer exists in a degraded condition, the reduced buffer shall be enhanced in accordance with 18.13.095.D.5. unless the area in question is utilized for activities consistent with water dependent uses.*
  - b. *The buffer cannot be further reduced through averaging or on-site mitigation.*

**Response:** There are portions of the site that have historically been used for development and have existing gravel or concrete surfacing that are located within the buffer. The applicant is not proposing to further impede the fish and wildlife conservation area of Rock Cove but is proposing permanent development in the already impacted area. Please see the attached site plan, Sheet C2.00, for details.

**F. Habitat Mitigation.**

1. *Compensatory Mitigation, Required. Compensatory mitigation for impacts to FWHCA's shall be used only for impacts that cannot be avoided or minimized and shall achieve equivalent or greater functions as those affected by the proposed project. Out-of-kind replacement of FWHCA type or functions may be considered if the applicant demonstrates it will best meet watershed goals formally identified by the city, such as replacement of historically diminished FWHCA types.*

**Response:** The proposed FWHCA enhancement increases the existing buffer functions and values. The applicant is proposing approximately 1.12 acres of buffer enhancement by densely planting the remaining buffer area with native shrubs and removing non-native invasive Himalayan blackberry. This is a 1:5.9 ratio of impact to enhancement, significantly exceeding the 1:1 enhancement ratio required for on-site FWHCA mitigation. Please see the attached Critical Areas and FWHCA Report for details.

2. *FWHCA Mitigation Plan. When a project involves FWHCA or FWHCA buffer impacts, enhancements, or reductions, a habitat mitigation plan by a qualified professional shall be required. At a minimum, the habitat mitigation plan must contain the following information:*
  - a. *Baseline Information. All the information required in the FWHCA Report prepared under SMC 18.13.095(C).*
  - b. *Site Plan. A copy of the site plan for the development proposal showing identified critical areas, buffers, and dimensions and limits of any areas to be cleared. This plan should include the proposed construction sequencing, grading and excavation details, erosion and sedimentation control features, and detailed site diagrams and any other drawings appropriate to show construction techniques or anticipated final outcome.*
  - c. *Project Impacts and Mitigation. A description of the mitigation sequence developed for the project according to SMC 18.13.055. This should involve a description of the existing and estimated future conditions of the enhancement area and/or compensatory mitigation site, including location and rationale for selection. Include an assessment of all appropriate technical information necessary to assess the compensatory mitigation proposed.*

- d. *Goals and Objectives. The environmental goals and objectives of the mitigation, and the goals and objectives must be related to the functions and values of the impacted critical area.*
- e. *Monitoring and Maintenance Program. A proposed Monitoring Program compliant with SMC 18.13.059 - Performance and monitoring standards.*
- f. *A bond estimate for the entire enhancement and/or compensatory mitigation project, including the following elements: site preparation, plant materials, construction materials, installation oversight, maintenance twice per year for up to 5 years, annual monitoring field work and reporting, and contingency actions for the monitoring period established under SMC 18.13.059 - Performance and monitoring standards.*
- g. *Where proposed activities, uses, and alterations are located below the OHWM, identification of how the preservation and enhancement of anadromous fish habitat will be achieved including, but not limited to, the following:*
  - i. *The allowable work window as designated by the WDFW.*
  - ii. *Alternative alignments or locations for the activity that were determined infeasible.*
  - iii. *Stream width and flow rate, stability of the channel including erosion or aggradation potential, type of substratum, discussions of infiltration capacity and biofiltration before and after alteration, presence of hydrologically associated wetlands, analysis of fish and wildlife habitat, and any proposed floodplain limits.*
  - iv. *Methods to minimize the degradation of the downstream functions or values of the fish habitat or other critical areas.*

**Response:** The attached Critical Areas and FWHCA Report prepared for the project site by Ecological Land Services includes all of the above requirements and information. Please see the attached report for details on compliance.

### **III. RESPONSE TO APPLICABLE STEVENSON SHORELINE MASTER PROGRAM AND APPROVAL CRITERIA**

#### **CHAPTER 3: SHORELINE ENVIRONMENT DESIGNATION PROVISIONS**

##### **SECTION 3.2: ENVIRONMENT DESIGNATIONS**

##### **3.2.5: ACTIVE WATERFRONT ENVIRONMENT**

- 3. *Management Policies:*
  - a. *Prefer uses that preserve the natural character of the area or promote preservation of open spaces and sensitive lands, either directly or over the long term. Allow uses that result in restoration of ecological functions if the use is otherwise compatible with the purpose of the environment and the setting.*
  - b. *Give priority to water-oriented uses, with first priority to water-dependent, then second priority to water-related and water-enjoyment uses. For shoreline areas adjacent to commercially navigable waters, give highest priority to water-dependent uses.*
  - c. *Prohibit new non-water-oriented uses, except:*
    - i. *As part of mixed use development;*

- ii. *In limited situations where they do not conflict with or limit opportunities for water oriented uses;*
- iii. *On sites where there is no direct access to the shoreline;*
- iv. *As part of a proposal that result in a disproportionately high amount of restoration of ecological functions.*

**Response:** WAC 173-26-020 defines a water-enjoyment use as a use that provides for recreational use or aesthetic enjoyment of the shoreline for a substantial number of people as a general characteristic of the use and which through location, design, and operation ensures the public’s ability to enjoy the physical and aesthetic qualities of the shoreline. A hotel with cabins and a shared event space located on the project site will allow for groups and individuals to stay and have events with a view of Rock Cove and the Columbia River. The proposed development is located on a part of the shoreline with very limited access due to the steep slopes, and is not an ideal location for a water-dependent use.

- d. *Assure no net loss of shoreline ecological functions as a result of new development through shoreline policies and regulations. Where applicable, new development shall include environmental cleanup and restoration of the shoreline to comply in accordance with any relevant state and federal law.*

**Response:** The applicant is proposing approximately 0.19 acres of buffer impacts that include permanent development. As mitigation, the applicant is proposing approximately 1.12 acres of buffer enhancement by densely planting the remaining buffer area with native shrubs and removing non-native invasive blackberry. The proposed mitigation is in-kind buffer enhancement at a 5.9:1 ratio, significantly exceeded the 1:1 enhancement ratio required for the site and assuring no net loss in shoreline ecological functions. Please see the attached Critical Areas and FWHCA Report for details.

- e. *Require public visual and physical access and implement public recreation objectives whenever feasible and where significant ecological impacts can be mitigated.*

**Response:** As part of the site design, the applicant is proposing pedestrian pathways that connect to the right-of-way, cabins and event center, and around the perimeter of the site adjacent to the shoreline. Please see the attached site plan for details on public access.

## CHAPTER 4: GENERAL PROVISIONS FOR ALL SHORELINE ACTIVITIES

### SECTION 4.3: ENVIRONMENTAL PROTECTION & NO NET LOSS

#### 4.3.2: REGULATIONS

1. *Management Sequence. In order to ensure that review activities contribute to meeting the no net loss provisions by avoiding, minimizing, and mitigating for adverse impacts to ecological functions or ecosystem-wide processes, applicants shall describe how the proposal will follow the sequence of mitigation as defined below:*
  - a. *Avoid the impact altogether by not taking a certain action or parts of an action;*

- b. *Minimize the impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps (e.g., project redesign, relocation, timing to avoid or reduce impacts, etc.);*
- c. *Rectify the impact by repairing, rehabilitating, or restoring the affected environment to the conditions existing at the time of the initiation of the project or activity;*
- d. *Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action;*
- e. *Compensate for the impact by replacing, enhancing, or providing substitute resources or environments; and*
- f. *Monitor the impact and the compensation projects and take remedial or corrective measures when necessary.*

**Response:** The applicant will be impacting parts of the buffer on site, but will be mitigating the impact at a near 6:1 ratio. The site has been designed to avoid all buffer impact areas to the maximum extent possible. However, with the current design there is approximately 0.19 acres of buffer impacts that include permanent development. As mitigation, the applicant is proposing approximately 1.12 acres of buffer enhancement by densely planting the remaining buffer area with native shrubs and removing non-native invasive blackberry. The proposed mitigation is in-kind buffer enhancement at a 5.9:1 ratio, significantly exceeded the 1:1 enhancement ratio required for the site and assuring no net loss in shoreline ecological functions. Please see the attached Critical Areas and FWHCA Report for details.

- 2. *The mitigation sequence is listed in the order of priority. Applicants shall consider and apply lower priority measures only where higher priority measures are determined to be infeasible or inapplicable.*

**Response:** The applicant avoided impacts to the maximum extent possible (a) and where impacts could not be avoided the were minimized with site design (b). All buffer enhancements include the planting of native species and restoring the shoreline by removing invasive species (c). Please see the attached Critical Areas and FWHCA Report for details.

- 3. *SEPA Compliance. To the extent SEPA applies to a proposal, the analysis of environmental impacts and mitigation related to the proposal shall be conducted consistent with WAC 197- 11—SEPA Rules and SMC 18.04—Environmental Policy.*

**Response:** The previously submitted SEPA covers the proposed development. No new SEPA is required.

- 4. *Cumulative Impacts. As part of the assessment of environmental impacts subject to this SMP, new uses, developments, and modifications shall evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions. Evaluation of cumulative impacts shall consider:*
  - a. *Current circumstances affecting the shorelines and relevant natural processes;*
  - b. *Reasonably foreseeable future development and use of the shoreline; and*
  - c. *Beneficial effects of any established regulatory programs under other local, state, and federal laws.*

**Response:** The applicant is proposing approximately 0.19 acres of impact to the shoreline on the project site. However, a total of 1.12 acres of enhancements are proposed within the shoreline area on site, creating a cumulative positive impact to the site. The enhancements proposed will benefit the site and surrounding ecology and include the planting of native species. Please see the attached Critical Areas Report and site plan for details.

5. *Mitigating for Impacts. When impacts related to a proposal require mitigation, the following shall apply:*
- a. *The proposal shall achieve no net loss of ecological functions.*
  - b. *The City shall not require mitigation in excess of that necessary to assure the proposal 1) results in no net loss of ecological function and 2) does not have a significant adverse impact on other shoreline functions fostered by this SMP.*
  - c. *Compensatory mitigation shall give preference to measures that replace the impacted function directly and in the immediate vicinity of the impact. However, alternative compensatory mitigation located elsewhere in the same reach or watershed that addresses limiting factors or identified critical needs for shoreline resource conservation may be authorized, including appropriate actions identified in the Restoration Plan.*
  - d. *Unless waived by the City, authorization of compensatory mitigation shall require appropriate safeguards, terms or conditions (e.g. performance bonding, monitoring, conservation covenants) as approved by the City Attorney and necessary to ensure no net loss of ecological functions.*

**Response:** There is approximately 0.19 acres of impacts to the buffer and a total of 1.12 acres of buffer enhancements proposed on site. This is a 1:5.9 impact to enhancement area ratio and does not result in a net loss of ecological functions on site. Please see the attached Critical Areas Report and site plan for details.

6. *Environmental protection and no net loss shall be achieved by complying with the combination of use regulations, shoreline setbacks, critical area buffers, and vegetation removal restrictions:*
- a. *Shoreline Allowances & Setbacks – Table 5.1 establishes a list of permitted, conditional, and prohibited uses in each shoreline environment designation (SED). This table also establishes the minimum shoreline setback applicable to each use, activity, or development within each SED where development cannot occur; and*

**Response:** The applicant proposes 19 cabins that will be available as overnight lodging, as well as an event space with a kitchen that is available for private events. This is considered a commercial use that is water-enjoyment and is permitted in the Active Waterfront as shown in Table 5.1. The minimum shoreline setback for this use and zone is 33 feet. The project has been designed to meet this setback, as shown on the attached site plan.

- b. *Critical Areas Buffers – Section 4.4 Critical Area provisions, including separately incorporated SMC 18.13 provisions that establish Wetland and Riparian buffer standards as additional areas where mitigation sequencing must be applied and unavoidable impacts must be mitigated; and*

**Response:** The project site is adjacent to a Fish & Wildlife Habitat Conservation Area and has provided a preliminary FWHCA assessment, determining necessary buffers and confirming there will be no net loss of ecological function with the proposed development. Please see the attached assessment for details.

- c. *Modifications & Vegetation – Shoreline modification standards, vegetation standards, and prescriptive mitigation measures of Chapter 6 apply to all vegetation impacts occurring within shoreline jurisdiction.*

**Response:** All applicable policies of Chapter 6 are met with the proposed development and vegetation mitigation. Please see the responses to the regulations of Chapter 6 for details.

## SECTION 4.6: PUBLIC ACCESS

### 4.6.2: POLICIES

1. *Continuous public pedestrian access should be provided along the City’s shorelines, especially the Columbia River, Rock Cove, and Lower Rock Creek.*

**Response:** The project site is located on the western edge of Rock Cove and is providing continuous public pedestrian access along the perimeter of the project site and connecting to the public right-of-way on Rock Creek Drive and the existing easement on the southern property. All pathways are accessible to the public and will provide access to adjoining properties and rights-of-way. Please see the attached site plan for details on the provided connections.

2. *The system of public physical and visual access to Stevenson’s shorelines should be maintained, enhanced, and protected over time on both private and public lands.*

**Response:** The property owner will maintain all proposed public and private pedestrian pathways on the project site, including surfacing and landscaping.

3. *Public access and recreational facilities should be located in a manner that will preserve the natural characteristics and functions of the shoreline.*

**Response:** The proposed public access pathway is located along the perimeter of the project site and provides access to the shoreline of Rock Cove without negatively impacting the shoreline or natural vegetation since the pathway is located primarily outside of the buffer area. Please see the attached site plan for details.

4. *Private property rights, public safety, and navigational rights should be considered when providing public access opportunities.*

**Response:** The applicant has designed the site to be developed as a private business while also providing public access opportunities to the right-of-way, adjacent properties, and the shoreline on Rock Cove. Please see the attached site plan for details on site layout and public access.

5. *New development should identify and preserve key shoreline views and avoid obstructing such views from public areas.*



**Response:** The proposed development has been thoughtfully designed to preserve the shoreline views along Rock Cove. The applicant is providing public access via a pedestrian pathway that will circumnavigate the site adjacent to the shoreline and connect to the adjacent properties and rights-of-way.

6. *The City's should develop a comprehensive and integrated public access and trail plan (consistent with WAC 173-26-221(4)) that identifies specific public access needs and opportunities to replace these site-by-site requirements. Such plan should identify a preference for pervious over impervious surfaces, where feasible.*

**Response:** The applicant is proposing connections to existing public access easements to the south property and along Rock Cove. Please see the attached site plan for all pedestrian pathway and public access proposed with this development.

#### 4.6.3: REGULATIONS

1. *Consistent with legal/constitutional limitations, provisions for adequate public access shall be incorporated into all proposals for Shoreline Permits that have one or more of the following characteristics:
  - a. *The proposed development or use will create a demand for, or increase demand for public access;*
  - b. *The proposed use is water-enjoyment, water-related, or non water-dependent, except for individual single-family residences not part of a development planned for 5 or more parcels;*
  - c. *The proposed use involves the subdivision of land into 5 or more parcels;*
  - d. *The proposed development or use will interfere with existing access by blocking access or discouraging use of existing access;*
  - e. *The proposed development or use will interfere with public use of waters of the state;*
  - f. *The proposed development or use will involve public funding or occur on public lands, provided that such access would not result in a net loss of ecological function. Public funding includes any funds from federal, state, municipal or local taxation districts.**

**Response:** The project site is a water-enjoyment use and is providing public access to and through the site to the shoreline. Please see the attached site plan for the location of this access.

2. *Additional public access will not be required where suitable public access is already provided by an existing public facility on or adjacent to the site and the Planning Commission makes a finding that the proposed development would not negatively impact existing visual or physical public access nor create a demand for shoreline public access that could not be accommodated by the existing public access system and existing public recreational facilities in the immediate vicinity.*
3. *Public access will not be required where the applicant demonstrates it is infeasible due to at least one of the following: [...]*
4. *To meet any of the conditions under Regulation 3 above, the applicant must first demonstrate to the satisfaction of the Planning Commission that all reasonable alternatives have been exhausted including, but not limited to, the following: [...]*

5. *For projects that meet the criteria of Regulation 3 above, the City may consider off-site public access or, if approved by the Planning Commission and agreed to by the applicant, the applicant may contribute a proportional fee to the local public access fund (payment in lieu).*
6. *If the City determines that public access is required pursuant to Regulation 1 above, the City shall impose permit conditions requiring the provision of public access that is roughly proportional to the impacts caused by the proposed development or use. The City shall demonstrate in its permit decision document that any such public access has a nexus with the impacts of the proposed development and is consistent with the rough proportionality standard.*

**Response:** The applicant is providing public access on the project site. Therefore, the above standards do not apply.

7. *When required, public access shall:*
  - a. *Consist of a dedication of land or a physical improvement in the form of a walkway, trail, bikeway, corridor, viewpoint, park, deck, observation tower, pier, boat launch, dock or pier area, or other area serving as a means of view and/or physical approach to public waters and may include interpretive centers and displays, view easements, and/or decreased building bulk through height, setback, or façade limitations;*

**Response:** To provide public access on the project site, the applicant is providing a pedestrian walkway that circumnavigates the site along the Rock Cove shoreline and provides access to viewpoints of the cove and Columbia River. The shoreline is relatively steep on the site, so it is not feasible to provide direct access to the water. In addition to the on-site pedestrian pathways, the applicant is providing connections via pathways to the right-of-way and the adjacent property to the south where an additional easement exists. Please see the attached site plan for details on the proposed public access.

- b. *Include features for protecting adjacent properties from trespass and other possible adverse impacts;*

**Response:** In addition to the pedestrian pathways, the applicant is providing extensive landscaping to buffer the site from the adjacent properties. These features will ensure public access is limited to the pedestrian pathways and not result in any trespassing or adverse impacts.

- c. *Be fully developed and available for public use at the time of occupancy of the proposed use or activity;*

**Response:** The pedestrian pathways will be fully developed with the site and be available for public use at the time of occupancy of the cabins and event space.

- d. *Result in no net loss of shoreline ecological functions.*

**Response:** The proposed public access pathways do not result in any net loss or negative impact to the shoreline ecological functions. Please see the attached report for details.

8. *When required, physical public access shall be constructed to meet the following requirements for location, design, operation and maintenance:*

- a. *Public access sites shall be connected directly to the nearest public street or non-motorized trail through a parcel boundary, tract, or easement, wherever feasible;*

**Response:** The proposed pedestrian pathways is connected directly to the right-of-way on Rock Creek Drive. Please see the attached site plan for details on public access to the site.

- b. *Signs indicating the public's right of access to shoreline areas shall be installed and maintained in conspicuous locations.*

**Response:** The property owner will ensure the public's right of access to the shoreline area are installed with the development of the site.

- c. *Public access easements and permit conditions shall be recorded on the deed of title and/or on the face of a plat or short plat as a condition running in perpetuity with the land, provided, that the Planning Commission may authorize a conveyance that that runs contemporaneous with the authorized land use for any form of public access other than parallel pedestrian access. Said recording with the County Auditor's Office shall occur at the time of permit approval.*

**Response:** All required easements and permit conditions will be recorded on the deed of title or the final plat.

- d. *Maintenance of the public access facility shall be the responsibility of the owner unless otherwise accepted by a public or nonprofit agency through a formal agreement approved by the City and recorded with the County Auditor's Office.*

**Response:** The property owner will maintain and be responsible for the public access pathway.

- e. *Public access sites shall be made barrier-free for the physically disabled where feasible, and in accordance with the ADA.*

**Response:** The applicant is not proposing any barriers, including gates or fences, along the public access pedestrian pathway on the project site.

- f. *Any trail constructed shall meet the conditions described for shoreline areas in any trail or parks plan officially adopted by the City Council.*

**Response:** All proposed pathways on the project site have been designed to meet all applicable standards of the City code. Please see the attached site plan for details.

## CHAPTER 5: SHORELINE USE REGULATIONS

### SECTION 5.3: SHORELINE USE TABLE

TABLE 5.1 – SHORELINE USE & SETBACK STANDARDS												
	Shoreline Environment Designation											
	AQUATIC		NATURAL		SHORELINE RESIDENTIAL		URBAN CONSERVANCY		ACTIVE WATERFRONT			
	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)		
P= Permitted, C=Conditional Use, X= Not Permitted, n/a= Not Applicable												
<b>Agriculture &amp; Mining</b>												
Agriculture	X	n/a	X	n/a	X	n/a	X	n/a	X	n/a		
Mining	X	n/a	X	n/a	X	n/a	X	n/a	X	n/a		
<b>Aquaculture</b>												
Water-Oriented	C	n/a	X	n/a	X	n/a	C	0	C	0		
Non-Water Oriented	X	n/a	X	n/a	X	n/a	X	n/a	C	150		
<b>Boating Facilities &amp; Overwater Structures</b>												
Non-motorized Boat Launch	See Adjacent Upland Environment		C		P		P		P			
Motorized Boat Launch			X		C		C		P			
Mooring Buoy			C		C		P		P			
Float			X		C		C		P			
Private Leisure Deck			X	n/a	X	n/a	X	n/a	X	n/a	X	n/a
Public Leisure Pier			X		C		C		P		P	
Single-User Residential Dock			X		C		C		C		P	
Joint-Use Moorage			X		X		P		P		P	
Marina			X		X		X		C		P	
<b>Commercial &amp; Industrial</b>												
Water-Dependent	P				X <sup>1</sup>	0	P	0	P	0		
Water-Related, Water Enjoyment	C	n/a	X	n/a	X <sup>1</sup>	75	P	50	P	33		
Nonwater-Oriented	X				X	-	C <sup>2</sup>	150	C <sup>2</sup>	100		

**Response:** The proposed cabins and event space are considered a water-enjoyment use. This is a permitted use in the Active Waterfront designation as shown in Table 5.1 above and requires a 33 foot setback. All proposed development on the project site is located outside of the 33 foot setback. Please see the attached site plan for details on setback location and proposed development.

### SECTION 5.4: SPECIFIC SHORELINE USE POLICIES & PROVISIONS

#### 5.4.4: COMMERCIAL & INDUSTRIAL

3. Policies:

- a. Give first preference to water-dependent commercial and industrial uses over non-water dependent commercial and industrial uses; and second, to water-related commercial and

*industrial uses over non- water-oriented commercial industrial uses. Existing non-water oriented commercial and industrial uses should phase out over time.*

- b. Prohibit new non-water-oriented industrial development on shorelines, unless the circumstances in WAC 173-26-241(3)(f) are found to exist.*

**Response:** The applicant is proposing a water-enjoyment use that is permitted in the underlying zone. There are no non-water-oriented industrial development uses proposed with this application.

- c. Ensure shoreline commercial development provides public access to the shoreline where opportunities exist, provided that such access would not pose a health or safety hazard.*

**Response:** The proposed commercial development includes cabins and an event space. The applicant has incorporated pedestrian pathways and connections into the site plan to ensure public access to the shoreline. Please see the attached site plan for details on the access provided.

- d. Encourage industrial development to incorporate public access as mitigation for impacts to shoreline resources and values unless public access cannot be provided in a manner that does not result in significant interference with operations or hazards to life or property.*

**Response:** There is no industrial development proposed on the project site. Therefore, the above standard does not apply to this application.

- e. Limit overwater commercial development to that which is water-dependent, or if not water dependent, that which is accessory and subordinate as necessary to support a water dependent use.*

**Response:** There is no overwater development proposed on the project site. Therefore, the above standard does not apply to this application.

- f. Locate and design industrial development in shoreline areas to avoid significant adverse impacts to other shoreline uses, resources, and values, including shoreline geomorphic processes, water quality, fish and wildlife habitat, and the aquatic food web. However, some industrial facilities are intensive and have the potential to negatively impact the shoreline environment. When impacts cannot be avoided, they should be mitigated to assure no net loss of the ecological functions necessary to sustain shoreline resources.*

**Response:** There is no industrial development proposed on the project site. Therefore, the above standard does not apply to this application.

- g. Encourage restoration of impaired shoreline ecological functions and processes as part of new or expanded commercial development, especially for non-water-oriented uses.*

**Response:** As part of the proposed site development, the applicant is proposing to remove invasive species from the shoreline and plant native vegetation along the perimeter of the development. Please see the attached landscape plan for details on proposed restoration and plantings.

- h. Give priority to industrial facilities proposed in areas of the shoreline already characterized by industrial development over such facilities proposed in shoreline areas not currently developed for industrial or port uses.*

**Response:** There is no industrial development proposed on the project site. Therefore, the above standard does not apply to this application.

- i. Locate industrial development where restoration of impaired shoreline ecological functions and processes and environmental cleanup can be included in the design of the project.*

**Response:** There is no industrial development proposed on the project site. Therefore, the above standard does not apply to this application.

**4. Regulations:**

- a. Water-dependent commercial and industrial uses shall be given preference over water related and water-enjoyment commercial and industrial uses. Second preference shall be given to water-related and water-enjoyment commercial and industrial uses over non-water oriented commercial and industrial uses.*

**Response:** WAC 173-26-020 defines a water-enjoyment use as a use that provides for recreational use or aesthetic enjoyment of the shoreline for a substantial number of people as a general characteristic of the use and which through location, design, and operation ensures the public's ability to enjoy the physical and aesthetic qualities of the shoreline. A hotel with cabins and a shared event space located on the project site will allow for groups and individuals to stay and have events with a view of Rock Cove and the Columbia River. The proposed development is located on a part of the shoreline with very limited access due to the steep slopes, and is not an ideal location for a water-dependent use.

- b. Prior to approval of water-dependent uses, the City shall review a proposal for design, layout and operation of the use and shall make specific findings that the use qualifies as a water dependent use.*

**Response:** The proposed use is not a water-dependent use. Therefore, the above standard does not apply to this application.

- c. When allowed, industrial development shall be located, designed and constructed in a manner that assures no net loss of shoreline ecological functions.*

**Response:** The proposed use is not industrial development. Therefore, the above standard does not apply to this application. However, there is no net loss of shoreline ecological functions, as demonstrated in the attached critical area report.

- d. Commercial development that is not water-dependent shall not be allowed over water except where it is located within the same existing building and is necessary to support a water-dependent use.*

**Response:** The proposed development is a water-enjoyment use and is not proposed to be constructed over water.

- e. Overwater and in-water construction of non-water-oriented industrial uses is prohibited. This provision is not intended to preclude the development of docks, piers, or boating facilities, or water-related uses that must be located in or over water (e.g., security worker booths, etc. that are necessary for the operation of the water-dependent or water-related use).*

**Response:** The proposed development does not include overwater or in-water construction. Therefore, the above standard does not apply to this application.

- f. Only those portions of water-oriented industrial uses that require over or in-water facilities shall be permitted to locate waterward of the OHWM, provided they are located on piling or other open-work structures, and they are limited to the minimum size necessary to support the structure's intended use.*

**Response:** The proposed development does not include water-oriented industrial uses or require over or in-water facilities. Therefore, the above standard does not apply to this application.

- g. Water-related and water-enjoyment uses shall avoid impacts to existing navigation, recreation, and public access.*

**Response:** The proposed development is a water-enjoyment use and has no anticipated impact to the navigation, recreation, or public access existing on site. The project site already has limited existing access and navigation since it is located on a part of the shoreline that has steep slopes. Please see the attached grading plan and site plan for details.

- h. Non-water-oriented commercial and industrial development shall not be allowed unless: [...]*

**Response:** The proposed hotel with cabins and a shared event space located is a water-enjoyment use. Therefore, standard (h) does not apply to this project and the remaining code language has been omitted.

- i. New commercial and industrial developments shall provide public access to the shorelines, subject to SMP Section 4.6.*

**Response:** The applicant is incorporating public access via pedestrian pathways that connect the Rock Cove right-of-way, shoreline, site features, and adjacent properties to provide public access on and through the project site. Please see the attached site plan for details on public access.

#### 5.4.8: LAND DIVISIONS

##### 3. Policies:

- a. Land divisions should not result in a net loss of ecological functions.*
- b. Land division should not complicate efforts to maintain or restore shoreline ecological functions.*

**Response:** The applicant is proposing approximately 0.19 acres of buffer impacts that include permanent development. As mitigation, the applicant is proposing approximately 1.12 acres of buffer enhancement by densely planting the remaining buffer area with native shrubs and removing non-native invasive blackberry. The proposed mitigation is in-kind buffer enhancement at a 5.9:1 ratio, significantly exceeded the 1:1 enhancement ratio required for the site and assuring no net loss in shoreline ecological functions. Please see the attached Critical Areas and FWHCA Report for details.

- c. *Land divisions involving the subdivisions of land into more than 4 parcels should provide community and/or public access in conformance with SMP Section 4.6.*

**Response:** The applicant is proposing a plat vacation, not a land division. The plat vacation will provide a more logical land use pattern by consolidating ownership of the property. Public access is also being provide around the site.

4. *Regulations*

- a. *Plats and subdivisions shall be designed, configured, and developed in a manner that assures no net loss of ecological functions results from the plat or subdivision at full build-out of all lots.*

**Response:** As mentioned, no net loss of ecological function will occur due to the plat vacation and proposed development. Please see the attached Critical Areas and FWHCA Report for details.

- b. *The layout of lots within 1) new plats and subdivisions, 2) plat amendments, or 3) boundary line adjustments shall:
  - i. *Prevent the need for new shoreline stabilization or flood hazard reduction measures that would cause significant impacts to other properties or public improvements or a net loss of shoreline ecological functions.*
  - ii. *Not result in lots containing inadequate buildable space due to critical areas and/or their buffers.**

**Response:** The proposed plat vacation will provide a more logical land use pattern by consolidating ownership of the property and will not require additional or new shoreline stabilization or cause inadequate buildable space. The proposed development will comply with all dimensional standards and includes mitigation and buffer enhancement on site.

- c. *To ensure the success of restoration and long-term maintenance, the City may require that critical areas and/or aquatic lands be placed in a separate tract which may be held by an appropriate natural land resource manager (e.g., homeowner’s association, land trust, natural resource agency, etc.).*

**Response:** Acknowledged by the applicant.

5.4.9: RECREATIONAL

2. *Regulations:*



- a. *Water-oriented recreational development shall be given priority and shall be primarily related to access, enjoyment, and use of the water and shorelines.*
- b. *Non-water-oriented recreational developments may be permitted only where it can be demonstrated that: [...]*

**Response:** WAC 173-26-020 defines a water-enjoyment use as a use that provides for recreational use or aesthetic enjoyment of the shoreline for a substantial number of people as a general characteristic of the use and which through location, design, and operation ensures the public’s ability to enjoy the physical and aesthetic qualities of the shoreline. A hotel with cabins and a shared event space located on the project site will allow for groups and individuals to stay and have events with a view of Rock Cove and the Columbia River. The proposed development is located on a part of the shoreline with very limited access due to the steep slopes, and is not an ideal location for a water-dependent use.

- c. *Non-water-oriented accessory uses (e.g., offices and parking areas that are part of recreational facilities) should be located landward of water-oriented facilities.*

**Response:** The proposed parking area serving the cabins and event center are located on the western portion of the site to provide maximum distance between the shoreline and the accessory uses. Please see the attached site plan for details on layout.

**5.4.11: TRANSPORTATION & PARKING FACILITIES**

3. *Policies.*

- a. *New non-water-oriented transportation facilities should be located outside shoreline jurisdiction unless there is no reasonably feasible alternative alignment or location as determined by an alternatives analysis.*

**Response:** The proposed use is a water-enjoyment use as described in this narrative. All parking proposed on site is in association with the proposed hotel use and there are no new non water-oriented transportation facilities located in the shoreline jurisdiction.

- b. *When it is necessary to locate transportation facilities in shoreline areas, they should be located where routes will have the least impact to shoreline ecological functions, will not result in a net loss of shoreline ecological functions, and will not adversely impact existing or planned water-dependent uses. Where feasible, a perpendicular alignment to shoreline should be preferred for transportation facilities over a parallel alignment which uses more shoreline area.*

**Response:** The proposed parking lot associated with the proposed cabins and event space are located as far away from the shoreline as possible. The parking lot will not adversely impact the shoreline’s ecological function and there is no net loss of the shoreline with the proposed site design. Please see the attached site plan for details.

- c. *Given that the City’s Columbia River Shoreline is bisected by the BNSF railroad and the SR 14, the City should explore opportunities for pedestrian over- and underpasses linking upland areas with the waterfront.*



**Response:** The project site does not border the BNSF railroad or SR 14. Therefore, the above standard does not apply.

- d. Pursuant to RCW 47.01.485, the City should review and act on WSDOT proposals within 90 days.
- e. Public visual and physical access areas should be encouraged as part of new transportation facilities (e.g., viewpoints, rest areas, picnic facilities, trail/bike systems adjacent to roads or railroads, etc.) where feasible and safe to do so. For bridges, public pedestrian access should be considered 1) on the bridge over the waterbody and 2) under or over the bridge parallel to the waterbody.
- f. The City should consider adopting special standards to ensure public and private roads within shoreline jurisdiction do not result in net loss of shoreline ecological functions.

**Response:** Acknowledged.

- g. Parking is not a preferred shoreline use and should be allowed only to support a use authorized under the SMP.

**Response:** The parking lot located on the project site is provided to support the primary use of the property (cabins and event space) which are permitted under the SMP. No parking is proposed as a primary use with this application.

- h. Parking facilities should be located outside of shoreline jurisdiction or as far landward from the OHWM as feasible. Parking facilities serving individual buildings on the shoreline should be located landward, adjacent, beneath, or within the principal building being served. When located within shoreline jurisdiction, the location and design of parking facilities should:
  - i. Minimize visual and environmental impacts to adjacent shoreline and critical areas including provision of adequate stormwater runoff and treatment facilities. Parking areas should be adequately fenced and/or screened along the waterward edges of parking facilities and along the sides of such facilities when they abut differing land uses; and
  - ii. Provide for pedestrian access through the facility to the shoreline.

**Response:** The parking lot proposed on site to serve the primary use of the property is located as far landward from the OHWM as feasible near Rock Creek Drive. The proposed event space and cabins are primarily located between the parking lot and the shoreline. The applicant is proposing landscaping around the parking lot to minimize the visual effect of the lot and ensure adequate stormwater runoff and treatment. Pedestrian pathways are provided through the parking lot, connecting the public right-of-way on Rock Creek Drive to the Rock Cove shoreline. Please see the attached site plan for details.

#### 4. Regulations.

- a. Applications for redevelopment of transportation facilities in shoreline jurisdiction shall include:
  - i. Analysis of alternative alignments or routes, including, where feasible, alignments or routes outside of shoreline jurisdiction;

- ii. *Description of construction, including location, construction type, and materials; and, if needed,*
- iii. *Description of mitigation and restoration measures.*

**Response:** The applicant is not proposing to redevelop any transportation facilities with this application.

- b. *Proposed transportation projects shall plan, design, and locate where routes:*
  - i. *Will have the least possible adverse effect on unique or fragile shoreline features,*
  - ii. *Will not result in a net loss of shoreline ecological functions, and*
  - iii. *Will not adversely impact existing or planned water-dependent uses.*
- c. *Alternative designs for transportation facilities that have less impact on shoreline resources (i.e., narrower rights-of-way, realignment) shall be considered in compliance with the SMC.*

**Response:** The only transportation facility proposed with this application is an on-site parking lot to serve the primary use of the development. There will be no net loss of shoreline or adverse effect to the shoreline features with this application. Please see the attached environmental report and mitigation plan for details.

- d. *Roads and railroads of all types shall cross shoreline jurisdiction by the most direct route feasible, unless such a route would result in greater impacts on wetlands and fish and wildlife habitat conservation areas, or channel migration than a less direct route.*

**Response:** There are no proposed roads or railroads with this application.

- e. *Wherever feasible and in compliance with the SMC, transportation facilities, including local access roads and surface parking facilities, shall be shared across shoreline uses to reduce the need for redundant facilities.*

**Response:** The surface parking lot proposed on the project site with this application will serve the proposed development (cabins and event space) and provide sufficient parking for visitors and employees. Due to the unique shape of the project site, and amount of shoreline directly adjacent, it is not feasible to provide shared facilities on site.

- f. *New, replacement and enlarged transportation facilities shall provide public access pursuant to SMP Section 4.6.*

**Response:** The applicant is not proposing a new or replacement transportation facility.

- g. *The City shall seek opportunities to obtain public easements and construct pedestrian connections over or under the railroad and state highway. The City shall place the pedestrian connection in its capital improvement plan and may require it as a condition of approval for Shoreline Permits, including permits involving new or replacement bridges and other transportation facilities.*

**Response:** The applicant is providing public access to align with the City's desire to obtain opportunities for pedestrian connections. Please see the attached site plan for details.

- h. *Primary parking facilities (pay parking lots, park-and-rides) are not allowed within shoreline jurisdiction. Accessory parking (including parking for vista purposes) and loading facilities necessary to support an authorized shoreline use are permitted.*

**Response:** The proposed parking lot is not a primary use on the project site, and will be used to serve the primary use (hotel and event space).

- i. *All of the following conditions shall be met when an accessory parking facility is proposed in the shoreline jurisdiction:*
  - i. *The facilities shall be located landward, adjacent to, beneath or within the building being served.*

**Response:** The proposed parking lot is located landward on the project site and the proposed event space and cabins are located between the shoreline and the parking area.

- ii. *Upland parking facilities shall provide safe and convenient pedestrian circulation from the parking area to the shoreline.*

**Response:** The applicant is providing pedestrian pathways connecting the public right-of-way, parking area, and shoreline in a convenient and direct manner. Please see the attached site plan for the provided circulation on site.

- iii. *Loading spaces for development in the shoreline jurisdiction shall be located on the landward or side wall of non-water-dependent uses or activities.*

**Response:** There are no proposed loading spaces with this application.

- iv. *All facilities shall provide parking suitable to the expected usage of the facility, with preference given to pavement or other dust-free all-weather surfaces.*

**Response:** The parking lot is constructed of AC pavement, a suitable material for the use and location of the site.

- v. *All facilities shall be screened from adjacent, dissimilar uses through the use of perimeter landscaping, fencing, or some other approved material.*

**Response:** The applicant is providing landscaping along the perimeter of the site and parking lot to screen from adjacent uses. Please see the attached landscaping plan for details.

## CHAPTER 6: SHORELINE MODIFICATION PROVISIONS

### SECTION 6.4: SPECIFIC SHORELINE MODIFICATION PROVISIONS

#### 6.4.1: VEGETATION REMOVAL

##### 3. Regulations

- a. *Vegetation removal shall be limited to the minimum necessary to accommodate approved shoreline development that is consistent with all other provisions of this SMP. This includes*

*the design, location, and operation of the structure or development, including septic drain fields, which shall minimize vegetation removal and meet all applicable requirements.*

- b. If removal of shoreline vegetation is unavoidable, vegetation removal shall be mitigated in accordance with the requirements in SMP Table 6.2 – Mitigation for Vegetation Removal within Shoreline Jurisdiction. Exceptions:
  - i. The removal of native vegetation within established gardens, landscaping that serve a horticultural purpose shall not require mitigation under SMP Table 6.2.*
  - ii. Mitigation plans prepared by a qualified professional may establish mitigation ratios that deviate from SMP Table 6.2.**

**Response:** The proposed mitigation plan has been prepared by a qualified professional landscape architect from Cascara Land Design. The mitigation ratios required under Table 6.2 have been met with the proposed plan. Please see the mitigation plan and landscape plan for details on compliance.

- c. No tree containing an active nest of an eagle, osprey, or other protected bird (as defined by WDFW or the Bald and Golden Eagle Protection Act) shall be removed and the nest shall not be disturbed unless the applicant obtains approval from WDFW.*

**Response:** None of the trees proposed to be removed have active eagle or osprey nests located in them.

- d. Vegetation removal conducted for the purposes outlined in SMC 18.13.025(D)(1)(a through d) shall comply with the regulations therein.*

**Response:** All applicable regulations are complied with for vegetation removal as demonstrated in the landscape plans and submitted application materials.

- e. Aquatic weed control shall be allowed only where the presence of aquatic weeds will affect native plant communities, fish and wildlife habitats, or an existing water dependent use adversely. Aquatic weed control efforts shall comply with all applicable laws and standards.*

**Response:** There is no aquatic weed control proposed with this application.

- f. Mitigation Area, Location. The location of the mitigation area shall:
  - i. Be on site unless there is insufficient area on site;*
  - ii. Improve an area of low habitat functionality;*
  - iii. Be within 50 feet of the OHWM or as close as possible to the shoreline waterbody; and*
  - iv. Prioritize south and west banks of waterbodies to provide shade.**

**Response:** The mitigation proposed is located completely on site and as close to the OHWM as possible. Please see the proposed mitigation plan for details.

- g. Mitigation Area, Monitoring.
  - i. The project shall be monitored annually for 5 years to document plant survivorship.*
  - ii. Monitoring reports shall be provided to the Administrator once per year.**

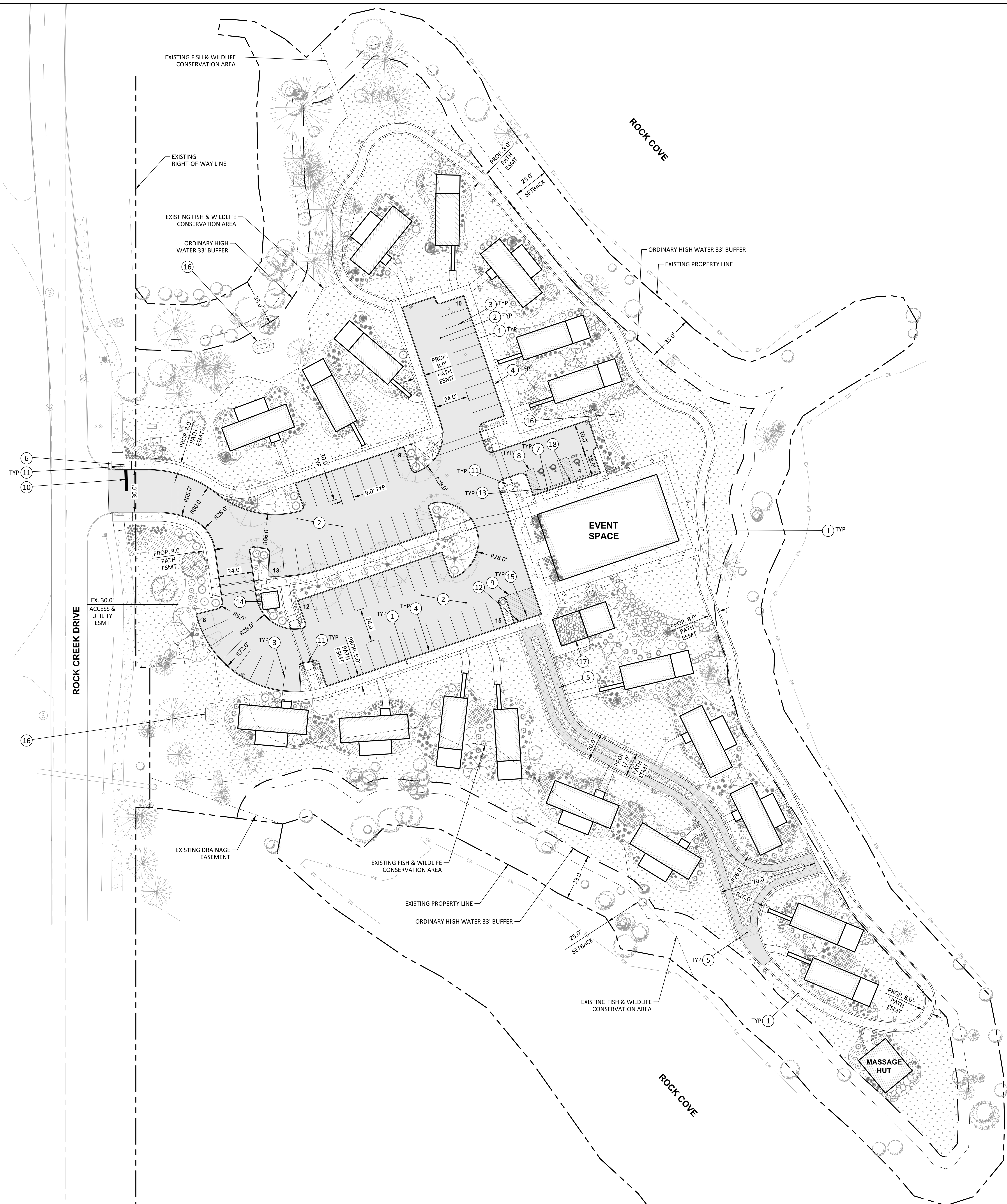
- iii. *The planted mitigation area shall achieve a plant survival standard of 80% at the end of 5 years.*
- iv. *Monitoring results may require additional/replacement planting to meet the survival standard. If the survival standard is not met, then additional planting may be required and the monitoring period extended.*
- v. *A conservation covenant may be established which prevents future development or alteration within the mitigation area.*

**Response:** The property owner will monitor the mitigation area and plantings to ensure survivorship of the proposed landscaping.

#### **IV. CONCLUSION**

This written statement and the accompanying supporting documents demonstrate compliance with the applicable approval criteria for a Site Plan Review and Shoreline Substantial Development Permit in the City of Stevenson. Therefore, the applicant respectfully requests that the County approve the application.

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**CONSTRUCTION NOTES:**

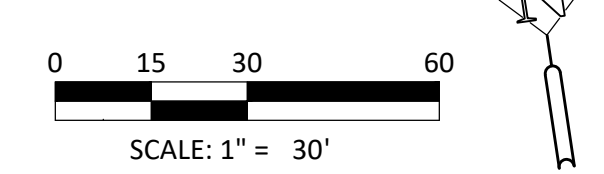
- 1 CONSTRUCT CONCRETE SIDEWALK PER DETAIL ON SHEET C6.00.
- 2 CONSTRUCT AC PAVEMENT PER SECTIONS ON SHEET C6.00.
- 3 PAINT 4" WHITE PARKING STRIPE PER DETAILS ON SHEET C6.00.
- 4 CONSTRUCT STANDARD CONCRETE 6" CURB PER DETAIL ON SHEET C6.00.
- 5 CONSTRUCT FIRE ACCESS AND PEDESTRIAN PATH PER SECTION ON SHEET C6.00.
- 6 INSTALL STOP SIGN AND POST PER DETAIL ON SHEET C6.00.
- 7 INSTALL ACCESSIBLE PARKING SIGN PER DETAILS ON SHEET C6.00. VAN ACCESSIBLE SIGN TO BE INSTALLED WHERE SHOWN ON PLANS.
- 8 PAINT LOADING ZONE STRIPING AND ACCESSIBLE PARKING SYMBOL PER DETAILS ON SHEET C6.00.
- 9 PAINT "NO PARKING" STRIPING PER DETAIL ON SHEET C6.00.
- 10 PAINT STOP BAR PER DETAIL ON SHEET C6.00.
- 11 INSTALL PERPENDICULAR SIDEWALK RAMP PER DETAIL ON SHEET C6.00.
- 12 INSTALL MOUNTABLE CURB PER DETAIL ON SHEET 6.00. INSTALL CONSTRUCTION JOINT ON EITHER END.
- 13 INSTALL CONCRETE WHEELSTOP PER DETAIL ON SHEET C6.00.
- 14 PROPOSED COVERED TRASH ENCLOSURE.
- 15 INSTALL REMOVABLE BOLLARD WITH KNOX PADLOCK PER DETAIL ON SHEET C6.00.
- 16 PROPOSED STORMWATER FACILITY. REFER TO UTILITY PLANS FOR INFORMATION.
- 17 PROPOSED STORAGE AREA AND GAZEBO. REFER TO ARCHITECTURAL PLANS FOR INFORMATION.
- 18 CONSTRUCT FLUSH CURB PER DETAIL ON SHEET C6.00.

OVERALL SITE PLAN  
**ROCK CREEK COVE HOSPITALITY**  
 STEVENSON, WASHINGTON

**Harper Houf Peterson Righellis Inc.**  
 ENGINEERS, ARCHITECTS, SURVEYORS  
 LANDSCAPE ARCHITECTS & SURVEYORS  
 205 SE Spokane Street, Suite 200, Portland, OR 97202  
 phone: 503.221.1131 www.hhpr.com

NOT FOR CONSTRUCTION

DESIGNED:	HHPR	DRAWN:	HHPR	CHECKED:	HHPR	DATE:	05/09/2023
R E V I S I O N S							
SHEET NO.	<b>C3.00</b>						
JOB NO.	FDM-01A						



# CRITICAL AREAS AND FWHCA REPORT

Updated May 3, 2023



## **Rock Creek Cove Hospitality** *Stevenson, Washington*

Prepared for

**FDM Development**  
5101 NE 82nd Ave, Suite 200  
Vancouver, WA 98662  
(210) 849-5592

*Prepared by*

**Ecological Land Services, Inc.**

1157 3rd Avenue, Suite 220A • Longview, WA 98632  
(360) 578-1371 • Project Number 2682.02



## SIGNATURES

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This report was prepared by the undersigned:



Andrew R. Allison  
Wetlands Scientist  
Ecological Land Services, Inc.



Kate'Lyn (KT) Wills  
Senior Biologist  
Ecological Land Services, Inc.

## **TABLE OF CONTENTS**

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<b>Introduction</b> .....	3
<b>SMC 18.13.050 - Critical areas report requirements</b> .....	3
<b>SMC 18.13.095 - Fish and wildlife habitat conservation areas</b> .....	9
<b>SMC 18.13.095(F) - Habitat mitigation</b> .....	12
<b>SMC 18.13.059 - Performance and monitoring standards</b> .....	14
<b>Limitations</b> .....	19
<b>References</b> .....	20

### **Appendix**

Figures

FDM engineered site plan

Photoplates

Preliminary critical areas report and conceptual mitigation plan

Olson Environmental findings letter

WDFW's "Pacific Northwest Goose Management"

WDFW's "Living with Wildlife: Canada Geese"

## Introduction

Ecological Land Services (ELS) has prepared the following critical areas report and compensatory mitigation plan for FDM Development (the applicant) as a component of the proposed mixed-use hospitality development adjacent to Rock Creek Cove on parcels 02070100130300, 02070100130400, and 02070100130200 (study area) in the City of Stevenson, Skamania County, Washington. The study area is in the SW ¼ of the NW ¼ of Section 1, Township 2 N, and Range 7 East of the Willamette Meridian, coordinates 45.6890, -121.8992, and is accessed from SW Rock Cove Dr (Figure 1). The study area's zoning is "Commercial" (C1). This report provides a description of existing critical areas on the proposed development site, a summary of proposed impacts from development, and a mitigation proposal for unavoidable impacts.

### **SMC 18.13.050 - Critical areas report requirements**

*A. Qualified Professional. When required by this chapter, the applicant shall submit a critical area report prepared by or under the direct supervision of a qualified professional as defined herein.<sup>1</sup>*

Ecological Land Services Inc. (ELS) is an environmental consulting firm with twenty-four years' experience specializing in natural resources management and land use planning. Andrew Allison has been employed by ELS for 9 years and has a total of 12 years' experience in critical areas analyses that include habitat associated with wetlands, streams, woodlands, and agriculture. He has completed critical areas assessments, prepared critical area determination reports, and designed wetland and habitat mitigation plans in Southeast Alaska, Washington, and Oregon that include urban, rural, and wilderness environments.

*B. Best Available Science. The critical area report shall use scientifically valid methods and studies in the analysis of critical area data and field reconnaissance and reference the source of science used. The critical area report shall evaluate the proposal and all probable impacts to critical areas in accordance with the provisions of this chapter.*

#### Stream Assessment:

ELS uses guidance provided by the Washington State Department of Ecology<sup>2</sup> (Ecology) and the U.S. Environmental Protection Agency<sup>3</sup> (EPA) to inform decisions about the location of an ordinary high water mark (OHWM) and to make determinations about stream characteristics, including habitat functions and flow dynamics. The Shoreline Management Act (SMA) of Washington State defines OHWM as a mark "...found by

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<sup>1</sup> "Qualified professional" means a person with experience and training in accordance with WAC 365-195-905(4).

<sup>2</sup> Publication No. 16-06-029: "Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State", revised October 2016.

<sup>3</sup> Publication No. 910-K-14-001: "Streamflow Duration Assessment Method for the Pacific Northwest", November 2015.

examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland..." (RCW 90.58.030(2)). ELS, in collaboration with Ecology staff, used principles in this guidance as well as site-specific indicators to identify the OWHM of the Columbia River within the study area boundary. Site specific indicators included transitions in vegetation, wrack lines, scouring under trees and exposed roots, and breaks in topography.

Wetland Assessment:

ELS follows the Routine Determination Method developed by the U.S. Army Corps of Engineers (Corps) for wetland delineation.<sup>4</sup> The Routine Determination Method examines vegetation, soils, and hydrology to determine if wetland is present. EPA defines wetlands as "...areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

*C. Minimum Report Contents. At a minimum, the report shall contain the following:*

*1. The name and contact information of the applicant and landowner (if different).*

<u>Applicant:</u>	<u>Landowners (represented by the applicant):</u>
FDM Development, Inc.	Erwin L&K, LLC
5101 NE 82 <sup>nd</sup> Ave, Suite 200	OPH DBD, LLC
Vancouver, WA 98662	Rawlings Family Investments, LLC
(210) 849-5592	

*2. The street address and tax lot number of the site proposed for the regulated activity.*

Parcel Numbers: 02070100130200, 02070100130300, 02070100130400  
Map Number: U-CR-P  
Site Address: Rock Creek Dr.  
Description: Lot 2 BK T/PG 100  
Total Acreage 6.40  
Zoning: Commercial Recreation (CR)

*3. A description of the proposal and identification of the permit requested.*

Rock Creek Cove Hospitality project is a mixed-use development adjacent to Rock Creek Cove on the former Hegewald Lumber Mill Site in Stevenson, WA. The project seeks to

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<sup>4</sup> "Corps of Engineers Wetlands Delineation Manual", Wetlands Research Program Technical Report Y-87-1 (Environmental Laboratory 1987) and the "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (Version 2.0)" (U.S. Army Corps of Engineers, May 2010)

complement the existing tourism industry in Stevenson by offering condo- and studio-sized units available for nightly and weekly rental, totaling 48 available bedrooms. A 15,000 square-foot commercial venue space will anchor the development and provide wide views of Rock Creek Cove and the Columbia River Gorge. The conceptual space planning of the commercial building consists of 5,000 open venue space, supported by 10,000 square feet of service, food preparation, and guest lounging area. The development seeks to attract both local and regional visitors, with venue space available for weddings, company parties, family reunions, and corporate retreats.

The project is proposed in three phases of development: Phase 1 includes condo-style units, operated by a single ownership group. Phase 2 will add the commercial venue space and restore water-side portions of the property for enhanced, publicly-accessible observation and enjoyment. Phase 3 completes the development with the studio-sized units, operated under the same ownership group as the remainder of the property.

The applicant is seeking a Critical Areas Permit from the City of Stevenson for an approximate 0.19-acre impact to the Columbia River's fish and wildlife habitat conservation area (FWHCA) (Figure 3).

*4. A detailed plan of the proposal site and all adjoining areas within 100 feet, drawn to a standard engineering scale and submitted on 8 ½"x11" or 11"x17" paper.*

The existing and proposed conditions are included with this report as Figures 2, 3, and 4. Its scale is 1:200 and it is on 11x17 paper. These figures include:

- a. location and description of critical areas and buffers
- b. existing conditions of the property
- c. location, species, and diameter of significant trees
- d. location and extent of proposed regulated activities

Details related to stormwater management are included in the engineer's drawing, included with this report's Appendix.

*5. The dates, names, and qualifications of the persons preparing the report and documentation of any fieldwork performed on the site.*

ELS (Andrew Allison, qualifications provided above) and Ecology (Rebecca Rothwell, Wetlands and Shorelands Technical and Regulatory Lead) completed fieldwork on December 30, 2019. We assessed critical areas and fish and wildlife habitat in the study area together, and physically demarcated the OHWM of the Columbia River in the study area using consecutively numbered fluorescent tape flagging. S&F Land Services, a

professional surveyor, recorded the flag locations on the same day. ELS and Ecology agreed wetlands were not present in the study area.<sup>5</sup>

*6. Identification and characterization of all critical areas, wetlands, water bodies, and buffers adjacent to the proposed project area. For areas off site, estimate conditions within 300 feet of the project boundaries using the best available information.*

ELS and Ecology identified one unnamed tributary to the Columbia River at the north end of the study area; the tributary is designated “Type F” by Washington Department of Natural Resources (DNR) (Figure 6). The Columbia River is designated “Type S” and is a shoreline of statewide significance. Rock Cove, a side channel of the Columbia River, surrounds the study area on three sides (Figures 2 and 3). According to SMC 18.13.095(D), the area designated as a fish and wildlife habitat conservation area (FWHCA) for Type F waters is 100 feet and Type S waters is 150 feet.<sup>6</sup> Existing conditions within 300 feet of the study area include SW Rock Creek Drive and single family residences to the west, an assisted living community to the south, and Rock Cove (open water) to the north and east.

Vegetation in the study area’s FWHCA consists of mature deciduous and evergreen trees spaced along the north, east, and southwest shoreline with an understory of woody shrubs and herbaceous species. Shrub species are best established between the study area and SW Rock Creek Drive, roughly the northwest and southeast portions of the subject shoreline; elsewhere, shrubs and herbaceous vegetation are sparse or absent due to existing impervious surfaces, riprapped embankments, and historic disturbances from industrial activities that include uses by the timber industry and municipal materials storage. Approximately 70 percent of the study area’s shoreline is armored with riprap-like material that consists of loose stones, gravel, fragments of concrete, and large pieces of metal (i.e. rebar, logging cable, nonspecific steel remnants). Derelict pilings are located a few feet offshore near the northeast portion of the study area.

In most places the transition from top-of-bank to the OHWM is relatively steep. Erosion control in the steeper portions of the shoreline has been historically achieved with riprap-like armoring. Approximately 65 percent of the shoreline is armored with material that consists of loose stones, gravel, fragments of concrete, and large pieces of metal (i.e. rebar, logging cable, and non-specific steel remnants). Derelict in-water pilings are located along the southeast shoreline of the study area and formerly supported timber industry infrastructure.

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<sup>5</sup> The National Wetlands Inventory (NWI) maps one wetland in the study area, identified as PEM1/UBFh (Figure 7). ELS and Ecology reviewed the area mapped as wetland by the NWI and determined it is part of Rock Cove, within the OHWM of the Columbia River, and not an independent wetland unit.

<sup>6</sup> Table 18.13.095-1

*7. A statement specifying the accuracy of the report, and all assumptions made and relied upon.*

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies will agree with our determinations; however, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

*8. A discussion of the regulatory standards applicable to the critical areas and proposed activities.*

Regulatory standards that apply to the applicant's proposed development include compliance with the City of Stevenson's December 2018 Shoreline Master Program (SMP), and SMC Chapter 18.13 *Critical areas and natural resource lands*.

- a. SMP requirements: The standard shoreline management area (or shoreline setback) for all designated shorelines in Washington State is 200 feet, measured landward from the OHWM. The study area is zoned "active waterfront"; according to Stevenson's 2018 SMP, setbacks for development proposed in active waterfront is typically 50 feet. Accordingly, the applicant is keeping all development outside of the 50-foot setback as demonstrated in Figure 3.

Regarding improvements from prior industrial land uses including concrete and gravel surfaces, gravel roads, the graveled boat launch, and riprap embankments, a shoreline use that was lawfully constructed prior to the effective date of the SMA or the December 2018 SMP and that does not conform to the current SMP standards is considered a nonconforming use. For the purposes of the December 2018 SMP, existing roads (whether asphalt, gravel, or dirt) are considered nonconforming uses and do not need a Shoreline Conditional Use Permit to be retained or improved (SMP 2018).

- b. This report is a discussion of all other regulatory standards applicable to SMC Chapter 18.13 *Critical areas and natural resource lands*.

*9. A description of efforts to apply mitigation sequencing pursuant to SMC 18.13.055 specific to avoidance, minimization, compensation, and preservation measures proposed for the critical areas.*

Rock Creek Cove Hospitality is proposed on the former Hegewald Lumber Mill Site which was active from the 1950's through the 1970's. The Natural Resource Conservation

Service (NRCS) describes soils in the study area as Arents 0 to 5 percent slopes. Arents do not have diagnostic horizons because they have been deeply mixed by plowing, spading, or other methods of moving by humans (NRCS 2020). Existing conditions indicate the site's history of disturbance from industrial timber processing; these conditions can be roughly categorized as impervious surface, disturbed/maintained pervious surfaces, and moderately vegetated shoreline.

Impervious surface occupies approximately 1.25 acres and consists of compacted gravel, asphalt, or concrete formerly used for roads, staging pads, or parking areas, and a boat launch. Disturbed/maintained pervious surfaces occupy approximately 4 acres are characterized by areas with little to no plant cover, low plant species diversity, and that have stockpiles of rock or woody materials. Moderately vegetated shoreline occupies approximately 1.22 acres. These areas show signs of prior industrial land use but have not been maintained and, in the absence of maintenance, reestablished trees and shrubs with moderate levels of diversity and interspersed. Critical areas in the study area are the FWHCA for Rock Cove and the unnamed tributary to Rock Cove, and one Oregon white oak tree (Figure 2). The FWHCA is primarily within moderately vegetated shoreline.

In adherence to mitigation sequencing pursuant to SMC 18.13.055 and with specificity to avoidance, the applicant is proposing most development in areas that are either existing impervious surfaces, previously disturbed ground, or that are otherwise prevented from providing buffer functions by shoreline armoring (Figures 2, 3, and 4). Pursuant to minimization, the applicant is proposing a 0.19-acre impact to Rock Cove's FWHCA in the southwest portion of the study area in a part of the buffer that, in addition to prior industrial land use, was used for storing rock, cobbles, and other materials until sometime after 2007 (Figure 4, 2007 aerial base map). The proposed impact area meets the definition of a "degraded" buffer as it is defined in SMC 18.13.010(B)(15).<sup>7</sup> Proposed mitigation for these impacts is discussed below in the requirements for FWHCA reports, SMC 18.13.095(F) *Habitat Mitigation*.

*10. Any additional information required for the critical area as specified in the corresponding section.*

SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts. Shoreline armoring meets the description of a preexisting structure that that does afford protection from adverse impacts. It lacks pervious surfacing for detaining and/or filtering sediment loads in surface runoff, an established and diverse native

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<sup>7</sup> Areas of the FWHCA that are dominated by more than 30 percent aerial coverage of invasive vegetation (primarily Himalayan blackberry (*Rubus armeniacus*)) and/or by fill, gravel, debris, asphalt, and other non-native material.



vegetation community able to provide forage, screening, refuge, or denning opportunities for wildlife species, and over-water shading for near-shore aquatic wildlife in the Columbia River. Accordingly, those portions of the study area that contain armoring satisfy the buffer exemption criteria per SMC 18.13.095(B)(3) (Figure 2).<sup>8</sup> Additional areas of buffer isolation are located near the entryway to the study area from Rock Creek Drive and consist of maintained vegetation adjacent to impervious surfaces (Figure 2).

### **SMC 18.13.095 - Fish and wildlife habitat conservation areas**

#### *C. FWHCA Reports*

*1. In order to determine the extent of the appropriate buffers on a site when the nature of the fish and wildlife habitat conservation area is unclear, the applicant may submit a preliminary habitat assessment report as prepared by a qualified professional.*

ELS prepared a critical areas' report and conceptual mitigation plan for the preliminary review of this application, dated June 16, 2020. The city's environmental consultant, Olson Environmental LLC (OE), provided review and comments on this report dated June 17, 2020. OE's findings for the preliminary report concur with FWHCA buffer isolation. A copy of ELS's preliminary report and OE's findings letter is included with this report for reference (Appendix).

*In addition to the minimum requirements for critical area reports contained in SMC 18.13.050, a preliminary FWHCA report should also contain the following information:*

*a. Confirmation or correction of the classifications for the FWHCA and/or stream type as defined in this chapter.*

ELS confirms there are FWHCAs in the study area for the unnamed tributary to Rock Cove (Type F) and for Rock Cove, a side channel of the Columbia River (Type S). ELS does not recommend revising the stream types or the FWHCA classifications.

*b. Characterization of riparian vegetation species, composition, and habitat function.*

Vegetation in Rock Cove's FWHCA consists of mature deciduous and evergreen trees spaced along the north, east, and southwest shoreline with an understory of woody shrubs and herbaceous species. Tree species include red alder (*Alnus rubra*), Douglas fir (*Pseudotsuga menziesii*), black cottonwood (*Populus trichocarpa*), and one Oregon white oak (*Quercus garryana*). Shrub species were best established between the study area and SW Rock Creek Drive, roughly the northwest and southeast portions of the subject

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<sup>8</sup> Armoring occupies approximately 65 percent of the shoreline. The remaining 25 percent is moderately well vegetated; moderately well vegetated areas are the northwest and southwest portions of the site (Figure 2).

shoreline; elsewhere, shrubs and herbaceous vegetation are sparse or absent due to existing impervious surfaces, riprapped embankments, and historic disturbances from industrial activities that include uses by the timber industry and municipal materials storage. Shrub species include common snowberry (*Symphoricarpos albus*), beaked hazelnut (*Corylus cornuta*), spirea (*Spiraea douglasii*), and Himalayan blackberry (*Rubus armeniacus*). Himalayan blackberry is common throughout Rock Cove's FWHCA. Herbaceous vegetation was primarily established in the transition zone above and below OHWM with reed canarygrass (*Phalaris arundinacea*), soft rush (*Juncus effuses*), dogwood (*Cornus sericea*), and spirea rooted at or below ordinary high and common grasses rooted above.

A small portion of the study area intersects with the FWHCA for the unnamed tributary in the northwest corner adjacent to SW Rock Creek Dr. Vegetation at this intersection point is characterized by a canopy and understory as discussed above for Rock Cove.

*c. Description of the soil types adjacent to and underlying the stream, using the Soil Conservation Service soil classification system.*

ELS uses the Natural Resource Conservation Service (NRCS) map unit descriptions to gather baseline soil data. NRCS identifies soils in the study area as Arents 0 to 5 percent slopes. Arents is described by NRCS as a well-drained, terraced soil with more than 80 inches depth to the groundwater table. A typical profile includes gravelly sandy loam from 0 to 24 inches and extremely gravelly sandy loam between 24 and 60 inches. As mentioned previously, Arents do not have diagnostic horizons because they have been deeply mixed by plowing, spading, or other methods of moving by humans (NRCS 2020). ELS did not collect soils data additional to the existing NRCS mapping data due to the prevalence of impervious and disturbed soil conditions, and consensus with Ecology that collecting soils data to demonstrate the absence of wetlands was not necessary for Ecology's purposes in the study area.

*d. Identification of the qualities of the area that are essential to maintain feeding, breeding, and nesting, and an assessment of potential project impacts to the use of the site by the species.*

Some of the study area's northern and southern FWHCA, as well as the entirety of Rock Cove, is identified by Washington Department of Fish and Wildlife's (WDFW) Priority Habitat and Species (PHS) mapping as a breeding area for Canadian geese (*Branta canadensis*) (Figure 9). Rock Cove is also identified by PHS as providing habitat for resident coastal cutthroat (*Oncorhynchus clarki*), Fall Chinook (*Oncorhynchus tshawytscha*), Winter Steelhead (*Oncorhynchus mykiss*), and rainbow trout (*Oncorhynchus mykiss*) (WDFW 2020) (Figure 9). Canada geese are not sensitive, threatened, or endangered, and FWHCA in the study area does not provide habitat that

is unique, important, or necessary for the species. As stated by WDFW, “...northwest Oregon and southwest Washington are now wintering more Canada geese than at any other time in recorded history” (WDFW 2015). ELS did not observe goose nests in the study area, or evidence that geese use the site (tracks, feathers, and droppings were absent). The applicant is not proposing in-water work or work within 50 feet of the OHWM; accordingly, there are no anticipated impacts to fish or Canada geese from the proposed development.

The study area is in a northern spotted owl management buffer. Spotted owl habitat usually consists of mature and old-growth coniferous forests with high canopy cover, trees of varying sizes, snags, and large downed wood (Buchanan, J.B. 2016). Suitable old-growth forests are approximately 150-200 years old. The study area and surrounding properties are managed for timber production; consequently, they do not meet criteria for spotted owl habitat.

*e. A discussion of any federal, state, or local species/habitat management recommendations, including the WDFW habitat management recommendations that have been developed for the identified species or habitat.*

There are no specific management recommendations for Canada geese as regards the success of the species. WDFW published a document titled “Living with Wildlife: Canada Geese” in 2005. This document is referenced in WDFW’s Priority Habitat and Species List published in 2008 and updated in February 2020. The document provides options for coexisting with geese and resolving conflicts that arise between geese and human land uses, resulting from populations of resident Canada geese “...dramatically increas[ing] over the past 25 years, particularly in urban areas where there are few predators, prohibitions on hunting, and a dependable year-round supply of food and water” (WDFW 2005). A copy of this document is included in the Appendix of the report for reference.

The applicant is not proposing in-water work or work within 50 feet of the OHWM; accordingly, there are no anticipated impacts to fish. The applicant will follow appropriate BMPs during construction and meet the requirements outlined in Ecology’s Stormwater Management Manual for Western Washington (Ecology 2019) to further ensure Rock Cove does not receive sediment, surface runoff, or any other input that would potentially affect water quality or fish habitat as a result of project construction.

*f. Recent photographs of the property, including detailed photographs of the habitat resource in question.*

On-the-ground color photographs of the study area taken by ELS in December 2019 are included with this report (Photoplates, Appendix).

*g. An outline of standard buffer widths, available buffer reductions, or potential opportunities for enhancement/mitigation.*

SMC 18.13.095(D) identifies the FWHCA for Type F waters as 100 feet and Type S waters as 150 feet. There are no proposed buffer reductions for this project, which is a revision from the preliminary critical areas report and conceptual mitigation plan prepared by ELS and reviewed by OE. After reviewing OE's findings letter with the applicant and OE's representative, and reviewing SMC 18.13, ELS concluded that eliminating buffer reduction from the proposal increases the amount of buffer enhancement available for mitigating the proposed buffer impact onsite. With the standard 150-foot FWHCA applied and adjusted for functional isolating features, the applicant is proposing approximately 0.19-acre buffer impact (Figures 3 and 4). Impacts include permanent development in a portion of the buffer that is already degraded from historic land uses. As mitigation, the applicant is proposing approximately 1.12 acres of buffer enhancement by densely planting the remaining buffer area with native shrubs and removing non-native invasive Himalayan blackberry, a dominant invasive plant in the study area. Blackberry removal and shrub installation will increase native plant diversity, improve habitat opportunities for a variety of native birds and mammals (both water-dependent and terrestrial), increase foraging value, and decrease opportunities for non-native plants and animals to occupy the site. The proposed mitigation is in-kind buffer enhancement at a 5.9:1 ratio, significantly exceeding the 1:1 enhancement ratio requirement for onsite FWHCA mitigation per SMC 18.13.095-3.

#### **SMC 18.13.095(F) - Habitat mitigation**

*1. Compensatory mitigation for impacts to FWHCA's shall achieve equivalent or greater functions as those affected by the proposed project.*

The proposed FWHCA enhancement increases the existing buffer functions and values.

*2. FWHCA Mitigation Plan. When a project involves FWHCA or FWHCA buffer impacts, enhancements, or reductions, a habitat mitigation plan by a qualified professional shall be required. At a minimum, the habitat mitigation plan must contain the following information:*

*a. All the information required in the FWHCA Report prepared under SMC 18.13.095(C).*

The report is a fulfillment of this requirement.

*b. A copy of the site plan for the development proposal.*

The site plan is included in Figures 3 and 4, and in the engineer's drawing in the Appendix.

*c. A description of the mitigation sequence developed for the project according to SMC 18.13.055.*

Please refer to item 9, page 7 of the report for the discussion of the applicant's mitigation sequencing.

*i. Existing conditions of the enhancement area, including location:*

The proposed enhancement areas are a combination of moderately vegetated shoreline and previously disturbed ground at the north and south ends of the study area (Figures 3 and 4). These are portions of the FWHCA that have not been regularly maintained or have been minimally maintained during the last 10 to 15 years, and longer in some places. Existing tree species include red alder, Douglas fir, and black cottonwood; cottonwood and alder are closer to the OHWM, fir is mid-slope to top-of-bank. Shrub species are sparsely to moderately interspersed under tree canopy and include common snowberry, beaked hazelnut, and Himalayan blackberry.

*ii. Rational for site selection*

The study area's history of industrial use provides an opportunity for onsite habitat improvement. The areas selected for improvement have existing canopy cover, lack armored shoreline, and are adjacent to sheltered coves formed by the topographic configuration of the study area. The existing canopy cover provides cooler temperatures and higher, more consistent soil moisture for installed native shrubs, and will help minimize potential regrowth of Himalayan blackberry through shading. The absence of shoreline armoring increases soil availability for installed plants' root establishment, decreases the amount of time and equipment necessary to prepare the site for enhancement, which together improves the overall likelihood that installed plants will succeed quickly. Lastly, sheltered coves provide unique attributes that increase habitat potential: they are more secluded than other parts of the study area's shoreline, both from natural elements such as wind and wave action, as well as minimizing future opportunities for human disturbance through topographic positioning; they have shallower water levels and consequently provide greater accessibility to habitats for birds, terrestrial mammals, and water-dependent species; and they have increased opportunity to provide off-channel salmonid habitat which would be improved by the proposed riparian vegetation enhancement.

iii. *Estimated future condition of the enhancement area*

Successful riparian vegetation enhancement will include a diverse native shrub understory, the absence or minimal presence of Himalayan blackberry (less than 10 percent cover), and evidence of frequent or ongoing seasonal native wildlife use.

iv. *An assessment of all appropriate technical information necessary to assess the compensatory mitigation proposed.*

This report is a fulfilment of the requirement.

*d. The environmental goals and objectives of the mitigation*

**SMC 18.13.059 - Performance and monitoring standards**

The goal of FWHCA enhancement is to provide high quality riparian habitat functions onsite using the following objectives and performance standards:

*Objective 1.* Provide high quality riparian habitat functions onsite.

- ▶ *Performance Standard 1a.* Enhance 1.12 acres of existing, moderately to poorly functioning FWHCA onsite. This performance standard is completed when the enhancement area is documented in the Year 1 Monitoring Report.
- ▶ *Performance Standard 1b.* Remove non-native invasive Himalayan blackberry from the enhancement site and areas adjacent to the enhancement site.
- ▶ *Performance Standard 1c.* Plant native shrubs trees and open areas in the understory and in areas formerly occupied by Himalayan blackberry. Plantings will achieve 100 percent survival in Year 1. Dead plants will be replaced if this performance standard is not met.
- ▶ *Performance Standard 1d.* Native shrubs will achieve at least 90 percent survival in Year 2. Dead plants will be replaced if this performance standard is not met.
- ▶ *Performance Standard 1e.* Native shrubs will achieve at least 80 percent survival in Year 3. Dead plants will be replaced if this performance standard is not met.
- ▶ *Performance Standard 1f.* Native shrubs will achieve at least 75 percent survival in Year 5. Dead plants will be replaced if this performance standard is not met.
- ▶ *Performance Standard 1g.* In all years, non-native invasive plant species will not exceed 10 percent cover in the enhancement area.

- ▶ *Performance Standard 1h.* In all years, native volunteer plants will be included in the survival calculation. If an installed plant dies and a volunteer plant emerges, the survival standard will be met.

*Objective 2.* Provide signage between the enhancement area and the development.

- ▶ *Performance Standard 2a.* Install FWHCA signs at a minimum of 50-foot intervals along the perimeter of the enhancement area facing the proposed development. This performance standard is complete when signs are installed and documented in a monitoring report.
- ▶ *Performance Standard 2b.* Install natural barriers where needed around the perimeters of the enhancement area. The need for barriers may not be apparent until after the development is complete. If needed/required, this performance standard is complete when the natural barriers are installed and documented in a monitoring report or memo.

*Objective 3.* Provide legally binding protection for the enhancement area.

- ▶ *Performance Standard 3a.* A conservation covenant or similar legal mechanism will be established for the enhancement area. The performance standard is complete when the City of Stevenson approves the conservation covenant or similar legal mechanism.

### Planting schedule and equipment

Native shrubs will be installed in late winter or early spring when the plants are dormant, and the soil moisture conditions are favorable for planting. The following equipment may be used to prepare and install plants in the enhancement area: tree shovel, garden shovel, and power auger. Heavy equipment is not anticipated to be necessary unless remnants of industrial materials are discovered while planting and removal of such material is determined to be beneficial to enhancement goals.

**Table 1: Proposed enhancement plants**

Common Name/Botanical Name	Size	Spacing	Quantity
Vine maple, <i>Acer circinatum</i>	1 gallon	6-10 feet	100
Western service berry, <i>Amelanchier alnifolia</i>	1 gallon	6-10 feet	100
Oceanspray, <i>Holodiscus discolor</i>	1 gallon	6-10 feet	100
Tall Oregon grape, <i>Mahonia aquifolium</i>	1 gallon	6-10 feet	100
Common snowberry, <i>Symphoricarpos albus</i>	1 gallon	6-10 feet	100
Sword fern, <i>Polystichum munitum</i>	1 gallon	6-10 feet	100
<b>Total</b>			<b>600</b>

## Specifications for site preparation, planting, and maintenance

### *Preparing the enhancement area*

- Install silt fencing where necessary to control runoff from the development.
- Install temporary construction fencing along the perimeters of the enhancement area bordering the development.
- Remove Himalayan blackberry. Selectively apply herbicide as necessary.

### *Installing habitat signs*

- Install durable signs at a minimum of 50-foot intervals on metal or wood posts where the enhancement area is adjacent to proposed development.

### *General plant specifications*

- Plant the native shrubs during the late winter or early spring at the spacing identified in Table 1.
- Group the plants in uneven patches dominated by a single species or interspersed with one another where no shrubs currently exist.
- All plant materials will be kept cool and moist prior to installation.
- All plant materials will have well developed roots and sturdy stems, with an appropriate root to shoot ratio.
- No damaged or desiccated roots or diseased plants will be accepted.

### *Planting shrubs*

- Dig the receiving hole several inches wider than the size of the root system.
- Position the planted species' root collar so that they are at or slightly above the level of the surrounding soil to allow for settling.
- Back the hole with soil.
- Gently compact the soil around the planted species to eliminate air spaces.
- Install a minimum of 3-inch depth by 4-foot diameter mulch layer around the base of planted species. The mulch will be comprised of clean, chipped wood. Avoid placing mulch directly against plant stems.
- Irrigate all newly installed plants as site and weather conditions warrant.

### *e. A monitoring and maintenance proposal compliant with SMC 18.13.059*

ELS recommends a 5-year monitoring and maintenance schedule in accordance with SMC 18.13.059(E)(1). Monitoring will begin the first growing season after the enhancement area is planted. Annual reports will be submitted to the City of Stevenson by December 31 of each monitoring year.



### *Monitoring plots*

During the first annual monitoring event, monitoring plots will be established as follows:

1. A minimum of two permanent monitoring plots will be established, one in each enhancement area. Monitoring plots will be staked and identified with an aluminum tag, their location will be recorded with GPS, and they will be included on the as-built site map that accompanies each monitoring report. Photo points will be taken at the monitoring plots and elsewhere as needed to accurately document conditions.

### *Vegetation*

Vegetation monitoring will measure the following:

1. Percent aerial cover of planted and naturally recruiting native trees and shrubs
2. Percent aerial cover of non-native, invasive plants
3. Change in the plant community over time (from photo points)

### *Fauna*

Wildlife documentation will include the following:

1. Evidence of bird use (nesting, tree excavation, tracks in shoreline sediments, etc.)
2. Evidence of mammal use (scat, tracks, shedding hair or antlers, browse, bedding, denning, etc.)

### *Monitoring reports*

The annual monitoring reports will contain at least the following:

- Location map and as-built map, and a revised plant quantity table as needed
- Description of monitoring methods
- Documentation of the presence and legibility of FWHCA signs
- Documentation of plant survival and cover
- Assessment of non-native, invasive plant species and recommendations for management
- Observations of wildlife
- Site photographs
- Summary of maintenance and contingency measures proposed for the next season and completed for the past season.

*Enhancement area maintenance*

Maintenance includes the following:

- Inspect the plants at least once annually, or more often as appropriate, and maintain to achieve the performance standards.
- Irrigate as-needed.
- Replace mulch as needed.
- Replace dead or failed plants to meet the minimum annual performance standards. Replaced plants will be installed as described for the original installation.
- Implementing a fertilizing schedule.
- Repairing damaged limbs or pruning dead branches.

*Responsible parties*

The Applicant, their successors, and/or their designee will be responsible for implementing the enhancement plan and its maintenance and monitoring. If the performance standards are not met by Year 5 an adaptive management plan will be developed and implemented. All adaptive management actions will be undertaken only after consulting with and gaining approval from the City of Stevenson. The responsible party will complete an adaptive management plan that describes 1) the need for adaptive management, 2) proposed actions, 3) time-frame for completing actions, and 4) any additional maintenance and monitoring necessary.

*f. A bond estimate for the entire enhancement and/or compensatory mitigation project per SMC 18.13.059 - Performance and monitoring standards.*

Table 2 on the following page includes the bond estimate for the proposed mitigation project. The estimate assumes initial site preparation and plant installation costs, followed by one maintenance and one monitoring trip each year for the subsequent two years.

**Table 2. Bond estimate for the entire enhancement project**

Year 1	Year 2	Year 3	Year 5	Years 1-5
Plant acquisition and installation \$2,500	Annual maintenance \$750	Annual maintenance \$750	Annual maintenance \$750	<b>Total Estimated Mitigation Cost</b>
Monitoring report \$4,572	Monitoring report \$4,572	Monitoring report \$4,572	Monitoring report \$4,572	
<b>Total = \$7,072</b>	<b>Total = \$5,322</b>	<b>Total = \$5,322</b>	<b>Total = \$5,322</b>	<b>\$23,038</b>

## Limitations

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies will agree with our determinations; however, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report. Please contact Kate'Lyn (KT) Wills by email [kt@eco-land.com](mailto:kt@eco-land.com) or by phone (360) 578-1371 with any questions regarding the contents of this report.

## References

City of Stevenson, Council Authorized Draft, Shoreline Master Program. December 2018.

Link, Russel. "Landscaping for Wildlife in the Pacific Northwest". University of Washington Press and the Washington Department of Fish and Wildlife. WDFW 1999.

Link, Russel. "Living with Wildlife: Canada Geese" Adapted from "Living with Wildlife in the Pacific Northwest". WDFW 2005.

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Natural Resource Conservation Service (NRCS). 2016. *Soil Survey of Skamania County, Washington*. Online document. [http://www.or.nrcs.usda.gov/pnw\\_soil/wa\\_reports.html](http://www.or.nrcs.usda.gov/pnw_soil/wa_reports.html). Accessed July 2020.

"Pacific Northwest Goose Management: a joint program of the Oregon Department of Fish and Wildlife and the Washington State Department of Fish and Wildlife". August 2015.

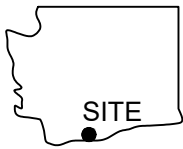
Stevenson Municipal Code (SMC) Chapter 18.13 *Critical Areas and Natural Resource Lands*. November 2008.

WDFW "PHS on the Web" <https://geodataservices.wdfw.wa.gov/hp/phs/>. Accessed July 2020.

WDFW "State of Washington Priority Habitats and Species List". Updated February 2020.

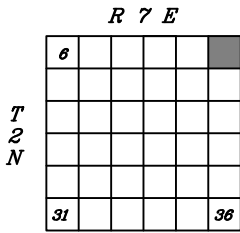
Washington Department of Natural Resources (DNR) "Forest Practices Application Mapping Tool". <https://fpamt.dnr.wa.gov>. Accessed July 2020.

WASHINGTON



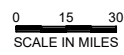
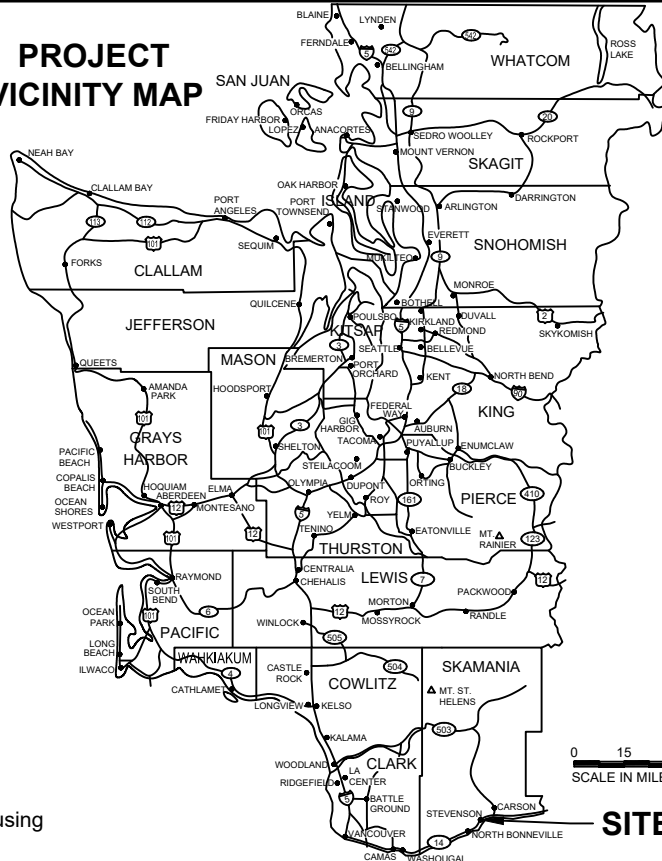
Latitude: 45.6886°  
Longitude: -121.8981°

LOCATION MAP



**NOTE:**  
USGS topographic quadrangle map reproduced using  
MAPTECH Inc., Terrain Navigator Pro software.

### PROJECT VICINITY MAP



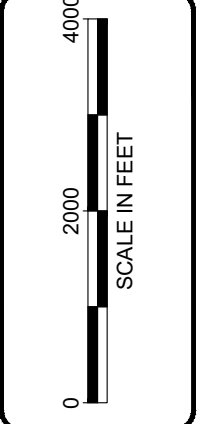
**SITE**

Figure 1

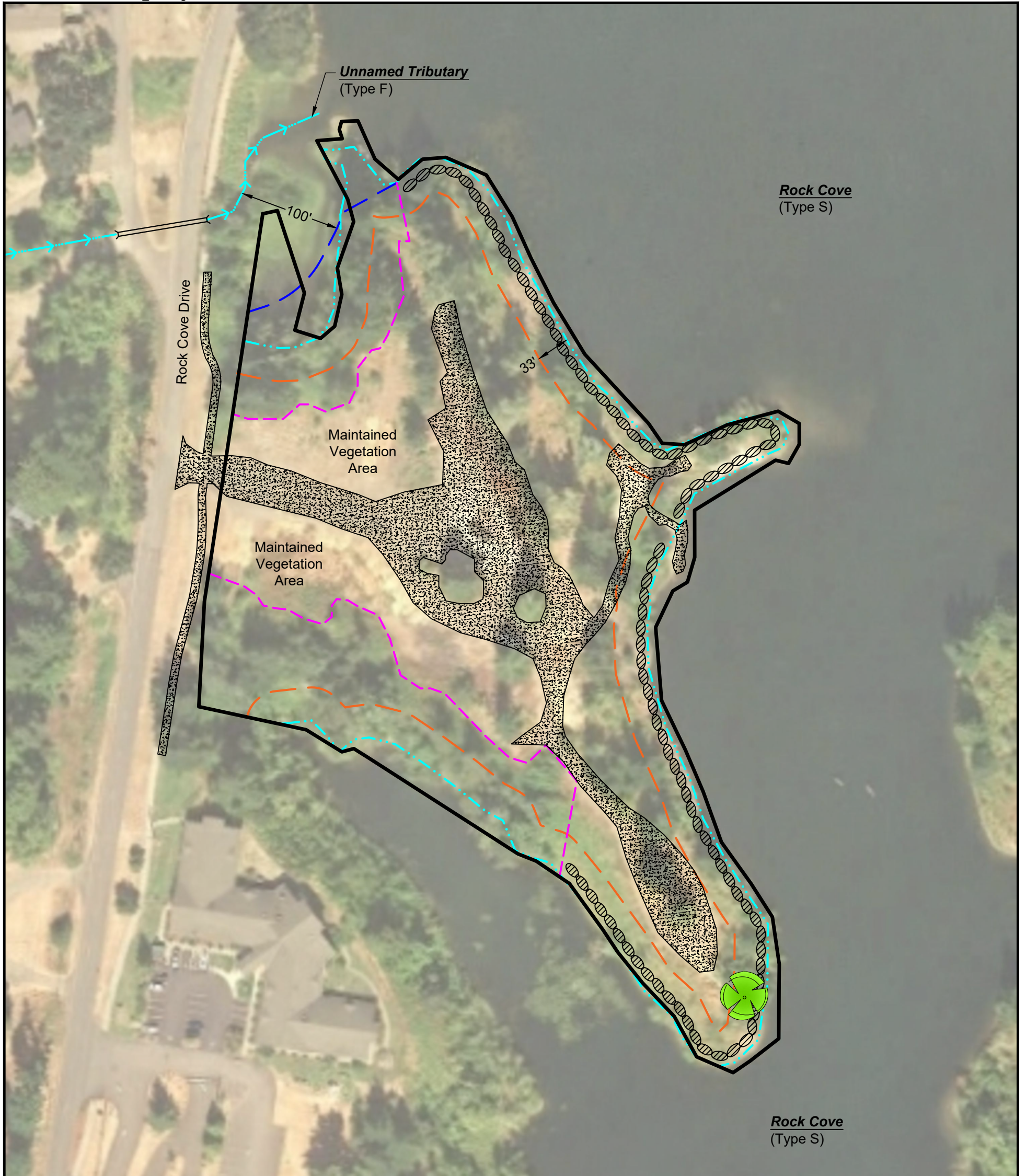
VICINITY MAP  
Rock Cove CAR  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 7E, W.M.

DATE: 4/28/23  
DWN: EF  
REQ. BY: AA  
PRJ. MGR: AA  
CHK: KJ  
PROJECT NO: 2682.02

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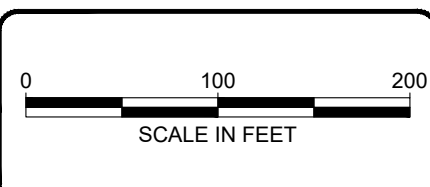
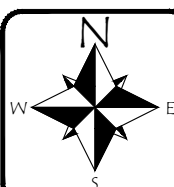
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- LEGEND:**
- Site Boundary
  - OHWM
  - Stream with Flow Direction
  - FWHCA Buffer for Type F
  - Functionally Isolated FWHCA Buffer for Type S (150')
  - 50' Shoreline Management Plan Setback
  - Culvert
  - Oak Tree Location
  - Existing Graveled or Concrete Surfacing
  - Existing Rip Rap

**NOTE(S):**

1. Aerial from Google Earth™. (2017)
2. OHWM line was determined through a joint effort by Ecological Land Services and Washington Department of Ecology on December 30, 2019. OHWM flags were professionally surveyed by S&F Land Services December 30-31, 2019.
3. SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts.



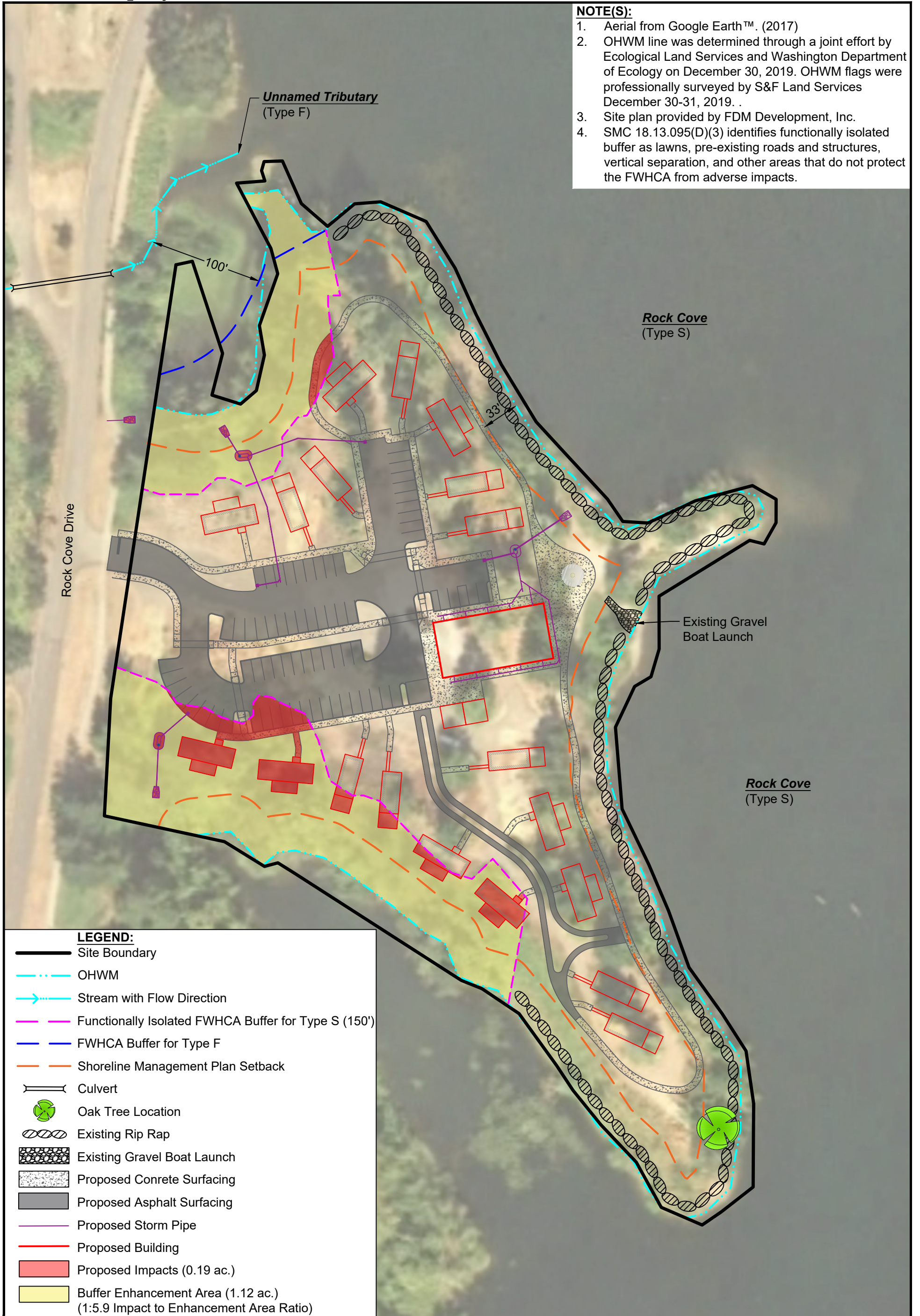
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Figure 2  
 EXISTING CONDITIONS SITE MAP  
 Rock Cove CAR  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.

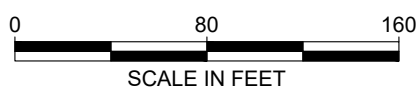
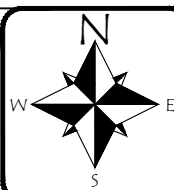
**NOTE(S):**

1. Aerial from Google Earth™. (2017)
2. OHWM line was determined through a joint effort by Ecological Land Services and Washington Department of Ecology on December 30, 2019. OHWM flags were professionally surveyed by S&F Land Services December 30-31, 2019. .
3. Site plan provided by FDM Development, Inc.
4. SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts.



**LEGEND:**

- Site Boundary
- OHWM
- Stream with Flow Direction
- - - Functionally Isolated FWHCA Buffer for Type S (150')
- - - FWHCA Buffer for Type F
- - - Shoreline Management Plan Setback
- Culvert
- ⊗ Oak Tree Location
- ⊗ Existing Rip Rap
- ⊗ Existing Gravel Boat Launch
- ⊗ Proposed Concrete Surfacing
- ⊗ Proposed Asphalt Surfacing
- Proposed Storm Pipe
- Proposed Building
- Proposed Impacts (0.19 ac.)
- Buffer Enhancement Area (1.12 ac.)  
(1:5.9 Impact to Enhancement Area Ratio)




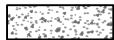



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Figure 3  
 PROPOSED CONDITIONS - 2017 AERIAL  
 Rock Cove CAR  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.

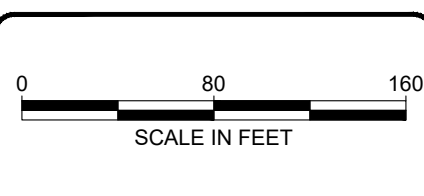
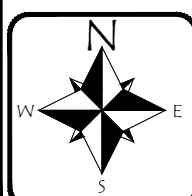


**LEGEND:**

-  Site Boundary
-  Proposed Concrete Surfacing
-  Proposed Asphalt Surfacing
-  Proposed Storm Pipe
-  Proposed Building

**NOTE(S):**

1. Aerial from Google Earth™. (2007)
2. Site plan provided by FDM Development, Inc.










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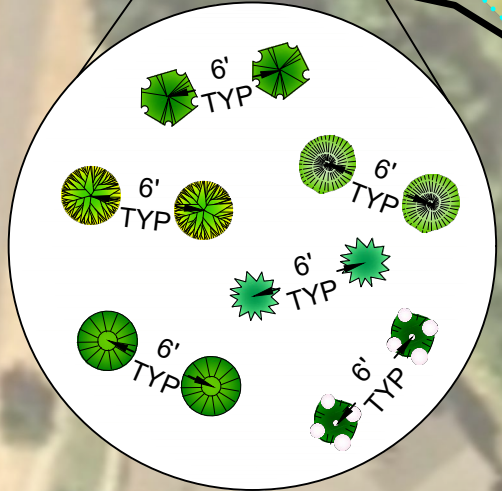
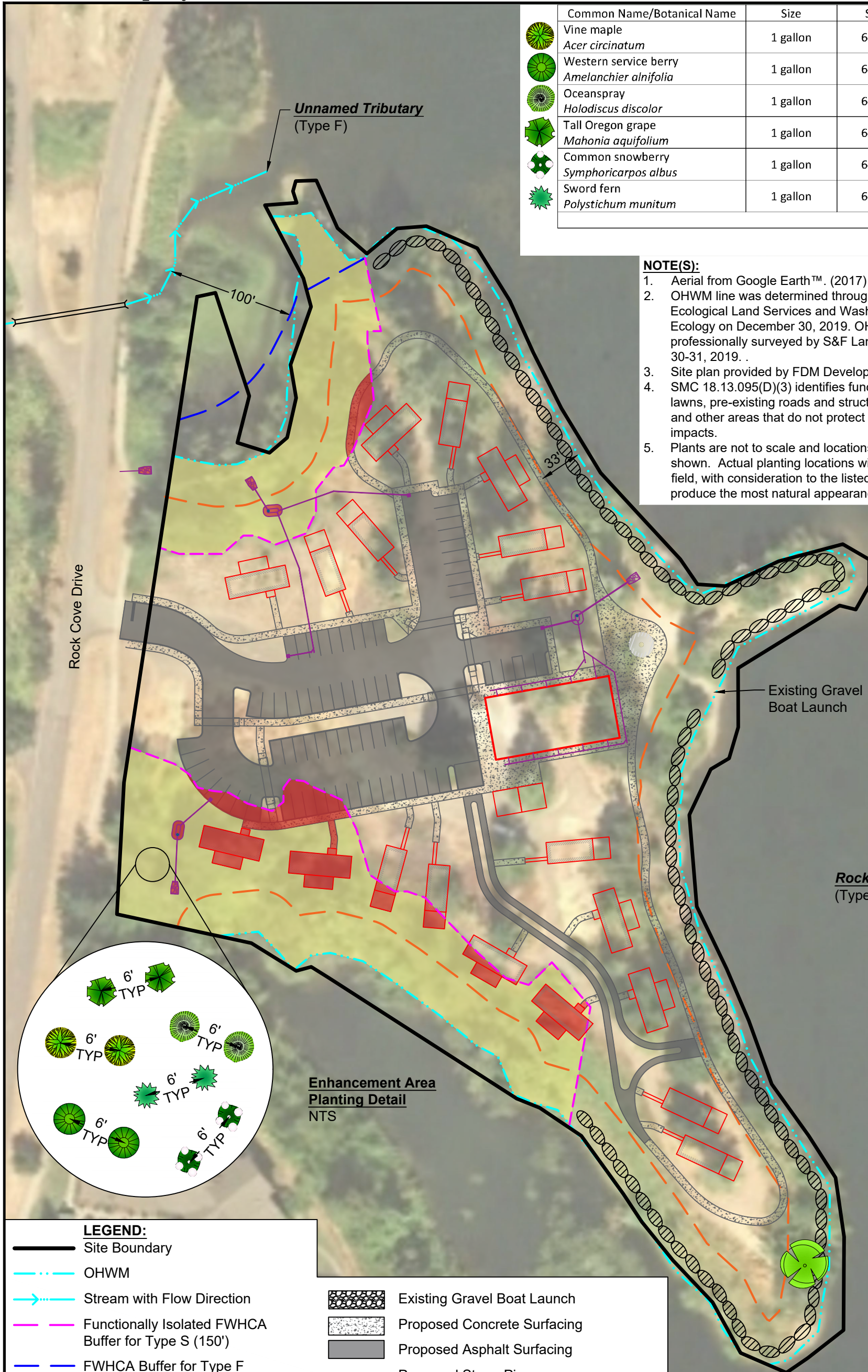
Figure 4  
 PROPOSED CONDITIONS - 2007 AERIAL  
 Rock Cove CAR  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.



















Common Name/Botanical Name	Size	Spacing	Quantity
 Vine maple <i>Acer circinatum</i>	1 gallon	6-10 feet	100
 Western service berry <i>Amelanchier alnifolia</i>	1 gallon	6-10 feet	100
 Oceanspray <i>Holodiscus discolor</i>	1 gallon	6-10 feet	100
 Tall Oregon grape <i>Mahonia aquifolium</i>	1 gallon	6-10 feet	100
 Common snowberry <i>Symphoricarpos albus</i>	1 gallon	6-10 feet	100
 Sword fern <i>Polystichum munitum</i>	1 gallon	6-10 feet	100
<b>Total</b>			<b>600</b>








**NOTE(S):**

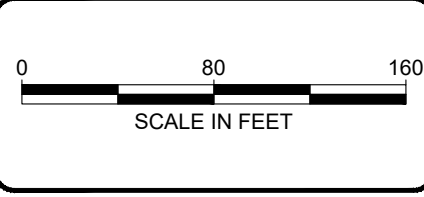
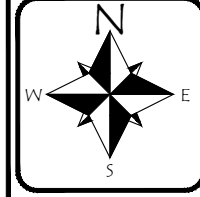
1. Aerial from Google Earth™. (2017)
2. OHWM line was determined through a joint effort by Ecological Land Services and Washington Department of Ecology on December 30, 2019. OHWM flags were professionally surveyed by S&F Land Services December 30-31, 2019. .
3. Site plan provided by FDM Development, Inc.
4. SMC 18.13.095(D)(3) identifies functionally isolated buffer as lawns, pre-existing roads and structures, vertical separation, and other areas that do not protect the FWHCA from adverse impacts.
5. Plants are not to scale and locations are approximate as shown. Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance possible.



**LEGEND:**

	Site Boundary		OHWM
	Stream with Flow Direction		Existing Gravel Boat Launch
	Functionally Isolated FWHCA Buffer for Type S (150')		Proposed Concrete Surfacing
	FWHCA Buffer for Type F		Proposed Asphalt Surfacing
	Shoreline Management Plan Setback		Proposed Storm Pipe
	Culvert		Proposed Building
	Oak Tree Location		Proposed Impacts (0.19 ac.)
	Existing Rip Rap		Buffer Enhancement Area (1.12 ac.) (1:5.9 Impact to Enhancement Area Ratio)

	Existing Gravel Boat Launch
	Proposed Concrete Surfacing
	Proposed Asphalt Surfacing
	Proposed Storm Pipe
	Proposed Building
	Proposed Impacts (0.19 ac.)
	Buffer Enhancement Area (1.12 ac.) (1:5.9 Impact to Enhancement Area Ratio)



**Ecological Land Services**

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Figure 5  
 MITIGATION PLAN  
 Rock Cove CAR  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.

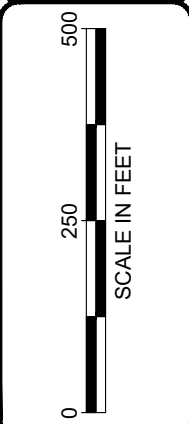
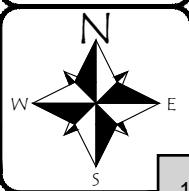


**LEGEND:**

- 2** Arents, 0 to 5 percent slopes. Not hydric.
- 17** Bonneville stony sandy loam. Not hydric.
- 123** Steever stony clay loam, 2 to 30 percent slopes. Not hydric.
- 177** **Water.**

**NOTE(S):**

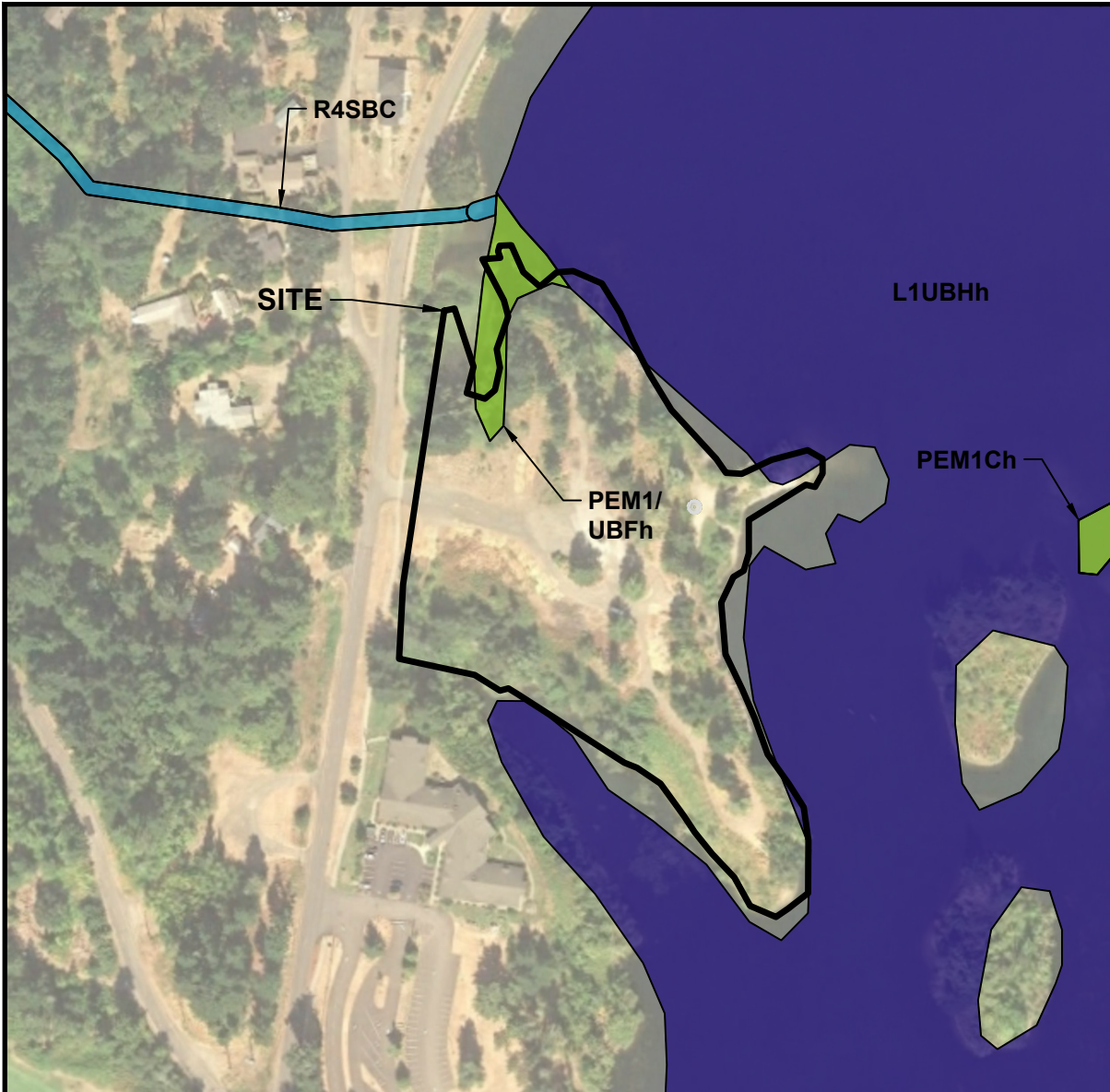
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<http://websoilsurvey.nrcs.usda.gov/app/>



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CHK: KJ  
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Figure 6  
NRCS SOIL SURVEY  
Rock Cove CAR  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 7E, W.M.



Mapped wetlands indicated onsite by US Fish & Wildlife Service.

**LEGEND:**

- Freshwater Emergent Wetland
- Lake
- Riverine

- PEM1Ch** Palustrine, Emergent, Persistent, Seasonally Flooded, Diked/ Impounded.
- PEM1/UBFh** Palustrine, Emergent, Persistent, Unconsolidated Bottom, Semipermanently Flooded, Diked/ Impounded.
- L1UBHh** Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded, Diked/ Impounded.
- R4SBC** Riverine, Intermittent, Streambed, Seasonally Flooded.

**NOTE(S):**

1. Map provided online by US Fish & Wildlife Service at web address: <http://www.fws.gov/wetlands/data/index.html>


Figure 7  
USFWS NATIONAL WETLANDS INVENTORY  
Rock Cove CAR  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 7E, W.M.

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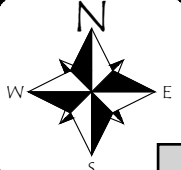


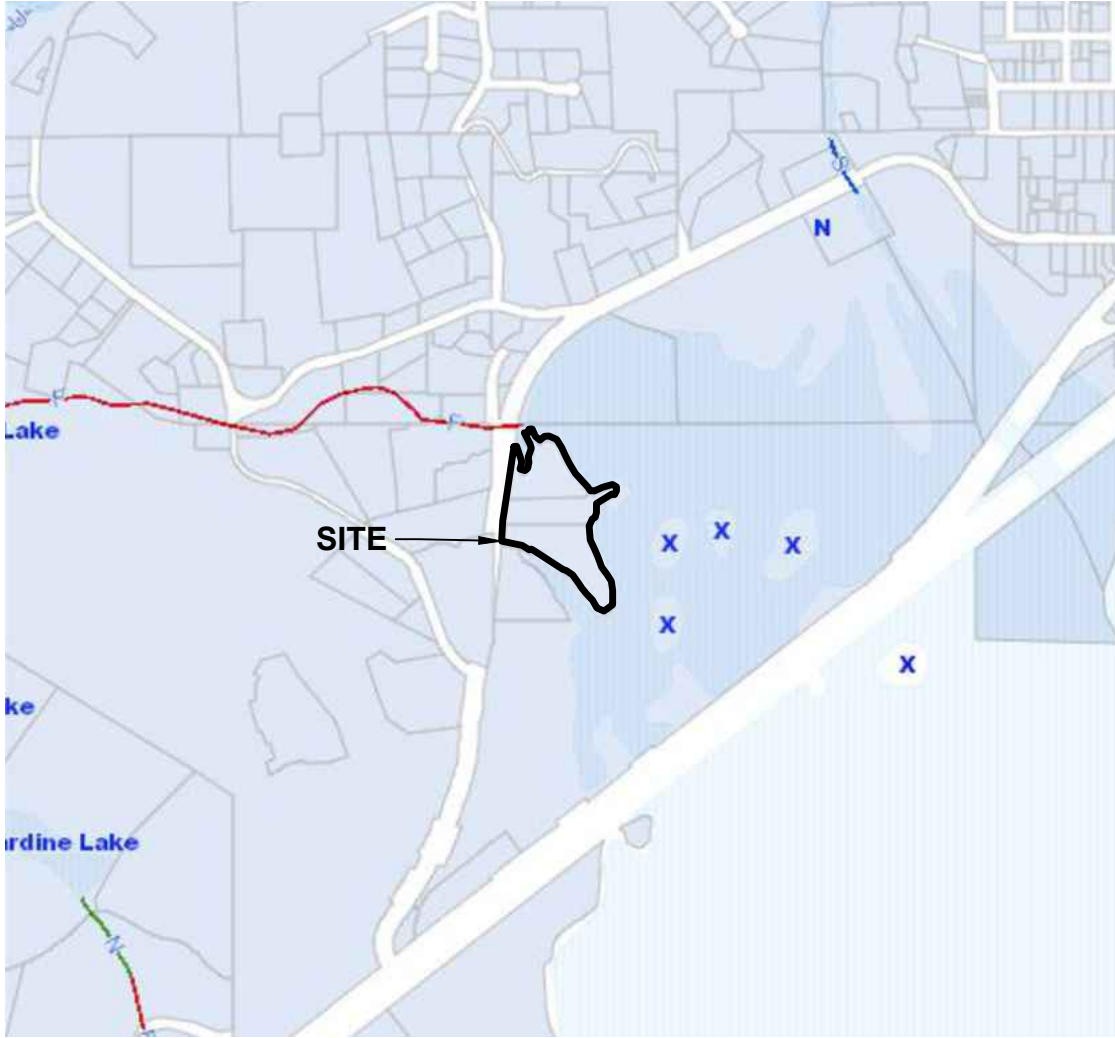

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SCALE IN FEET

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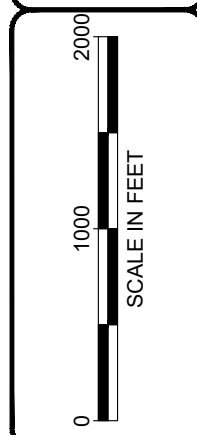
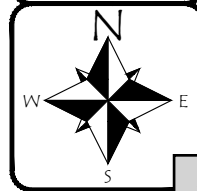
No mapped streams indicated onsite by the Washington State Department of Natural Resources (DNR).

**LEGEND:**

**Streams**  
Streams

- Type S
- Type F
- Type N, No, Ns
- U, unknown
- X X, non-typed per WAC 222-16

**NOTE:** Map provided online by Washington State Department of Natural Resources at web address: <https://fortress.wa.gov/dnr/protectiongis/fpamt/index.html>






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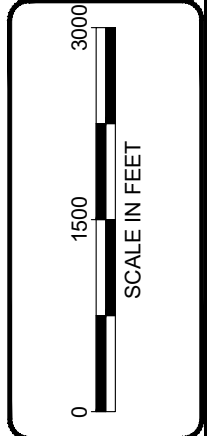
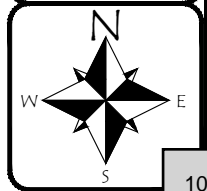
**Figure 8**  
**DNR STREAM TYPE MAP**  
 Rock Cove CAR  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.



**LEGEND:**

-  Site Boundary
-  Bog Clubmoss (*Lycopodiella Inundata*)
-  Low Elevation Sphagnum Bog

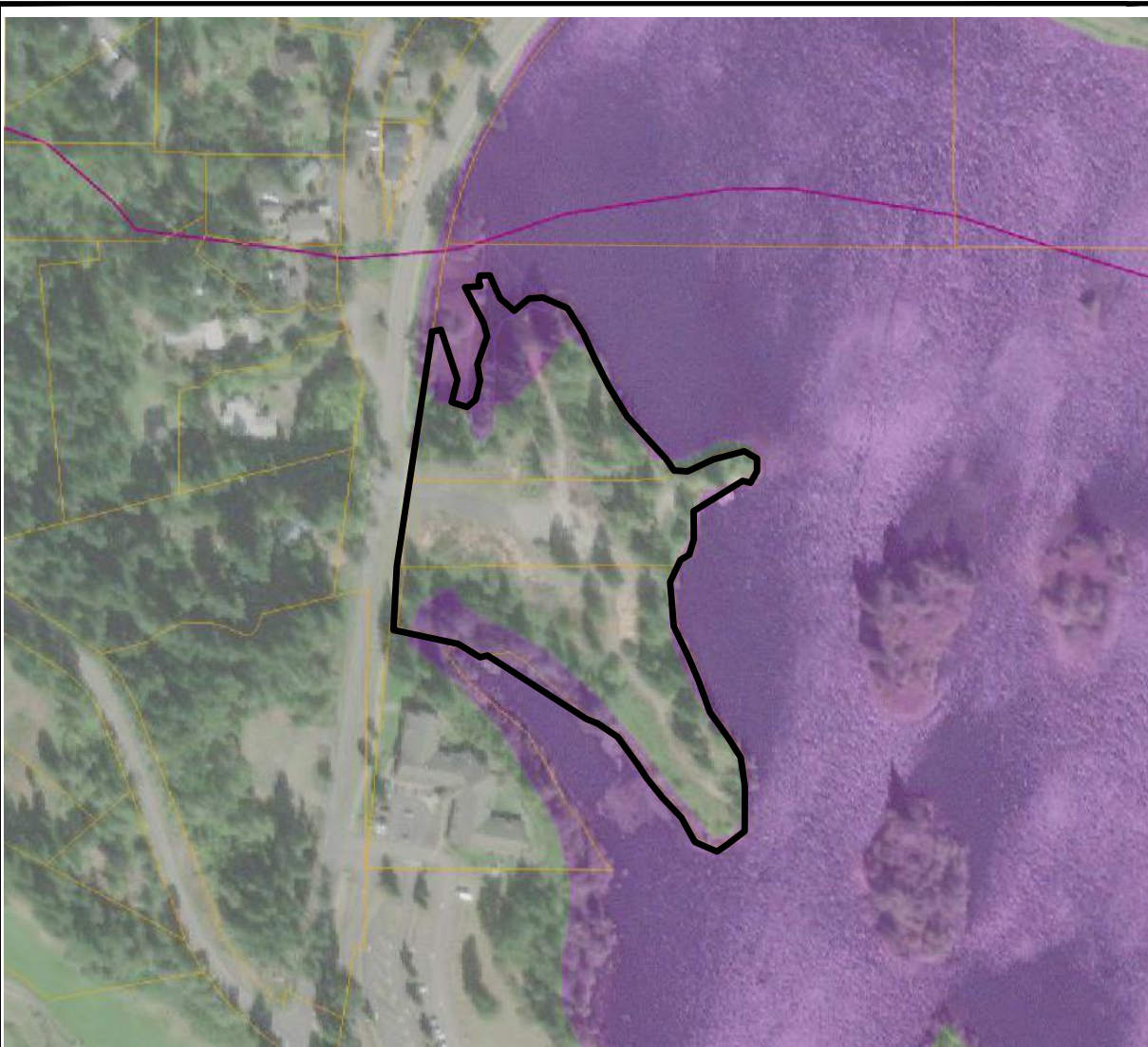
**NOTE:** Map provided online by Washington State  
 Department of Natural Resources at web address:  
<https://fortress.wa.gov/dnr/protectiongis/fpamt/index.html>







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Figure 9  
 DNR NATURAL HERITAGE MAP  
 Rock Cove CAR  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 7E, W.M.



**LEGEND:**

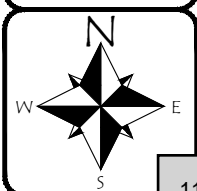
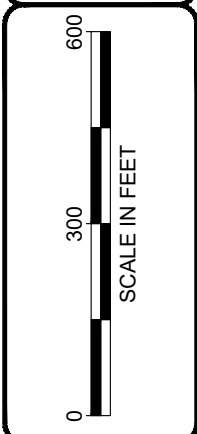
-  Site Boundary
-  Canada Goose  
Northern Spotted Owl  
Waterfowl Concentrations
-  Winter Steelhead - Occurrence/Migration  
Rainbow Trout - Occurrence/Migration

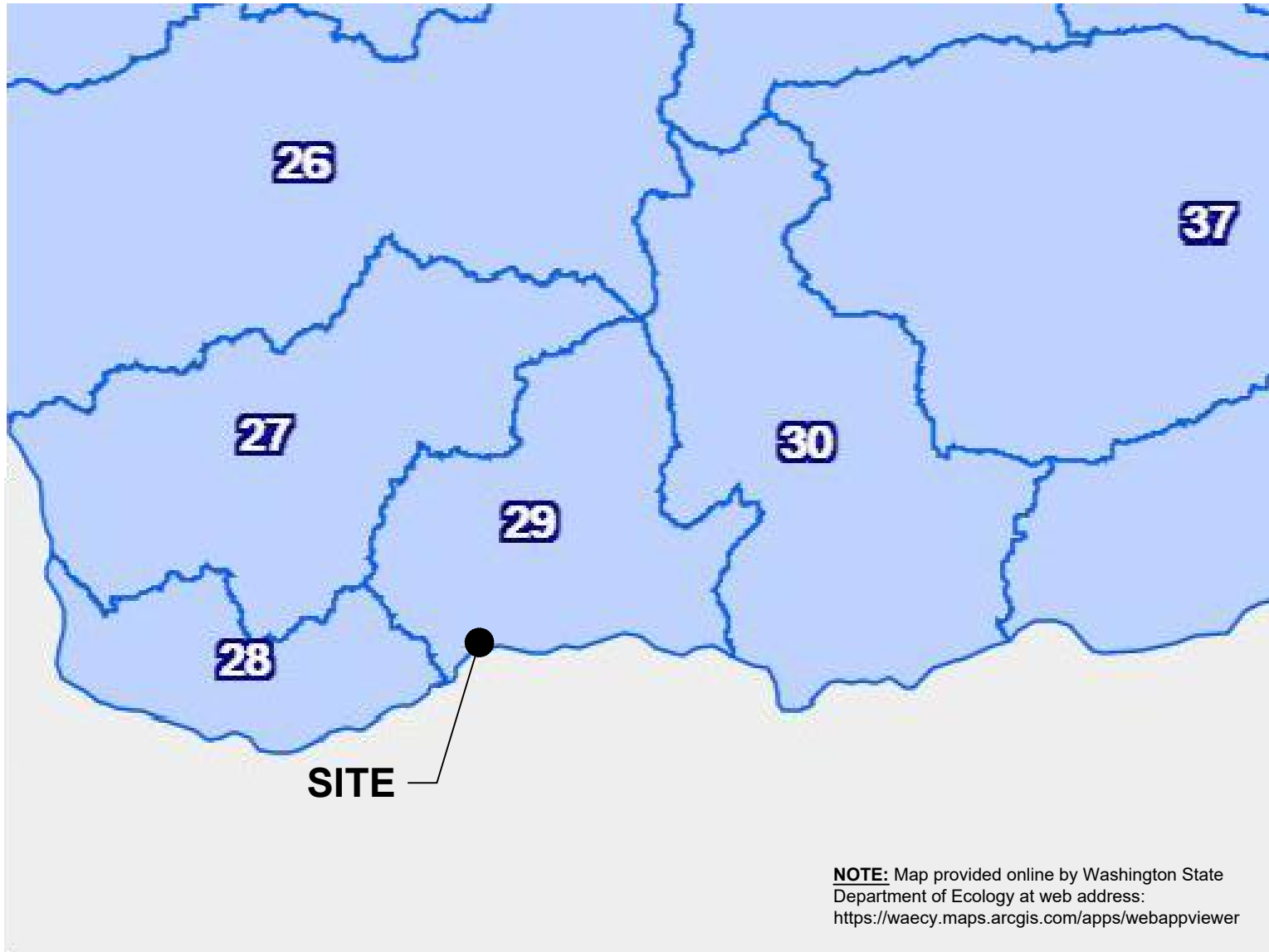
**NOTE:** Map provided online by Washington State  
Department of Fish and Wildlife at web address:  
<https://geodataservices.wdfw.wa.gov/hp/phs/>

**Figure 10**  
**PRIORITY HABITAT AND SPECIES**  
Rock Cove CAR  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 7E, W.M.

DATE: 4/28/23  
DWN: EF  
REQ. BY: AA  
PRJ. MGR: AA  
CHK: JKJ  
PROJECT NO: 2682.02

1157 3rd Ave., Suite 220A  
Longview, WA 98632  
Phone: (360) 578-1371  
Fax: (360) 414-9305  
[www.eco-land.com](http://www.eco-land.com)



NOT TO SCALE



1157 3rd Ave., Suite 220A  
Longview, WA 98632  
Phone: (360) 578-1371  
Fax: (360) 414-9305  
[www.eco-land.com](http://www.eco-land.com)

DATE: 4/28/23  
DWN: EF  
REQ. BY: AA  
PRJ. MGR: AA  
CHK: JKJ  
PROJECT NO:  
2682.02

Figure 11  
WRIA MAP  
Rock Cove CAR  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 7E, W.M.

ROCK CREEK EVENT CENTER

EL, ARCHITECTS, PS 3200 SE 164TH AVENUE, SUITE 302 VANCOUVER, WASHINGTON 98683 V. 360.798.3801

ATHAY & ASSOCIATES, INC 411 NE 83RD STREET VANCOUVER, WASHINGTON 98665 V. 360.574.0199

PARACLETE PS, INC 7510 NE VANCOUVER MALL DRIVE VANCOUVER, WASHINGTON 98662 V. 360.254.9234

NOT FOR CONSTRUCTION EXPIRES: 01.20.24 SIGNED: xx.xx.xx

REVISIONS DATE

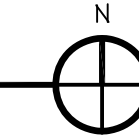
STEVENSON EVENT CENTER

ISSUE DATE: 04.04.2023 JOB NUMBER: 1036

COVER SHEET

AO.01

VICINITY MAP



THESE ABBREVIATIONS ARE FOR STANDARD REFERENCE ONLY.

ABBREVIATIONS

NOT ALL SYSTEMS AND ASSEMBLIES LISTED OCCUR IN THESE DOCUMENTS

Table of abbreviations for various construction materials and systems, including concrete, masonry, wood, plastics, insulation, and floor materials.

PROJECT DIRECTORY

ARCHITECT: EL ARCHITECTS PS CONTACT: ERIC LANCIUALT 3200 SE 164TH AVE STE 302 VANCOUVER, WA 98683 TEL: 360.798.3801 EMAIL: eric@elacpa.com

SEPARATE PERMITS

FIRE SPRINKLER FIRE ALARM

DEFERRED SUBMITTALS

PRE-ENGINEERED METAL BUILDING

SPECIAL INSPECTIONS

PER 1104.2, OWNER SHALL EMPLOY ONE OF MORE APPROVED AGENCIES TO PROVIDE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION ON WORK INDICATED IN SPECIAL INSPECTION PROGRAM AND REQUIREMENTS; ALL SPECIAL INSPECTION AND TEST REPORTS SHALL BE SUBMITTED TO THE AHJ AND ARCHITECT

GENERAL NOTES

- 1. VERIFY AND COORDINATE SITE CONDITIONS AND DIMENSIONS. BRING INCONSISTENCIES TO ATTENTION OF ARCHITECT BEFORE PROCEEDING WITH WORK.
2. PROVIDE SHORING AND BRACING AS NECESSARY TO ENSURE STRUCTURAL INTEGRITY WHEN WORK INCLUDES STRUCTURAL MEMBERS.
3. IMMEDIATELY BRING ERRORS AND OMISSIONS FOUND IN THESE DRAWINGS TO ATTENTION OF ARCHITECT. WHERE CONTRACTOR IS AWARE OF CONFLICTS OR OMISSIONS AND HAS NOT BROUGHT THEM TO ARCHITECT'S ATTENTION, IT IS UNDERSTOOD THAT CONTRACTOR HAS MADE PROVISIONS FOR MORE COSTLY AND STRINGENT METHOD. WHERE CONFLICTS, ERRORS OR OMISSIONS OCCUR IN DRAWINGS, PROJECT MANUAL, OR OTHER RELATED CONTRACT DOCUMENT PROVISIONS SUCH AS MANUFACTURER'S INSTRUCTIONS, REFERENCE STANDARDS, AND REGULATORY AGENCIES AND CODES, ASSUME MORE STRINGENT REQUIREMENTS AND VERIFY WITH ARCHITECT BEFORE BEGINNING WORK.
4. DO NOT SCALE DRAWINGS. FOLLOW DIMENSIONS SHOWN ON DRAWINGS AND ACTUAL FIELD MEASUREMENTS. NOTIFY ARCHITECT OF DISCREPANCIES.
5. ALL DIMENSIONS ARE TO FACE OF STUD, FACE OF CONCRETE AND MASONRY, FACE OF FRAMING OR CENTERLINE OF COLUMN, UNLESS NOTED OTHERWISE.
6. COMPLY WITH BUILDING CODES AND OTHER APPLICABLE CODES AND ORDINANCES.
7. WORK INSTALLED IN CONFLICT WITH CONSTRUCTION DOCUMENTS IS NON-CONFORMING WORK AND REQUIRES CORRECTION AT NO ADDITIONAL COST TO OWNER AS DIRECTED BY ARCHITECT.
8. COORDINATE WORK IN COMPLIANCE WITH DRAWINGS AND SPECIFICATIONS TO ACCURATELY LOCATE MECHANICAL, ELECTRICAL, AND OTHER PENETRATIONS AND SYSTEMS WITH RESPECT TO STRUCTURAL FRAMING. DO NOT PENETRATE STRUCTURAL FRAMING EXCEPT AS ACCEPTED BY ARCHITECT.
9. FOLLOW MANUFACTURERS' INSTRUCTIONS EXCEPT WHERE MORE STRINGENT REQUIREMENTS ARE INDICATED OR REQUIRED BY CODE.
10. COORDINATE SIZES AND LOCATIONS OF OPENINGS AND ROUGH-INS FOR MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR, BEFORE PROCEEDING WITH THE WORK.
11. ALL PIPE, CONDUIT, DUCTS AND STRUCTURE TO BE CONCEALED BEHIND FINISHED CONSTRUCTION UNLESS NOTED AS EXPOSED TO VIEW ON DRAWINGS OR APPROVED BY ARCHITECT.
12. OFFSET AND ADJUST NON-LOAD BEARING FRAMING AS NECESSARY TO MAKE FINISHED SURFACES FLUSH AND TRUE TO LINE.
13. VERIFY BLOCKING & BACKING REQUIREMENTS WITH EQUIPMENT SUPPLIER & CASEWORK FABRICATOR; INSTALL BLOCKING & BACKING AT ALL WALL-MOUNTED AND WALL-SUPPORTED ITEMS, TYPICAL.
14. NOTES INCLUDING "AS REQUIRED" INDICATE AS REQUIRED BY LOCAL JURISDICTION, VERIFY REQUIREMENTS PRIOR TO BID AND BEGINNING THE WORK.
15. EXIT SIGNS AND EMERGENCY ILLUMINATION SHALL INDICATE PATH OF EGRESS TRAVEL.

GRAPHIC SYMBOLS

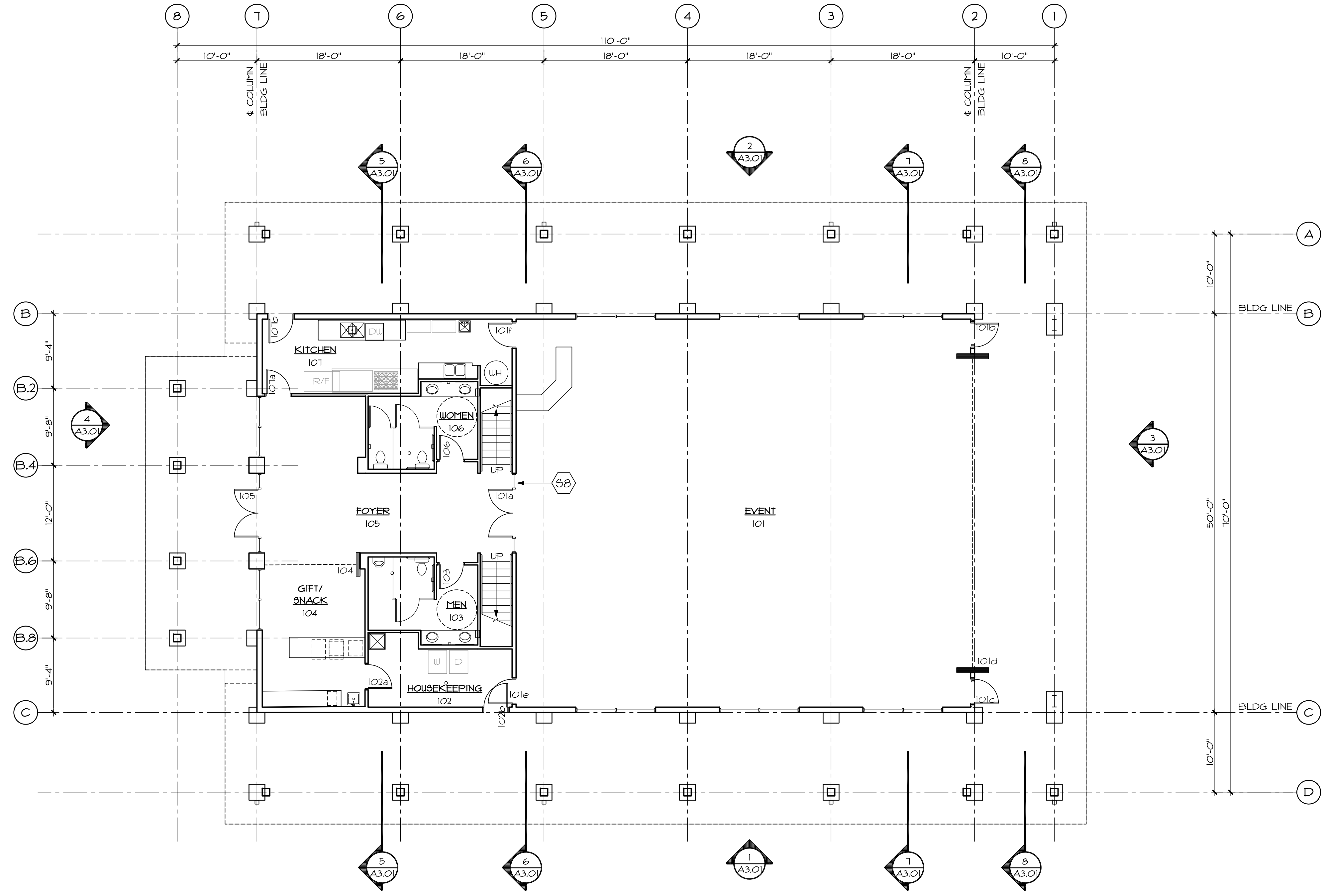
THESE SYMBOLS ARE FOR STANDARD REFERENCE ONLY. NOT ALL SYSTEMS AND ASSEMBLIES LISTED OCCUR IN THESE DOCUMENTS

Graphic symbols section containing various symbols for building elevation, grid lines, wall types, roof-ceiling indicators, schedule indicators, north arrows, signages, bench marks, floor lines, spot elevations, cut lines, revision indicators, room marks, office, interior elevations, room marks, office, and typical door swing.

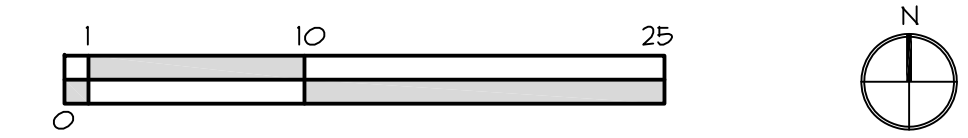
AIR BARRIER TESTING

PROVIDE COMPLETE AIR BARRIERS & AIR BARRIER TESTING





1 MAIN LEVEL FLOOR PLAN  
1/8" = 1'-0" rpo1.dwg



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EXPIRES: 01.20.24  
SIGNED: xx.xx.xx

REVISIONS	DATE

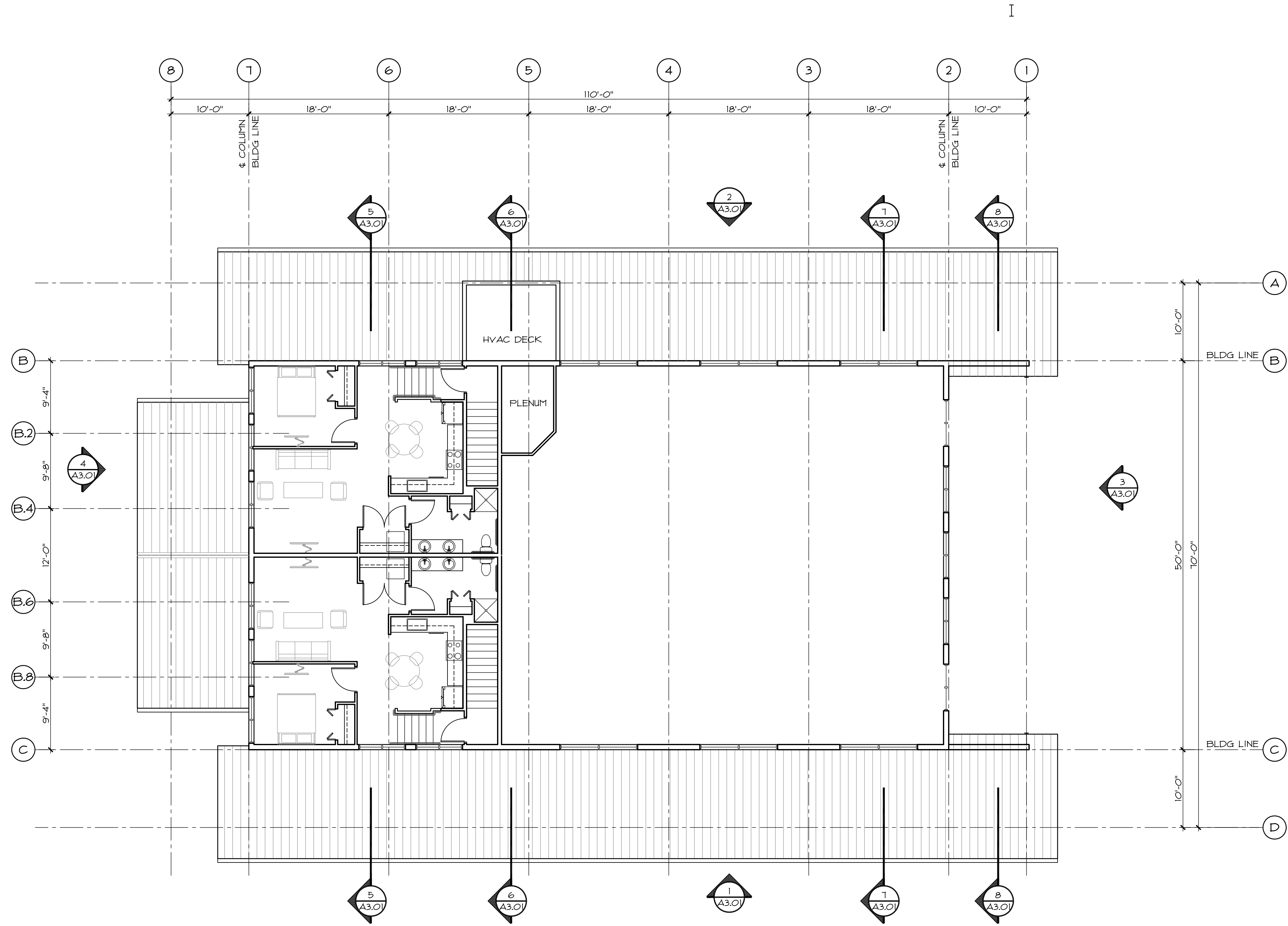
STEVENSON  
EVENT CENTER

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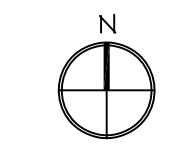
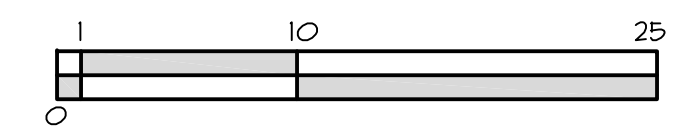
ISSUE DATE: 04.04.2023  
JOB NUMBER: 1036

MAIN LEVEL  
FLOOR PLAN

A2.01



1 UPPER LEVEL FLOOR PLAN  
1/8" = 1'-0" tp02.dwg



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REVISIONS	DATE

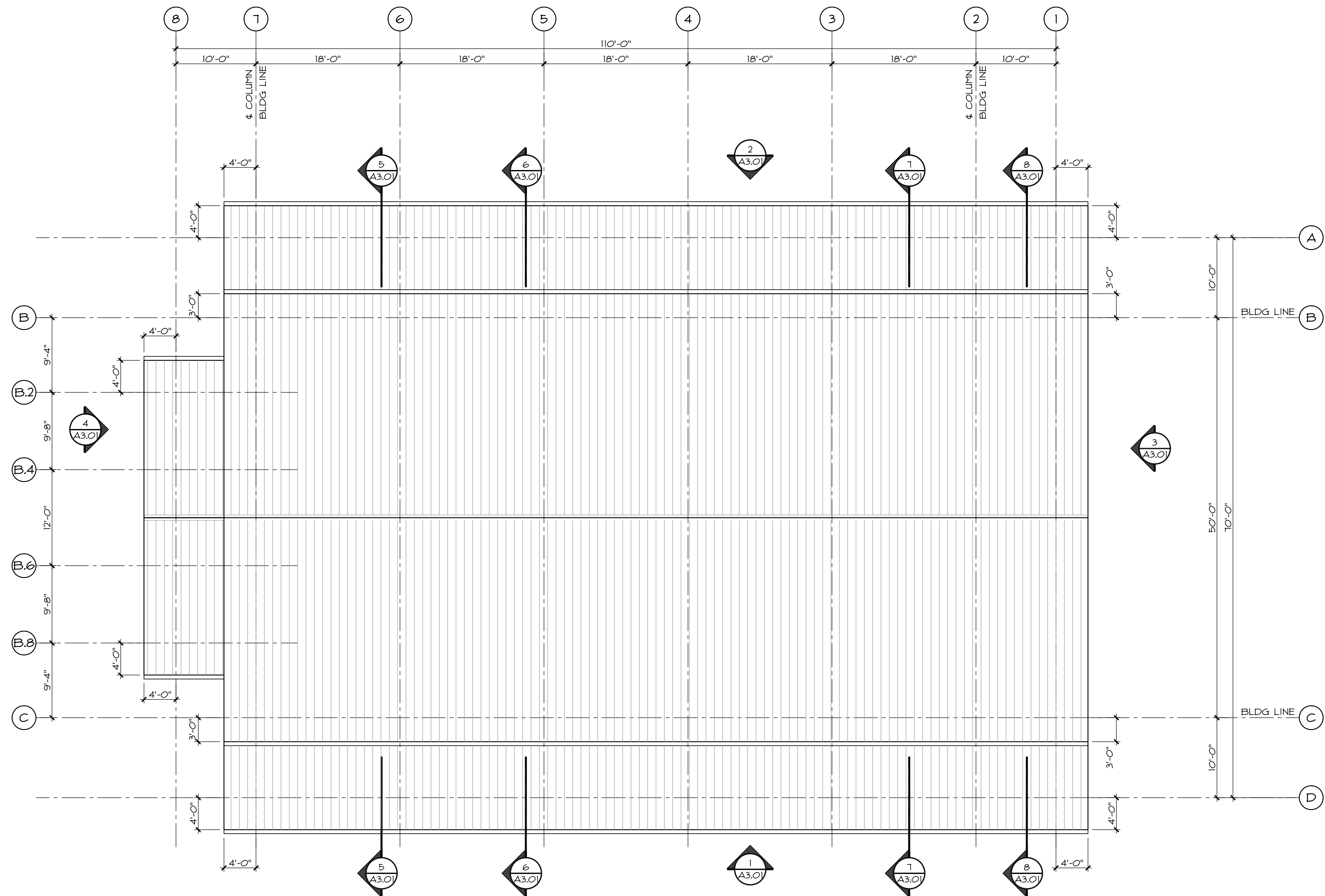
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EVENT CENTER

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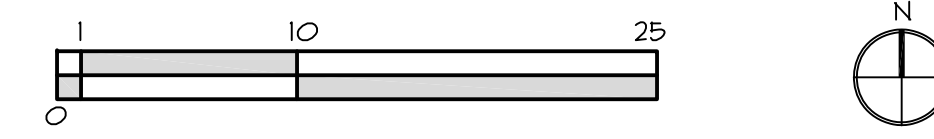
ISSUE DATE: 04.04.2023  
JOB NUMBER: 1036

UPPER  
LEVEL  
FLOOR PLAN

A2.02



1 ROOF PLAN  
1/8" = 1'-0" rp01.dwg



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EXPIRES: 01.20.24  
SIGNED: xx.xx.xx

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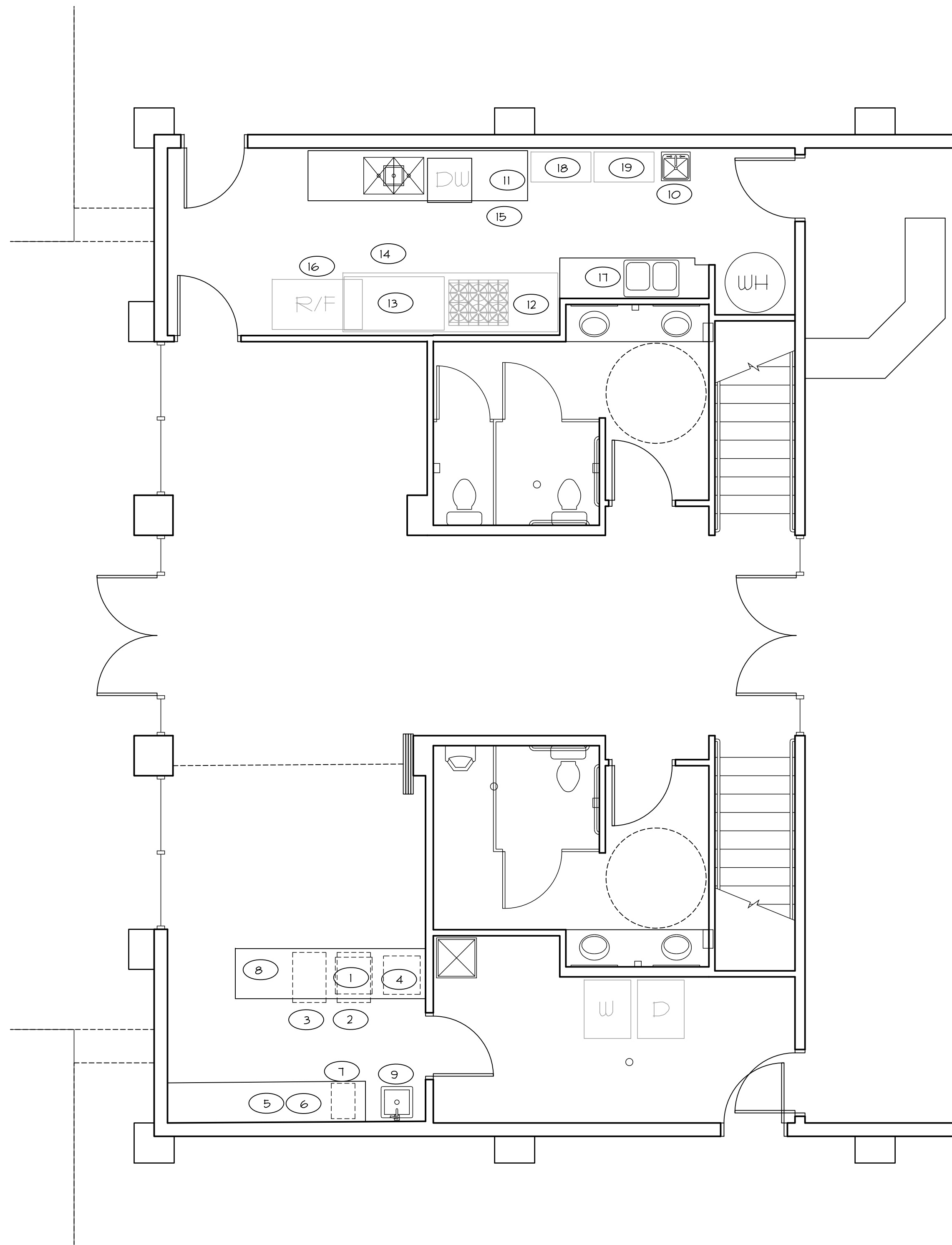
PRELIMINARY PRICING -- 04.04.2023

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EVENT CENTER

ISSUE DATE: 04.04.2023  
JOB NUMBER: 1036

ROOF PLAN

A2.03



- 1 ESPRESSO MACHINE 22"Wx22"Dx22"H; 208v
- 2 UNDERCOUNTER REFRIGERATOR 28"Wx29"Dx33-1/2"H; 120v
- 3 UNDERCOUNTER ICE MACHINE SCOTSMAN CU9201A-1A 120v, 15A 1/4" CU 3/4" DRAIN 20"Wx30"Dx31-1/2"H
- 4 UNDERCOUNTER DISHWASHER; 208v HARD WIRE CONNECTION
- 5 COFFEE MAKER
- 6 COFFEE MAKER
- 7 COFFEE GRINDER
- 8 POS
- 9 HAND SINK
- 10 HAND SINK
- 11 DISHWASH
- 12 RANGE/OVEN
- 13 COOKTOP
- 14 TYPE 1 HOOD
- 15 TYPE 2 HOOD
- 16 REFRIGERATOR/FREEZER
- 17 PREP SINK
- 18 WIRE SHELVING
- 19 WIRE SHELVING

NOT FOR CONSTRUCTION

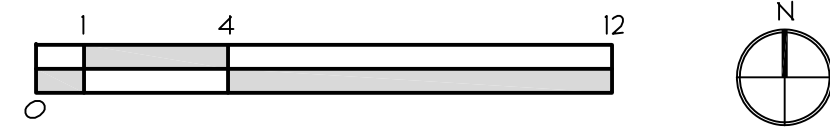
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REVISIONS      DATE

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1 MAIN LEVEL EQUIPMENT LAYOUT  
1/4" = 1'-0"      fp01.dwg

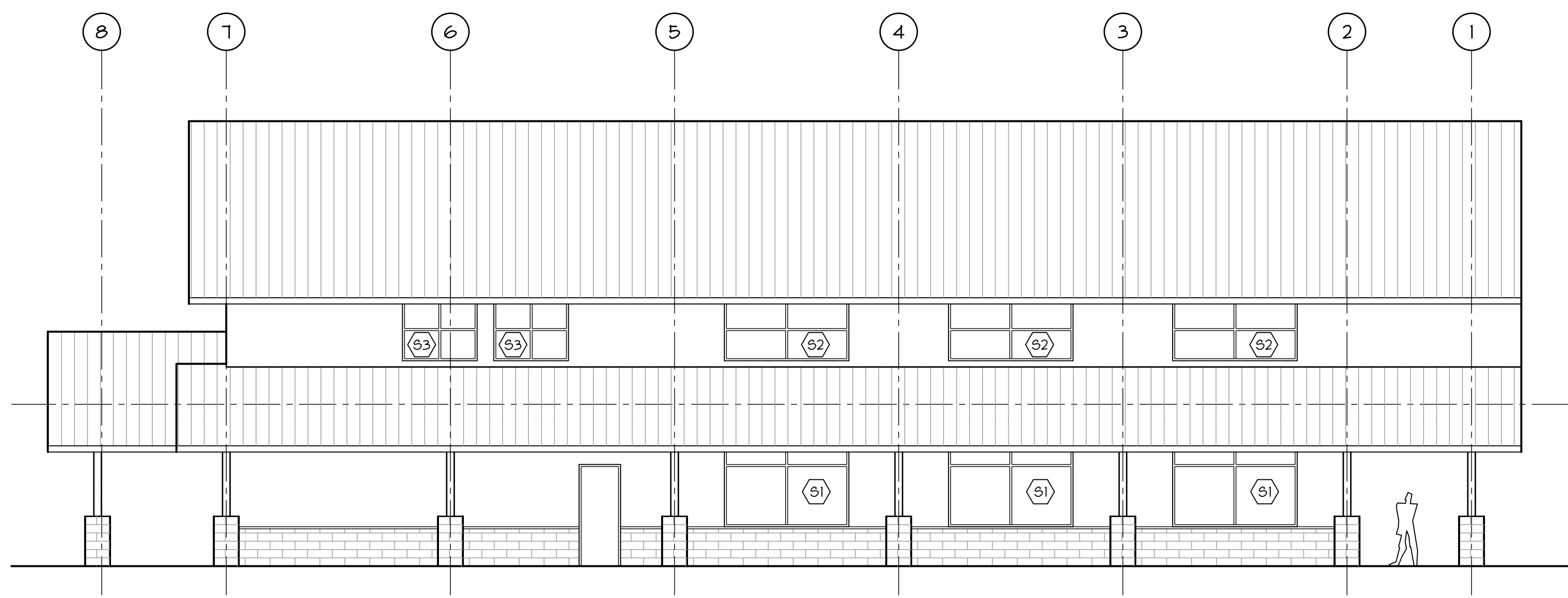


PRELIMINARY PRICING -- 04.04.2023

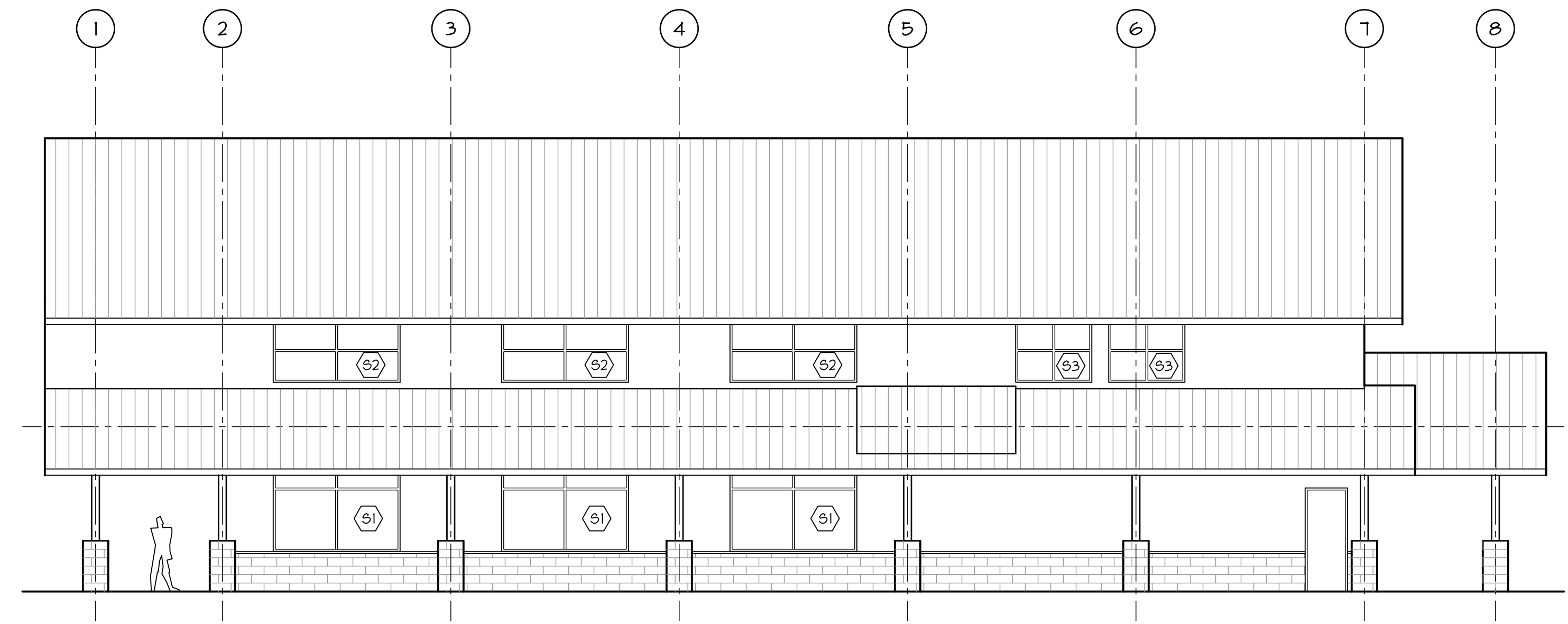
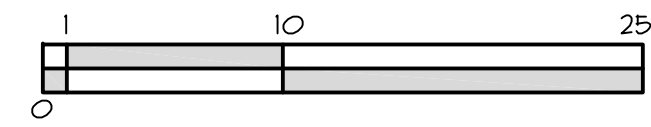
ISSUE DATE: 04.04.2023  
JOB NUMBER: 1036

MAIN LEVEL  
EQUIPMENT  
LAYOUT

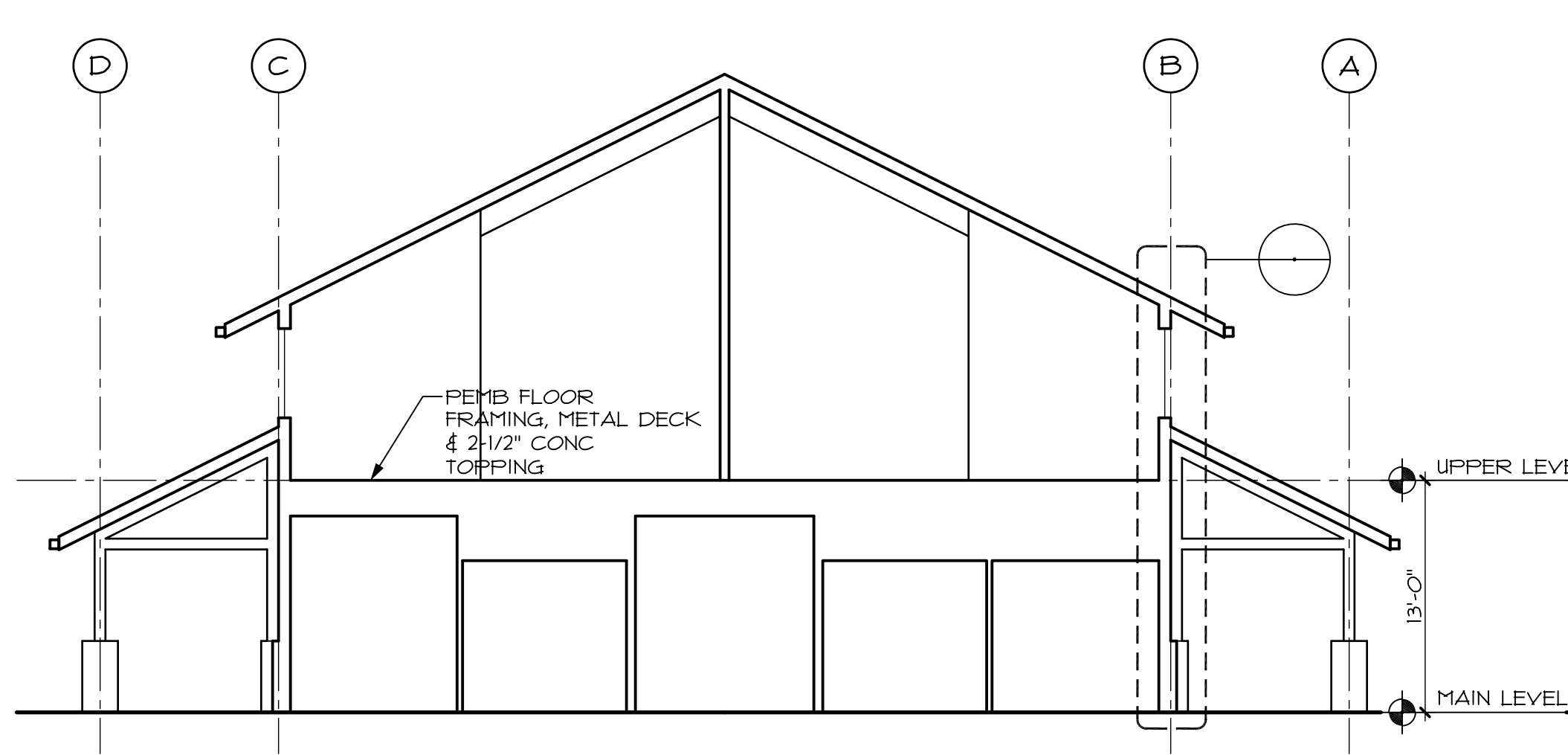
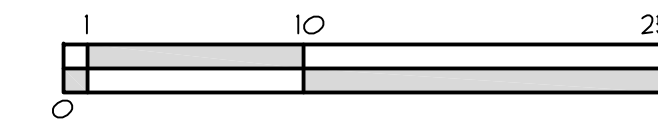
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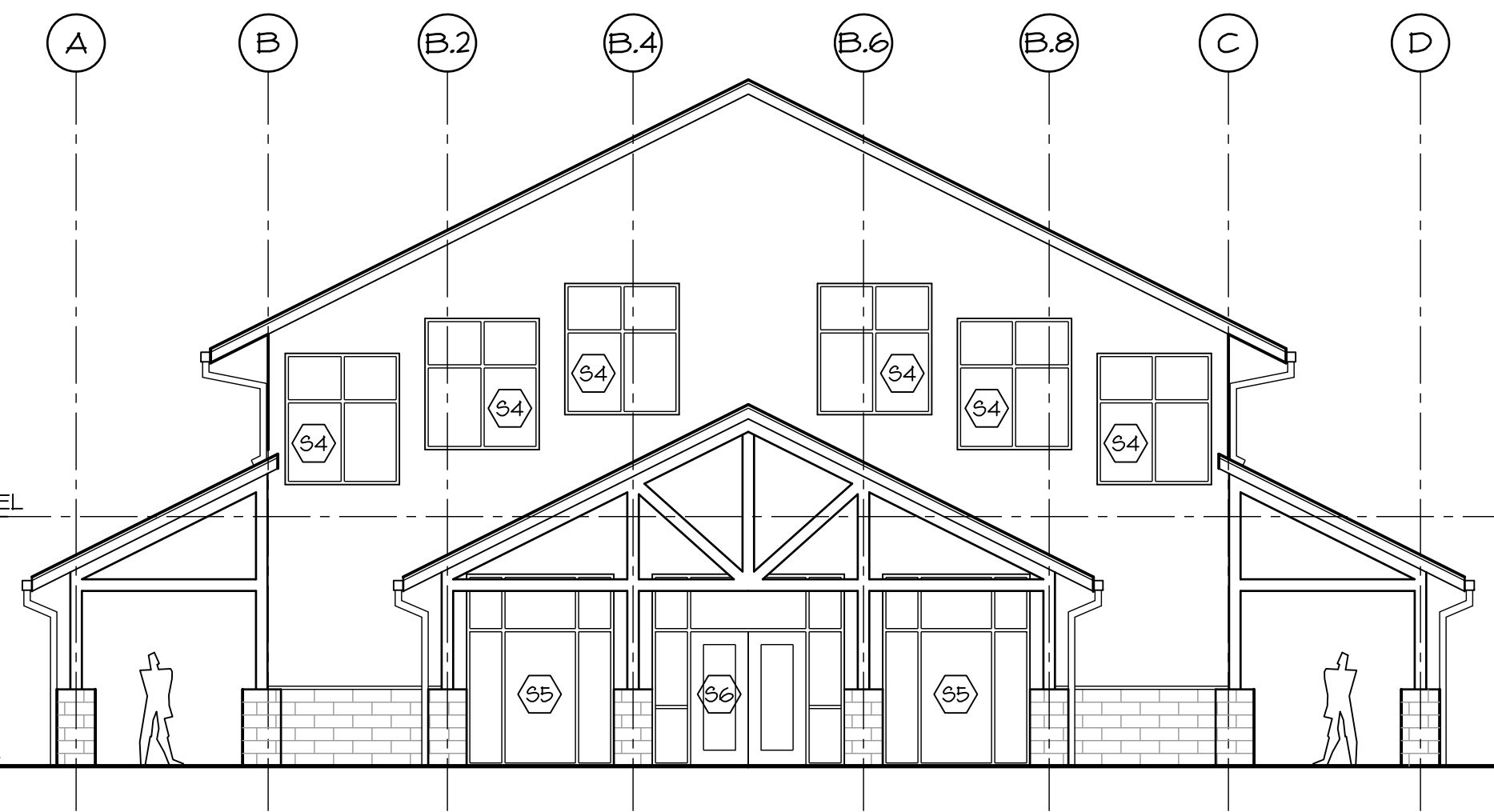
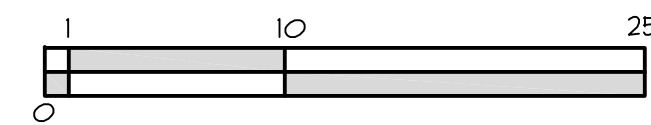
**2 NORTH ELEVATION**  
1/8" = 1'-0"  
ben.dwg



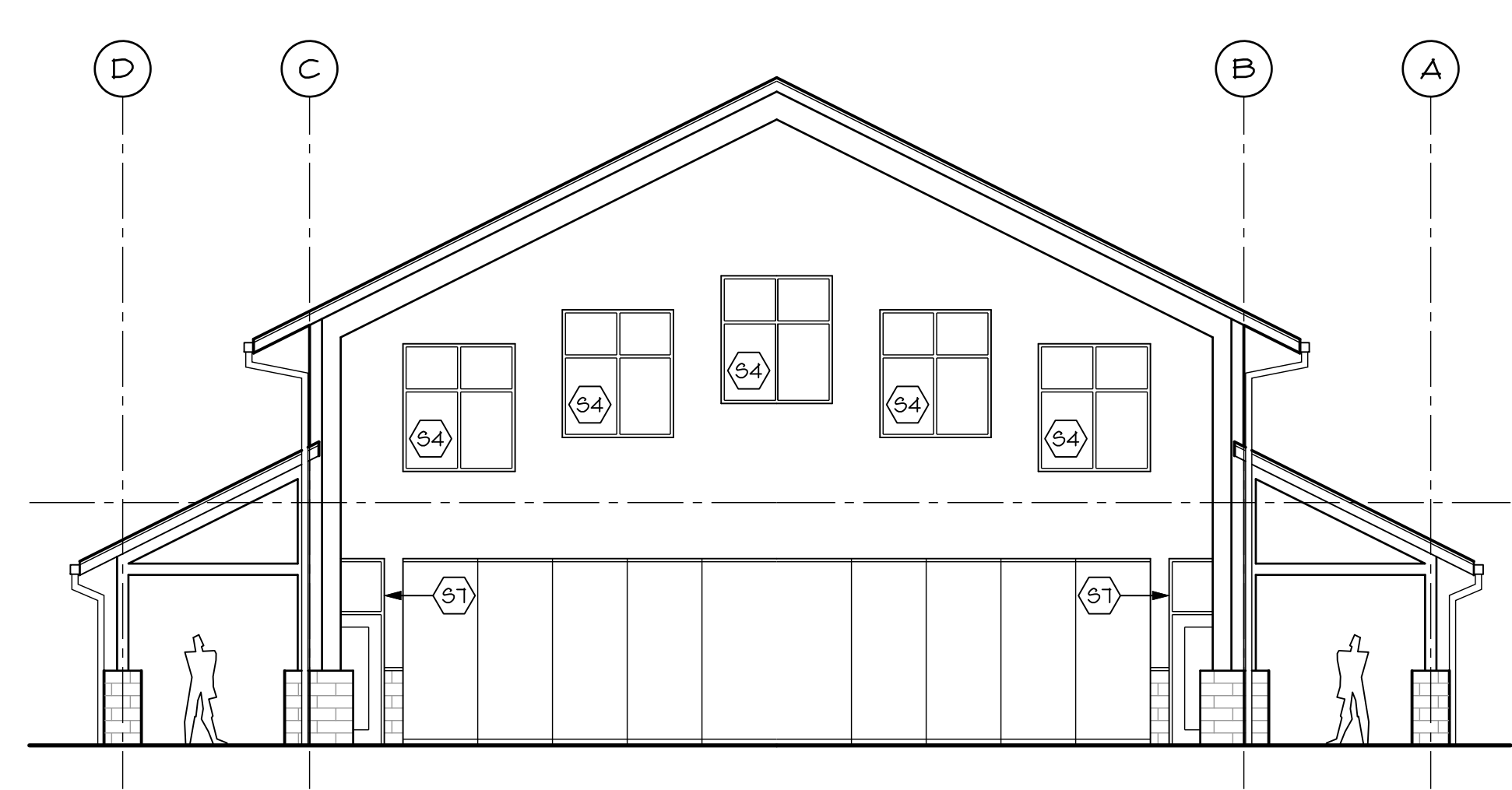
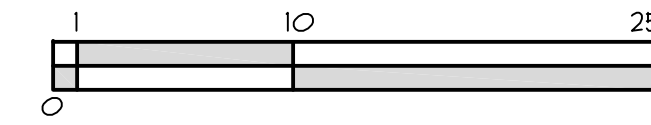
**1 SOUTH ELEVATION**  
1/8" = 1'-0"  
bes.dwg



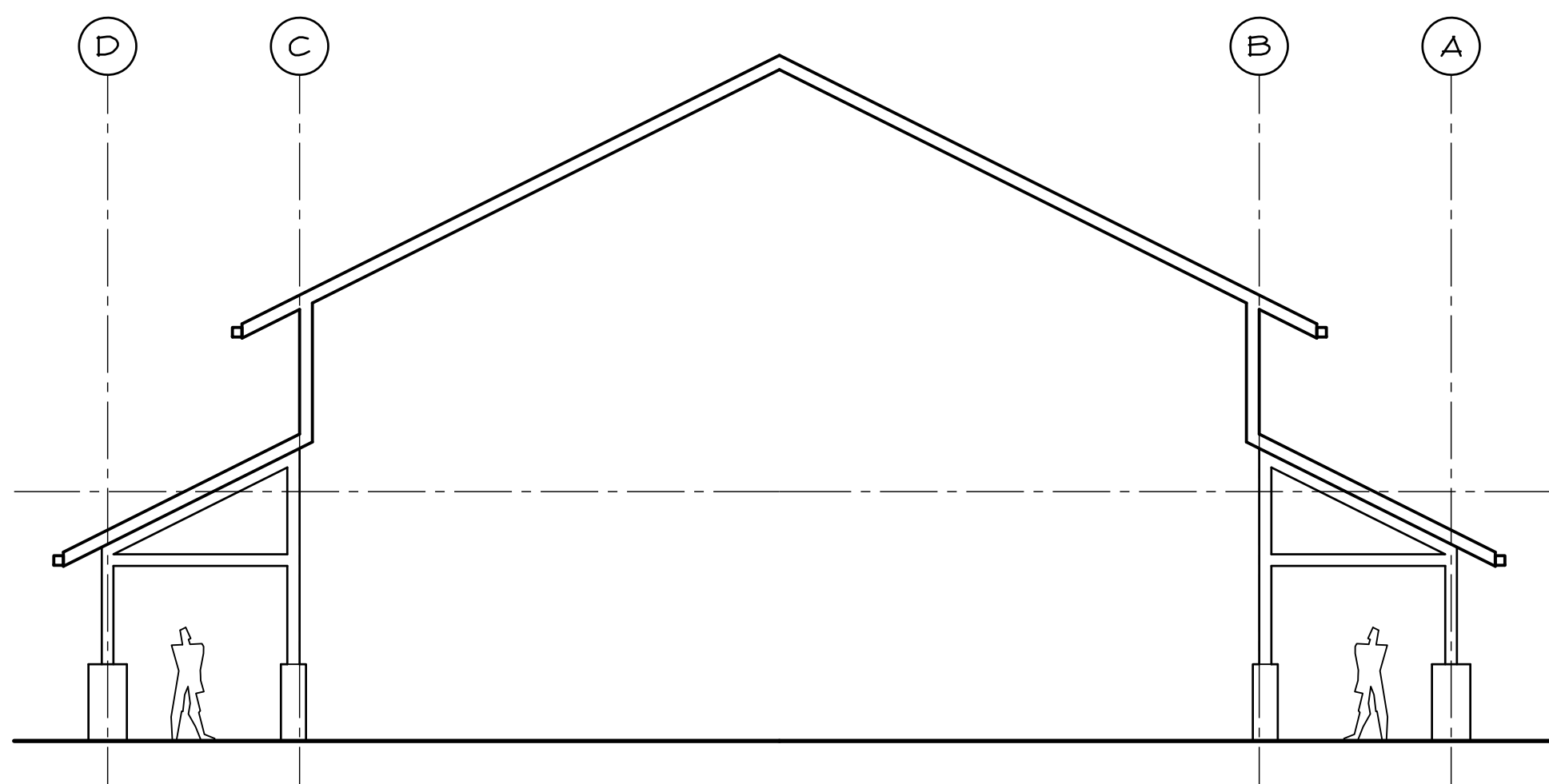
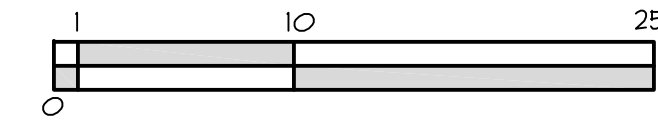
**5 LATERAL SECTION**  
1/8" = 1'-0"  
bs02.dwg



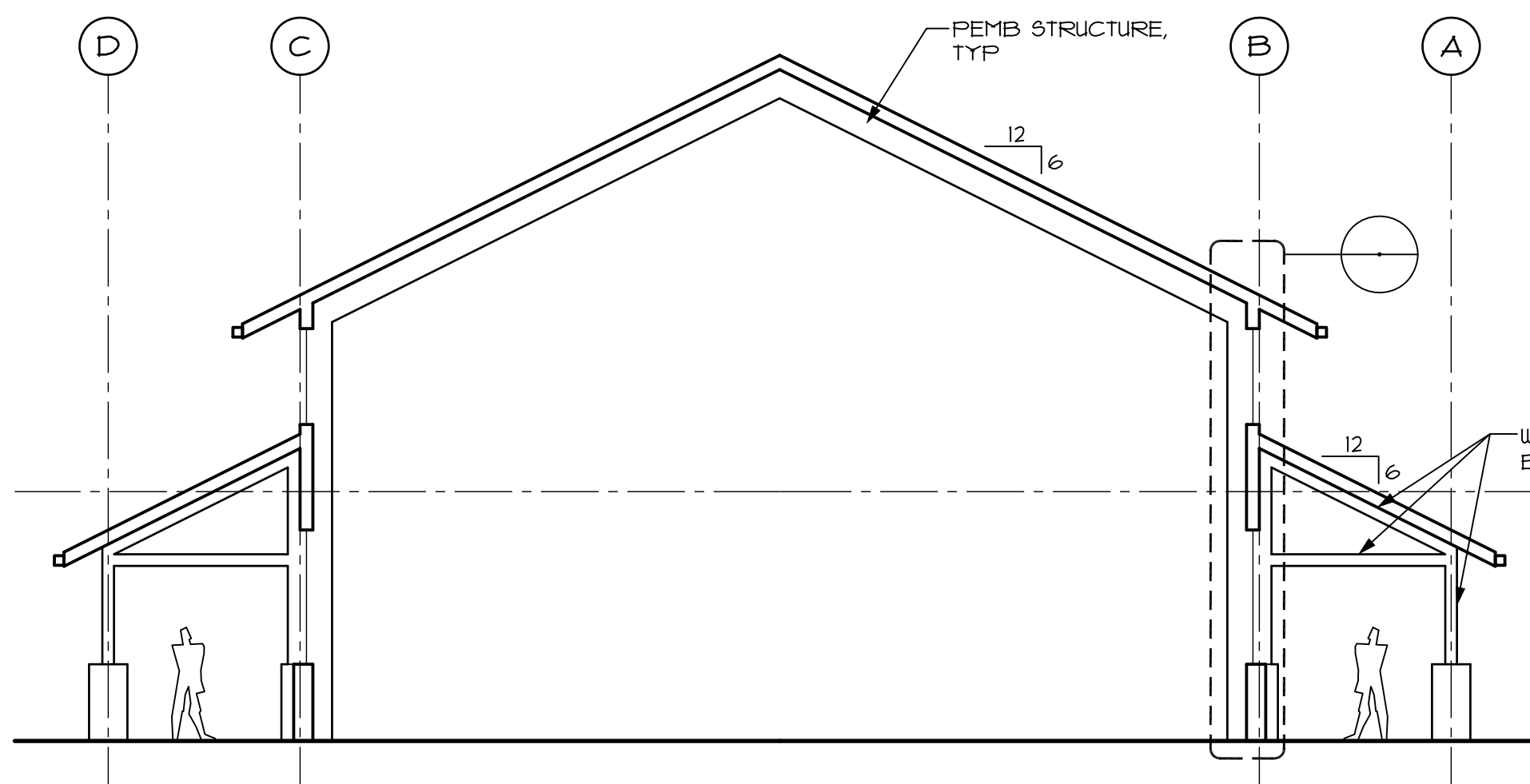
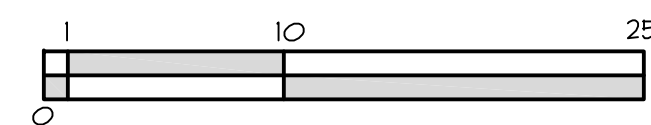
**4 WEST ELEVATION**  
1/8" = 1'-0"  
bew.dwg



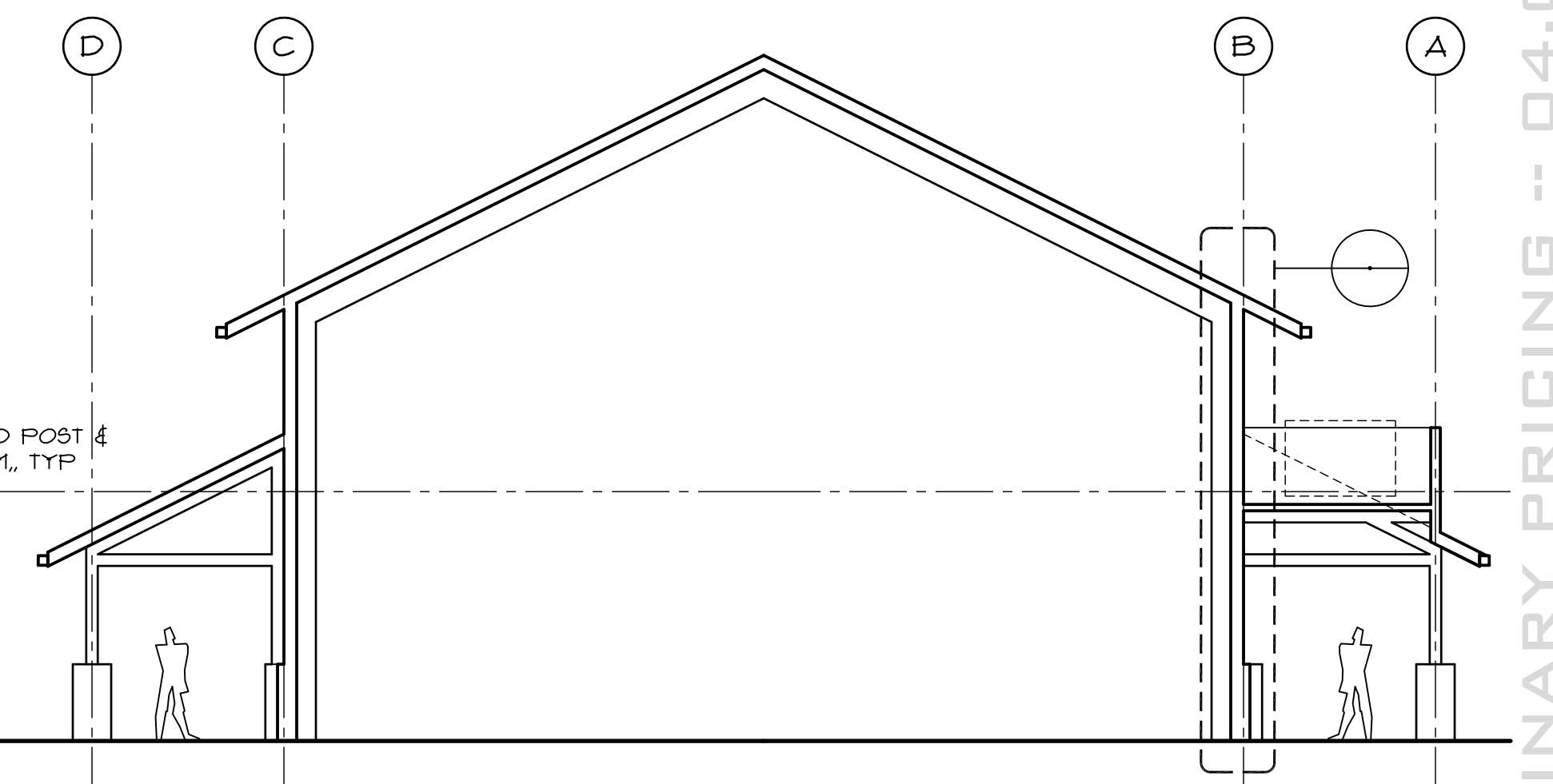
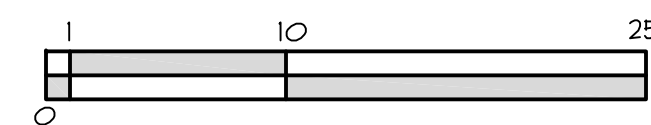
**3 EAST ELEVATION**  
1/8" = 1'-0"  
bee.dwg



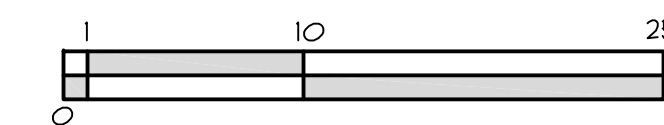
**8 LATERAL SECTION**  
1/8" = 1'-0"  
bs04.dwg



**7 LATERAL SECTION**  
1/8" = 1'-0"  
bs01.dwg



**6 LATERAL SECTION**  
1/8" = 1'-0"  
bs01.dwg



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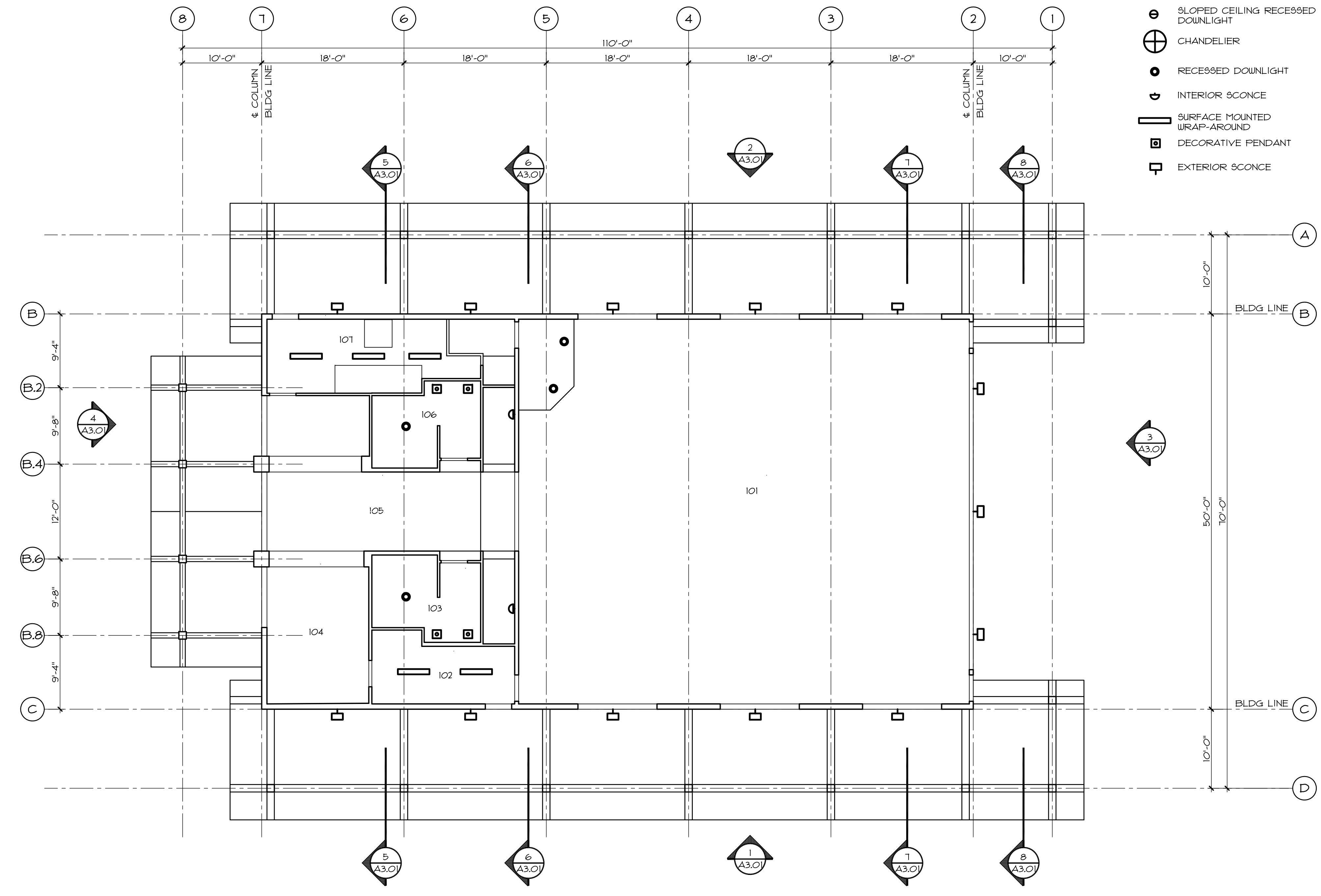
ISSUE DATE: 04.04.2023  
JOB NUMBER: 1036

EXTERIOR  
ELEVATIONS  
& BUILDING  
SECTIONS

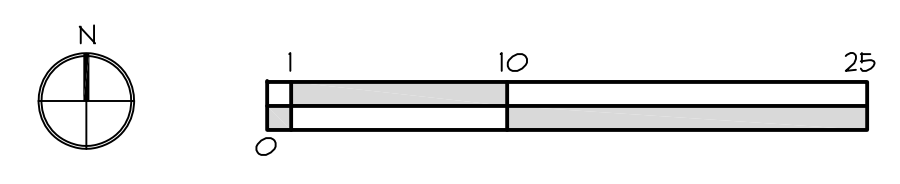
**A3.01**

FIXTURE LEGEND

- SLOPED CEILING RECESSED DOWNLIGHT
- ⊕ CHANDELIER
- RECESSED DOWNLIGHT
- ⌋ INTERIOR SCONCE
- ▭ SURFACE MOUNTED WRAP-AROUND
- ◻ DECORATIVE PENDANT
- ⌋ EXTERIOR SCONCE



1 FIRST LEVEL REFLECTED CEILING PLAN  
1/8" = 1'-0"  
fp01.dwg



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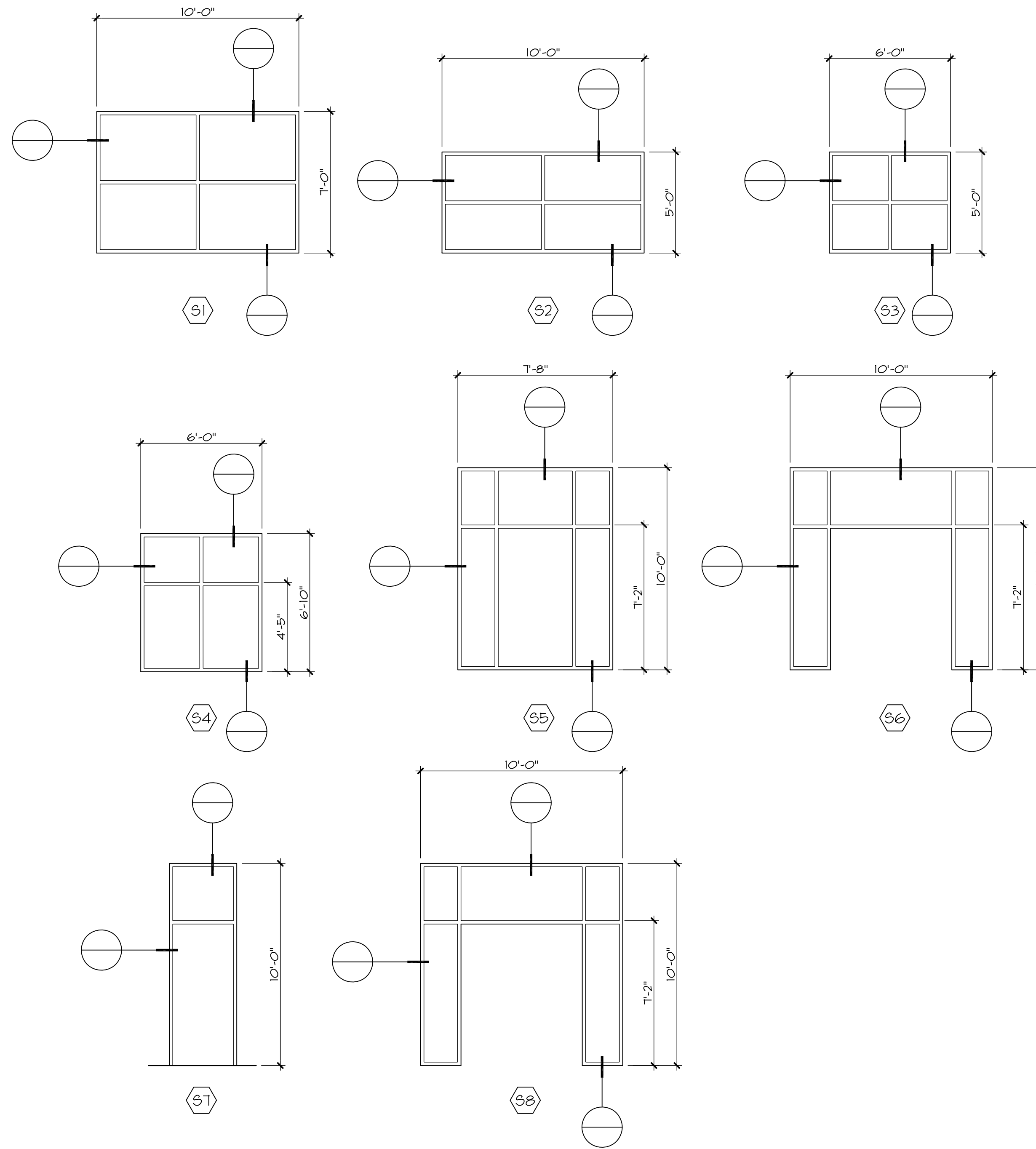
ISSUE DATE: 04.04.2023  
JOB NUMBER: 1036

FIRST LEVEL  
REFLECTED  
CEILING PLAN

A8.01



STOREFRONT ELEVATIONS



ROOM FINISH SCHEDULE

RM NO.	ROOM NAME	WALLS				CLG	FLR	BASE	REMARKS
		N	E	S	W				
101	EVENT	-	-	-	-	P-	-	-	-
102	HOUSEKEEPING	-	-	-	-	P-	SC	RB	-
103	MEN	-	-	-	-	P-	-	-	NOTE 2, 3
104	GIFT/SNACK	-	-	-	-	P-	-	-	-
105	FOYER	-	-	-	-	P-	-	-	-
106	WOMEN	-	-	-	-	P-	-	-	NOTE 2, 3
107	KITCHEN	FRP	FRP	FRP	FRP	P-	-	-	-

ROOM FINISH SCHEDULE NOTES:  
 1. 6" H COVE BASE  
 2. PLAM WAINSCOT TO 4'-0" AFF, SEE INTERIOR ELEVATIONS

FRP - FIBER-REINFORCED PLASTIC PANEL  
 LVT - LUXURY VINYL FLOORING  
 P- - GUB, PAINT  
 RB - 4" RESILIENT BASE  
 RSP - RESILIENT SHEET FLOORING  
 SC - SEALED CONCRETE

DOOR SCHEDULE

DOOR NO.	DOOR SIZE W x H	FRAME TYPE	DOOR TYPE	HEAD JAMB SILL DETAILS AS DET	GLAZING	REMARKS
101a	6'-0" x 7'-0"	-	4	-	GL-1	NOTE 1
101b	3'-0" x 7'-0"	-	4	-	GL-2	NOTE 1
101c	3'-0" x 7'-0"	-	4	-	GL-2	NOTE 1
101d	4'-0" x 10'-0"	-	3	-	GL-2	-
101e	3'-0" x 7'-0"	A	1	-	-	-
101f	3'-0" x 7'-0"	A	1	-	-	-
102a	3'-0" x 7'-0"	A	1	-	-	-
102b	3'-0" x 7'-0"	B	2	-	-	-
103	3'-0" x 7'-0"	A	1	-	-	-
104	12'-0" x 10'-0"	-	3	-	-	-
105	6'-0" x 7'-0"	-	4	-	-	NOTE 1
106	3'-0" x 7'-0"	A	1	-	-	-
107a	3'-0" x 7'-0"	A	1	-	-	-
107b	3'-0" x 7'-0"	B	2	-	-	-

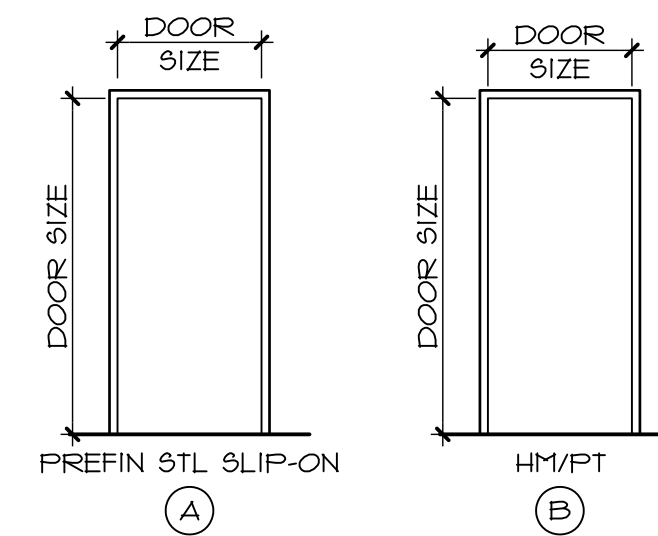
GL-1 SAFETY GLAZING  
 ALUM ALUMINUM  
 FT PAINT  
 STN STAIN

GL-2 INSULATED SAFETY GLAZING  
 HM HOLLOW METAL  
 STL STEEL  
 WD WOOD

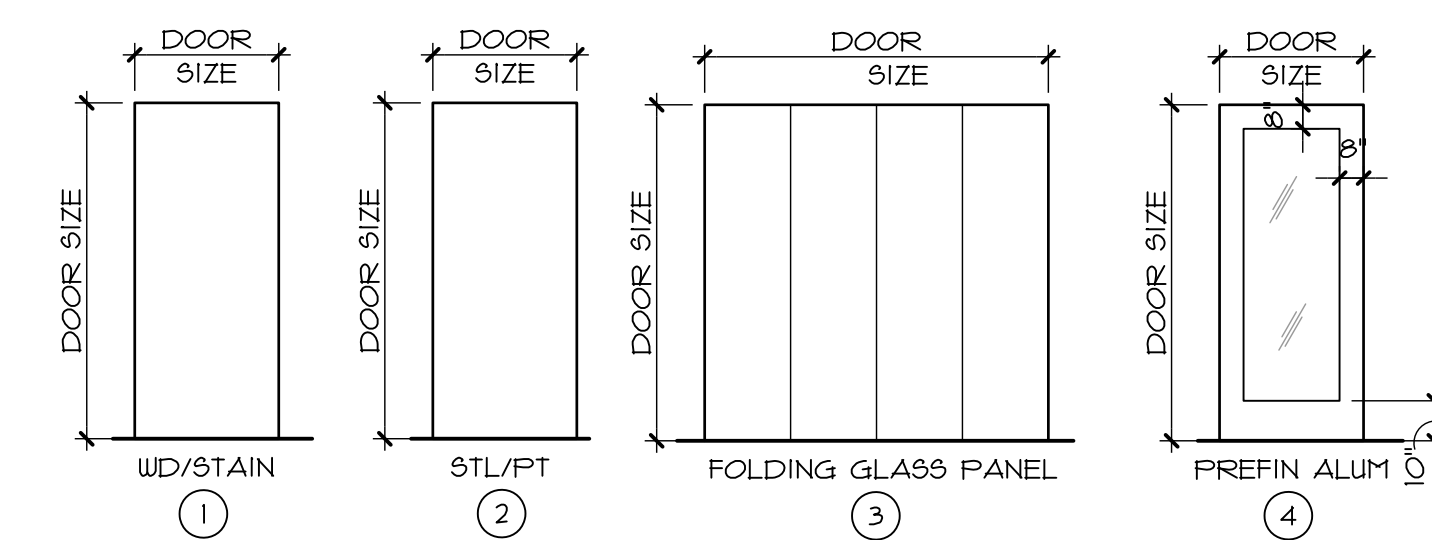
DOOR SCHEDULE NOTES:

- SEE SECTION 08 11 00 FOR HARDWARE, TYP
- ALL DOORS: NO MORE THAN 5LBF DOOR OPENING FORCE, TYP
- ALL EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT; FIELD VERIFY & MODIFY AS REQUIRED
- LOCATE ALL MANUALLY OPERATING HARDWARE WITHIN INDICATED HEIGHT ZONE
- ALL DOOR HARDWARE OPERABLE WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST
- ADJUST ALL DOORS WITH CLOSERS SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12 DEGREES FROM THE LATCH IS MINIMUM 5 SECONDS
- SEE STOREFRONT ELEVATIONS

FRAME ELEVATIONS



DOOR ELEVATIONS



EL, ARCHITECTS, PS

3200 SE 164TH AVENUE SUITE 302 VANCOUVER, WASHINGTON 98683 v. 360.798.3801

ATHAY & ASSOCIATES, INC

4111 NE 83RD STREET VANCOUVER, WASHINGTON 98665 v. 360.574.0199

PARACLETE PS, INC

7510 NE VANCOUVER MALL DRIVE VANCOUVER, WASHINGTON 98662 v. 360.254.9234

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ISSUE DATE: 04.04.2023 JOB NUMBER: 1036

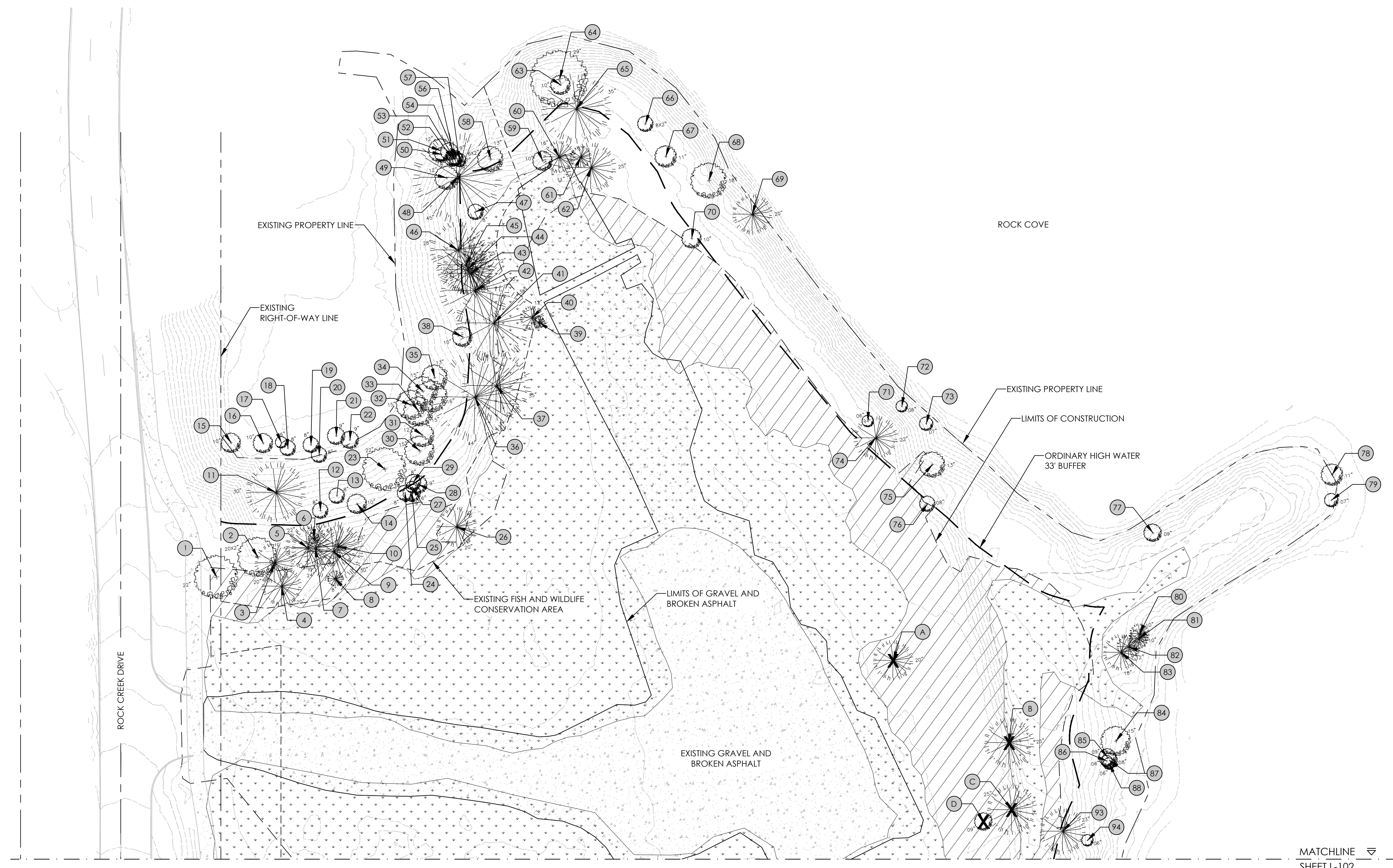
SCHEDULES

A10.01

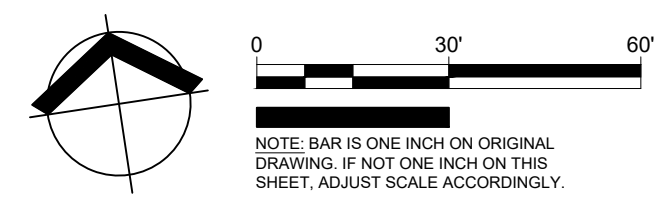
PRELIMINARY PRICING -- 04.04.2023



PLOT DATE: Monday, July 24, 2023 FILE LOCATION: C:\Users\Curtis Riley\OneDrive - Cascara Land Design\Cascara Land Design\Projects\0110.03 Rock Creek Cove\CAD\Vegetation Assessment\_Plan.dwg



MATCHLINE  
SHEET L-102



**EXISTING TREES TO REMAIN**

TREE NUMBER	SPECIES	SIZE (DBH)
1	NORWAY MAPLE	22"
2	DOUGLAS FIR	20X2"
3	DOUGLAS FIR	20"
4	DOUGLAS FIR	20"
5	DOUGLAS FIR	22"
6	DOUGLAS FIR	6"
7	DOUGLAS FIR	24"
8	DOUGLAS FIR	8"
9	DOUGLAS FIR	30"
10	DOUGLAS FIR	20"
11	DOUGLAS FIR	30"
12	RED ALDER	8"
13	RED ALDER	8"
14	RED ALDER	10"
15	RED ALDER	10"
16	RED ALDER	10"
17	RED ALDER	6"
18	RED ALDER	8"
19	RED ALDER	8"
20	RED ALDER	8"
21	RED ALDER	9"
22	RED ALDER	9"
23	BLACK HAWTHORNE	22"
24	RED ALDER	8"
25	BLACK HAWTHORNE	9"
26	DOUGLAS FIR	20"
27	BLACK HAWTHORNE	6"
28	BLACK HAWTHORNE	9"
29	RED ALDER	8"
30	BIG LEAF MAPLE	15"

TREE NUMBER	SPECIES	SIZE (DBH)
31	RED ALDER	12"
32	RED ALDER	15"
33	RED ALDER	15"
34	RED ALDER	15"
35	RED ALDER	13"
36	DOUGLAS FIR	44"
37	DOUGLAS FIR	35"
38	BIG LEAF MAPLE	10"
39	DOUGLAS FIR	6"
40	DOUGLAS FIR	12"
41	DOUGLAS FIR	38"
42	DOUGLAS FIR	35"
43	DOUGLAS FIR	22"
44	DOUGLAS FIR	25"
45	DOUGLAS FIR	29"
46	DOUGLAS FIR	28"
47	BLACK HAWTHORNE	8"
48	DOUGLAS FIR	45"
49	RED ALDER	12"
50	RED ALDER	7"
51	RED ALDER	12"
52	RED ALDER	8"
53	RED ALDER	6X2"
54	RED ALDER	7"
56	RED ALDER	8"
57	RED ALDER	7"
58	BIG LEAF MAPLE	13"
59	BITTER CHERRY	10"
60	DOUGLAS FIR	16"
61	DOUGLAS FIR	11"

TREE NUMBER	SPECIES	SIZE (DBH)
62	DOUGLAS FIR	25"
63	BIG LEAF MAPLE	10"
64	BIG LEAF MAPLE	29"
65	DOUGLAS FIR	35"
66	RED ALDER	8X2"
67	RED ALDER	11"
68	RED ALDER	18"
69	DOUG FIR	20"
70	RED ALDER	10"
71	CASCARA	6"
72	RED ALDER	6"
73	RED ALDER	7"
74	DOUGLAS FIR	22"
75	BITTER CHERRY	13"
76	RED ALDER	8"
77	RED ALDER	9"
78	RED ALDER	11"
79	RED ALDER	7"
80	DOUGLAS FIR	10"
81	DOUGLAS FIR	10"
82	DOUGLAS FIR	12"
83	DOUGLAS FIR	18"
84	RED ALDER	15"
85	RED ALDER	9"
86	RED ALDER	6"
87	RED ALDER	8"
88	RED ALDER	6"
93	DOUGLAS FIR	23"
94	BIG LEAF MAPLE	6"

**TREES PROPOSED FOR REMOVAL**

TREE NUMBER	SPECIES	SIZE (DBH)
A	DOUGLAS FIR	20"
B	DOUGLAS FIR	25"
C	DOUGLAS FIR	25"
D	BITTER CHERRY	9"

**LEGEND**

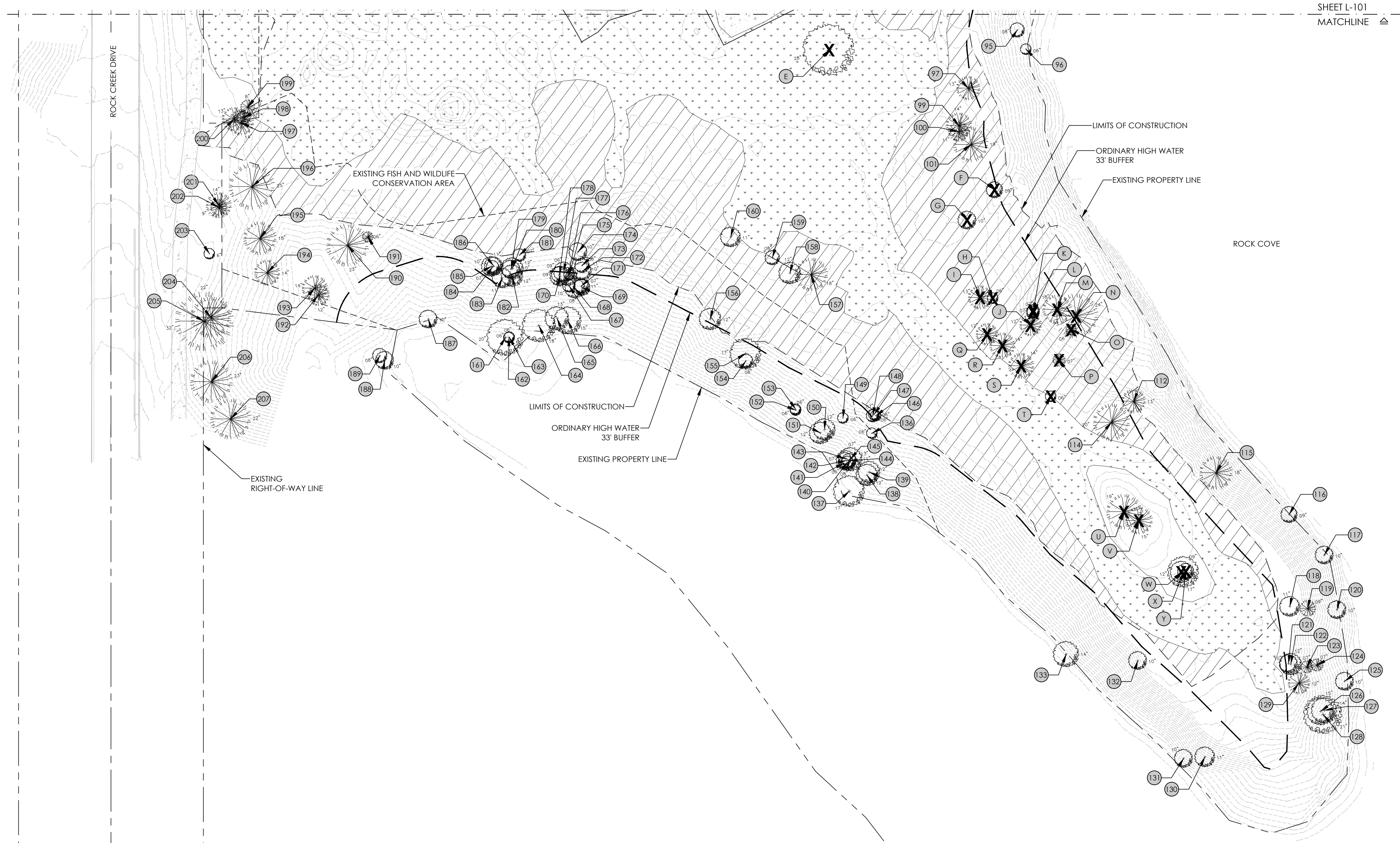
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EXISTING TREE TO BE REMOVED
- EXISTING OPEN GRASSY AREAS
- EXISTING HIMALAYAN BLACKBERRY AREAS TO BE REMOVED

**NOTES:**

1. THE EXISTING VEGETATION AT ROCK CREEK COVE IS PREDOMINANTLY A MIXED CONIFEROUS/DECIDUOUS RIPARIAN FOREST WITH AN INTERIOR OPEN GRASSY AREA THAT IS SURROUNDED BY A DENSE COVER OF COMMON VETCH AND HIMALAYAN BLACKBERRY.
2. THE EXISTING TREE SPECIES PRESENT INCLUDE DOUGLAS FIR, BLACK COTONWOOD, BIG LEAF MAPLE, RED ALDER, BITTER CHERRY, BLACK HAWTHORNE, BLACK LOCUST, AND A FEW OREGON WHITE OAKS.
3. THE RIPARIAN UNDERSTORY CONSISTS OF A MIX OF NOOTKA ROSE, SWAMP ROSE, OCEAN SPRAY, SERVICEBERRY, OREGON GRAPE, AND LADY FERN. THE RIPARIAN GROUND COVER IS COMPRISED MOSTLY OF THE INVASIVE HIMALAYAN BLACKBERRY AND COMMON VETCH THAT HAS SPREAD THROUGHOUT NEARLY ALL OF THE VEGETATED AREAS.
4. THE OPEN GRASSY AREAS IN THE INTERIOR OF THE SITE INCLUDE A MIX OF NATIVE AND NONNATIVE GRASSES, PATCHES OF YOUNG COTTONWOODS, WHITE CLOVER, COMMON CHICORY, MEADOW HAWKWEED, SCOTCH BROOM, COMMON HORSETAIL, COMMON VETCH, THISTLE, QUEEN ANNE'S LACE, CURLY DOCK, AND HIMALAYAN BLACKBERRY.
5. THE VEGETATED AREAS THAT ARE WITHOUT TREE CANOPY AND NOT WITHIN THE GRASSY OPEN AREAS CONSIST OF A DENSE COVER OF COMMON VETCH AND HIMALAYAN BLACKBERRY.
6. THE VEGETATED AREAS LOWER IN ELEVATION ADJACENT TO ROCK CREEK COVE INCLUDE A MIX OF WILLOWS, COMMON RUSH, SPREADING RUSH, SPIREA, TUFTED HAIRGRASS, YELLOW FLAG IRIS, COMMON VETCH, AND HIMALAYAN BLACKBERRY.
7. A TOTAL OF 25 TREES WILL BE IMPACTED AND REMOVED DURING CONSTRUCTION. 15 OF THE TREES TO BE REMOVED HAVE A DBH GREATER THAN OR EQUAL TO 12".
8. A TOTAL OF 40 TREES WILL BE REPLANTED, REFER TO SHEETS L201 - L203 FOR THEIR SPECIES, SIZE, AND LOCATION.
9. THE EXISTING OPEN GRASSY AREAS CONSIST OF 95,485 SF. ALL OF THE GRASSY AREAS WILL BE IMPACTED DURING CONSTRUCTION AND WILL BE REPLANTED WITH A TOTAL OF 500 SHRUBS, 45 ORNAMENTAL GRASSES, 411 PERENNIALS, 209 GROUNDCOVERS, AND 64,677 SF OF RESEDED GRASS AREAS. REFER TO SHEETS L201 - L203 FOR SPECIES, SIZE, AND LOCATION OF THE PROPOSED PLANTINGS.
10. THE PROPOSED CONSTRUCTION WILL REMOVE 61,067 SF OF HIMALAYAN BLACKBERRY AND COMMON VETCH.

Revisions:

PLOT DATE: Monday, July 24, 2023 FILE LOCATION: C:\Users\Curtis Riley\OneDrive - Cascara Land Design\Cascara Land Design\Projects\0110.03 Rock Creek Cove\CAD\Vegetation Assessment\_Plan.dwg



SHEET L-101  
MATCHLINE

**EXISTING TREES TO REMAIN**

TREE NUMBER	SPECIES	SIZE (DBH)
95	RED ALDER	8"
96	RED ALDER	6"
97	DOUGLAS FIR	13"
99	DOUGLAS FIR	14"
100	DOUGLAS FIR	11"
101	DOUGLAS FIR	19"
112	DOUGLAS FIR	13"
114	DOUGLAS FIR	20"
115	DOUGLAS FIR	18"
116	PACIFIC DOGWOOD	9"
117	OREGON ASH	10"
118	RED ALDER	11"
119	DOUGLAS FIR	9"
120	RED ALDER	10"
121	WESTERN SERVICEBERRY	10"
122	WESTERN SERVICEBERRY	12"
123	DOUGLAS FIR	7"
124	DOUGLAS FIR	7"
125	WESTERN SERVICEBERRY	10"
126	OREGON WHITE OAK	15"
127	OREGON WHITE OAK	14"
128	OREGON WHITE OAK	21"
129	DOUGLAS FIR	12"
130	BITTER CHERRY	11"
131	RED ALDER	12"
132	BITTER CHERRY	10"
133	BITTER CHERRY	14"
136	BLACK LOCUST	6"
137	BLACK LOCUST	17"
138	BLACK LOCUST	12"
139	BLACK LOCUST	12"
140	BLACK LOCUST	8"
141	BLACK LOCUST	6"

TREE NUMBER	SPECIES	SIZE (DBH)
142	BLACK LOCUST	7"
143	BLACK LOCUST	7"
144	BLACK LOCUST	13"
145	BLACK LOCUST	11"
146	BLACK LOCUST	6"
147	BLACK LOCUST	6"
148	BLACK LOCUST	7"
149	BLACK LOCUST	6"
150	BLACK LOCUST	12"
151	BLACK LOCUST	12"
152	BLACK LOCUST	6"
153	BLACK LOCUST	6"
154	BLACK LOCUST	8"
155	BLACK LOCUST	17"
156	BLACK LOCUST	12"
157	DOUGLAS FIR	18"
158	BITTER CHERRY	12"
159	BITTER CHERRY	8"
160	BLACK LOCUST	11"
161	COTTONWOOD	20"
162	COTTONWOOD	6"
163	COTTONWOOD	6"
164	RED ALDER	18"
165	RED ALDER	13"
166	RED ALDER	15"
167	BLACK LOCUST	8"
168	BLACK LOCUST	11"
169	BLACK LOCUST	7"
170	BLACK LOCUST	10"
171	BLACK LOCUST	7"
172	BLACK LOCUST	10"
173	BLACK LOCUST	8"
174	BLACK LOCUST	10"
175	BLACK LOCUST	9"

TREE NUMBER	SPECIES	SIZE (DBH)
176	BLACK LOCUST	11"
177	BLACK LOCUST	6"
178	BLACK LOCUST	9"
179	BLACK LOCUST	10"
180	BLACK LOCUST	12"
181	BLACK LOCUST	7"
182	BLACK LOCUST	12"
183	BLACK LOCUST	11"
184	BLACK LOCUST	7"
185	BLACK LOCUST	10"
186	BLACK LOCUST	11"
187	RED ALDER	10"
188	RED ALDER	10"
189	RED ALDER	8"
190	DOUGLAS FIR	25"
191	DOUGLAS FIR	6"
192	DOUGLAS FIR	12"
193	DOUGLAS FIR	14"
194	DOUGLAS FIR	14"
195	DOUGLAS FIR	18"
196	DOUGLAS FIR	25"
197	DOUGLAS FIR	14"
198	DOUGLAS FIR	8"
199	DOUGLAS FIR	8"
200	DOUGLAS FIR	13"
201	DOUGLAS FIR	14"
202	DOUGLAS FIR	9"
203	OREGON WHITE OAK	6"
204	DOUGLAS FIR	22"
205	DOUGLAS FIR	32"
206	DOUGLAS FIR	23"
207	Douglas Fir	22"

**TREES PROPOSED FOR REMOVAL**

TREE NUMBER	SPECIES	SIZE (DBH)
E	COTTONWOOD	28"
F	BIG LEAF MAPLE	9"
G	BIG LEAF MAPLE	10"
H	BIG LEAF MAPLE	6"
I	DOUGLAS FIR	13"
J	DOUGLAS FIR	12"
K	CASCARA	7"
L	BIG LEAF MAPLE	7"
M	DOUGLAS FIR	18"
N	DOUGLAS FIR	24"
O	DOUGLAS FIR	6"
P	DOUGLAS FIR	7"
Q	DOUGLAS FIR	12"
R	DOUGLAS FIR	14"
S	DOUGLAS FIR	14"
T	BIG LEAF MAPLE	6"
U	DOUGLAS FIR	19"
V	DOUGLAS FIR	15"
W	COTTONWOOD	12"
X	COTTONWOOD	17"
Y	COTTONWOOD	9"

**LEGEND**

- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- EXISTING TREE TO BE REMOVED
- EXISTING OPEN GRASSY AREAS
- EXISTING HIMALAYAN BLACKBERRY AREAS TO BE REMOVED

**NOTES:**

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8. A TOTAL OF 40 TREES WILL BE REPLANTED. REFER TO SHEETS L201 - L203 FOR THEIR SPECIES, SIZE, AND LOCATION.
9. THE EXISTING OPEN GRASSY AREAS CONSIST OF 95,485 SF. ALL OF THE GRASSY AREAS WILL BE IMPACTED DURING CONSTRUCTION AND WILL BE REPLANTED WITH A TOTAL OF 300 SHRUBS, 45 ORNAMENTAL GRASSES, 411 PERENNIALS, 209 GROUNDCOVERS, AND 64,977 SF OF RESEEDED GRASS AREAS. REFER TO SHEETS L201 - L203 FOR SPECIES, SIZE, AND LOCATION OF THE PROPOSED PLANTINGS.
10. THE PROPOSED CONSTRUCTION WILL REMOVE 61,067 SF OF HIMALAYAN BLACKBERRY AND COMMON VETCH.

**GENERAL PLANTING NOTES: (NS)**

- CORRESPONDING SPECIFICATION SECTION(S) HAVE NOT BEEN DEVELOPED FOR THIS PROJECT. ALL PERTINENT INFORMATION HAS BEEN PROVIDED ON THESE PLAN SHEETS. ENSURE THAT ALL RELATED ARCHITECTURAL AND CIVIL SHEETS ARE THOROUGHLY REVIEWED AS REFERENCE TO INFORMATION ON THE LANDSCAPE AND IRRIGATION SHEETS.
- VERIFY LOCATION OF ALL EXISTING AND PROPOSED UTILITIES EITHER ABOVE OR BELOW GRADE PRIOR TO BEGINNING ANY WORK. COORDINATE WITH ALL OTHER CONTRACTORS TO AVOID CONFLICTS BETWEEN IRRIGATION EQUIPMENT AND TREE/SHRUB PLACEMENT, AND/OR OTHER SITE AMENITIES.
- VERIFY THAT SUB GRADE PREPARATION HAS BEEN COMPLETED TO ACCEPTABLE TOLERANCES PRIOR TO BEGINNING ANY WORK.
- ALL WORK COMPLETED SHALL BE GUARANTEED FOR ONE (1) FULL YEAR.
- LANDSCAPED AREAS TO RECEIVE 2" OF APPROVED TOPSOIL IN LAWN AREAS AND 2" IN ALL SHRUB PLANTING AREAS.
- ACCEPTABLE TOPSOIL SHALL BE EITHER TAKEN FROM ON-SITE STRIPPED AND STOCKPILED TOPSOIL, OR IMPORTED FROM LOCAL SUPPLIERS, AND SHALL BE FRIABLE SURFACE SOIL TAKEN ONLY FROM THE "A" HORIZON AS DETERMINED BY THE USDA SOIL CONSERVATION SERVICE. FREE FROM TOXIC MATERIAL, NOXIOUS WEED SEEDS, SUBSOIL, STONES AND OTHER DEBRIS GREATER THAN 1" DIAMETER, MAXIMUM ELECTRICAL CONDUCTIVITY: 2.0 MILLIOMHS, MAXIMUM EXCHANGEABLE SODIUM PERCENTAGE: 10%, PH: 5.5 TO 6.5, ORGANIC CONTENT: 5-7%. PROVIDE THREE SEPARATE SOIL SAMPLES (TAKEN FROM THREE DIFFERENT LOCATIONS WITHIN THE SOIL SOURCE). SUBMIT TEST RESULTS FOR REVIEW AND APPROVAL BY THE OWNER/LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- ALL LANDSCAPE AREAS SHALL BE IRRIGATED BY AN AUTOMATIC IRRIGATION SYSTEM - SEE IRRIGATION NOTES/SEE SHEET ?.
- COORDINATE WITH GENERAL CONTRACTOR FOR THE PROTECTION AND WATERING OF EXISTING PLANT MATERIAL IDENTIFIED AS TO REMAIN UNTIL THE NEW IRRIGATION SYSTEM IS OPERABLE.
- LAWN AREAS SHALL BE EDGED AS INDICATED IN DETAIL?, SHEET ?.
- SHRUB PLANTING AREAS SHALL BE MULCHED WITH 3" OF APPROVED ? UNLESS OTHERWISE NOTED. GROUND COVER AREAS SHALL BE DRESSED WITH 1" - 2" OF APPROVED ? UNLESS OTHERWISE NOTED. FINISHED GRADE OF MULCH SHALL NOT BE ABOVE OR MORE THAN 1" BELOW ADJOINING SURFACES.
- LAWN AREAS SHALL BE SEEDED/SODDED WITH LOCALLY PRODUCED SEED MIX CONSISTING OF A MINIMUM THREE VARIETIES OF BLUE GRASS SEED, AND AN ANNUAL RYE GRASS. HYDRO-SEED AT A RATE PER MANUFACTURER'S RECOMMENDATIONS.
- PLANT SYMBOLS SHALL DICTATE COUNT.

**PLANT SCHEDULE L-201**

TREES	CODE	BOTANICAL / COMMON NAME	CONT	CAL	HEIGHT	QTY
	ACV	ACER CIRCINATUM / VINE MAPLE	MULTI-STEM		5' MIN	6
	AJ	ACER PALMATUM 'JEDDELOH ORANGE' / JEDDELOH ORANGE JAPANESE MAPLE	15 GAL			2
	AB	ACER RUBRUM 'BRANDYWINE' / BRANDYWINE RED MAPLE	B & B	2.0' CAL		7
	AX	ACER TRUNCATUM X PLATANOIDES 'WARRENRED' / PACIFIC SUNSET® MAPLE	B & B	2.0' CAL		2
	CNP	CHAMAECYPARIS NOOTKATENSIS 'PENDULA' / WEEPING NOOTKA FALSE CYPRESS	B & B		8' HT.	1
	CG	CHAMAECYPARIS OBTUSA 'GRACILIS' / SLENDER HINOKI FALSE CYPRESS	15 GAL			7
	CJ	CORNUS CONTROVERSA 'JUNE SNOW-JFS' / JUNE SNOW™ GIANT DOGWOOD	B & B	2.0' CAL		1
	MY	MAGNOLIA ACUMINATA 'YELLOW BIRD' / YELLOW BIRD MAGNOLIA	2" CAL			3
	MG	METASEQUOIA GLYPTOSTROBILIDES / DAWN REDWOOD	B & B		7' MIN	6
	PO	PINUS NIGRA 'OREGON GREEN' / OREGON GREEN AUSTRIAN PINE	B & B		6' MIN	3
	SG	SEQUIADENDRON GIGANTEUM 'PENDULUM' / WEEPING GIANT SEQUOIA	B & B		8' MIN	2
SHRUBS	CODE	BOTANICAL / COMMON NAME	SIZE			
	AN	AZALEA X 'MAISCHNEE' / KIMONO MAY SNOW AZALEA	5 GAL			54
	CK	CORNUS SERICEA 'KELSEY' / KELSEY'S DWARF RED TWIG DOGWOOD	5 GAL			55
	HD	HAMAMELIS X INTERMEDIA 'DIANE' / DIANE WITCH HAZEL	15 GAL			6
	HR	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' / RUBY SLIPPERS OAKLEAF HYDRANGEA	5 GAL			19
	HS	HYPERICUM X INODORUM 'KOLSAN' / FLORALBERRY® SANGRIA ST. JOHN'S WORT	5 GAL			52
	IS	ILEX CRENATA 'SKY PENCIL' / SKY PENCIL JAPANESE HOLLY	5 GAL			34
	PC	PINUS MUGO 'VALLEY CUSHION' / VALLEY CUSHION MUGO PINE	5 GAL			14
	PH	PINUS SYLVESTRIS 'HILLSIDE CREEPER' / HILLSIDE CREEPER SCOTCH PINE	5 GAL			28
	RR	RHAMNUS FRANGULA 'RON WILLIAMS' / FINE LINE® ALDER BUCKTHORN	5 GAL			30
	RP	RHODODENDRON X 'POLARNACHT' / POLARNACHT RHODODENDRON	5 GAL			12
	RS	RHODODENDRON X 'SEPTEMBER SONG' / SEPTEMBER SONG RHODODENDRON	5 GAL			15
	RX	RHODODENDRON X 'YELLOW PETTICOATS' / YELLOW PETTICOATS RHODODENDRON	5 GAL			16
	RG	RHUS AROMATICA 'GRO-LOW' / GRO-LOW FRAGRANT SUMAC	5 GAL			38
	ST	SPIRAEA BETULIFOLIA 'TOR' / TOR BIRCHLEAF SPIRAEA	5 GAL			80
	TD	TAXUS X MEDIA 'DARK GREEN SPREADER' / DARK GREEN SPREADER YEW	5 GAL			39
ORNAMENTAL GRASSES	CODE	BOTANICAL / COMMON NAME	SIZE			
	PN	PENNISETUM ALOPECUROIDES 'GINGER LOVE' / GINGER LOVE FOUNTAIN GRASS	1 GAL			57
	SP	STIPA TENUISSIMA 'PONY TAILS' / PONY TAILS MEXICAN FEATHER GRASS	1 GAL			45
PERENNIALS	CODE	BOTANICAL / COMMON NAME	SIZE			
	AC	ATHYRIUM FILIX-FEMINA 'CRISTATUM' / CRESTED LADY FERN	1 GAL			34
	AF	ATHYRIUM FILIX-FEMINA 'LADY IN RED' / LADY IN RED FERN	1 GAL			31
	EG	ECHINACEA PURPUREA 'GREEN EYES' / GREEN EYES CONEFLOWER	1 GAL			81
	GR	GERANIUM X 'ROZANNE' / ROZANNE CRANESBILL	1 GAL			72
	HH	HEMEROCALLIS X 'HAPPY RETURNS' / HAPPY RETURNS DAYLILY	1 GAL			75
	LM	LIRIOPE MUSCARI 'MONROE'S WHITE' / MONROE'S WHITE LILYTURF	1 GAL			193
	LS	LIRIOPE MUSCARI 'SILVER DRAGON' / SILVER DRAGON LILYTURF	1 GAL			185
	PM	POLYSTICHUM MUNITUM / WESTERN SWORD FERN	1 GAL			98
GROUND COVERS	CODE	BOTANICAL / COMMON NAME	CONT			
	AU	ARCTOSTAPHYLOS UVA-URSI / KINNIKINNICK	1 GAL		36" o.c.	335
	GO	GALIUM ODORATUM / SWEET WOODRUFF	1 GAL		36" o.c.	191

**REFERENCE NOTES SCHEDULE L-201**

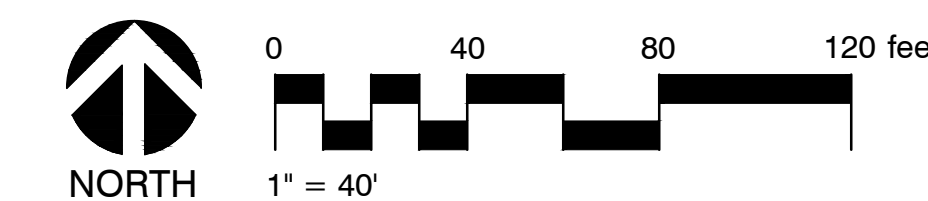
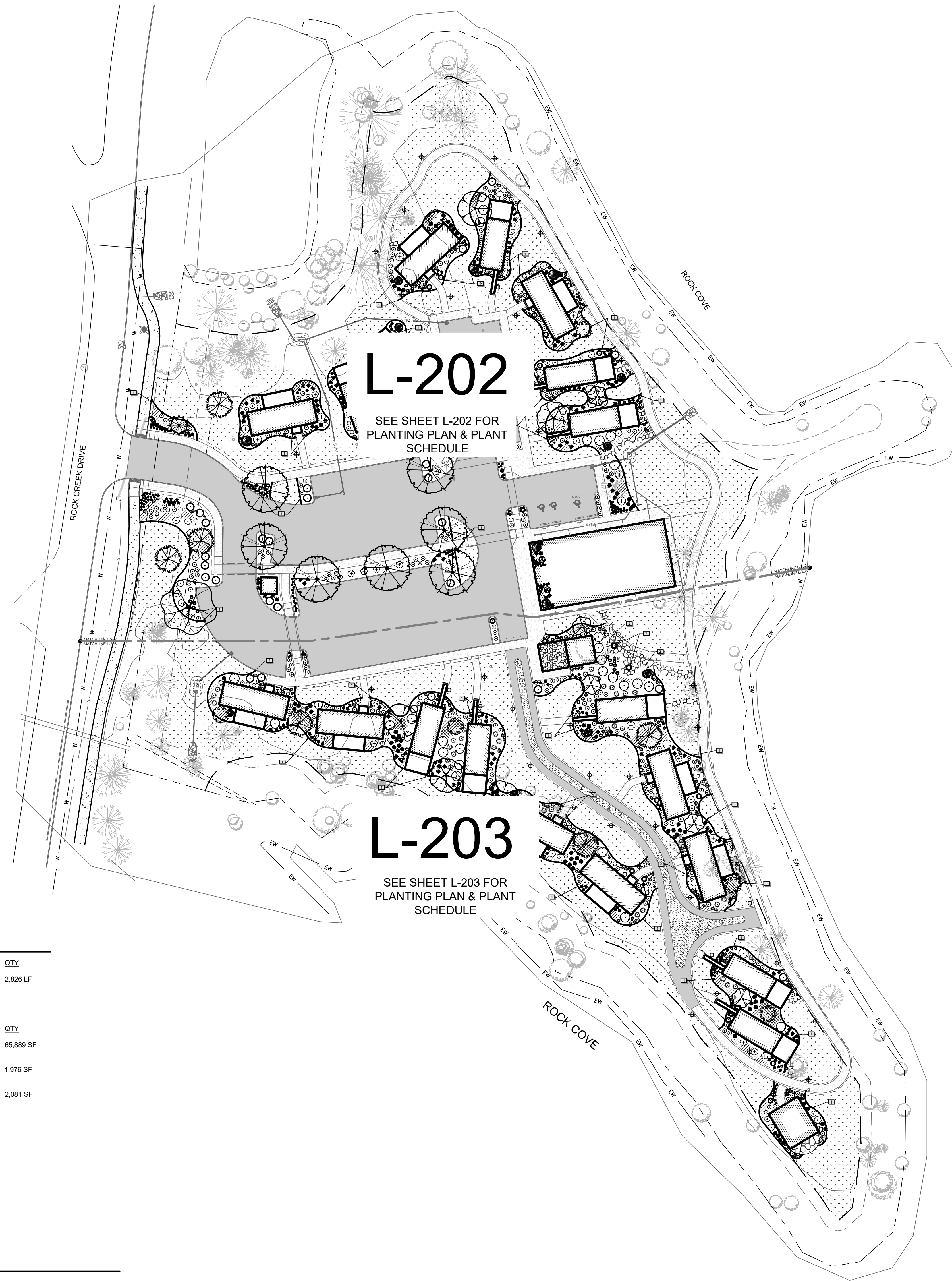
SYMBOL	DESCRIPTION	QTY
	LAWN EDGING, ALUMINUM, 3/16" X 5 1/2", COLOR: BLACK	2,826 LF
	18" HIGH SEAT WALL	
	FIRE PIT	
SYMBOL	DESCRIPTION	QTY
	LAWN AREA, HYDROSEED	65,889 SF
	BELGARD FLAGSTONE PAVERS	1,976 SF
	GRASS PAVE	2,081 SF

**LIGHTING SCHEDULE L-201**

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	36" BASALT BOLLARD PATHWAY LIGHT	46

**BOULDER SCHEDULE**

SYMBOL	DESCRIPTION	QTY	DETAIL
	BASALT BOULDER 36" X 30" X 30"/286	28	
	BASALT BOULDER 24" X 18" X 24"	29	



PROJECT NUMBER: 2334  
ROCK CREEK COVE HOSPITALITY  
SHEET TITLE: OVERALL LANDSCAPE PLAN  
DRAWN BY: JPL  
CHECKED BY: TCS  
STEVENSON, WA 99648

Revisions:

PLANT SCHEDULE L-202

TREES	CODE	BOTANICAL / COMMON NAME	CONT	CAL.	HEIGHT	QTY
	ACV	ACER CIRCINATUM / VINE MAPLE	MULTI-STEM		5' MIN	2
	AJ	ACER PALMATUM 'JEDDELOH ORANGE' / JEDDELOH ORANGE JAPANESE MAPLE	15 GAL			2
	AB	ACER RUBRUM 'BRANDYWINE' / BRANDYWINE RED MAPLE	B & B	2.0' CAL		7
	AX	ACER TRUNCATUM X PLATANOIDES 'WARRENRED' / PACIFIC SUNSET® MAPLE	B & B	2.0' CAL		1
	CNP	CHAMAECYPARIS NOOTKATENSIS 'PENDULA' / WEEPING NOOTKA FALSE CYPRESS	B & B		8' HT.	1
	CG	CHAMAECYPARIS OBTUSA 'GRACILIS' / SLENDER HINOKI FALSE CYPRESS	15 GAL			4
	CJ	CORNUS CONTROVERSA 'JUNE SNOW-JFS' / JUNE SNOW™ GIANT DOGWOOD	B & B	2.0' CAL		1
	MY	MAGNOLIA ACUMINATA 'YELLOW BIRD' / YELLOW BIRD MAGNOLIA	2" CAL			1
	MG	METASEQUOIA GLYPTOSTROBOIDES / DAWN REDWOOD	B & B		7' MIN	3
	PO	PINUS NIGRA 'OREGON GREEN' / OREGON GREEN AUSTRIAN PINE	B & B		6' MIN	3
	SG	SEQUIADENDRON GIGANTEUM 'PENDULUM' / WEEPING GIANT SEQUIA	B & B		8' MIN	2
SHRUBS	CODE	BOTANICAL / COMMON NAME	SIZE			
	AN	AZALEA X 'MAISCHNEE' / KIMONO MAY SNOW AZALEA	5 GAL	29		
	CK	CORNUS SERICEA 'KELSEY' / KELSEY'S DWARF RED TWIG DOGWOOD	5 GAL	25		
	HD	HAMAMELIS X INTERMEDIA 'DIANE' / DIANE WITCH HAZEL	15 GAL	2		
	HR	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' / RUBY SLIPPERS OAKLEAF HYDRANGEA	5 GAL	13		
	HS	HYPERICUM X INODORUM 'KOLSAN' / FLORALBERRY® SANGRIA ST. JOHN'S WORT	5 GAL	21		
	IS	ILEX CRENATA 'SKY PENCIL' / SKY PENCIL JAPANESE HOLLY	5 GAL	13		
	PC	PINUS MUGO 'VALLEY CUSHION' / VALLEY CUSHION MUGO PINE	5 GAL	6		
	PH	PINUS SYLVESTRIS 'HILLSIDE CREEPER' / HILLSIDE CREEPER SCOTCH PINE	5 GAL	21		
	RR	RHAMNUS FRANGULA 'RON WILLIAMS' / FINE LINE® ALDER BUCKTHORN	5 GAL	9		
	RP	RHODODENDRON X 'POLARNACHT' / POLARNACHT RHODODENDRON	5 GAL	8		
	RS	RHODODENDRON X 'SEPTEMBER SONG' / SEPTEMBER SONG RHODODENDRON	5 GAL	8		
	RX	RHODODENDRON X 'YELLOW PETTICOATS' / YELLOW PETTICOATS RHODODENDRON	5 GAL	11		
	RG	RHUS AROMATICA 'GRO-LOW' / GRO-LOW FRAGRANT SUMAC	5 GAL	16		
	ST	SPIRAEA BETULIFOLIA 'TOR' / TOR BIRCHLEAF SPIREA	5 GAL	49		
	TD	TAXUS X MEDIA 'DARK GREEN SPREADER' / DARK GREEN SPREADER YEW	5 GAL	3		
ORNAMENTAL GRASSES	CODE	BOTANICAL / COMMON NAME	SIZE			
	PN	PENNISETUM ALOPECUROIDES 'GINGER LOVE' / GINGER LOVE FOUNTAIN GRASS	1 GAL	28		
	SP	STIPA TENUISSIMA 'PONY TAILS' / PONY TAILS MEXICAN FEATHER GRASS	1 GAL	17		
PERENNIALS	CODE	BOTANICAL / COMMON NAME	SIZE			
	AC	ATHYRIUM FILIX-FEMINA 'CRISTATUM' / CRESTED LADY FERN	1 GAL	19		
	AF	ATHYRIUM FILIX-FEMINA 'LADY IN RED' / LADY IN RED FERN	1 GAL	15		
	EG	ECHINACEA PURPUREA 'GREEN EYES' / GREEN EYES CONEFLOWER	1 GAL	48		
	GR	GERANIUM X 'ROZANNE' / ROZANNE CRANESBILL	1 GAL	31		
	HH	HEMEROCALLIS X 'HAPPY RETURNS' / HAPPY RETURNS DAYLILY	1 GAL	34		
	LM	LIRIOPE MUSCARI 'MONROE'S WHITE' / MONROE'S WHITE LILYTURF	1 GAL	145		
	LS	LIRIOPE MUSCARI 'SILVER DRAGON' / SILVER DRAGON LILYTURF	1 GAL	85		
	PM	POLYSTICHUM MUNITUM / WESTERN SWORD FERN	1 GAL	16		
GROUND COVERS	CODE	BOTANICAL / COMMON NAME	CONT			
	AU	ARCTOSTAPHYLOS LVA-URSI / KINNIKINNICK	1 GAL	36" o.c.	10'	
	GO	GALIUM ODORATUM / SWEET WOODRUFF	1 GAL	36" o.c.	39'	

REFERENCE NOTES SCHEDULE L-202

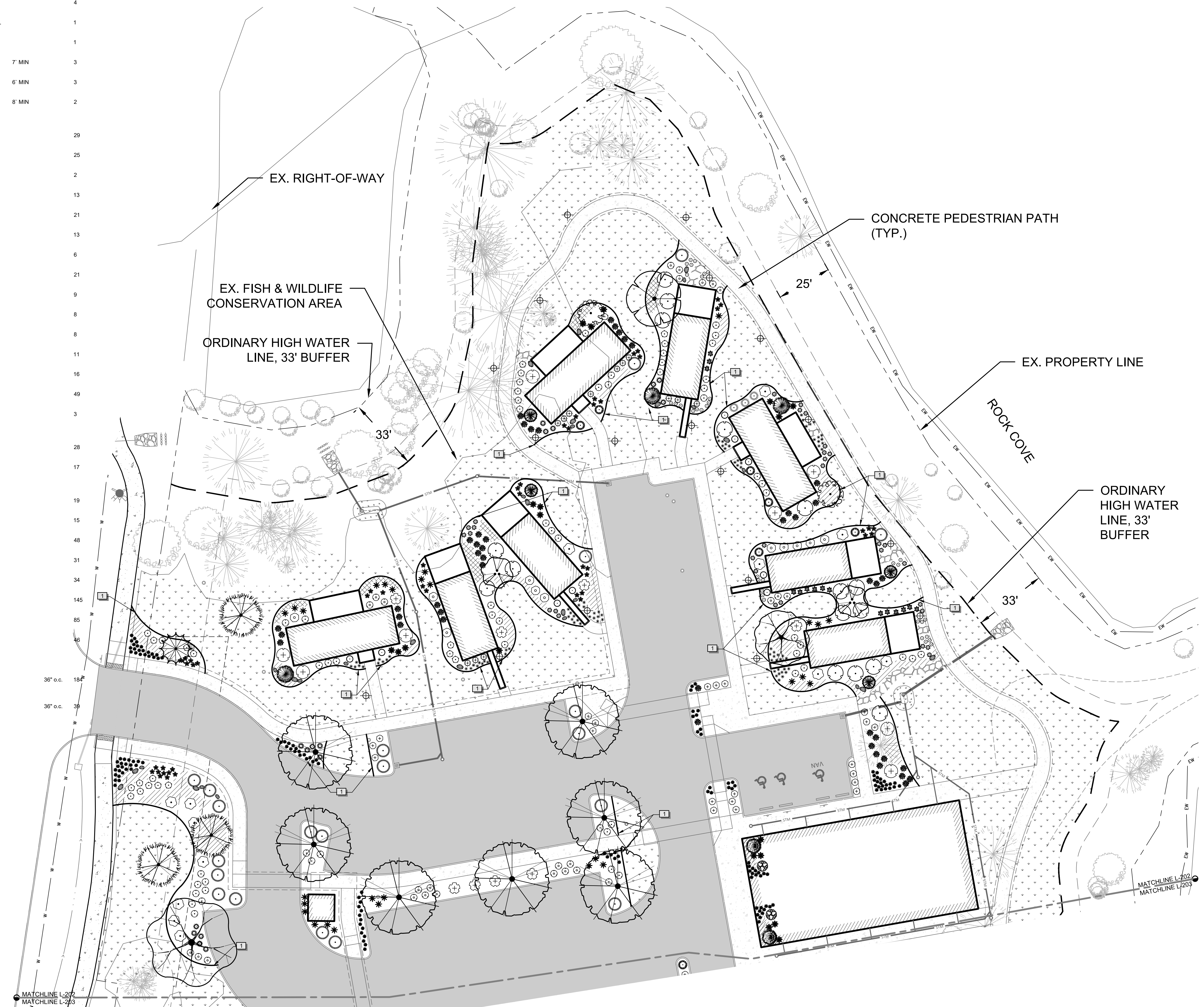
SYMBOL	DESCRIPTION	QTY	DETAIL
	LAWN EDGING, ALUMINUM, 3/16" X 5 1/2", COLOR: BLACK	1,414 LF	
	LAWN AREA, HYDROSEED	32,540 SF	
	BELGARD FLAGSTONE PAVERS	350 SF	

LIGHTING SCHEDULE L-202

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	36" BASALT BOLLARD PATHWAY LIGHT	18	

BOULDER SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
	BASALT BOULDER 36" X 30" X 30" 286	28	
	BASALT BOULDER 24" X 18" X 24"	29	



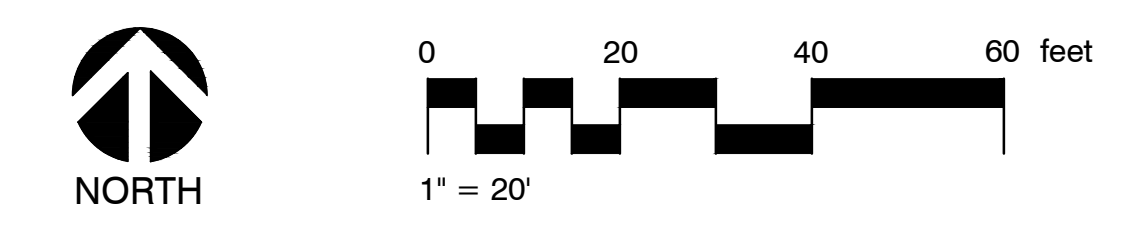
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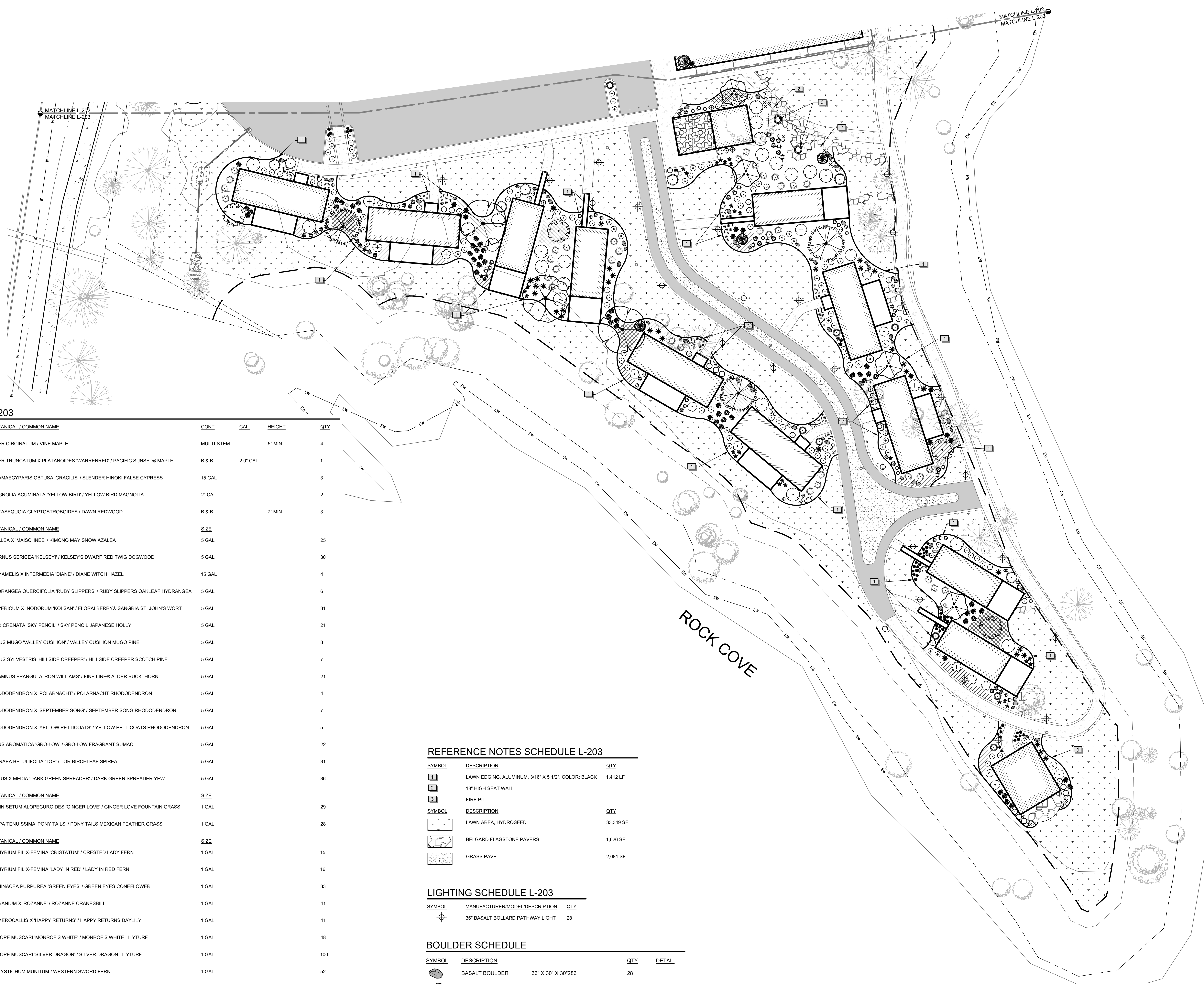
CONSULTANT:

PROJECT NUMBER: 2334  
ROCK CREEK COVE HOSPITALITY  
DRAWN BY: JPL  
CHECKED BY: TCS  
STEVENS, WA 98648

SHEET TITLE:  
NORTH  
LANDSCAPE PLAN

Revisions:





PLANT SCHEDULE L-203

TREES	CODE	BOTANICAL / COMMON NAME	CONT	CAL	HEIGHT	QTY
	ACV	ACER CIRCINATUM / VINE MAPLE	MULTI-STEM		5' MIN	4
	AX	ACER TRUNCATUM X PLATANOIDES 'WARRENRED' / PACIFIC SUNSET® MAPLE	B & B	2.0" CAL		1
	CG	CHAMAECYPARIS OBTUSA 'GRACILIS' / SLENDER HINOKI FALSE CYPRESS	15 GAL			3
	MY	MAGNOLIA ACUMINATA 'YELLOW BIRD' / YELLOW BIRD MAGNOLIA	2" CAL			2
	MG	METASEQUOIA GLYPTOSTROBILIS / DAWN REDWOOD	B & B		7' MIN	3
SHRUBS	CODE	BOTANICAL / COMMON NAME	SIZE			
	AN	AZALEA X 'MAISCHNEE' / KIMONO MAY SNOW AZALEA	5 GAL			25
	CK	CORNUS SERICEA 'KELSEY' / KELSEY'S DWARF RED TWIG DOGWOOD	5 GAL			30
	HD	HAMAMELIS X INTERMEDIA 'DIANE' / DIANE WITCH HAZEL	15 GAL			4
	HR	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' / RUBY SLIPPERS OAKLEAF HYDRANGEA	5 GAL			6
	HS	HYPERICUM X INODORUM 'KOLSAF' / FLORALBERRY® SANGRIA ST. JOHN'S WORT	5 GAL			31
	IS	ILEX CRENATA 'SKY PENCIL' / SKY PENCIL JAPANESE HOLLY	5 GAL			21
	PC	PINUS MUGO 'VALLEY CUSHION' / VALLEY CUSHION MUGO PINE	5 GAL			8
	PH	PINUS SYLVESTRIS 'HILLSIDE CREEPER' / HILLSIDE CREEPER SCOTCH PINE	5 GAL			7
	RR	RHAMNUS FRANGULA 'RON WILLIAMS' / FINE LINE® ALDER BUCKTHORN	5 GAL			21
	RP	RHODODENDRON X 'POLARNACHT' / POLARNACHT RHODODENDRON	5 GAL			4
	RS	RHODODENDRON X 'SEPTEMBER SONG' / SEPTEMBER SONG RHODODENDRON	5 GAL			7
	RX	RHODODENDRON X 'YELLOW PETTICOATS' / YELLOW PETTICOATS RHODODENDRON	5 GAL			5
	RG	RHUS AROMATICA 'GRO-LOW' / GRO-LOW FRAGRANT SUMAC	5 GAL			22
	ST	SPIRAEA BETULIFOLIA 'TOR' / TOR BIRCHLEAF SPIREA	5 GAL			31
	TD	TAXUS X MEDIA 'DARK GREEN SPREADER' / DARK GREEN SPREADER YEW	5 GAL			36
ORNAMENTAL GRASSES	CODE	BOTANICAL / COMMON NAME	SIZE			
	PN	PENNISETUM ALOPECUROIDES 'GINGER LOVE' / GINGER LOVE FOUNTAIN GRASS	1 GAL			29
	SP	STIPA TENUISSIMA 'PONY TAILS' / PONY TAILS MEXICAN FEATHER GRASS	1 GAL			28
PERENNIALS	CODE	BOTANICAL / COMMON NAME	SIZE			
	AC	ATHYRIUM FILIX-FEMINA 'CRISTATUM' / CRESTED LADY FERN	1 GAL			15
	AF	ATHYRIUM FILIX-FEMINA 'LADY IN RED' / LADY IN RED FERN	1 GAL			16
	EG	ECHINACEA PURPUREA 'GREEN EYES' / GREEN EYES CONEFLOWER	1 GAL			33
	GR	GERANIUM X 'ROZANNE' / ROZANNE CRANESBILL	1 GAL			41
	HH	HEMEROCALLIS X 'HAPPY RETURNS' / HAPPY RETURNS DAYLILY	1 GAL			41
	LM	LIRIOPE MUSCARI 'MONROE'S WHITE' / MONROE'S WHITE LILYTURF	1 GAL			48
	LS	LIRIOPE MUSCARI 'SILVER DRAGON' / SILVER DRAGON LILYTURF	1 GAL			100
	PM	POLYSTICHUM MUNITUM / WESTERN SWORD FERN	1 GAL			52
GROUND COVERS	CODE	BOTANICAL / COMMON NAME	CONT			
	AU	ARCTOSTAPHYLOS UVA-URSI / KINKINNICK	1 GAL		36" o.c.	151
	GO	GALIUM ODORATUM / SWEET WOODRUFF	1 GAL		36" o.c.	152

REFERENCE NOTES SCHEDULE L-203

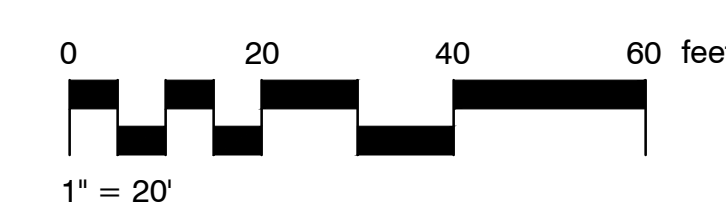
SYMBOL	DESCRIPTION	QTY
	LAWN EDGING, ALUMINUM, 3/16" X 5 1/2", COLOR: BLACK	1,412 LF
	18" HIGH SEAT WALL	
	FIRE PIT	
SYMBOL	DESCRIPTION	QTY
	LAWN AREA, HYDROSEED	33,349 SF
	BELGARD FLAGSTONE PAVERS	1,626 SF
	GRASS PAVE	2,081 SF

LIGHTING SCHEDULE L-203

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	36" BASALT BOLLARD PATHWAY LIGHT	28

BOULDER SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
	BASALT BOULDER 36" X 30" X 30"/286	28	
	BASALT BOULDER 24" X 18" X 24"	29	





**Harper  
Houf Peterson  
Righellis Inc.**

## Final Stormwater Report

**Rock Creek Cove Hospitality  
Stevenson, Washington**

**Prepared For:**

FDM Development Inc.  
5453 Ridgeline Drive  
Suite 160  
Kennewick, WA 99338

May 18, 2023

FDM-01

**Prepared By:**

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Laura Haunreiter, PE



ENGINEERS ♦ PLANNERS  
LANDSCAPE ARCHITECTS ♦ SURVEYORS

# TABLE OF CONTENTS

<b>SECTION A – PROJECT OVERVIEW</b>	<b>1</b>
<b>SECTION B – MINIMUM REQUIREMENTS</b>	<b>2</b>
<b>SECTION C – OFFSITE ANALYSIS</b>	<b>3</b>
<b>SECTION D – FLOW CONTROL ANALYSIS AND DESIGN</b>	<b>4</b>
<b>SECTION E – CONVEYANCE SYSTEMS ANALYSIS AND DESIGN</b>	<b>4</b>
<b>SECTION F – WATER QUALITY DESIGN</b>	<b>4</b>
<b>SECTION G – SOILS EVALUATION</b>	<b>6</b>
<b>SECTION H – SPECIAL REPORTS AND STUDIES</b>	<b>6</b>
<b>SECTION I – OTHER PERMITS</b>	<b>6</b>
<b>SECTION J – GROUNDWATER MONITORING PROGRAM</b>	<b>6</b>
<b>SECTION K – MAINTENANCE AND OPERATIONS MANUAL</b>	<b>6</b>
<b>SECTION L – TECHNICAL APPENDIX</b>	<b>6</b>

## TECHNICAL APPENDICES

1. Maps
2. Project Plans
3. Stormwater Calculations and Design Information
4. Geotechnical Report
5. Critical Areas Assessment
6. Operations and Maintenance Manual

## REFERENCES

1. Department of Ecology Stormwater Management Manual for the Puget Sound Basin, 1992
2. GN Northern, Inc. *Geotechnical Site Investigation Report. Proposed Rock Creek Cove Development.* Stevenson, Washington. January 2020.
3. Ecological Land Services. *Rock Cove Preliminary Critical Areas Assessment.* Stevenson, Washington. January 21, 2020.

## SECTION A – PROJECT OVERVIEW

### ***Site Location and Description***

FDM Development, Inc. (FDM) proposes to develop a vacant lot located at Rock Creek Cove into a resort that would include 19 vacation rental units, event space, a massage hut, associated utilities and paved parking areas.

The 6.4-acre site is in the town of Stevenson in Skamania County, Section 1, Township 2 North, Range 7 East, Willamette Meridian. The site consists of three contiguous parcels (02070100130300, 02070100130400, and 02070100130200), on an irregularly shaped peninsula projecting into Rock Creek Cove on the northern bank of the Columbia River. It is bordered on the west by Rock Creek Drive, and by the cove on the north, east and south. Historically, the site was developed as an industrial lumber mill facility, the Hegewald Veneer Mill.

### ***Topography***

The subject site is generally characterized as an irregular shaped peninsula with several fingers extending east from Rock Creek Drive into Rock Cove. The elevation of the site is approximately 102 ft above mean sea level. Most of the upper surface of the site is relatively flat, while the irregular shaped peninsula fingers typically include steep slopes along the perimeter down to the shoreline. Surface conditions across the site include a variety of gravel covered and paved areas (asphalt and concrete), as well as areas with a dense growth of mature Douglas-fir, red alder, and maple trees, grasses and Himalayan blackberry, with selected areas across shoreline slope faces that include riprap.

The surface contains artificial fill likely related to the development of the Hegewald Veneer Mill in the early 1950s. Two concrete pads remain onsite (28,982 sf and 2,655 sf) marking the former location of the mill buildings.

### ***Critical Areas***

A Critical Areas Assessment of the site was completed by Ecological Land Services. ELS and Ecology identified one unnamed tributary north of the study area identified as a Type F (fish-bearing) water by Washington Department of Natural Resources (DNR). Rock Creek is east of the study area and is designated as Type S, a shoreline of the state. Rock Cove surrounds the study area on three sides. The Columbia River is designated Type S and is a shoreline of statewide significance. There were no wetlands or other surface waters in the study area, and no priority habitat for terrestrial wildlife. Additionally, portions of the study area are exempt from the designation as a fish and wildlife habitat conservation area (FWHCA) for Rock Cove due to areas of maintained vegetation and the presence of riprap which is both structural and vertical separation from Rock Cove. (See attached Critical Areas Assessment in Appendix 5)

### ***Existing Stormwater System***

No stormwater system presently exists on-site. Stormwater either infiltrates on-site or flows overland to Rock Cove.

### ***Site Soils***

The National Resources Conservation Service (NRCS) map identifies the site soils as Arents (0 to 5 percent slopes) with typical profile described as gravelly sandy loam grading to extremely gravelly sandy loam; units generally consisting of well drained materials. The geotechnical investigation of the site determined that the soils include a variably thick layer of artificial fill soils likely associated with historic site development, atop the native silty gravel with sand stratum



(mass wasting deposits). Fill soils were generally classified as silty gravel with sand and variable amounts of cobbles and boulders, and with some areas also including organics, wood debris and miscellaneous trash. The fill soils at the site are likely to be related to the previous historic development at the site. The apparent native underlying soils were classified as Silty Gravel with Sand and included varying amounts of cobbles and boulders. The native soil stratum typically appeared medium dense.

The Geotechnical Engineer tested the infiltration rate at one location near the site entrance. At a depth of 5.5 feet below ground surface (bgs), the infiltration test pit yielded a result of 4 in/hour. The infiltration rate will be confirmed during construction. (See attached Geotechnical Report in Appendix 4.)

***Drainage to and from Adjacent Properties***

The site is relatively flat, with steep slopes along the perimeter of the peninsula down to the shoreline. No stormwater flows onto the site from adjacent parcels.

***Compliance with Standards***

This project is designed to meet the requirements of the City of Stevenson, the Department of Ecology’s 1992 Stormwater Management Manual for the Puget Sound Basin (portions adopted by the City of Stevenson), and the Uniform Plumbing Code.

**SECTION B – MINIMUM REQUIREMENTS**

There is an existing gravel driveway (pervious) and existing concrete building pads (impervious) on-site. A summary of the project’s surface impacts to the site is provided in the table below.

**TABLE B-1. PROJECT IMPACT AREA VALUES**

<b>Existing Impervious (acres)</b>	<b>Replaced Impervious (acres)</b>	<b>New Impervious (acres)</b>	<b>Total Land-Disturbing Activity (acres)</b>
0.72	0.72	0.51	2.00

This project is considered a “New Development” project for stormwater thresholds, as the development is greater than 5000 square feet, with greater than 1 acre of land disturbing activity. Minimum Requirements 1-11 apply.

A summary of how the project meets each of the minimum requirements is described below. See additional sections of this report for more detailed information. See the project plans in Appendix 2 for grading, stormwater and erosion control information.

**MR#1 – Erosion and Sediment Control**

See the project plans in Appendix 2 for temporary erosion control information. The contractor is responsible for conforming to the City of Stevenson and Department of Ecology (DOE) erosion control standards. A Construction Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction.

**MR#2 – Preservation of Natural Drainage Systems**

The majority of the upper surface of the site is relatively flat, while the irregular shaped peninsula fingers typically include steep slopes along the perimeter down to the shoreline. No stormwater flows onto the site from adjacent parcels. Stormwater collected on site will be conveyed to proposed bioretention facilities, and then discharged to Rock Cove. The proposed

outfall will be placed above the Ordinary High Water Mark (OHWM) and stabilized with a riprap dispersion pad.

#### MR#3 – Source Control of Pollution

The primary source of pollutants for this project will be vehicle traffic. The main permanent structural BMPs incorporated on this project will be:

1. Sumped catch basins.
2. Bioretention facilities located in the north, south and east portions of the site.

The operational BMP will be the continual maintenance of the storm system by the property owner.

#### MR#4 – Runoff Treatment BMPs

Three bioretention facilities designed using WWHM2012 are proposed to treat the collected runoff from the new pollution generating and non-pollution generating impervious surfaces. See attached WWHM Report in Appendix 3.

#### MR#5 – Streambank Erosion Control

Stormwater runoff treated by the proposed bioretention facilities will be discharged to Rock Cove through a proposed outfall, placed above the OHWM and stabilized with a riprap dispersion pad.

#### MR#6 – Wetlands

There are no existing wetlands on the project site.

#### MR#7 – Water Quality Sensitive Areas

There are no known sensitive areas on or immediately downstream of the project site where stormwater will flow, and therefore, this minimum requirement does not apply.

#### MR#8 – Off-Site Analysis and Mitigation

The proposed bioretention facilities will treat stormwater runoff, which will be discharged to Rock Cove, a large water body along the north shore of the Columbia River. There are no negative water quality impacts anticipated downstream of the project site.

#### MR#9 – Basin Planning

There are no impacts to any regional drainage basins or watersheds associated with this development, nor are there any known regional plans that would affect the minimum requirements for this project.

#### MR#10 – Operation and Maintenance

The new stormwater facilities associated with this project will be maintained by the property owner.

#### MR#11 – Financial Liability

These facilities will be constructed by the property owner, and financial guarantee is not necessary.

### **SECTION C – OFFSITE ANALYSIS**

This project will provide water quality treatment to all proposed runoff from the project site prior to discharge into Rock Cove, and ultimately the Columbia River. See Appendix 2 for project plans and Appendix 3 for all stormwater calculations.

## **SECTION D – FLOW CONTROL ANALYSIS AND DESIGN**

The stormwater runoff from this site will discharge directly to Rock Cove and the Columbia River. Per the 2019 Stormwater Management Manual for Western Washington, flow control is not required for Threshold Discharge Areas that discharge to a Flow Control Exempt Receiving waterbody. Table I-A.1 in Appendix I-A of the SWMMWW lists the Columbia River downstream of the Canadian border as a Flow Control Exempt Receiving Waters. Therefore, the project is exempt from the requirement to control the off-site flow to match the existing conditions for the 2-year, 10-year and 100-year 24-hour design storms. (A design exemption memo is attached.) Stormwater runoff from the site will be collected and conveyed to proposed bioretention facilities, and discharged to Rock Cove through proposed outfalls, placed above the OHWM and stabilized with a riprap dispersion pad. See project plans in Appendix 2.

## **SECTION E – CONVEYANCE SYSTEMS ANALYSIS AND DESIGN**

For conveyance calculations, the capacity of the pipe based on size, slope and pipe type was calculated using the Rational Method and a 25-year storm event. The flow was calculated for the immediate and upstream basins conveyed to each pipe segment. The actual flow for each pipe was then compared to the capacity of the pipe to ensure that the pipe was free flowing.

1. The conveyance system for the project consists of overland flow, inlets and underground pipes to convey stormwater to the bioretention facilities and the proposed outfalls.
2. The conveyance system has not been significantly adjusted since the preliminary plan set.
3. Refer to Appendix 3 – Stormwater Calculations where peak flows and pipe capacities are tabulated.
4. The existing site consisted of onsite infiltration and overland flow to Rock Creek Cove. The design has kept this same flow regime.
5. The assumptions utilized in the conveyance system design are:
  - a. The rainfall data in the storm calculations accurately reflects the rainfall.
  - b. The proposed conveyance system will be well maintained by the owner.
6. Refer to Appendix 2 - Project Plans for details regarding the stormwater piping and outfall protection.
7. Refer to Appendix 3 – Stormwater Calculations where peak flows and pipe capacities are tabulated and verified.

## **SECTION F – WATER QUALITY DESIGN**

The proposed BMPs, bioretention facilities, were designed using WWHM2012 per the DOE Stormwater Manual. They are designed to infiltrate at least 91% of the runoff through the treatment soil. The infiltration rate utilized for design of the bioretention facility soil was 12 in/hour with a factor of safety of four (design rate = 3 in/hour). Infiltration tests conducted onsite in the vicinity of the proposed bioretention facilities yielded results of 4 in/hour (5.5 feet bgs). The non-pollution generating roof drain runoff will flow to roof drain dispersion systems. See Appendix 3 for all stormwater calculations and Appendix 4 for the Geotechnical Report.

**TABLE F-1. Pollution Generating Surface Summary  
Post-Developed**

Pollution Generating Impervious Surface (acre)	Pollution Generating Pervious Surface (acre)
0.78	0

The asphalt parking area and the drive aisles are considered pollution generating. The roof areas and pedestrian pathways are considered non-pollution generating. The runoff from the pollution generating and the non-pollution generating pedestrian areas will be treated in bioretention facilities and discharged to proposed outfalls with riprap dispersion pads located above the OHWM of Rock Cove. As shown in the WWHM printouts, the bioretention facilities treat at least 91% of the water quality runoff through the treatment soils. There are three bioretention facilities within the project:

**Bioretention Facility 1 (North):** The northern bioretention facility is located north of the north parking area and will treat pollution generating runoff from the Basin A parking area and drive aisles. The facility has a bottom area of approximately 24 sf, 3:1 side slopes, 6 inches of storage volume, 18 inches BSM depth, and 12 inches of drain rock below the BSM.

**Bioretention Facility 2 (South):** The southern bioretention facility is located southwest of the south parking area and will treat pollution generating runoff from the Basin B parking area and drive aisles. The facility has a bottom area of approximately 24 sf, 3:1 side slopes, 6 inches of storage volume, 18 inches BSM depth, and 12 inches of drain rock below the BSM.

**Bioretention Facility 3 (East):** The eastern bioretention facility is located east of the east parking area and will treat pollution generating runoff from the Basin C parking area and drive aisles, as well as non-pollution generating roof drain runoff from the event center. The facility has a bottom area of approximately 12 sf, 3:1 side slopes, 6 inches of storage volume, 18 inches BSM depth, and 12 inches of drain rock below the BSM.

1. The water quality will be mitigated by sumped catch basins and bioretention facilities.
2. The water quality system has not been significantly adjusted since the preliminary plan set.
3. Refer to Appendix 4 for the geotechnical report.
4. The Best Management Practices (BMPs) utilized in design are bioretention facilities. BMP T5.13 Post-Construction Soil Quality and Depth will be completed on all disturbed soils.
5. Groundwater was found on-site ranging from 12' – 14' below existing ground surface in the month of December. See Geotechnical Report, Appendix 4.
6. The assumptions utilized in the water quality system design are:
  - a. The rainfall data in WWHM2012 accurately reflects the rainfall.
  - b. The proposed bioretention facilities will be well maintained by the owner.
7. Refer to the project plans for details regarding the stormwater piping, outfall protection, and bioretention facilities.
8. Refer to Appendix 3 – Stormwater Calculations for all storm water treatment calculations.

## **SECTION G – SOILS EVALUATION**

1. The National Resources Conservation Service (NRCS) map identifies the site soils as Arents (0 to 5 percent slopes) with typical profile described as gravelly sandy loam grading to extremely gravelly sandy loam; units generally consisting of well drained materials. The geotechnical investigation of the site determined that the soils include a variably thick layer of artificial fill soils likely associated with historic site development, atop the native silty gravel with sand stratum (mass wasting deposits). Fill soils were generally classified as silty gravel with sand and variable amounts of cobbles and boulders, and with some areas also including organics, wood debris and miscellaneous trash. The fill soils at the site are likely to be related to the previous historic development at the site. The apparent native underlying soils were classified as Silty Gravel with Sand and included varying amounts of cobbles and boulders. The native soil stratum typically appeared medium dense. (See attached Geotechnical Report in Appendix 4.)
2. The Geotechnical Engineer tested the infiltration rate at one location near the site entrance. At a depth of 5.5 feet below ground surface (bgs), the infiltration test pit yielded a result of 4 in/hour. The infiltration rate will be confirmed during construction. (See attached Geotechnical Report in Appendix 4.)
3. The soil parameters that affected the stormwater design are the infiltration rates, as well as the proximity to a large receiving water body.

## **SECTION H – SPECIAL REPORTS AND STUDIES**

1. Geotechnical Report – See Appendix 4.
2. Critical Areas Assessment – See Appendix 5.

## **SECTION I – OTHER PERMITS**

1. N/A

## **SECTION J – GROUNDWATER MONITORING PROGRAM**

1. N/A

## **SECTION K – MAINTENANCE AND OPERATIONS MANUAL**

1. An Operations and Maintenance manual is provided in Appendix 6.

## **SECTION L – TECHNICAL APPENDIX**

The Technical Appendices include all computations, drawings, maps, referenced data, software printouts, specials studies, and all other information used in the preparation of this report.

1. Maps
2. Project Plans
3. Stormwater Calculations and Design Information
4. Geotechnical Report
5. Critical Areas Assessment
6. Operations and Maintenance Manuals

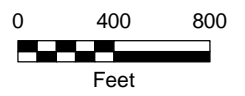
**APPENDIX 1 – Maps**

Path: X:\1200.01\Fig2\_Property Vicinity.mxd  
Print Date: 11/23/2015  
Approved By: sotto  
Produced By: ischane  
Project: 1200.01



**Figure 2**  
**Property Vicinity**

Former Hegewald Timber Site  
Stevenson, Washington



Source: Aerial photograph obtained from Esri  
ArcGIS Online



This product is for informational purposes and may not have been prepared for, or be suitable for, legal, engineering, or surveying purposes. Users of this information should review and consult the primary data and information sources to ascertain the usability of the information.



**APPENDIX 2 – Project Plans**





**GENERAL NOTES:**

1. WORK SHALL CONFORM WITH CITY OF STEVENSON STANDARDS, THE INTERNATIONAL BUILDING CODE AND THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION" AS PREPARED BY WSDOT AND APWA.
2. AS-BUILT INFORMATION SHOULD BE FIELD VERIFIED PRIOR TO CONSTRUCTION. THIS INCLUDES POTHOLING EXISTING UTILITIES AT PROPOSED CONNECTION POINTS PRIOR TO CONSTRUCTION TO ENSURE LOCATIONS AND ELEVATIONS ARE ACCURATE. NOTIFY ENGINEER IMMEDIATELY WITH POTHOLE RESULTS FOR DISCREPANCIES.
3. PROVISIONS SHALL BE MADE BY THE CONTRACTOR TO KEEP ALL EXISTING UTILITIES NOT SHOWN FOR REMOVAL IN SERVICE AND PROTECT THEM DURING CONSTRUCTION.
4. EXISTING MONUMENTS, PROPERTY CORNERS, AND SURVEY MARKERS SHALL BE PROTECTED. REPLACEMENT SHALL BE AT THE CONTRACTOR'S EXPENSE.
5. CONSTRUCTION STAGING IS NOT PERMITTED IN THE PUBLIC RIGHT-OF-WAY.
6. EXISTING UTILITIES SHOWN ON THE PLANS ARE PER SURFACE LOCATIONS AND AS-BUILT DRAWINGS. ADDITIONAL UNDERGROUND UTILITIES MAY EXIST. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND REPORT ANY CONFLICTS TO THE ENGINEER. THE CONTRACTOR SHALL COORDINATE THE RELOCATION OF ANY UTILITY IN CONFLICT WITH THE PROPOSED CONSTRUCTION.
7. CONTRACTOR SHALL CONFIRM ALL REQUIRED PERMITS AND LICENSES HAVE BEEN ISSUED BEFORE STARTING CONSTRUCTION.
8. CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER AND THE CITY OF STEVENSON INSPECTOR 48 HOURS BEFORE INSPECTION.
9. CONSTRUCTION VEHICLES ARE NOT ALLOWED TO BE STAGED IN THE PUBLIC RIGHT-OF-WAY WITHOUT PRIOR APPROVAL.
10. CONTRACTOR SHALL KEEP AND MAINTAIN A CURRENT SET OF DRAWINGS FOR THE PROJECT ENGINEER SHOWING AS-CONSTRUCTED DATA. CONTRACTOR SHALL KEEP AN APPROVED SET OF PLANS ON THE PROJECT SITE AT ALL TIMES.
11. CONTRACTOR SHALL PERFORM ALL WORK NECESSARY TO COMPLETE THIS PROJECT IN ACCORDANCE WITH THE PLANS INCLUDING SUCH INCIDENTALS AS MAY BE NECESSARY TO MEET APPLICABLE AGENCY REQUIREMENTS AND OTHERS AS NECESSARY TO PROVIDE A COMPLETE PROJECT.
12. ANY ALTERATION OR VARIANCE FROM THESE PLANS, EXCEPT MINOR FIELD ADJUSTMENTS NEEDED TO MEET EXISTING FIELD CONDITIONS, SHALL FIRST BE APPROVED BY THE APPLICABLE AGENCY REPRESENTATIVE. ANY ALTERATION OR VARIANCE FROM THESE PLANS SHALL BE DOCUMENTED ON CONSTRUCTION FIELD PRINTS AND TRANSMITTED TO THE PROJECT ENGINEER.
13. CONTRACTOR SHALL PROVIDE THE NECESSARY EROSION PROTECTION TO MINIMIZE EROSION AND IMPACT TO ADJACENT PROPERTIES.
14. OPEN TRENCHES SHALL BE STRICTLY LIMITED TO A MAXIMUM OF 100 FEET UNLESS LIMITED TO A LESSER AMOUNT BY PERMIT. NO TRENCHES WILL BE ALLOWED TO REMAIN OPEN AT NIGHT.
15. AT THE END OF EACH WORK DAY THE CONTRACTOR SHALL CLEAN UP THE PROJECT AREA AND LEAVE IT IN A NEAT AND SECURED MANNER. UPON COMPLETION, THE CONTRACTOR SHALL LEAVE THE PROJECT AREA FREE OF DEBRIS AND UNUSED MATERIAL.
16. THE CONTRACTOR SHALL PRUNE ALL VEGETATION, AS NECESSARY, AWAY AND UP FROM THE AREA OF WORK. THE CONTRACTOR SHALL PROTECT ALL EXISTING LANDSCAPING THAT IS TO REMAIN. ARBORIST SHALL BE CONTACTED IF SIGNIFICANT ROOTS ARE UNCOVERED.
17. ALL MATERIAL SUPPLIERS SHALL SUBMIT TO THE ENGINEER PROOF OF MATERIAL(S) TESTED IN ACCORDANCE WITH SPECIFICATIONS. BY ACCEPTANCE OF THE CONTRACT WITH THE OWNER/DEVELOPER, THE CONTRACTOR CERTIFIES THAT ALL MATERIALS DELIVERED TO THE JOB SITE WILL MEET OR EXCEED THOSE SPECIFICATIONS. ANY MATERIAL NOT CONFORMING SHALL BE REMOVED FROM THE SITE AT NO ADDITIONAL COST TO THE OWNER.

**TRAFFIC CONTROL:**

1. TRAFFIC CONTROL TO BE PERFORMED IN ACCORDANCE WITH THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES. THE CITY OR COUNTY CAN REQUIRE ADDITIONAL TRAFFIC CONTROL MEASURES AS NEEDED TO PROVIDE FOR PUBLIC SAFETY.
2. A TRAFFIC CONTROL PLAN SHALL BE PREPARED AND SUBMITTED FOR REVIEW BY CITY, FOR BOTH CONSTRUCTION OPERATIONS AND AFTER-HOUR SITUATIONS.
3. ALL TRAFFIC CONTROL MEASURES NEEDED TO BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL.

**PRIVATE UTILITIES NOTES:**

**STORM DRAINAGE**

1. PRIVATE STORM DRAINAGE CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF STEVENSON, THE INTERNATIONAL BUILDING CODE (IBC) AND THE UNIFORM PLUMBING CODE (UPC).
2. STORM SEWER PIPE MATERIAL SHALL BE HDPE (ADS N-12), PVC ASTM D-3034, OR ENGINEER APPROVED EQUAL.
3. THE CONTRACTOR SHALL FLUSH THE ENTIRE STORM SYSTEM AT PROJECT COMPLETION.
4. CATCH BASINS SHALL BE INSTALLED TO FINISH GRADE.
5. ADJUST MANHOLES, CLEAN OUT AND AREA DRAIN RIMS TO FINISH GRADE.
6. HORIZONTAL LINES CONNECTING WITH OTHER HORIZONTAL LINES SHALL ENTER THROUGH 45 DEGREE WYE BRANCH. TEE BRANCH IS NOT ALLOWED.
7. ALL RAIN DRAIN PIPING INSTALLED WITHIN 5.0 FEET OF A BUILDING TO BE SCHEDULE 40 PVC-D.W.V. PIPING OR APPROVED EQUAL. COORDINATE LOCATION OF RAIN DRAINS WITH PLUMBING PLANS.
8. FOUNDATION DRAIN PIPE SHALL BE COORDINATED WITH STRUCTURAL AND ARCHITECTURAL PLANS AND DETAILS. AT FOUNDATION DRAIN CONNECTION INSTALL CLEANOUT AND ACCESSIBLE FLAPPER TYPE BACKWATER VALVE. SET RIM TO FINISH GRADE. COORDINATE FOUNDATION DRAIN CONNECTION POINTS WITH ARCHITECTURAL AND STRUCTURAL PLANS.
9. TRACER WIRE - 12-GAUGE STRANDED OR SOLID COPPER INSULATED HIGH MOLECULAR WEIGHT POLYETHYLENE (HMW-PE) TRACER WIRE. THE HMW-PE INSULATED COVER SHALL BE GREEN AND A MINIMUM 45 MIL THICK. THE WIRE SHALL BE RATED FOR 140 DEGREES FAHRENHEIT. INSTALL TRACER WIRE IN ALL TRENCHES FOR STORM SEWERS. PLACE THE TRACER WIRE DIRECTLY OVER THE PIPE CENTERLINE AND ON TOP OF THE PIPE ZONE MATERIAL, PARALLEL TO, AND ALONG THE ENTIRE LENGTH OF ALL NONMETALLIC PIPE.
10. ALL STORMWATER FACILITIES SHALL REMAIN IN PRIVATE OWNERSHIP AND SHALL BE PRIVATELY MAINTAINED IN ACCORDANCE WITH THE O&M MANUAL AND THE PROJECT ITR.

**SANITARY SEWER**

11. ALL SANITARY SEWER CONSTRUCTION TO WITHIN THREE (3) FEET OF THE BUILDING SHALL BE PVC ASTM D3034 SDR 35 AND PVC C900 WHERE PIPE COVER IS LESS THAN 3' IN VEHICULAR AREAS AND IN ACCORDANCE WITH CITY OF STEVENSON, THE INTERNATIONAL BUILDING CODE (IBC) AND UNIFORM PLUMBING CODE (UPC).
12. PRIVATE SANITARY SEWER PIPE WITHIN THREE (3) FEET OF THE BUILDING SHALL BE DRAIN WASTE VENT (DWV), IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE (IBC) AND UNIFORM PLUMBING CODE (UPC).
13. HORIZONTAL LINES CONNECTING WITH OTHER HORIZONTAL LINES SHALL ENTER THROUGH 45 DEGREE WYE BRANCH. TEE BRANCH IS NOT ALLOWED.
14. WHERE SANITARY LINES CROSS WATER LINES, THE SYSTEMS NEED TO BE CONSTRUCTED SUCH THAT THE CROSSING WILL OCCUR AT THE CENTER OF A PIPE SEGMENT FOR BOTH LINES.
15. PRIOR TO TESTING AND INSPECTION OF THE SANITARY PIPELINE, ALL PARTS OF THE SYSTEM SHALL BE CLEANED OF ALL DEBRIS.

16. TESTING OF PRIVATE SANITARY PIPELINE SHALL BE IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE AND UNIFORM PLUMBING CODE.
17. TRACER WIRE - 12-GAUGE STRANDED OR SOLID COPPER INSULATED HIGH MOLECULAR WEIGHT POLYETHYLENE (HMW-PE) TRACER WIRE. THE HMW-PE INSULATED COVER SHALL BE GREEN AND A MINIMUM 45 MIL THICK. THE WIRE SHALL BE RATED FOR 140 DEGREES FAHRENHEIT. INSTALL TRACER WIRE IN ALL TRENCHES FOR SANITARY SEWERS. PLACE THE TRACER WIRE DIRECTLY OVER THE PIPE CENTERLINE AND ON TOP OF THE PIPE ZONE MATERIAL, PARALLEL TO, AND ALONG THE ENTIRE LENGTH OF ALL NONMETALLIC PIPE.

**WATER SERVICE**

18. ALL PIPE SHALL HAVE A MINIMUM OF 36" OF COVER MEASURED FROM FINISH GRADE.
19. WATER PIPE MATERIAL SHALL BE SCHEDULE 80 PVC OR ENGINEER APPROVED EQUAL.
20. FIRE SERVICE PIPE MATERIAL SHALL BE C900, D.I.P. OR ENGINEER APPROVED EQUAL.
21. THE CONTRACTOR SHALL CALL FOR ALL INSPECTIONS AND PERFORM THE NECESSARY TESTING REQUIRED BY THE SPECIFICATIONS AND THE PRIVATE UTILITIES PERMIT. UPON COMPLETION OF THE INSTALLATION OF THE WATER SYSTEM ALL LINES SHALL BE FLUSHED AND DISINFECTED IN CONFORMANCE WITH HEALTH DIVISION GUIDELINES.
22. ALL WATERLINES, JOINTS, TEES, BENDS (HORIZ. & VERT.), REDUCERS AND VALVES SHALL BE MECHANICALLY RESTRAINED.
23. ALL WATER PIPE SHALL COMPLY WITH AWWA STANDARDS AND UL APPROVED.
24. TRACER WIRE - 12-GAUGE STRANDED OR SOLID COPPER INSULATED HIGH MOLECULAR WEIGHT POLYETHYLENE (HMW-PE) TRACER WIRE. THE HMW-PE INSULATED COVER SHALL BE GREEN AND A MINIMUM 45 MIL THICK. THE WIRE SHALL BE RATED FOR 140 DEGREES FAHRENHEIT. INSTALL TRACER WIRE IN ALL TRENCHES FOR WATER LINE. PLACE THE TRACER WIRE DIRECTLY OVER THE PIPE CENTERLINE AND ON TOP OF THE PIPE ZONE MATERIAL, PARALLEL TO, AND ALONG THE ENTIRE LENGTH OF ALL NONMETALLIC PIPE.

**MISC. UTILITIES**

23. ELECTRICAL, TELEPHONE, GAS, AND TV INSTALLATION SHALL BE COORDINATED BY THE CONTRACTOR WITH THE APPROPRIATE UTILITY COMPANY INCLUDING REQUIREMENTS FOR UTILITY CROSSING SLEEVES.
24. ALL PROPOSED POWER, TELEPHONE, GAS, AND TV SERVICES ON SITE SHALL BE PLACED UNDERGROUND.
25. TRENCH BACKFILL WITHIN THE PUBLIC RIGHT OF WAY TO BE CRUSHED ROCK PER CITY OF STEVENSON STANDARDS. THIS APPLIES TO ALL UTILITY INSTALLATIONS: STORM, SANITARY, WATER, IRRIGATION CROSSINGS, PRIVATE UTILITIES.
26. PLACE DETECTABLE MARKING TAPE AND TRACER WIRE IN THE TRENCH DIRECTLY ABOVE, PARALLEL TO, AND ALONG THE ENTIRE LENGTH OF ALL NONMETALLIC PIPE AND CONDUIT.

**SITE GRADING, PREPARATION AND FILL NOTES:**

1. REFER TO FINAL GEOTECHNICAL REPORT FOR ADDITIONAL EARTHWORK AND GEOTECHNICAL RECOMMENDATIONS.
2. BUILDING SLAB AND FOUNDATION DESIGN SHALL BE PER STRUCTURAL DRAWINGS AND GEOTECHNICAL ENGINEERING REPORT.
3. THE PERIMETER GROUND SURFACE AND HARDCAPE SHOULD BE SLOPED TO DRAIN AWAY FROM ALL STRUCTURES AND AWAY FROM ADJACENT SLOPES.
4. CONSTRUCTION OF THE PROPOSED DEVELOPMENT WILL INVOLVE CLEARING AND GRUBBING OF THE EXISTING VEGETATION AND DEMOLITION OF EXISTING STRUCTURES. DEMOLITION SHALL INCLUDE REMOVAL OF EXISTING PAVEMENT, SLABS, UTILITIES, ETC., THROUGHOUT THE PROPOSED NEW DEVELOPMENT. VEGETATION, ROOTS, ORGANIC LADEN SOILS, AND ANY OTHER DELETERIOUS SOILS SHALL BE REMOVED. UNDERGROUND UTILITY LINES OR OTHER ABANDONED STRUCTURAL ELEMENTS SHALL BE REMOVED. THE VOIDS RESULTING FROM REMOVAL OF FOUNDATIONS OR LOOSE SOIL IN UTILITY LINES SHALL BE BACKFILLED WITH COMPACTED STRUCTURAL FILL. THE BASE OF THESE EXCAVATIONS SHOULD BE EXCAVATED TO FIRM NATIVE SUBGRADE BEFORE FILLING, WITH SIDES SLOPED AT A MINIMUM OF 1H:1V TO ALLOW FOR UNIFORM COMPACTION. MATERIALS GENERATED DURING DEMOLITION SHOULD BE TRANSPORTED OFF SITE OR STOCKPILED IN AREAS DESIGNATED BY THE OWNER'S REPRESENTATIVE. A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD DETERMINE THE DEPTH OF REMOVAL AT THE TIME OF CONSTRUCTION.
5. FILL SHOULD BE PLACED IN RELATIVELY UNIFORM HORIZONTAL LIFTS ON THE PREPARED SUBGRADE. EACH LOOSE LIFT SHOULD BE ABOUT 10 INCHES THICK. THE TYPE OF COMPACTION EQUIPMENT USED WILL ULTIMATELY DETERMINE THE MAXIMUM LIFT THICKNESS. STRUCTURAL FILL SHALL BE COMPACTED TO AT LEAST 92 PERCENT OF MODIFIED PROCTOR MAXIMUM DRY DENSITY AS DETERMINED BY ASTM DESIGNATION D 1557 (MODIFIED PROCTOR).
6. ANY STRUCTURAL FILL PLACED ON SLOPES AT OR GREATER THAN 1H:1V SHOULD BE PROPERLY BENCHED. LEVEL BENCHES EXCAVATED INTO THE EXISTING SLOPE SHOULD BE A MINIMUM OF 10 FEET WIDE LATERALLY, AND SHOULD BE CUT INTO THE SLOPE FOR EVERY FIVE FEET OF MAXIMUM VERTICAL RISE. THE PLACEMENT OF FILL SHOULD BEGIN AT THE BASE OF THE FILL. ALL BENCHES SHOULD BE INSPECTED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACEMENT OF STRUCTURAL FILL LIFTS. IF EVIDENCE OF SEEPAGE IS OBSERVED IN THE BENCH EXCAVATIONS, A SUPPLEMENTAL DRAINAGE SYSTEM MAY NEED TO BE DESIGNED AND INSTALLED TO PREVENT HYDROSTATIC PRESSURE BUILDUP BEHIND THE FILL. FINAL FILL AND/OR CUT SLOPES SHOULD BE KEPT AT OR BELOW 2H:1V.
7. EACH LIFT OF COMPACTED ENGINEERED FILL SHOULD BE TESTED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF SUBSEQUENT LIFTS.
8. FOLLOWING SITE PREPARATION AND PRIOR TO PLACING AGGREGATE BASE FOR SHALLOW FOUNDATIONS, BUILDING PAD, SLAB SUBGRADE SECTIONS, OR PAVEMENT SECTIONS, THE EXPOSED SUBGRADE SHOULD BE EVALUATED EITHER BY PROOFROLLING OR ANOTHER METHOD OF SUBGRADE VERIFICATION. THE SUBGRADE SHOULD BE PROOFROLLED WITH A FULLY LOADED DUMP TRUCK OR SIMILAR HEAVY, RUBBER-TIRE CONSTRUCTION EQUIPMENT TO IDENTIFY UNSUITABLE AREAS. IF EVALUATION OF THE SUBGRADES OCCURS DURING WET CONDITIONS, OR IF PROOFROLLING THE SUBGRADES WILL RESULT IN DISTURBANCE, THEY SHOULD BE EVALUATED BY THE GEOTECHNICAL ENGINEER.
9. SITE EARTHWORK AND SUBGRADE PREPARATION SHOULD NOT BE COMPLETED DURING FREEZING CONDITIONS, EXCEPT FOR MASS EXCAVATION TO THE SUBGRADE DESIGN ELEVATIONS.
10. ALL EXCAVATIONS SHOULD BE MADE IN ACCORDANCE WITH APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND STATE REGULATION.
11. IF DEWATERING IS REQUIRED, THE TYPE AND DESIGN OF THE DEWATERING SYSTEM SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
12. CUT AND FILL SLOPES SHALL BE PROTECTED FROM EROSION. SUCH CONTROL MAY CONSIST OF APPROPRIATE REVEGETATION OR OTHER ACCEPTABLE MEANS AND METHODS. EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO EARTHWORK OR SITE STRIPPING.

**EROSION AND SEDIMENT CONTROL NOTES:**

1. THE ESCP MEASURES SHOWN ON THIS PLAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, UPGRADE THESE MEASURES AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL EROSION AND SEDIMENT CONTROL REGULATIONS.
2. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS.
3. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION.
4. IDENTIFY, MARK, AND PROTECT (BY FENCING OFF OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS.
5. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED.
6. EROSION AND SEDIMENT CONTROL MEASURES INCLUDING PERIMETER SEDIMENT CONTROL MUST BE IN PLACE BEFORE VEGETATION IS DISTURBED AND

- MUST REMAIN IN PLACE AND BE MAINTAINED, REPAIRED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING PROTECTION FOR ACTIVE STORM DRAIN INLETS AND CATCH BASINS AND APPROPRIATE NON-STORMWATER POLLUTION CONTROLS.
7. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. DIRECT ALL WASH WATER INTO A PIT OR LEAK-PROOF CONTAINER. HANDLE WASH WATER AS WASTE, CONCRETE DISCHARGE TO WATER OF THE STATE IS PROHIBITED.
8. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES AND FOR ALL ROADWAYS INCLUDING GRAVEL ROADWAYS.
9. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS.
10. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES.
11. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE.
12. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, LEFTOVER PAINTS, SOLVENTS, AND GLUES FROM CONSTRUCTION OPERATIONS.
13. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES.
14. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL.
15. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE.
16. AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS.
17. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND DURING WET WEATHER OCTOBER 01 - MAY 31.
18. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL.
19. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT, AND BEFORE BMP REMOVAL.
20. CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT.
21. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS.
22. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS.
23. PROVIDE PERMANENT EROSION CONTROL MEASURES ON ALL EXPOSED AREAS. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. HOWEVER, DO REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AS EXPOSED AREAS BECOME STABILIZED, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. PROPERLY DISPOSE OF CONSTRUCTION MATERIALS AND WASTE, INCLUDING SEDIMENT RETAINED BY TEMPORARY BMPS.
24. IF VEGETATIVE SEED MIXES ARE SPECIFIED, SEEDING MUST TAKE PLACE NO LATER THAN SEPTEMBER 1; THE TYPE AND PERCENTAGES OF SEED IN THE MIX MUST BE IDENTIFIED ON THE PLANS.
25. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE DISCHARGED OVER AN UNDISTURBED, PREFERABLY VEGETATED AREA, AND THROUGH A SEDIMENT CONTROL BMP I.E. (FILTER BAG).
26. ALL EXPOSED SOILS MUST BE COVERED DURING THE WET WEATHER PERIOD, OCTOBER 01 - MAY 31.
27. IF WATERS OF THE STATE IS WITHIN THE PROJECT SITE OR WITHIN 50 FEET OF THE PROJECT BOUNDARY, MAINTAIN THE EXISTING NATURAL BUFFER WITHIN THE 50-FOOT ZONE FOR THE DURATION OF THE PERMIT COVERAGE, OR MAINTAIN LESS THAN THE ENTIRE EXISTING NATURAL BUFFER AND PROVIDE ADDITIONAL EROSION AND SEDIMENT CONTROL BMPS.
28. DISCHARGE OF SEDIMENT LADEN WATER FROM SITE TO PUBLIC STORM SYSTEM IS NOT ALLOWED. TREATMENT REQUIRED PRIOR TO DISCHARGE.
29. ALL LAND AREA PROPOSED FOR EXCAVATION, VEGETATION REMOVAL, SOIL STOCKPILING, OR WHICH WILL HAVE EXPOSED SOIL SHALL BE CONSIDERED PART OF THE DEVELOPMENT SITE.
30. MAY 1 THROUGH SEPTEMBER 30, THE DURATION OF SOIL EXPOSURE SHALL BE KEPT TO A MAXIMUM OF 21 DAYS. ALL DISTURBED SOIL THAT REMAINS EXPOSED FOR 21 DAYS OR MORE DURING CONSTRUCTION SHALL BE TREATED WITH AN EROSION CONTROL COVER (I.E., PLASTIC, SEEDING OR MULCHING), FOLLOWING GRADING OR CONSTRUCTION, UNTIL SOILS ARE RE-VEGETATED OR OTHERWISE STABILIZED.
31. OCTOBER 1 THROUGH APRIL 30, THE DURATION OF SOIL EXPOSURE SHALL BE KEPT TO A MAXIMUM OF 7 DAYS. ALL DISTURBED SOIL THAT REMAINS EXPOSED FOR 7 DAYS OR MORE DURING CONSTRUCTION SHALL BE TREATED WITH AN EROSION CONTROL COVER (I.E., PLASTIC, SEEDING OR MULCHING), FOLLOWING GRADING OR CONSTRUCTION, UNTIL SOILS ARE REVEGETATED OR OTHERWISE STABILIZED.
32. DURING CONSTRUCTION, RUNOFF FROM THE DEVELOPMENT SITE SHALL BE CONTROLLED, AND RUNOFF AND SEDIMENT RESULTING THEREFROM SHALL BE RETAINED ON SITE.
33. A STABILIZED PAD OF GRAVEL SHALL BE LAID AND MAINTAINED AT ALL ENTRANCES AND EXITS TO ANY DEVELOPMENT SITE FROM WHICH VEHICULAR TRAFFIC MAY TRACK SOIL OR DEBRIS ONTO PUBLIC RIGHT-OF-WAY. THE GRAVEL PAD(S) SHALL BE INSTALLED AND INSPECTED BY CITY STAFF PRIOR TO ANY DEVELOPMENT OR SITE PREPARATION. NO OTHER VEHICULAR ENTRANCE OR EXIT BY USED TO ACCESS THE DEVELOPMENT SITE.
34. GRAVEL PADS SHALL BE MAINTAINED TO FUNCTION PROPERLY. IF THE GRAVEL PAD DOES NOT ADEQUATELY REMOVE DIRT AND MUD FROM THE VEHICLE WHEELS, SUCH THAT MUD TRACKING IS EVIDENT OFF SITE, ADDITIONAL MEASURES MUST BE TAKEN.
35. TOPSOIL REMOVED FOR DEVELOPMENT SHALL BE STOCKPILED AND REUSED TO THE DEGREE NECESSARY TO RESTORE DISTURBED AREAS TO THEIR ORIGINAL OR ENHANCED CONDITION, OR TO ASSURE A MINIMUM OF SIX INCHES OF STABLE TOPSOIL FOR REVEGETATION.
36. THE OWNER SHALL BE RESPONSIBLE FOR THE PROMPT CLEAN-UP OF ALL SEDIMENTS THAT ARE CARRIED ONTO ANY PUBLIC OR PRIVATE STREETS, OR ONTO ADJACENT PROPERTY AS SOON AS THE OWNER BECOMES AWARE OF SUCH PROBLEMS OR WITHIN THE TIME REQUIRED BY THE CITY. THE OWNER SHALL BE RESPONSIBLE FOR CLEANING AND REPAIRING STREETS, CATCH BASINS, DRAINAGE WAYS, STORM WATER DRAINAGE FACILITIES, AND ADJACENT PROPERTIES CONTAMINATED OR DAMAGED BY SEDIMENT. FAILURE TO DO SO WILL BE IN VIOLATION OF THIS CODE.



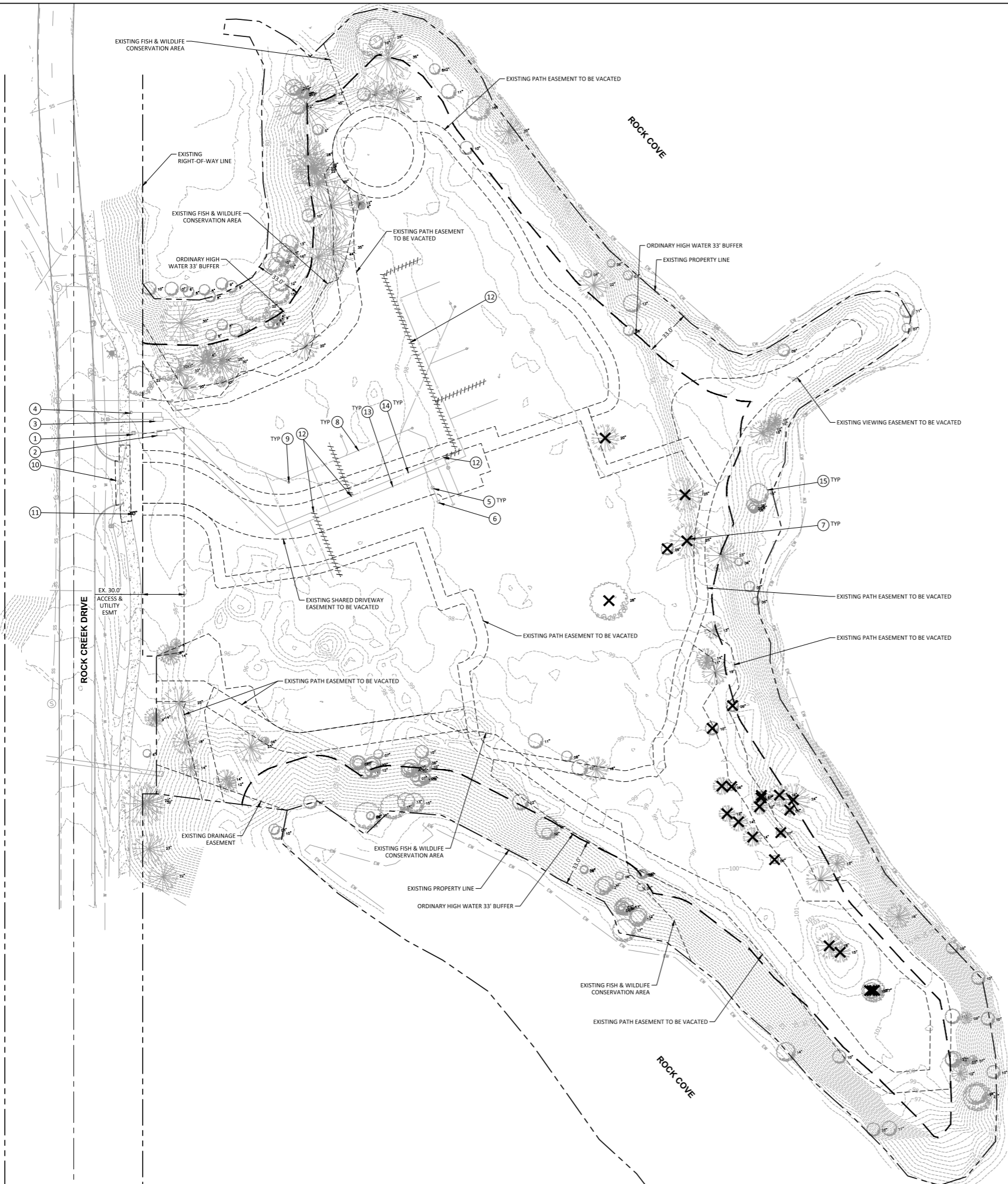
NOT FOR CONSTRUCTION

DESIGNED:	HHPR	DRAWN:	HHPR	CHECKED:	HHPR	DATE:	05/18/2023
						NO.	
				DATE	DESCRIPTION		
R E V I S I O N S							
SHEET NO. <b>C1.01</b>							
JOB NO. FDM-01A							



W:\02\Arcuser\FDM\FDM\_Development\FDM-01\_Rock\_Creek\_Cove\FDM-01\DWGSSheets\FDM01-C1.01\_NOTES.dwg

W:\02\Inhouse\FDM\FDM\_Development\FDM-01\_Rock\_Creek\_Cove\FDM-01-02-Overall\_Existing\_Conditions.dwg



**CONSTRUCTION NOTES:**

- 1 EXISTING WATER METER AND SERVICE TO REMAIN. PROTECT IN PLACE.
- 2 EXISTING WATER DCVA TO REMAIN. PROTECT IN PLACE.
- 3 EXISTING FIRE SERVICE AND DCDA TO REMAIN. PROTECT IN PLACE.
- 4 EXISTING FDC TO REMAIN. PROTECT IN PLACE.
- 5 EXISTING WATER VALVE TO REMAIN AND BE PROTECTED. LID TO BE ADJUSTED TO FINISH GRADE AS NECESSARY.
- 6 EXISTING PRIVATE FIRE HYDRANT TO REMAIN. PROTECT IN PLACE.
- 7 EXISTING TREE TO BE REMOVED.
- 8 EXISTING SANITARY SEWER LINE TO REMAIN. PROTECT IN PLACE.
- 9 EXISTING SANITARY CLEANOUT TO REMAIN AND BE PROTECTED. LID TO BE ADJUSTED TO FINISH GRADE AS NECESSARY.
- 10 SAWCUT AND REMOVE EXISTING CURB AND PAVEMENT AS SHOWN ON PLANS. SIDEWALK TO BE REMOVED AT NEAREST JOINT.
- 11 REMOVE EXISTING SIGN AND POST.
- 12 EXISTING FIRE SERVICE TO BE CAPPED AT EXISTING TEE AND REMOVED OR ABANDONED.
- 13 EXISTING PRIVATE WATER LINE TO REMAIN. PROTECT IN PLACE.
- 14 EXISTING PRIVATE FIRE LINE TO REMAIN. PROTECT IN PLACE.
- 15 EXISTING TREE TO REMAIN AND BE PROTECTED.

OVERALL EXISTING CONDITIONS & DEMO PLAN  
**ROCK CREEK COVE HOSPITALITY**  
 STEVENSON, WASHINGTON

**Harper Houf Peterson Righellis Inc.**  
 ENGINEERS ARCHITECTS LANDSCAPE ARCHITECTS SURVEYORS  
 205 SE Spokane Street, Suite 200, Portland, OR 97202  
 phone: 503.221.1131 www.hhp.com

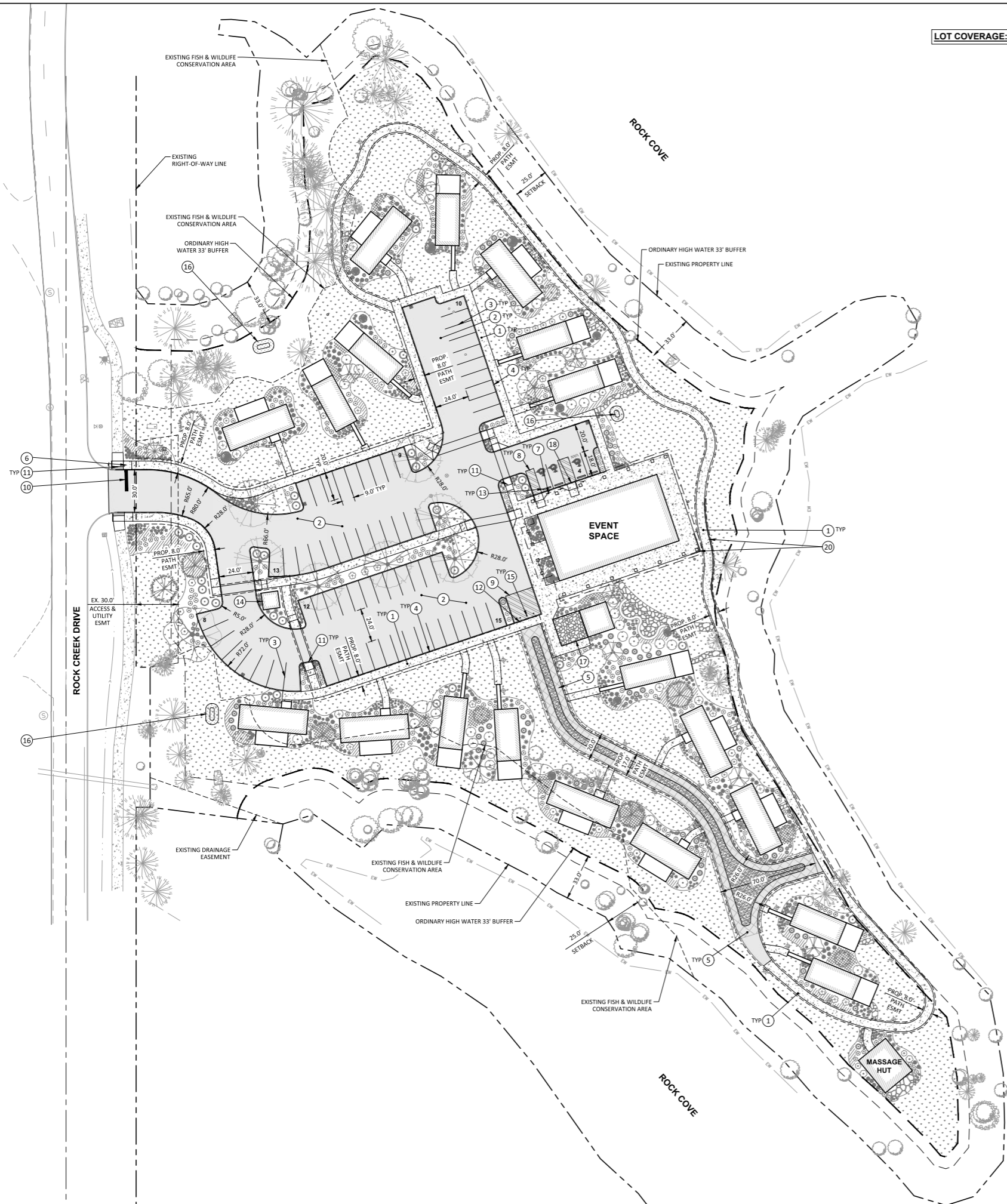
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SHEET NO.	<b>C2.00</b>
JOB NO.	FDM-01A



W:\24\arcuser\FDM\Development\FDM-01 (Rock Creek Cove)\FDM-01\DWG\FDM-01-C3.00 OVERALL SITE PLAN.dwg

LOT COVERAGE: 10.6% (27,983 SF/262,834 SF)



**CONSTRUCTION NOTES:**

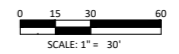
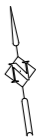

- 1 CONSTRUCT CONCRETE SIDEWALK PER DETAIL ON SHEET C6.00.
- 2 CONSTRUCT AC PAVEMENT PER SECTIONS ON SHEET C6.00.
- 3 PAINT 4" WHITE PARKING STRIPE PER DETAILS ON SHEET C6.00.
- 4 CONSTRUCT STANDARD CONCRETE 6" CURB PER DETAIL ON SHEET C6.00.
- 5 CONSTRUCT FIRE ACCESS AND PEDESTRIAN PATH PER SECTION ON SHEET C6.00.
- 6 INSTALL STOP SIGN AND POST PER DETAIL ON SHEET C6.00.
- 7 INSTALL ACCESSIBLE PARKING SIGN PER DETAILS ON SHEET C6.00. VAN ACCESSIBLE SIGN TO BE INSTALLED WHERE SHOWN ON PLANS.
- 8 PAINT LOADING ZONE STRIPING AND ACCESSIBLE PARKING SYMBOL PER DETAILS ON SHEET C6.00.
- 9 PAINT "NO PARKING" STRIPING PER DETAIL ON SHEET C6.00.
- 10 PAINT STOP BAR PER DETAIL ON SHEET C6.00.
- 11 INSTALL PERPENDICULAR SIDEWALK RAMP PER DETAIL ON SHEET C6.00.
- 12 INSTALL MOUNTABLE CURB PER DETAIL ON SHEET 6.00. INSTALL CONSTRUCTION JOINT ON EITHER END.
- 13 INSTALL CONCRETE WHEELSTOP PER DETAIL ON SHEET C6.00.
- 14 PROPOSED COVERED TRASH ENCLOSURE.
- 15 INSTALL REMOVABLE BOLLARD WITH KNOX PADLOCK PER DETAIL ON SHEET C6.00.
- 16 PROPOSED STORMWATER FACILITY. REFER TO UTILITY PLANS FOR INFORMATION.
- 17 PROPOSED STORAGE AREA AND GAZEBO. REFER TO ARCHITECTURAL PLANS FOR INFORMATION.
- 18 CONSTRUCT FLUSH CURB PER DETAIL ON SHEET C6.00.
- 20 PROPOSED SIDEWALK THICKENED EDGE PER DETAIL ON SHEET C6.00.

OVERALL SITE PLAN  
**ROCK CREEK COVE HOSPITALITY**  
 STEVENSON, WASHINGTON

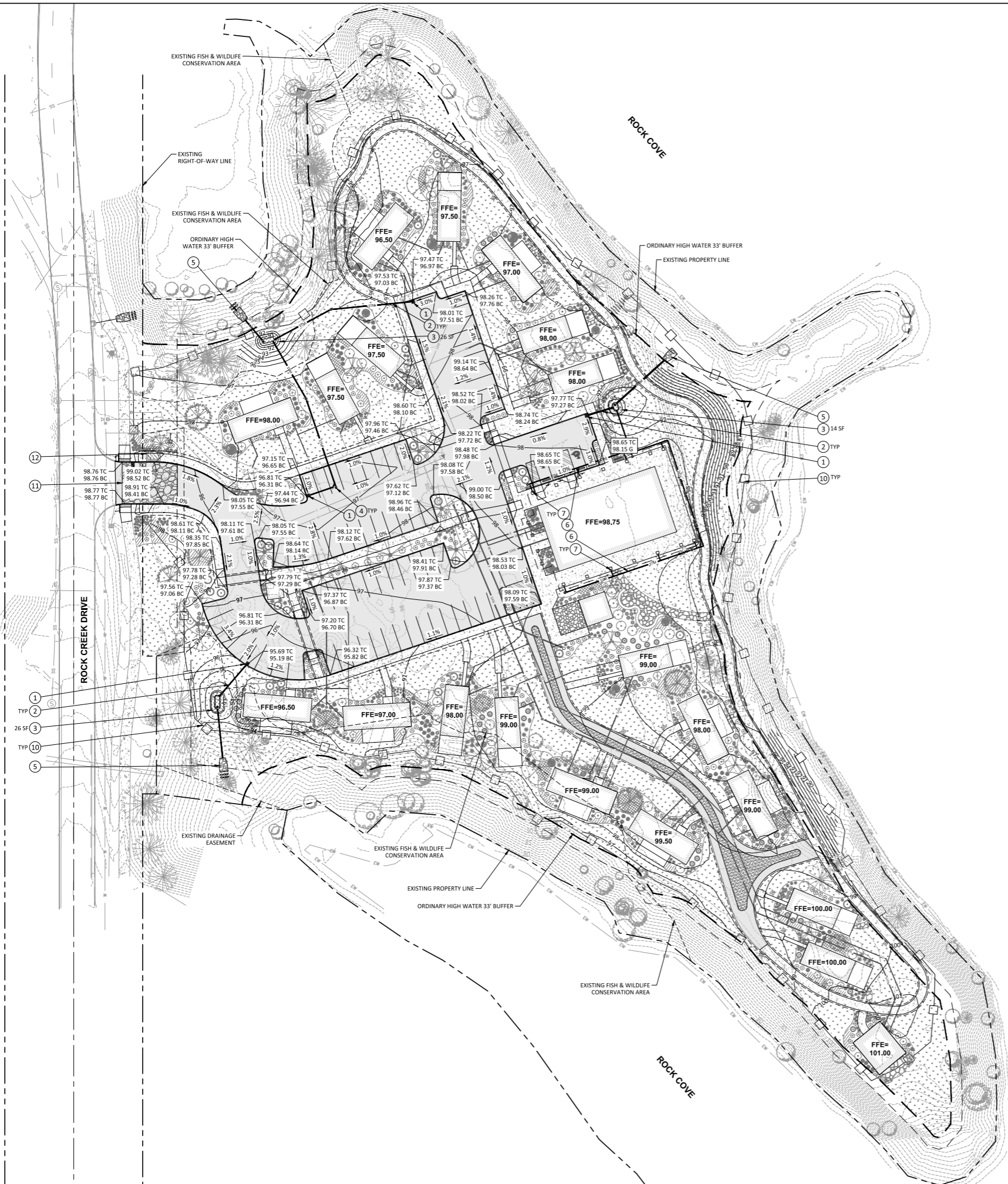
  
**Harper Houf Peterson Righellis Inc.**  
ENGINEERS ARCHITECTS SURVEYORS  
 LANDSCAPE ARCHITECTS SURVEYORS  
 205 SE Spokane Street, Suite 200, Portland, OR 97202  
 phone: 503.221.1131 www.hhpi.com

NOT FOR CONSTRUCTION

DESIGNED:	HHPR	DRAWN:	HHPR	CHECKED:	HHPR	DATE:	05/18/2023
R E V I S I O N S							
SHEET NO.	<b>C3.00</b>						
JOB NO.	FDM-01A						

V:\02\_Misc\user\FDM\_Development\FDM01 (Rock Creek Cove)\DWG\SS\sheet\FDM01-C4.00\_OVERALL GRADING PLAN.dwg



- CONSTRUCTION NOTES:**
- 1 INSTALL CATCHBASIN PER DETAIL ON SHEET C6.01. INLET TO BE PROTECTED WITH 'SILT SACK' PER DETAIL ON SHEET C6.02 FOR ENTIRE COURSE OF CONSTRUCTION.
  - 2 INSTALL 12" PVC STORM LINE. SLOPE AT 0.5% MIN.
  - 3 CONSTRUCT STORMWATER FACILITY PER DETAIL ON SHEET C6.01. BEEHIVE INLET TO BE PROTECTED WITH 'SILT SACK' PER DETAIL ON SHEET C6.02 FOR ENTIRE COURSE OF CONSTRUCTION.
  - 4 INSTALL STORM CLEANOUT PER DETAIL ON SHEET C6.01.
  - 5 CONSTRUCT STORMWATER ROCK OUTFALL PER DETAIL ON SHEET C6.01.
  - 6 INSTALL 6" PVC STORM LINE. SLOPE AT 0.5% MIN.
  - 7 PROPOSED DOWNSPOUT CONNECTION.
  - 10 INSTALL SEDIMENT FENCE FOR EROSION CONTROL PER DETAIL ON SHEET C6.02.
  - 11 INSTALL CONSTRUCTION ENTRANCE PER DETAIL SHEET C6.02.
  - 12 INSTALL CONCRETE WASHOUT PER DETAIL ON SHEET C6.02.

OVERALL GRADING, DRAINAGE & EROSION CONTROL PLAN  
**ROCK CREEK COVE HOSPITALITY**  
 STEVENSON, WASHINGTON

**Harper Houf Peterson Righellis Inc.**  
 ENGINEERS ARCHITECTS SURVEYORS  
 LANDSCAPE ARCHITECTS #SURVEYORS  
 205 SE Spokane Street, Suite 200, Portland, OR 97202  
 phone: 503.221.1131 www.hhp.com

NOT FOR CONSTRUCTION

DESIGNED:	HHPR
DRAWN:	HHPR
CHECKED:	HHPR
DATE:	05/18/2023

NO.	DATE	DESCRIPTION

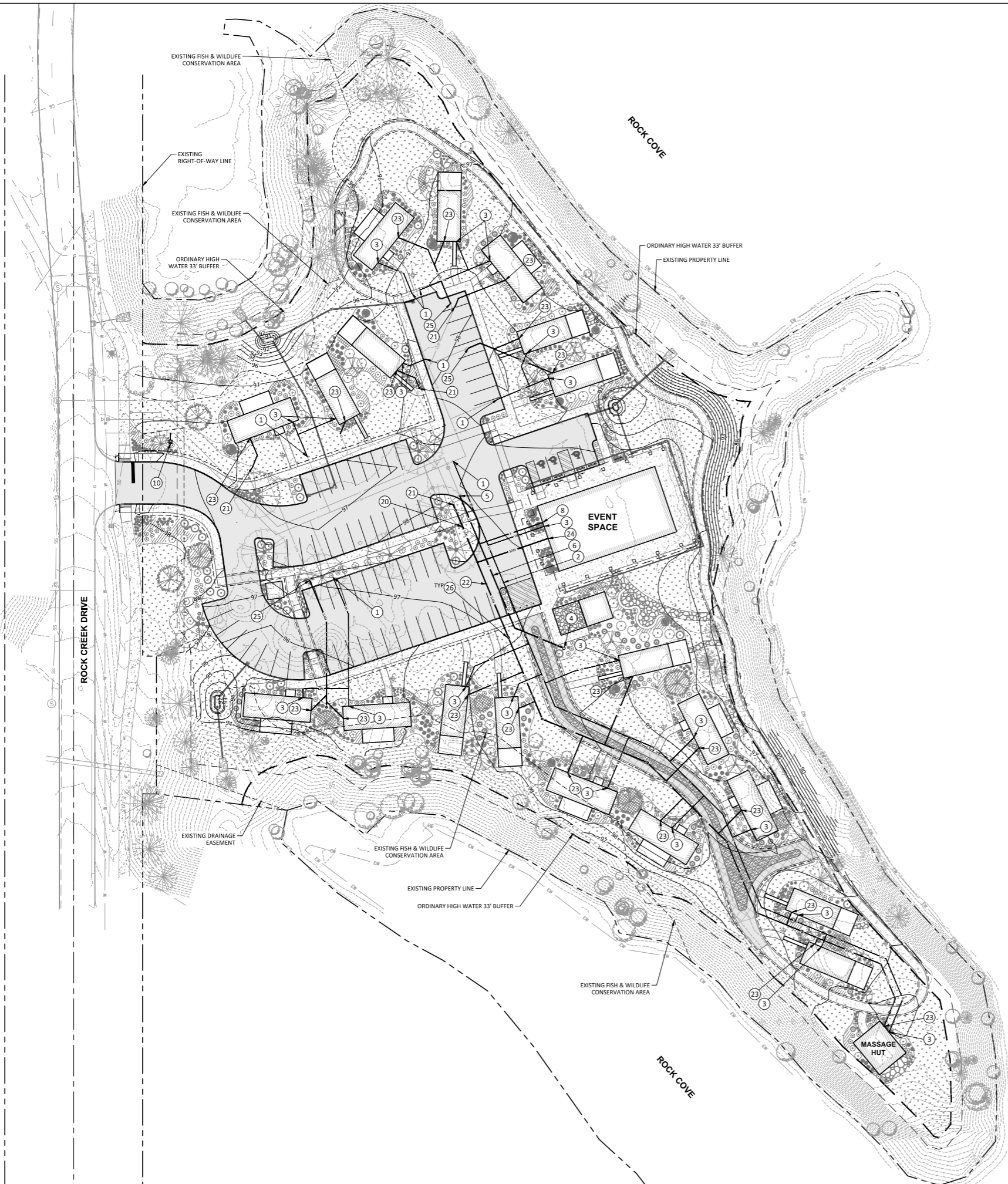
R E V I S I O N S

SHEET NO. **C4.00**

JOB NO. FDM-01A

SCALE: 1" = 30'

W:\02\Inhouse\FDM\Development\FDM-01 (Rock Creek Cove)\FDM01-C4.00-OVERALL UTILITY PLAN.dwg



**CONSTRUCTION NOTES:**

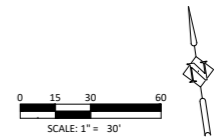
- 1 CONNECT TO EXISTING 1.5" WATER SERVICE.
- 2 INSTALL 1.5" SCH. 80 PVC WATER SERVICE.
- 3 DOMESTIC WATER SERVICE CONNECTION POINT. VERIFY SIZE AND LOCATION WITH BUILDING PLUMBING DESIGNER. INSTALL APPROVED PRESSURE REDUCING VALVE (PRV) PER PLUMBING CODE AND SET PRESSURE TO 70 PSI.
- 4 INSTALL FIRE HYDRANT ASSEMBLY INCLUDING 6" X 6" TEE, FLG. AND 6" G.V., FLG. X M.J. PER DETAIL, SHEET C6.02. INCLUDING:  
1- 6" ADAPTER, FLG. X M.J.  
1- 6" BLIND FLANGE, 2" TAPPED I.P.T.
- 5 CONNECT TO EXISTING 6" D.I. FIRE SERVICE LINE.
- 6 INSTALL 6" D.I. CLASS 52 FIRE SERVICE LINE.
- 8 FIRE SERVICE CONNECTION POINT. VERIFY SIZE AND LOCATION WITH BLDG SPRINKLER DESIGNER.
- 10 IRRIGATION SERVICE CONNECTION POINT AND DEDUCT METER. REFER TO LANDSCAPE PLANS.
- 20 INSTALL 8" C900 SANITARY PIPE. SLOPE AT 0.5% MIN.
- 21 CONNECT TO EXISTING 8" SANITARY LINE.
- 22 INSTALL 6" C900 SANITARY PIPE. SLOPE AT 0.5% MIN.
- 23 4" SANITARY SEWER BUILDING CONNECTION.
- 24 6" SANITARY SEWER BUILDING CONNECTION.
- 25 CONNECT TO EXISTING 6" SANITARY LINE.
- 26 INSTALL SANITARY SEWER CLEANOUT PER DETAIL ON SHEET C6.01.

OVERALL UTILITY PLAN  
**ROCK CREEK COVE HOSPITALITY**  
 STEVENSON, WASHINGTON

**Harper Houf Peterson Righellis Inc.**  
 ENGINEERS, ARCHITECTS & SURVEYORS  
 LANDSCAPE ARCHITECTS & SURVEYORS  
 205 SE Spokane Street, Suite 200, Portland, OR 97202  
 phone: 503.221.1131 www.hhr.com

NOT FOR CONSTRUCTION

DESIGNED:	HHRP
DRAWN:	HHRP
CHECKED:	HHRP
DATE:	05/18/2023
NO.	
DATE	
DESCRIPTION	
R E V I S I O N S	



SHEET NO.  
**C5.00**  
 JOB NO. FDM-01A

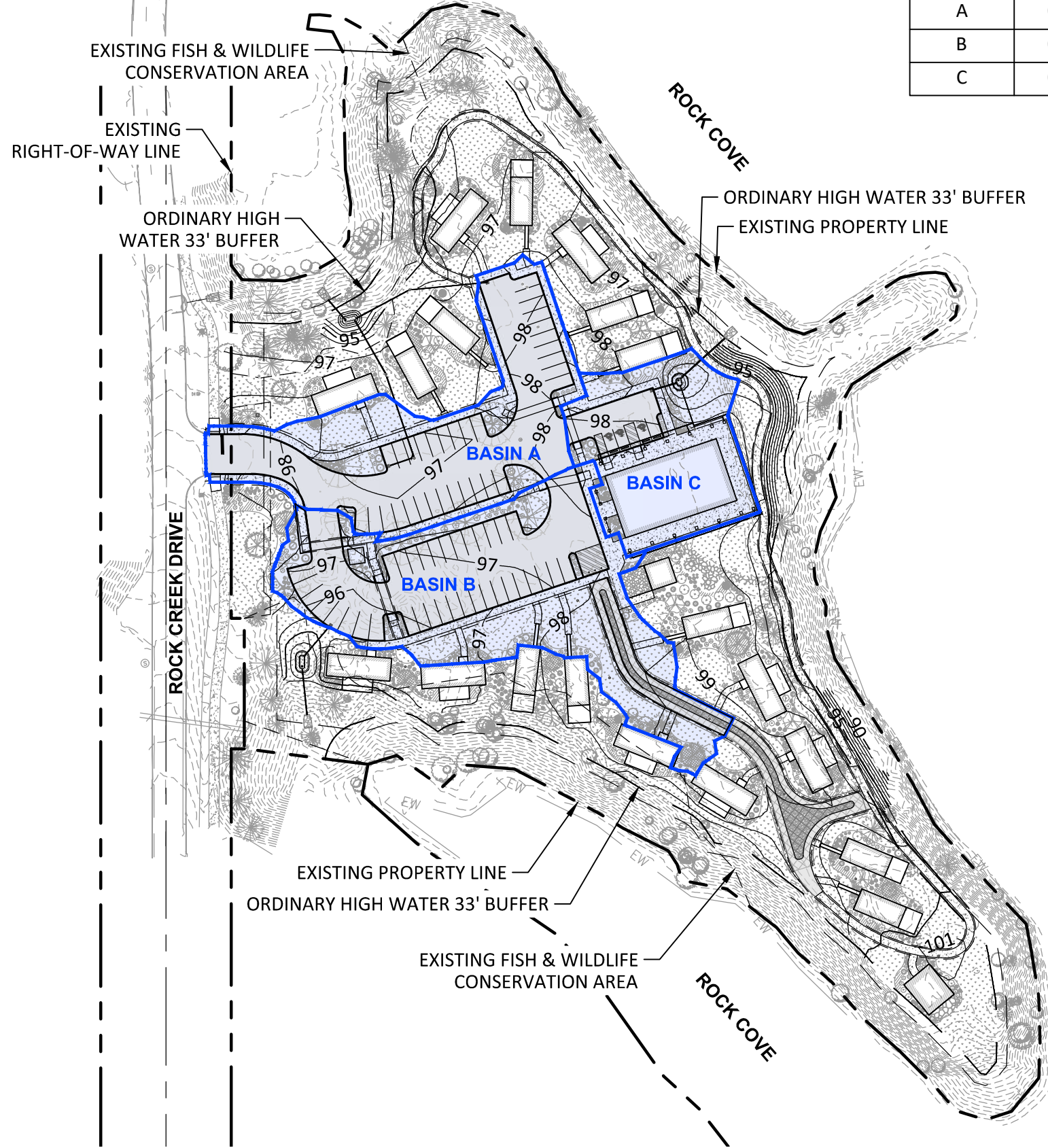




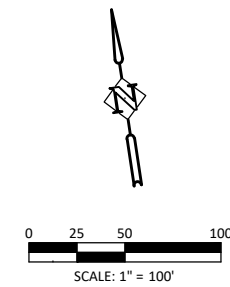




**APPENDIX 3 – Stormwater Calculations and Design Information**



BASIN AREA TABLE					
BASIN	PARKING AREA	PEDESTRIAN AREA	ROOF AREA	PERVIOUS AREA	TOTAL
A	0.39 AC	0.10 AC	--	0.11 AC	0.60 AC
B	0.33 AC	0.13 AC	--	0.32 AC	0.78 AC
C	0.06 AC	0.02 AC	0.20 AC	0.08 AC	0.36 AC



STORMWATER BASIN MAP  
**ROCK CREEK COVE HOSPITALITY**  
 STEVENSON, WASHINGTON

**Harper Houf Peterson Righellis Inc.**  
 ENGINEERS+PLANNERS  
 LANDSCAPE ARCHITECTS+SURVEYORS  
 205 SE Spokane Street, Suite 200, Portland, OR 97202  
 phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

DESIGNED:	HHPR
DRAWN:	HHPR
CHECKED:	HHPR
DATE:	05/18/2023

SHEET NO.  
**1**

**WWHM2012**  
**PROJECT REPORT**

**Scenario 1 Mitigated**

**Facility Name:** Bioretention 1

**Downstream Connection:** Outlet 1: 0, Outlet 2: 0, Outlet 3: 0

Use simple Bioretention

Underdrain Used

**Underdrain Diameter (ft):** 0.5

**Orifice Diameter (in):** 6

**Flow Through Underdrain (ac-ft):** 90.5

**Total Outflow (ac-ft):** 105.04

**Percent Through Underdrain:** 95.16

**WG Percent Filtered:** 91.88

**Facility Dimension Diagram**

**Outlet Structure Data**

**Riser Height Above bioretention surface (ft):** 0.5

**Riser Diameter (in):** 12

**Riser Type:** Flat

**Material Layers for**

Layer	Layer 1	Layer 2	Layer 3
Depth (ft)	1.500	1.000	0.000
Soil Layer 1	SMMw/w 12 w/hr		
Soil Layer 2	GRAVEL		
Soil Layer 3	GRAVEL		

**Native Infiltration:** Yes

**Measured Infiltration Rate (in/hr):** 4

**Reduction Factor (in/hr factor):** 0.25

**Use Wetted Surface Area (sidewalks):** Yes

**Total Inflow ac-ft:** 105.35

**Total Volume Infiltrated (ac-ft):** 6.007

**Total Volume Through Riser (ac-ft):** 8.533

**Total Volume Through Facility (ac-ft):** 105.04

**Percent Infiltrated:** 5.72

**Precipitation on Facility (acre-ft):** 1.738

**Evaporation from Facility (acre-ft):** 0.31

**Scenario 2 Mitigated**

**Facility Name:** Bioretention 2

**Downstream Connection:** Outlet 1: 0, Outlet 2: 0, Outlet 3: 0

Use simple Bioretention

Underdrain Used

**Underdrain Diameter (ft):** 0.5

**Orifice Diameter (in):** 6

**Flow Through Underdrain (ac-ft):** 85.158

**Total Outflow (ac-ft):** 93.027

**Percent Through Underdrain:** 90.57

**WG Percent Filtered:** 92.73

**Facility Dimension Diagram**

**Outlet Structure Data**

**Riser Height Above bioretention surface (ft):** 0.5

**Riser Diameter (in):** 12

**Riser Type:** Flat

**Material Layers for**

Layer	Layer 1	Layer 2	Layer 3
Depth (ft)	1.500	1.000	0.000
Soil Layer 1	SMMw/w 12 w/hr		
Soil Layer 2	GRAVEL		
Soil Layer 3	GRAVEL		

**Native Infiltration:** Yes

**Measured Infiltration Rate (in/hr):** 4

**Reduction Factor (in/hr factor):** 0.25

**Use Wetted Surface Area (sidewalks):** Yes

**Total Inflow ac-ft:** 99.336

**Total Volume Infiltrated (ac-ft):** 5.075

**Total Volume Through Riser (ac-ft):** 7.194

**Total Volume Through Facility (ac-ft):** 98.027

**Percent Infiltrated:** 5.73

**Precipitation on Facility (acre-ft):** 1.703

**Evaporation from Facility (acre-ft):** 0.309

**Scenario 3 Mitigated**

**Facility Name:** Bioretention 3

**Downstream Connection:** Outlet 1: 0, Outlet 2: 0, Outlet 3: 0

Use simple Bioretention

Underdrain Used

**Underdrain Diameter (ft):** 0.5

**Orifice Diameter (in):** 6

**Flow Through Underdrain (ac-ft):** 54.795

**Total Outflow (ac-ft):** 60.275

**Percent Through Underdrain:** 90.84

**WG Percent Filtered:** 95.85

**Facility Dimension Diagram**

**Outlet Structure Data**

**Riser Height Above bioretention surface (ft):** 0.5

**Riser Diameter (in):** 12

**Riser Type:** Flat

**Material Layers for**

Layer	Layer 1	Layer 2	Layer 3
Depth (ft)	1.500	1.000	0.000
Soil Layer 1	SMMw/w 12 w/hr		
Soil Layer 2	GRAVEL		
Soil Layer 3	GRAVEL		

**Native Infiltration:** Yes

**Measured Infiltration Rate (in/hr):** 4

**Reduction Factor (in/hr factor):** 0.25

**Use Wetted Surface Area (sidewalks):** Yes

**Total Inflow ac-ft:** 60.489

**Total Volume Infiltrated (ac-ft):** 3.628

**Total Volume Through Riser (ac-ft):** 1.891

**Total Volume Through Facility (ac-ft):** 60.275

**Percent Infiltrated:** 6.02

**Precipitation on Facility (acre-ft):** 1.264

**Evaporation from Facility (acre-ft):** 0.214

# General Model Information

Project Name: FDM-01 Rock Creek WWHM  
Site Name: Rock Ck Cove  
Site Address:  
City: Steveson  
Report Date: 5/18/2023  
Gage: Portland  
Data Start: 1948/10/01  
Data End: 2009/09/30  
Timestep: 15 Minute  
Precip Scale: 0.000 (adjusted)  
Version Date: 2019/09/13  
Version: 4.2.17

## POC Thresholds

---

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

---

*Landuse Basin Data*  
*Predeveloped Land Use*

*Mitigated Land Use*

**Basin A**

Bypass: No

GroundWater: No

Pervious Land Use acre  
A B, Lawn, Flat 0.11

Pervious Total 0.11

Impervious Land Use acre  
SIDEWALKS FLAT 0.1  
PARKING FLAT 0.39

Impervious Total 0.49

Basin Total 0.6

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 1	Surface retention 1	



## Basin B

Bypass: No

GroundWater: No

Pervious Land Use acre  
A B, Lawn, Flat 0.32

Pervious Total 0.32

Impervious Land Use acre  
SIDEWALKS FLAT 0.13  
PARKING FLAT 0.33

Impervious Total 0.46

Basin Total 0.78

### Element Flows To:

Surface	Interflow	Groundwater
Surface retention 2	Surface retention 2	

### Basin 3

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Lawn, Flat	0.08
Pervious Total	0.08
Impervious Land Use	acre
ROOF TOPS FLAT	0.2
SIDEWALKS FLAT	0.02
PARKING FLAT	0.06
Impervious Total	0.28
Basin Total	0.36

Element Flows To:  
Surface                      Interflow                      Groundwater  
Surface retention 3      Surface retention 3

*Routing Elements*  
*Predeveloped Routing*

## Mitigated Routing

### Bioretention 1

Bottom Length:	8.00 ft.
Bottom Width:	3.00 ft.
Material thickness of first layer:	1.5
Material type for first layer:	SMMWW 12 in/hr
Material thickness of second layer:	1
Material type for second layer:	GRAVEL
Material thickness of third layer:	0
Material type for third layer:	GRAVEL
Infiltration On	
Infiltration rate:	4
Infiltration safety factor:	0.25
Wetted surface area On	
Total Volume Infiltrated (ac-ft.):	6.007
Total Volume Through Riser (ac-ft.):	8.533
Total Volume Through Facility (ac-ft.):	105.04
Percent Infiltrated:	5.72
Total Precip Applied to Facility:	1.738
Total Evap From Facility:	0.31
Underdrain used	
Underdrain Diameter (feet):	0.5
Orifice Diameter (in.):	6
Offset (in.):	0
Flow Through Underdrain (ac-ft.):	90.5
Total Outflow (ac-ft.):	105.04
Percent Through Underdrain:	86.16
Discharge Structure	
Riser Height:	0.5 ft.
Riser Diameter:	12 in.
Element Flows To:	
Outlet 1	Outlet 2

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0095	0.0000	0.0000	0.0000
0.0385	0.0095	0.0000	0.0000	0.0000
0.0769	0.0093	0.0000	0.0000	0.0000
0.1154	0.0091	0.0000	0.0000	0.0000
0.1538	0.0089	0.0000	0.0000	0.0000
0.1923	0.0087	0.0001	0.0000	0.0000
0.2308	0.0084	0.0001	0.0000	0.0000
0.2692	0.0082	0.0001	0.0000	0.0000
0.3077	0.0080	0.0001	0.0000	0.0000
0.3462	0.0078	0.0001	0.0001	0.0000
0.3846	0.0076	0.0002	0.0001	0.0000
0.4231	0.0075	0.0002	0.0001	0.0000
0.4615	0.0073	0.0002	0.0002	0.0000
0.5000	0.0071	0.0002	0.0002	0.0000
0.5385	0.0069	0.0003	0.0003	0.0000
0.5769	0.0067	0.0003	0.0004	0.0000
0.6154	0.0065	0.0003	0.0005	0.0000
0.6538	0.0063	0.0003	0.0006	0.0000
0.6923	0.0062	0.0004	0.0006	0.0000

0.7308	0.0060	0.0004	0.0007	0.0000
0.7692	0.0058	0.0005	0.0009	0.0000
0.8077	0.0056	0.0005	0.0011	0.0000
0.8462	0.0055	0.0005	0.0013	0.0000
0.8846	0.0053	0.0006	0.0015	0.0000
0.9231	0.0052	0.0006	0.0018	0.0000
0.9615	0.0050	0.0007	0.0021	0.0000
1.0000	0.0048	0.0007	0.0022	0.0000
1.0385	0.0047	0.0008	0.0025	0.0000
1.0769	0.0045	0.0008	0.0029	0.0000
1.1154	0.0044	0.0009	0.0033	0.0000
1.1538	0.0042	0.0009	0.0038	0.0000
1.1923	0.0041	0.0010	0.0043	0.0000
1.2308	0.0039	0.0011	0.0049	0.0001
1.2692	0.0038	0.0011	0.0055	0.0001
1.3077	0.0037	0.0012	0.0058	0.0001
1.3462	0.0035	0.0013	0.0065	0.0001
1.3846	0.0034	0.0013	0.0073	0.0001
1.4231	0.0033	0.0014	0.0081	0.0001
1.4615	0.0031	0.0015	0.0091	0.0001
1.5000	0.0030	0.0016	0.0101	0.0001
1.5385	0.0029	0.0017	0.0112	0.0001
1.5769	0.0028	0.0017	0.0120	0.0001
1.6154	0.0027	0.0018	0.0128	0.0002
1.6538	0.0025	0.0019	0.0141	0.0002
1.6923	0.0024	0.0020	0.0155	0.0002
1.7308	0.0023	0.0021	0.0225	0.0003
1.7692	0.0022	0.0022	0.0232	0.0003
1.8077	0.0021	0.0023	0.0238	0.0003
1.8462	0.0020	0.0024	0.0245	0.0004
1.8846	0.0019	0.0025	0.0252	0.0004
1.9231	0.0018	0.0026	0.0259	0.0004
1.9615	0.0017	0.0027	0.0266	0.0004
2.0000	0.0016	0.0028	0.0273	0.0004
2.0385	0.0015	0.0029	0.0281	0.0005
2.0769	0.0014	0.0030	0.0288	0.0005
2.1154	0.0013	0.0031	0.0295	0.0005
2.1538	0.0013	0.0032	0.0303	0.0005
2.1923	0.0012	0.0034	0.0311	0.0006
2.2308	0.0011	0.0035	0.0318	0.0006
2.2692	0.0010	0.0036	0.0326	0.0006
2.3077	0.0009	0.0037	0.0334	0.0007
2.3462	0.0009	0.0039	0.0342	0.0007
2.3846	0.0008	0.0040	0.0350	0.0007
2.4231	0.0007	0.0042	0.0358	0.0008
2.4615	0.0007	0.0043	0.0367	0.0008
2.5000	0.0006	0.0045	0.0375	0.0008
2.5000	0.0006	0.0045	0.0375	0.0008

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.009504	0.004462	0.0000	0.0294	0.0002
2.5385	0.009723	0.004832	0.0000	0.0294	0.0004
2.5769	0.009943	0.005210	0.0000	0.0316	0.0007
2.6154	0.010167	0.005597	0.0000	0.0331	0.0009
2.6538	0.010393	0.005992	0.0000	0.0347	0.0011
2.6923	0.010621	0.006396	0.0000	0.0362	0.0014
2.7308	0.010851	0.006809	0.0000	0.0379	0.0016

2.7692	0.0110840.007231	0.0000	0.0395	0.0018
2.8077	0.0113200.007662	0.0000	0.0413	0.0021
2.8462	0.0115580.008102	0.0000	0.0430	0.0023
2.8846	0.0117980.008551	0.0000	0.0448	0.0026
2.9231	0.0120410.009009	0.0000	0.0467	0.0028
2.9615	0.0122870.009477	0.0000	0.0486	0.0031
3.0000	0.0125340.009955	0.0000	0.0506	0.0033
3.0385	0.0127850.010441	0.0800	0.0526	0.0036
3.0769	0.0130370.010938	0.2257	0.0546	0.0038
3.1154	0.0132920.011444	0.4122	0.0567	0.0041
3.1538	0.0135500.011961	0.6273	0.0589	0.0043
3.1923	0.0138100.012487	0.8600	0.0611	0.0046
3.2308	0.0140720.013023	1.0991	0.0633	0.0049
3.2692	0.0143370.013569	1.3333	0.0656	0.0051
3.3077	0.0146050.014126	1.5516	0.0680	0.0054
3.3462	0.0148740.014693	1.7445	0.0704	0.0057
3.3846	0.0151470.015270	1.9054	0.0728	0.0060
3.4231	0.0154210.015858	2.0318	0.0754	0.0062
3.4615	0.0156980.016456	2.1274	0.0779	0.0065
3.5000	0.0159780.017066	2.2033	0.0806	0.0065

## Surface retention 1

Element Flows To:

Outlet 1

Outlet 2

Bioretention 1

## Bioretention 2

Bottom Length:	8.00 ft.
Bottom Width:	3.00 ft.
Material thickness of first layer:	1.5
Material type for first layer:	SMMWW 12 in/hr
Material thickness of second layer:	1
Material type for second layer:	GRAVEL
Material thickness of third layer:	0
Material type for third layer:	GRAVEL
Infiltration On	
Infiltration rate:	4
Infiltration safety factor:	0.25
Wetted surface area On	
Total Volume Infiltrated (ac-ft.):	5.675
Total Volume Through Riser (ac-ft.):	7.194
Total Volume Through Facility (ac-ft.):	99.027
Percent Infiltrated:	5.73
Total Precip Applied to Facility:	1.703
Total Evap From Facility:	0.309
Underdrain used	
Underdrain Diameter (feet):	0.5
Orifice Diameter (in.):	6
Offset (in.):	0
Flow Through Underdrain (ac-ft.):	86.158
Total Outflow (ac-ft.):	99.027
Percent Through Underdrain:	87
Discharge Structure	
Riser Height:	0.5 ft.
Riser Diameter:	12 in.
Element Flows To:	
Outlet 1	Outlet 2

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0095	0.0000	0.0000	0.0000
0.0385	0.0095	0.0000	0.0000	0.0000
0.0769	0.0093	0.0000	0.0000	0.0000
0.1154	0.0091	0.0000	0.0000	0.0000
0.1538	0.0089	0.0000	0.0000	0.0000
0.1923	0.0087	0.0001	0.0000	0.0000
0.2308	0.0084	0.0001	0.0000	0.0000
0.2692	0.0082	0.0001	0.0000	0.0000
0.3077	0.0080	0.0001	0.0000	0.0000
0.3462	0.0078	0.0001	0.0001	0.0000
0.3846	0.0076	0.0002	0.0001	0.0000
0.4231	0.0075	0.0002	0.0001	0.0000
0.4615	0.0073	0.0002	0.0002	0.0000
0.5000	0.0071	0.0002	0.0002	0.0000
0.5385	0.0069	0.0003	0.0003	0.0000
0.5769	0.0067	0.0003	0.0004	0.0000
0.6154	0.0065	0.0003	0.0005	0.0000
0.6538	0.0063	0.0003	0.0006	0.0000
0.6923	0.0062	0.0004	0.0006	0.0000
0.7308	0.0060	0.0004	0.0007	0.0000
0.7692	0.0058	0.0005	0.0009	0.0000



0.8077	0.0056	0.0005	0.0011	0.0000
0.8462	0.0055	0.0005	0.0013	0.0000
0.8846	0.0053	0.0006	0.0015	0.0000
0.9231	0.0052	0.0006	0.0018	0.0000
0.9615	0.0050	0.0007	0.0021	0.0000
1.0000	0.0048	0.0007	0.0022	0.0000
1.0385	0.0047	0.0008	0.0025	0.0000
1.0769	0.0045	0.0008	0.0029	0.0000
1.1154	0.0044	0.0009	0.0033	0.0000
1.1538	0.0042	0.0009	0.0038	0.0000
1.1923	0.0041	0.0010	0.0043	0.0000
1.2308	0.0039	0.0011	0.0049	0.0001
1.2692	0.0038	0.0011	0.0055	0.0001
1.3077	0.0037	0.0012	0.0058	0.0001
1.3462	0.0035	0.0013	0.0065	0.0001
1.3846	0.0034	0.0013	0.0073	0.0001
1.4231	0.0033	0.0014	0.0081	0.0001
1.4615	0.0031	0.0015	0.0091	0.0001
1.5000	0.0030	0.0016	0.0101	0.0001
1.5385	0.0029	0.0017	0.0112	0.0001
1.5769	0.0028	0.0017	0.0120	0.0001
1.6154	0.0027	0.0018	0.0128	0.0002
1.6538	0.0025	0.0019	0.0141	0.0002
1.6923	0.0024	0.0020	0.0155	0.0002
1.7308	0.0023	0.0021	0.0225	0.0003
1.7692	0.0022	0.0022	0.0232	0.0003
1.8077	0.0021	0.0023	0.0238	0.0003
1.8462	0.0020	0.0024	0.0245	0.0004
1.8846	0.0019	0.0025	0.0252	0.0004
1.9231	0.0018	0.0026	0.0259	0.0004
1.9615	0.0017	0.0027	0.0266	0.0004
2.0000	0.0016	0.0028	0.0273	0.0004
2.0385	0.0015	0.0029	0.0281	0.0005
2.0769	0.0014	0.0030	0.0288	0.0005
2.1154	0.0013	0.0031	0.0295	0.0005
2.1538	0.0013	0.0032	0.0303	0.0005
2.1923	0.0012	0.0034	0.0311	0.0006
2.2308	0.0011	0.0035	0.0318	0.0006
2.2692	0.0010	0.0036	0.0326	0.0006
2.3077	0.0009	0.0037	0.0334	0.0007
2.3462	0.0009	0.0039	0.0342	0.0007
2.3846	0.0008	0.0040	0.0350	0.0007
2.4231	0.0007	0.0042	0.0358	0.0008
2.4615	0.0007	0.0043	0.0367	0.0008
2.5000	0.0006	0.0045	0.0375	0.0008
2.5000	0.0006	0.0045	0.0375	0.0008

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.009504	0.004462	0.0000	0.0294	0.0002
2.5385	0.009723	0.004832	0.0000	0.0294	0.0004
2.5769	0.009943	0.005210	0.0000	0.0316	0.0007
2.6154	0.010167	0.005597	0.0000	0.0331	0.0009
2.6538	0.010393	0.005992	0.0000	0.0347	0.0011
2.6923	0.010621	0.006396	0.0000	0.0362	0.0014
2.7308	0.010851	0.006809	0.0000	0.0379	0.0016
2.7692	0.011084	0.007231	0.0000	0.0395	0.0018
2.8077	0.011320	0.007662	0.0000	0.0413	0.0021

2.8462	0.0115580.008102	0.0000	0.0430	0.0023
2.8846	0.0117980.008551	0.0000	0.0448	0.0026
2.9231	0.0120410.009009	0.0000	0.0467	0.0028
2.9615	0.0122870.009477	0.0000	0.0486	0.0031
3.0000	0.0125340.009955	0.0000	0.0506	0.0033
3.0385	0.0127850.010441	0.0800	0.0526	0.0036
3.0769	0.0130370.010938	0.2257	0.0546	0.0038
3.1154	0.0132920.011444	0.4122	0.0567	0.0041
3.1538	0.0135500.011961	0.6273	0.0589	0.0043
3.1923	0.0138100.012487	0.8600	0.0611	0.0046
3.2308	0.0140720.013023	1.0991	0.0633	0.0049
3.2692	0.0143370.013569	1.3333	0.0656	0.0051
3.3077	0.0146050.014126	1.5516	0.0680	0.0054
3.3462	0.0148740.014693	1.7445	0.0704	0.0057
3.3846	0.0151470.015270	1.9054	0.0728	0.0060
3.4231	0.0154210.015858	2.0318	0.0754	0.0062
3.4615	0.0156980.016456	2.1274	0.0779	0.0065
3.5000	0.0159780.017066	2.2033	0.0806	0.0065

## Surface retention 2

Element Flows To:

Outlet 1

Outlet 2

Bioretention 2

### Bioretention 3

Bottom Length:	4.00 ft.
Bottom Width:	3.00 ft.
Material thickness of first layer:	1.5
Material type for first layer:	SMMWW 12 in/hr
Material thickness of second layer:	1
Material type for second layer:	GRAVEL
Material thickness of third layer:	0
Material type for third layer:	GRAVEL
Infiltration On	
Infiltration rate:	4
Infiltration safety factor:	0.25
Wetted surface area On	
Total Volume Infiltrated (ac-ft.):	3.628
Total Volume Through Riser (ac-ft.):	1.891
Total Volume Through Facility (ac-ft.):	60.275
Percent Infiltrated:	6.02
Total Precip Applied to Facility:	1.264
Total Evap From Facility:	0.214
Underdrain used	
Underdrain Diameter (feet):	0.5
Orifice Diameter (in.):	6
Offset (in.):	0
Flow Through Underdrain (ac-ft.):	54.756
Total Outflow (ac-ft.):	60.275
Percent Through Underdrain:	90.84
Discharge Structure	
Riser Height:	0.5 ft.
Riser Diameter:	12 in.
Element Flows To:	
Outlet 1	Outlet 2

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0079	0.0000	0.0000	0.0000
0.0385	0.0079	0.0000	0.0000	0.0000
0.0769	0.0077	0.0000	0.0000	0.0000
0.1154	0.0075	0.0000	0.0000	0.0000
0.1538	0.0073	0.0000	0.0000	0.0000
0.1923	0.0071	0.0000	0.0000	0.0000
0.2308	0.0069	0.0000	0.0000	0.0000
0.2692	0.0067	0.0001	0.0000	0.0000
0.3077	0.0065	0.0001	0.0000	0.0000
0.3462	0.0064	0.0001	0.0000	0.0000
0.3846	0.0062	0.0001	0.0001	0.0000
0.4231	0.0060	0.0001	0.0001	0.0000
0.4615	0.0058	0.0001	0.0001	0.0000
0.5000	0.0057	0.0001	0.0001	0.0000
0.5385	0.0055	0.0002	0.0002	0.0000
0.5769	0.0053	0.0002	0.0002	0.0000
0.6154	0.0052	0.0002	0.0003	0.0000
0.6538	0.0050	0.0002	0.0004	0.0000
0.6923	0.0049	0.0002	0.0004	0.0000
0.7308	0.0047	0.0003	0.0005	0.0000
0.7692	0.0046	0.0003	0.0006	0.0000

0.8077	0.0044	0.0003	0.0007	0.0000
0.8462	0.0043	0.0003	0.0009	0.0000
0.8846	0.0041	0.0004	0.0011	0.0000
0.9231	0.0040	0.0004	0.0013	0.0000
0.9615	0.0039	0.0004	0.0015	0.0000
1.0000	0.0037	0.0005	0.0016	0.0000
1.0385	0.0036	0.0005	0.0018	0.0000
1.0769	0.0035	0.0005	0.0021	0.0000
1.1154	0.0033	0.0006	0.0024	0.0000
1.1538	0.0032	0.0006	0.0028	0.0000
1.1923	0.0031	0.0007	0.0032	0.0000
1.2308	0.0029	0.0007	0.0037	0.0000
1.2692	0.0028	0.0008	0.0041	0.0000
1.3077	0.0027	0.0008	0.0043	0.0000
1.3462	0.0026	0.0009	0.0049	0.0000
1.3846	0.0025	0.0009	0.0055	0.0000
1.4231	0.0024	0.0010	0.0062	0.0001
1.4615	0.0023	0.0010	0.0069	0.0001
1.5000	0.0022	0.0011	0.0077	0.0001
1.5385	0.0021	0.0012	0.0086	0.0001
1.5769	0.0020	0.0012	0.0093	0.0001
1.6154	0.0019	0.0013	0.0099	0.0001
1.6538	0.0018	0.0014	0.0110	0.0001
1.6923	0.0017	0.0014	0.0121	0.0001
1.7308	0.0016	0.0015	0.0176	0.0002
1.7692	0.0015	0.0016	0.0182	0.0002
1.8077	0.0014	0.0016	0.0188	0.0002
1.8462	0.0013	0.0017	0.0194	0.0002
1.8846	0.0013	0.0018	0.0200	0.0002
1.9231	0.0012	0.0019	0.0207	0.0003
1.9615	0.0011	0.0020	0.0213	0.0003
2.0000	0.0010	0.0020	0.0219	0.0003
2.0385	0.0010	0.0021	0.0226	0.0003
2.0769	0.0009	0.0022	0.0232	0.0003
2.1154	0.0008	0.0023	0.0239	0.0003
2.1538	0.0008	0.0024	0.0246	0.0004
2.1923	0.0007	0.0025	0.0253	0.0004
2.2308	0.0007	0.0026	0.0260	0.0004
2.2692	0.0006	0.0027	0.0267	0.0004
2.3077	0.0005	0.0028	0.0274	0.0004
2.3462	0.0005	0.0029	0.0281	0.0005
2.3846	0.0004	0.0031	0.0288	0.0005
2.4231	0.0004	0.0032	0.0296	0.0005
2.4615	0.0004	0.0033	0.0303	0.0005
2.5000	0.0003	0.0034	0.0311	0.0006
2.5000	0.0003	0.0034	0.0311	0.0006

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.5000	0.007851	0.003420	0.0000	0.0243	0.0002
2.5385	0.008048	0.003726	0.0000	0.0243	0.0004
2.5769	0.008248	0.004039	0.0000	0.0262	0.0006
2.6154	0.008450	0.004360	0.0000	0.0275	0.0008
2.6538	0.008655	0.004689	0.0000	0.0289	0.0010
2.6923	0.008862	0.005026	0.0000	0.0302	0.0012
2.7308	0.009071	0.005371	0.0000	0.0317	0.0014
2.7692	0.009283	0.005724	0.0000	0.0331	0.0017
2.8077	0.009498	0.006085	0.0000	0.0346	0.0019

2.8462	0.0097140.006454	0.0000	0.0362	0.0021
2.8846	0.0099340.006832	0.0000	0.0378	0.0023
2.9231	0.0101550.007219	0.0000	0.0394	0.0025
2.9615	0.0103790.007613	0.0000	0.0411	0.0028
3.0000	0.0106060.008017	0.0000	0.0428	0.0030
3.0385	0.0108350.008429	0.0800	0.0445	0.0032
3.0769	0.0110670.008850	0.2257	0.0464	0.0035
3.1154	0.0113000.009281	0.4122	0.0482	0.0037
3.1538	0.0115370.009720	0.6273	0.0501	0.0040
3.1923	0.0117760.010168	0.8600	0.0521	0.0042
3.2308	0.0120170.010626	1.0991	0.0541	0.0044
3.2692	0.0122610.011093	1.3333	0.0561	0.0047
3.3077	0.0125070.011569	1.5516	0.0582	0.0049
3.3462	0.0127550.012055	1.7445	0.0604	0.0052
3.3846	0.0130060.012550	1.9054	0.0625	0.0055
3.4231	0.0132600.013055	2.0318	0.0648	0.0057
3.4615	0.0135160.013570	2.1274	0.0671	0.0060
3.5000	0.0137740.014095	2.2033	0.0694	0.0060

## Surface retention 3

Element Flows To:

Outlet 1

Outlet 2

Bioretention 3

## *Analysis Results*

### *POC 1*

POC #1 was not reported because POC must exist in both scenarios and both scenarios must have been run.



## *Model Default Modifications*

Total of 0 changes have been made.

### *PERLND Changes*

No PERLND changes have been made.

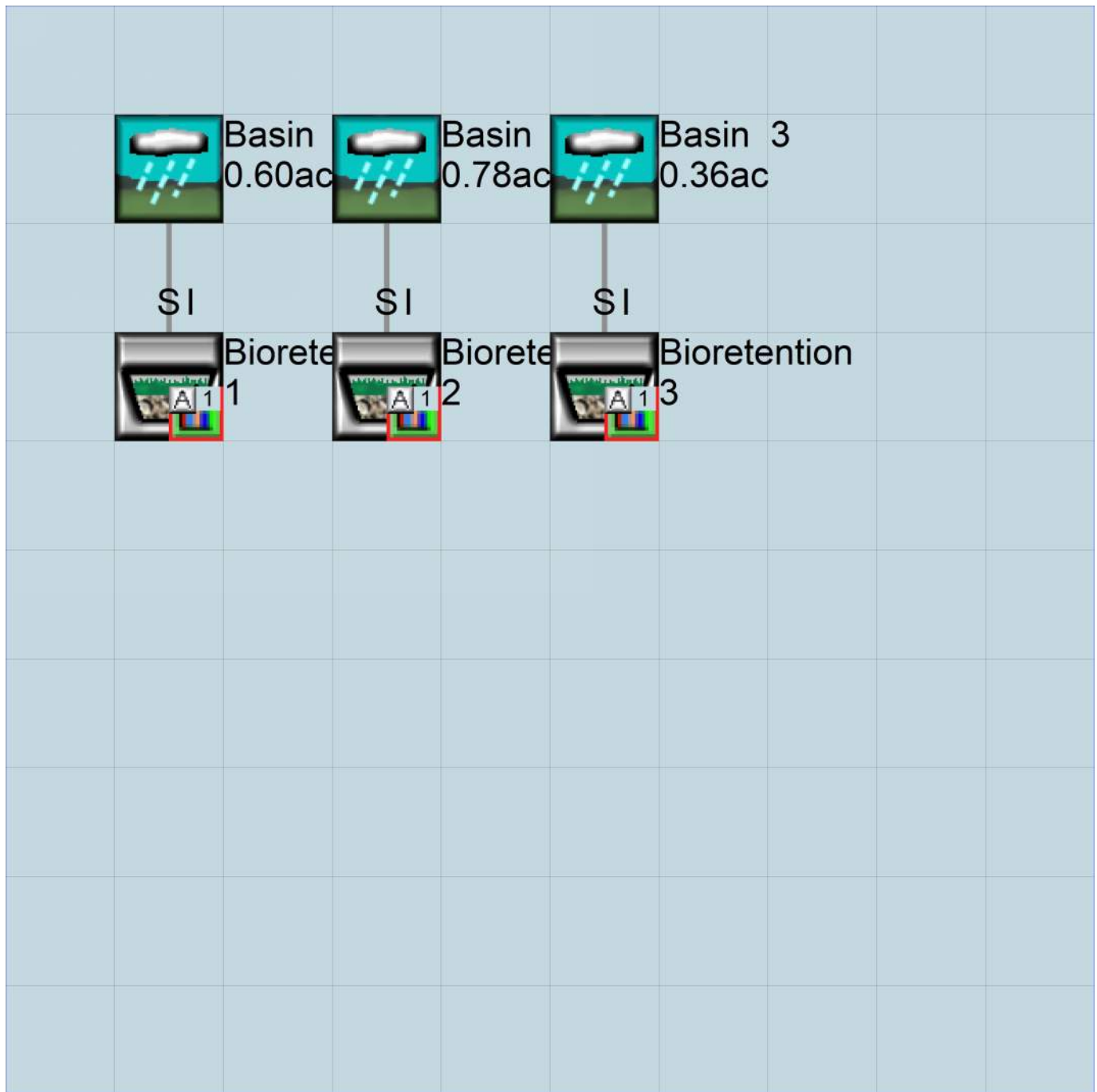
### *IMPLND Changes*

No IMPLND changes have been made.

*Appendix*  
*Predeveloped Schematic*



Mitigated Schematic



# Predeveloped UCI File

RUN

GLOBAL

```
WVHM4 model simulation
START      1948 10 01      END      2009 09 30
RUN INTERP OUTPUT LEVEL   3      0
RESUME     0 RUN         1
UNIT SYSTEM 1
```

END GLOBAL

FILES

```
<File> <Un#> <-----File Name----->***
<-ID->                                     ***
WDM      26      FDM-01 Rock Creek WVHM.wdm
MESSU    25      PreFDM-01 Rock Creek WVHM.MES
          27      PreFDM-01 Rock Creek WVHM.L61
          28      PreFDM-01 Rock Creek WVHM.L62
```

END FILES

OPN SEQUENCE

```
INGRP                INDELT 00:15
END INGRP
END OPN SEQUENCE
```

DISPLY

```
DISPLY-INFO1
# - #<-----Title----->***TRAN PIVL DIG1 FIL1 PYR DIG2 FIL2 YRND
END DISPLY-INFO1
```

END DISPLY

COPY

```
TIMESERIES
# - # NPT NMN ***
1   1   1
END TIMESERIES
```

END COPY

GENER

```
OPCODE
#   # OPCD ***
END OPCODE
PARM
#   #           K ***
END PARM
```

END GENER

PERLND

```
GEN-INFO
<PLS ><-----Name----->NBLKS Unit-systems Printer ***
# - #                               User t-series Engl Metr ***
                               in out ***
```

```
END GEN-INFO
*** Section PWATER***
```

ACTIVITY

```
<PLS > ***** Active Sections *****
# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC ***
END ACTIVITY
```

PRINT-INFO

```
<PLS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC *****
END PRINT-INFO
```

PWAT-PARM1

```
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG VCS VUZ VNN VIFW VIRC VLE INFC HWT ***
END PWAT-PARM1
```

PWAT-PARM2

```
<PLS > PWATER input info: Part 2 ***
# - # ***FOREST LZSN INFILT LSUR SLSUR KVARY AGWRC
END PWAT-PARM2
```

```

PWAT-PARM3
  <PLS >          PWATER input info: Part 3          ***
  # - # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
END PWAT-PARM3
PWAT-PARM4
  <PLS >          PWATER input info: Part 4          ***
  # - #          CEPSC    UZSN    NSUR    INTFW    IRC    LZETP ***
END PWAT-PARM4

PWAT-STATE1
  <PLS > *** Initial conditions at start of simulation
                ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
  # - # *** CEPS    SURS    UZS    IFWS    LZS    AGWS    GWVS
END PWAT-STATE1

END PERLND

IMPLND
GEN-INFO
  <PLS ><-----Name----->    Unit-systems    Printer ***
  # - #                          User t-series Engl Metr ***
                                in out          ***
END GEN-INFO
*** Section IWATER***

ACTIVITY
  <PLS > ***** Active Sections *****
  # - # ATMP SNOW IWAT SLD IWG IQAL ***
END ACTIVITY

PRINT-INFO
  <ILS > ***** Print-flags ***** PIVL PYR
  # - # ATMP SNOW IWAT SLD IWG IQAL *****
END PRINT-INFO

IWAT-PARM1
  <PLS > IWATER variable monthly parameter value flags ***
  # - # CSNO RTOP VRS VNN RTLI ***
END IWAT-PARM1

IWAT-PARM2
  <PLS >          IWATER input info: Part 2          ***
  # - # *** LSUR    SLSUR    NSUR    RETSC
END IWAT-PARM2

IWAT-PARM3
  <PLS >          IWATER input info: Part 3          ***
  # - # ***PETMAX    PETMIN
END IWAT-PARM3

IWAT-STATE1
  <PLS > *** Initial conditions at start of simulation
  # - # *** RETS    SURS
END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->          <--Area-->          <-Target->    MBLK    ***
<Name> #          <-factor->          <Name> #    Tbl#    ***

*****Routing*****
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> #          <Name> # #<-factor->strg <Name> # #          <Name> # # ***

```

```

<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor->strg <Name> # # <Name> # # ***
END NETWORK

```

```

RCHRES
GEN-INFO
RCHRES          Name          Nexits      Unit Systems      Printer          ***
# - #<-----><-----> User T-series   Engl Metr LKFG   ***
                               in out          ***
END GEN-INFO
*** Section RCHRES***

```

```

ACTIVITY
<PLS > ***** Active Sections *****
# - # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
END ACTIVITY

```

```

PRINT-INFO
<PLS > ***** Print-flags ***** PIVL PYR
# - # HYDR ADCA CONS HEAT SED GQL OXRX NUTR PLNK PHCB PIVL PYR *****
END PRINT-INFO

```

```

HYDR-PARM1
RCHRES          Flags for each HYDR Section          ***
# - # VC A1 A2 A3 ODFVFG for each *** ODGTFG for each     FUNCT for each
          FG FG FG FG possible exit *** possible exit     possible exit
          * * * * * * * * * * * * * * * * * * * * * * *
END HYDR-PARM1

```

```

HYDR-PARM2
# - # FTABNO          LEN          DELTH          STCOR          KS          DB50          ***
<-----><-----><-----><-----><-----><-----><-----> ***
END HYDR-PARM2

```

```

HYDR-INIT
RCHRES          Initial conditions for each HYDR section          ***
# - # *** VOL          Initial value of COLIND          Initial value of OUTDGT
          *** ac-ft          for each possible exit          for each possible exit
<-----><----->          <-----><-----><-----><-----> *** <-----><-----><-----><----->
END HYDR-INIT
END RCHRES

```

```

FTABLES
END FTABLES

```

```

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # tem strg<-factor->strg <Name> # # <Name> # # ***
WDM      2 PREC      ENGL      1.333      PERLND      1 999 EXTNL      PREC
WDM      2 PREC      ENGL      1.333      IMPLND      1 999 EXTNL      PREC
WDM      1 EVAP      ENGL      0.76       PERLND      1 999 EXTNL      PETINP
WDM      1 EVAP      ENGL      0.76       IMPLND      1 999 EXTNL      PETINP

```

```

END EXT SOURCES

```

```

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name> # <Name> # #<-factor->strg <Name> # <Name> tem strg strg***
END EXT TARGETS

```

```

MASS-LINK
<Volume> <-Grp> <-Member-><--Mult--> <Target> <-Grp> <-Member->***
<Name> <Name> # #<-factor-> <Name> <Name> # #***

```

```

END MASS-LINK

```

```

END RUN

```

# Mitigated UCI File

RUN

GLOBAL

```
WWM4 model simulation
START      1948 10 01      END      2009 09 30
RUN INTERP OUTPUT LEVEL   3      0
RESUME     0 RUN         1
UNIT SYSTEM                1
END GLOBAL
```

FILES

```
<File> <Un#> <-----File Name----->***
<-ID->                                     ***
WDM      26      FDM-01 Rock Creek WWHM.wdm
MESSU    25      MitFDM-01 Rock Creek WWHM.MES
          27      MitFDM-01 Rock Creek WWHM.L61
          28      MitFDM-01 Rock Creek WWHM.L62
          30      POCFDM-01 Rock Creek WWHM1.dat
```

END FILES

OPN SEQUENCE

INGRP INDELT 00:15

```
PERLND      7
IMPLND      8
IMPLND     11
IMPLND      4
GENER       2
RCHRES      1
RCHRES      2
GENER       4
RCHRES      3
RCHRES      4
GENER       6
RCHRES      5
RCHRES      6
COPY        1
COPY       501
DISPLY      1
```

END INGRP

END OPN SEQUENCE

DISPLY

DISPLY-INFO1

```
# - #<-----Title----->***TRAN PIVL DIG1 FIL1 PYR DIG2 FIL2 YRND
1      Surface retention 1      MAX      1      2      30      9
```

END DISPLY-INFO1

END DISPLY

COPY

TIMESERIES

```
# - # NPT NMN ***
1      1      1
501    1      1
```

END TIMESERIES

END COPY

GENER

OPCODE

```
#      # OPCODE ***
2      24
4      24
6      24
```

END OPCODE

PARM

```
#      #      K ***
2      0.
4      0.
6      0.
```

END PARM

END GENER

PERLND

GEN-INFO

```

<PLS ><-----Name----->NBLKS    Unit-systems    Printer ***
# - #                               User  t-series  Engr Metr ***
                               in  out      ***
7      A/B, Lawn, Flat            1    1    1    1    27    0
END GEN-INFO
*** Section PWATER***

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW PWAT  SED  PST  PWG  PQAL MSTL  PEST  NITR  PHOS  TRAC  ***
7      0    0    1    0    0    0    0    0    0    0    0    0
END ACTIVITY

PRINT-INFO
<PLS > ***** Print-flags ***** PIVL  PYR
# - # ATMP SNOW PWAT  SED  PST  PWG  PQAL MSTL  PEST  NITR  PHOS  TRAC  *****
7      0    0    4    0    0    0    0    0    0    0    0    0    1    9
END PRINT-INFO

PWAT-PARM1
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG  VCS  VUZ  VNN  VIFW  VIRC  VLE  INFC  HWT  ***
7      0    0    0    0    0    0    0    0    0    0    0
END PWAT-PARM1

PWAT-PARM2
<PLS > PWATER input info: Part 2          ***
# - # ***FOREST  LZSN  INFILT  LSUR  SLSUR  KVARY  AGWRC
7      0          5    0.8    400    0.05    0.3    0.996
END PWAT-PARM2

PWAT-PARM3
<PLS > PWATER input info: Part 3          ***
# - # ***PETMAX  PETMIN  INFEXP  INFILD  DEEPFR  BASETP  AGWETP
7      0          0    2    2    0    0    0
END PWAT-PARM3

PWAT-PARM4
<PLS > PWATER input info: Part 4          ***
# - # CEPSC  UZSN  NSUR  INTFW  IRC  LZETP ***
7      0.1    0.5    0.25  0    0.7    0.25
END PWAT-PARM4

PWAT-STATE1
<PLS > *** Initial conditions at start of simulation
ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
# - # *** CEPS  SURS  UZS  IFWS  LZS  AGWS  GWVS
7      0    0    0    0    3    1    0
END PWAT-STATE1

END PERLND

IMPLND
GEN-INFO
<PLS ><-----Name----->    Unit-systems    Printer ***
# - #                               User  t-series  Engr Metr ***
                               in  out      ***
8      SIDEWALKS/FLAT            1    1    1    27    0
11     PARKING/FLAT              1    1    1    27    0
4      ROOF TOPS/FLAT            1    1    1    27    0
END GEN-INFO
*** Section IWATER***

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT  SLD  IWG  IQAL  ***
8      0    0    1    0    0    0
11     0    0    1    0    0    0
4      0    0    1    0    0    0
END ACTIVITY

```



```

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL  PYR
# - # ATMP SNOW IWAT  SLD  IWG IQAL  *****
8      0      0      4      0      0      0      1      9
11     0      0      4      0      0      0      1      9
4      0      0      4      0      0      0      1      9
END PRINT-INFO

```

```

IWAT-PARM1
<PLS > IWATER variable monthly parameter value flags ***
# - # CSNO RTOP  VRS  VNN RTLI  ***
8      0      0      0      0      0
11     0      0      0      0      0
4      0      0      0      0      0
END IWAT-PARM1

```

```

IWAT-PARM2
<PLS > IWATER input info: Part 2          ***
# - # ***  LSUR  SLSUR  NSUR  RETSC
8      400  0.01  0.1  0.1
11     400  0.01  0.1  0.1
4      400  0.01  0.1  0.1
END IWAT-PARM2

```

```

IWAT-PARM3
<PLS > IWATER input info: Part 3          ***
# - # ***PETMAX  PETMIN
8      0      0
11     0      0
4      0      0
END IWAT-PARM3

```

```

IWAT-STATE1
<PLS > *** Initial conditions at start of simulation
# - # ***  RETS  SURS
8      0      0
11     0      0
4      0      0
END IWAT-STATE1

```

END IMPLND

```

SCHEMATIC
<-Source->          <--Area-->          <-Target->          MBLK          ***
<Name> #           <-factor-->          <Name> #           Tbl#          ***
Basin A***
PERLND 7           0.11           RCHRES 1           2
PERLND 7           0.11           RCHRES 1           3
IMPLND 8           0.1            RCHRES 1           5
IMPLND 11          0.39           RCHRES 1           5
Basin B***
PERLND 7           0.32           RCHRES 3           2
PERLND 7           0.32           RCHRES 3           3
IMPLND 8           0.13           RCHRES 3           5
IMPLND 11          0.33           RCHRES 3           5
Basin 3***
PERLND 7           0.08           RCHRES 5           2
PERLND 7           0.08           RCHRES 5           3
IMPLND 4           0.2            RCHRES 5           5
IMPLND 8           0.02           RCHRES 5           5
IMPLND 11          0.06           RCHRES 5           5

*****Routing*****
PERLND 7           0.11           COPY    1           12
IMPLND 8           0.1            COPY    1           15
IMPLND 11          0.39           COPY    1           15
PERLND 7           0.11           COPY    1           13
RCHRES 1           1            RCHRES 2           8
RCHRES 3           1            RCHRES 4           8
RCHRES 3           1            COPY    1           18

```

```

RCHRES 5 1 RCHRES 6 8
RCHRES 5 COPY 1 18
RCHRES 2 1 COPY 501 17
RCHRES 1 1 COPY 501 17
RCHRES 4 1 COPY 501 17
RCHRES 6 1 COPY 501 17
END SCHEMATIC

```

```

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor->strg <Name> # # <Name> # # ***
COPY 501 OUTPUT MEAN 1 1 48.4 DISPLY 1 INPUT TIMSER 1
GENER 2 OUTPUT TIMSER .0011111 RCHRES 1 EXTNL OUTDGT 1
GENER 4 OUTPUT TIMSER .0011111 RCHRES 3 EXTNL OUTDGT 1
GENER 6 OUTPUT TIMSER .0011111 RCHRES 5 EXTNL OUTDGT 1

```

```

<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor->strg <Name> # # <Name> # # ***
END NETWORK

```

```

RCHRES
GEN-INFO
RCHRES Name Nexits Unit Systems Printer ***
# - #<-----><----> User T-series Engl Metr LKFG ***
in out ***
1 Surface retentio-007 3 1 1 1 28 0 1
2 Bioretention 1 2 1 1 1 28 0 1
3 Surface retentio-011 3 1 1 1 28 0 1
4 Bioretention 2 2 1 1 1 28 0 1
5 Surface retentio-015 3 1 1 1 28 0 1
6 Bioretention 3 2 1 1 1 28 0 1
END GEN-INFO
*** Section RCHRES***

```

```

ACTIVITY
<PLS > ***** Active Sections *****
# - # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
1 1 0 0 0 0 0 0 0 0 0 0
2 1 0 0 0 0 0 0 0 0 0 0
3 1 0 0 0 0 0 0 0 0 0 0
4 1 0 0 0 0 0 0 0 0 0 0
5 1 0 0 0 0 0 0 0 0 0 0
6 1 0 0 0 0 0 0 0 0 0 0
END ACTIVITY

```

```

PRINT-INFO
<PLS > ***** Print-flags ***** PIVL PYR *****
# - # HYDR ADCA CONS HEAT SED GQL OXRX NUTR PLNK PHCB PIVL PYR *****
1 4 0 0 0 0 0 0 0 0 0 0 1 9
2 4 0 0 0 0 0 0 0 0 0 0 1 9
3 4 0 0 0 0 0 0 0 0 0 0 1 9
4 4 0 0 0 0 0 0 0 0 0 0 1 9
5 4 0 0 0 0 0 0 0 0 0 0 1 9
6 4 0 0 0 0 0 0 0 0 0 0 1 9
END PRINT-INFO

```

```

HYDR-PARM1
RCHRES Flags for each HYDR Section ***
# - # VC A1 A2 A3 ODFVFG for each *** ODGTFG for each FUNCT for each ***
FG FG FG FG possible exit *** possible exit possible exit
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
1 0 1 0 0 4 5 6 0 0 0 0 1 0 0 0 2 1 2 2 2
2 0 1 0 0 4 5 0 0 0 0 0 0 0 0 0 2 2 2 2 2
3 0 1 0 0 4 5 6 0 0 0 0 1 0 0 0 2 1 2 2 2
4 0 1 0 0 4 5 0 0 0 0 0 0 0 0 0 2 2 2 2 2
5 0 1 0 0 4 5 6 0 0 0 0 1 0 0 0 2 1 2 2 2
6 0 1 0 0 4 5 0 0 0 0 0 0 0 0 0 2 2 2 2 2
END HYDR-PARM1

```

```

HYDR-PARM2
# - # FTABNO LEN DELTH STCOR KS DB50 ***
<-----><-----><-----><-----><-----><-----><----->
1 1 0.01 0.0 0.0 0.0 0.0
2 2 0.01 0.0 0.0 0.0 0.0
3 3 0.01 0.0 0.0 0.0 0.0
4 4 0.01 0.0 0.0 0.0 0.0
5 5 0.01 0.0 0.0 0.0 0.0
6 6 0.01 0.0 0.0 0.0 0.0

```

```

END HYDR-PARM2
HYDR-INIT

```

```

RCHRES Initial conditions for each HYDR section ***
# - # *** VOL Initial value of COLIND Initial value of OUTDGT
*** ac-ft for each possible exit for each possible exit
<-----><-----> <-----><-----><-----><-----> *** <-----><-----><-----><-----><----->
1 0 4.0 5.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
2 0 4.0 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
3 0 4.0 5.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
4 0 4.0 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
5 0 4.0 5.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
6 0 4.0 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

```

```

END HYDR-INIT
END RCHRES

```

SPEC-ACTIONS

```

*** User-Defined Variable Quantity Lines
*** addr
*** <----->
*** kwd varnam optyp opn vari s1 s2 s3 tp multiply lc ls ac as agfn ***
<****> <-----> <-----> <-> <-----><-><-><-><-><-----> <><-> <><-> <-> ***
UVQUAN vol2 RCHRES 2 VOL 4
UVQUAN v2m2 GLOBAL WORKSP 1 3
UVQUAN vpo2 GLOBAL WORKSP 2 3
UVQUAN v2d2 GENER 2 K 1 3

```

```

*** User-Defined Variable Quantity Lines
*** addr
*** <----->
*** kwd varnam optyp opn vari s1 s2 s3 tp multiply lc ls ac as agfn ***
<****> <-----> <-----> <-> <-----><-><-><-><-><-----> <><-> <><-> <-> ***
UVQUAN vol4 RCHRES 4 VOL 4
UVQUAN v2m4 GLOBAL WORKSP 3 3
UVQUAN vpo4 GLOBAL WORKSP 4 3
UVQUAN v2d4 GENER 4 K 1 3

```

```

*** User-Defined Variable Quantity Lines
*** addr
*** <----->
*** kwd varnam optyp opn vari s1 s2 s3 tp multiply lc ls ac as agfn ***
<****> <-----> <-----> <-> <-----><-><-><-><-><-----> <><-> <><-> <-> ***
UVQUAN vol6 RCHRES 6 VOL 4
UVQUAN v2m6 GLOBAL WORKSP 5 3
UVQUAN vpo6 GLOBAL WORKSP 6 3
UVQUAN v2d6 GENER 6 K 1 3

```

```

*** User-Defined Target Variable Names
*** addr or addr or
*** <-----> <----->
*** kwd varnam ct vari s1 s2 s3 frac oper vari s1 s2 s3 frac oper
<****> <-----><-> <-----><-><-><-> <-----> <-> <-----><-><-><-> <-----> <->
UVNAME v2m2 1 WORKSP 1 1.0 QUAN
UVNAME vpo2 1 WORKSP 2 1.0 QUAN
UVNAME v2d2 1 K 1 1.0 QUAN

```

```

*** User-Defined Target Variable Names
*** addr or addr or
*** <-----> <----->
*** kwd varnam ct vari s1 s2 s3 frac oper vari s1 s2 s3 frac oper
<****> <-----><-> <-----><-><-><-> <-----> <-> <-----><-><-><-> <-----> <->
UVNAME v2m4 1 WORKSP 3 1.0 QUAN
UVNAME vpo4 1 WORKSP 4 1.0 QUAN
UVNAME v2d4 1 K 1 1.0 QUAN

```

```

*** User-Defined Target Variable Names

```

```

***          addr or          addr or
***          <----->          <----->
*** kwd   varnam ct   vari  s1 s2 s3   frac oper   vari  s1 s2 s3   frac oper
<****> <-----><-> <-----><-><-><-> <-----> <-> <-----><-><-><-> <-----> <->
UVNAME   v2m6     1 WORKSP  5             1.0 QUAN   v2m6     1 WORKSP  5             1.0 QUAN
UVNAME   vpo6     1 WORKSP  6             1.0 QUAN   vpo6     1 WORKSP  6             1.0 QUAN
UVNAME   v2d6     1 K      1             1.0 QUAN   v2d6     1 K      1             1.0 QUAN
*** opt foplop dcdts yr mo dy hr mn d t   vnam  s1 s2 s3 ac quantity tc ts rp
<****><-><-----><-><-><-> <> <> <> <><><> <-----><-><-><-><-><-----> <> <-><->
GENER    2                               v2m2                = 228.87
*** Compute remaining available pore space
GENER    2                               vpo2                = v2m2
GENER    2                               vpo2                -= vol2
*** Check to see if VPORA goes negative; if so set VPORA = 0.0
IF (vpo2 < 0.0) THEN
GENER    2                               vpo2                = 0.0
END IF
*** Infiltration volume
GENER    2                               v2d2                = vpo2
*** opt foplop dcdts yr mo dy hr mn d t   vnam  s1 s2 s3 ac quantity tc ts rp
<****><-><-----><-><-><-> <> <> <> <><><> <-----><-><-><-><-><-----> <> <-><->
GENER    4                               v2m4                = 228.87
*** Compute remaining available pore space
GENER    4                               vpo4                = v2m4
GENER    4                               vpo4                -= vol4
*** Check to see if VPORA goes negative; if so set VPORA = 0.0
IF (vpo4 < 0.0) THEN
GENER    4                               vpo4                = 0.0
END IF
*** Infiltration volume
GENER    4                               v2d4                = vpo4
*** opt foplop dcdts yr mo dy hr mn d t   vnam  s1 s2 s3 ac quantity tc ts rp
<****><-><-----><-><-><-> <> <> <> <><><> <-----><-><-><-><-><-----> <> <-><->
GENER    6                               v2m6                = 177.47
*** Compute remaining available pore space
GENER    6                               vpo6                = v2m6
GENER    6                               vpo6                -= vol6
*** Check to see if VPORA goes negative; if so set VPORA = 0.0
IF (vpo6 < 0.0) THEN
GENER    6                               vpo6                = 0.0
END IF
*** Infiltration volume
GENER    6                               v2d6                = vpo6
END SPEC-ACTIONS
FTABLES
FTABLE    2
67      5
      Depth      Area      Volume      Outflow1      Outflow2      Velocity      Travel Time***
      (ft)      (acres)      (acre-ft)      (cfs)      (cfs)      (ft/sec)      (Minutes)***
0.000000  0.009504  0.000000  0.000000  0.000000
0.038462  0.009504  0.000010  0.000000  0.000000
0.076923  0.009288  0.000021  0.000000  0.000000
0.115385  0.009075  0.000034  0.000000  0.000000
0.153846  0.008864  0.000047  0.000000  0.000000
0.192308  0.008655  0.000062  0.000000  0.000000
0.230769  0.008449  0.000078  0.000017  0.000000
0.269231  0.008245  0.000095  0.000028  0.000000
0.307692  0.008044  0.000114  0.000043  0.000000
0.346154  0.007845  0.000134  0.000063  0.000000
0.384615  0.007648  0.000155  0.000090  0.000001
0.423077  0.007454  0.000178  0.000125  0.000001
0.461538  0.007263  0.000203  0.000168  0.000001
0.500000  0.007074  0.000228  0.000221  0.000002
0.538462  0.006887  0.000256  0.000286  0.000003
0.576923  0.006703  0.000285  0.000364  0.000003
0.615385  0.006521  0.000316  0.000457  0.000005
0.653846  0.006342  0.000348  0.000567  0.000006
0.692308  0.006165  0.000382  0.000635  0.000006
0.730769  0.005991  0.000418  0.000733  0.000006
0.769231  0.005819  0.000456  0.000890  0.000007

```

0.807692	0.005649	0.000496	0.001069	0.000009
0.846154	0.005482	0.000538	0.001275	0.000012
0.884615	0.005317	0.000581	0.001509	0.000015
0.923077	0.005155	0.000627	0.001773	0.000018
0.961538	0.004995	0.000675	0.002071	0.000022
1.000000	0.004838	0.000724	0.002200	0.000022
1.038462	0.004683	0.000776	0.002513	0.000023
1.076923	0.004531	0.000831	0.002900	0.000028
1.115385	0.004381	0.000887	0.003332	0.000033
1.153846	0.004233	0.000946	0.003810	0.000040
1.192308	0.004088	0.001007	0.004338	0.000047
1.230769	0.003946	0.001070	0.004919	0.000055
1.269231	0.003805	0.001136	0.005507	0.000055
1.307692	0.003668	0.001204	0.005769	0.000060
1.346154	0.003532	0.001274	0.006491	0.000070
1.384615	0.003400	0.001348	0.007279	0.000081
1.423077	0.003269	0.001423	0.008137	0.000094
1.461538	0.003141	0.001502	0.009069	0.000108
1.500000	0.003016	0.001575	0.010079	0.000124
1.538462	0.002893	0.001651	0.011171	0.000142
1.576923	0.002772	0.001730	0.012028	0.000142
1.615385	0.002654	0.001811	0.012757	0.000155
1.653846	0.002538	0.001894	0.014059	0.000176
1.692308	0.002425	0.001980	0.015451	0.000199
1.730769	0.002314	0.002069	0.022486	0.000298
1.769231	0.002205	0.002161	0.023152	0.000316
1.807692	0.002100	0.002255	0.023826	0.000335
1.846154	0.001996	0.002352	0.024510	0.000355
1.884615	0.001895	0.002452	0.025203	0.000376
1.923077	0.001796	0.002555	0.025905	0.000397
1.961538	0.001700	0.002660	0.026616	0.000419
2.000000	0.001606	0.002769	0.027335	0.000442
2.038462	0.001515	0.002880	0.028064	0.000466
2.076923	0.001426	0.002994	0.028802	0.000491
2.115385	0.001340	0.003112	0.029548	0.000518
2.153846	0.001256	0.003232	0.030304	0.000545
2.192308	0.001174	0.003356	0.031068	0.000573
2.230769	0.001095	0.003483	0.031841	0.000602
2.269231	0.001019	0.003613	0.032622	0.000632
2.307692	0.000945	0.003746	0.033413	0.000663
2.346154	0.000873	0.003883	0.034212	0.000696
2.384615	0.000804	0.004022	0.035020	0.000729
2.423077	0.000737	0.004166	0.035837	0.000764
2.461538	0.000672	0.004312	0.036662	0.000800
2.500000	0.000610	0.004462	0.037496	0.000837
2.500000	0.000551	0.005254	0.037496	0.000837

END FTABLE 2  
 FTABLE 1  
 27 6

Time*** (Minutes)***	Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Outflow3 (cfs)	Velocity (ft/sec)	Travel
0.000000	0.000551	0.000000	0.000000	0.000000	0.000000	0.000220		
0.038462	0.009723	0.000370	0.000000	0.000000	0.029411	0.000220		
0.076923	0.009943	0.000748	0.000000	0.000000	0.031621	0.000443		
0.115385	0.010167	0.001135	0.000000	0.000000	0.033120	0.000668		
0.153846	0.010393	0.001530	0.000000	0.000000	0.034662	0.000896		
0.192308	0.010621	0.001934	0.000000	0.000000	0.036247	0.001126		
0.230769	0.010851	0.002347	0.000000	0.000000	0.037876	0.001358		
0.269231	0.011084	0.002769	0.000000	0.000000	0.039549	0.001594		
0.307692	0.011320	0.003200	0.000000	0.000000	0.041267	0.001831		
0.346154	0.011558	0.003640	0.000000	0.000000	0.043031	0.002071		
0.384615	0.011798	0.004089	0.000000	0.000000	0.044842	0.002313		
0.423077	0.012041	0.004547	0.000000	0.000000	0.046699	0.002558		
0.461538	0.012287	0.005015	0.000000	0.000000	0.048603	0.002806		
0.500000	0.012534	0.005493	0.000000	0.000000	0.050556	0.003056		
0.538462	0.012785	0.005979	0.0079976	0.079976	0.052556	0.003308		
0.576923	0.013037	0.006476	0.225672	0.054606	0.054606	0.003563		
0.615385	0.013292	0.006982	0.412175	0.056706	0.056706	0.003820		

0.653846	0.013550	0.007499	0.627270	0.058856	0.004080
0.692308	0.013810	0.008025	0.859995	0.061056	0.004342
0.730769	0.014072	0.008561	1.099144	0.063308	0.004606
0.769231	0.014337	0.009107	1.333311	0.065612	0.004873
0.807692	0.014605	0.009664	1.551565	0.067968	0.005143
0.846154	0.014874	0.010231	1.744468	0.070377	0.005415
0.884615	0.015147	0.010808	1.905359	0.072840	0.005690
0.923077	0.015421	0.011396	2.031838	0.075357	0.005966
0.961538	0.015698	0.011994	2.127417	0.077929	0.006246
1.000000	0.015978	0.012604	2.203335	0.080556	0.006528

END FTABLE 1  
 FTABLE 4  
 67 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.009504	0.000000	0.000000	0.000000		
0.038462	0.009504	0.000010	0.000000	0.000000		
0.076923	0.009288	0.000021	0.000000	0.000000		
0.115385	0.009075	0.000034	0.000000	0.000000		
0.153846	0.008864	0.000047	0.000000	0.000000		
0.192308	0.008655	0.000062	0.000000	0.000000		
0.230769	0.008449	0.000078	0.000017	0.000000		
0.269231	0.008245	0.000095	0.000028	0.000000		
0.307692	0.008044	0.000114	0.000043	0.000000		
0.346154	0.007845	0.000134	0.000063	0.000000		
0.384615	0.007648	0.000155	0.000090	0.000001		
0.423077	0.007454	0.000178	0.000125	0.000001		
0.461538	0.007263	0.000203	0.000168	0.000001		
0.500000	0.007074	0.000228	0.000221	0.000002		
0.538462	0.006887	0.000256	0.000286	0.000003		
0.576923	0.006703	0.000285	0.000364	0.000003		
0.615385	0.006521	0.000316	0.000457	0.000005		
0.653846	0.006342	0.000348	0.000567	0.000006		
0.692308	0.006165	0.000382	0.000635	0.000006		
0.730769	0.005991	0.000418	0.000733	0.000006		
0.769231	0.005819	0.000456	0.000890	0.000007		
0.807692	0.005649	0.000496	0.001069	0.000009		
0.846154	0.005482	0.000538	0.001275	0.000012		
0.884615	0.005317	0.000581	0.001509	0.000015		
0.923077	0.005155	0.000627	0.001773	0.000018		
0.961538	0.004995	0.000675	0.002071	0.000022		
1.000000	0.004838	0.000724	0.002200	0.000022		
1.038462	0.004683	0.000776	0.002513	0.000023		
1.076923	0.004531	0.000831	0.002900	0.000028		
1.115385	0.004381	0.000887	0.003332	0.000033		
1.153846	0.004233	0.000946	0.003810	0.000040		
1.192308	0.004088	0.001007	0.004338	0.000047		
1.230769	0.003946	0.001070	0.004919	0.000055		
1.269231	0.003805	0.001136	0.005507	0.000055		
1.307692	0.003668	0.001204	0.005769	0.000060		
1.346154	0.003532	0.001274	0.006491	0.000070		
1.384615	0.003400	0.001348	0.007279	0.000081		
1.423077	0.003269	0.001423	0.008137	0.000094		
1.461538	0.003141	0.001502	0.009069	0.000108		
1.500000	0.003016	0.001575	0.010079	0.000124		
1.538462	0.002893	0.001651	0.011171	0.000142		
1.576923	0.002772	0.001730	0.012028	0.000142		
1.615385	0.002654	0.001811	0.012757	0.000155		
1.653846	0.002538	0.001894	0.014059	0.000176		
1.692308	0.002425	0.001980	0.015451	0.000199		
1.730769	0.002314	0.002069	0.022486	0.000298		
1.769231	0.002205	0.002161	0.023152	0.000316		
1.807692	0.002100	0.002255	0.023826	0.000335		
1.846154	0.001996	0.002352	0.024510	0.000355		
1.884615	0.001895	0.002452	0.025203	0.000376		
1.923077	0.001796	0.002555	0.025905	0.000397		
1.961538	0.001700	0.002660	0.026616	0.000419		
2.000000	0.001606	0.002769	0.027335	0.000442		
2.038462	0.001515	0.002880	0.028064	0.000466		
2.076923	0.001426	0.002994	0.028802	0.000491		

2.115385 0.001340 0.003112 0.029548 0.000518  
 2.153846 0.001256 0.003232 0.030304 0.000545  
 2.192308 0.001174 0.003356 0.031068 0.000573  
 2.230769 0.001095 0.003483 0.031841 0.000602  
 2.269231 0.001019 0.003613 0.032622 0.000632  
 2.307692 0.000945 0.003746 0.033413 0.000663  
 2.346154 0.000873 0.003883 0.034212 0.000696  
 2.384615 0.000804 0.004022 0.035020 0.000729  
 2.423077 0.000737 0.004166 0.035837 0.000764  
 2.461538 0.000672 0.004312 0.036662 0.000800  
 2.500000 0.000610 0.004462 0.037496 0.000837  
 2.500000 0.000551 0.005254 0.037496 0.000837

END FTABLE 4  
 FTABLE 3  
 27 6

Time*** (Minutes)***	Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Outflow3 (cfs)	Velocity (ft/sec)	Travel
0.000000	0.000551	0.000000	0.000000	0.000000	0.000000	0.000220		
0.038462	0.009723	0.000370	0.000000	0.000000	0.029411	0.000220		
0.076923	0.009943	0.000748	0.000000	0.000000	0.031621	0.000443		
0.115385	0.010167	0.001135	0.000000	0.000000	0.033120	0.000668		
0.153846	0.010393	0.001530	0.000000	0.000000	0.034662	0.000896		
0.192308	0.010621	0.001934	0.000000	0.000000	0.036247	0.001126		
0.230769	0.010851	0.002347	0.000000	0.000000	0.037876	0.001358		
0.269231	0.011084	0.002769	0.000000	0.000000	0.039549	0.001594		
0.307692	0.011320	0.003200	0.000000	0.000000	0.041267	0.001831		
0.346154	0.011558	0.003640	0.000000	0.000000	0.043031	0.002071		
0.384615	0.011798	0.004089	0.000000	0.000000	0.044842	0.002313		
0.423077	0.012041	0.004547	0.000000	0.000000	0.046699	0.002558		
0.461538	0.012287	0.005015	0.000000	0.000000	0.048603	0.002806		
0.500000	0.012534	0.005493	0.000000	0.000000	0.050556	0.003056		
0.538462	0.012785	0.005979	0.0079976	0.052556	0.003308			
0.576923	0.013037	0.006476	0.225672	0.054606	0.003563			
0.615385	0.013292	0.006982	0.412175	0.056706	0.003820			
0.653846	0.013550	0.007499	0.627270	0.058856	0.004080			
0.692308	0.013810	0.008025	0.859995	0.061056	0.004342			
0.730769	0.014072	0.008561	1.099144	0.063308	0.004606			
0.769231	0.014337	0.009107	1.333311	0.065612	0.004873			
0.807692	0.014605	0.009664	1.551565	0.067968	0.005143			
0.846154	0.014874	0.010231	1.744468	0.070377	0.005415			
0.884615	0.015147	0.010808	1.905359	0.072840	0.005690			
0.923077	0.015421	0.011396	2.031838	0.075357	0.005966			
0.961538	0.015698	0.011994	2.127417	0.077929	0.006246			
1.000000	0.015978	0.012604	2.203335	0.080556	0.006528			

END FTABLE 3  
 FTABLE 6  
 67 5

Time*** (Minutes)***	Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.007851	0.000000	0.000000	0.000000	0.000000		
0.038462	0.007851	0.000005	0.000000	0.000000	0.000000		
0.076923	0.007656	0.000011	0.000000	0.000000	0.000000		
0.115385	0.007464	0.000018	0.000000	0.000000	0.000000		
0.153846	0.007274	0.000025	0.000000	0.000000	0.000000		
0.192308	0.007087	0.000033	0.000000	0.000000	0.000000		
0.230769	0.006902	0.000042	0.000010	0.000000	0.000000		
0.269231	0.006719	0.000052	0.000016	0.000000	0.000000		
0.307692	0.006539	0.000063	0.000026	0.000000	0.000000		
0.346154	0.006361	0.000075	0.000038	0.000000	0.000000		
0.384615	0.006186	0.000088	0.000055	0.000000	0.000000		
0.423077	0.006013	0.000102	0.000078	0.000000	0.000000		
0.461538	0.005843	0.000118	0.000106	0.000001	0.000001		
0.500000	0.005675	0.000134	0.000141	0.000001	0.000001		
0.538462	0.005510	0.000151	0.000185	0.000001	0.000001		
0.576923	0.005347	0.000170	0.000238	0.000001	0.000001		
0.615385	0.005186	0.000190	0.000302	0.000002	0.000002		
0.653846	0.005028	0.000212	0.000378	0.000003	0.000003		
0.692308	0.004872	0.000235	0.000427	0.000003	0.000003		

```

0.730769 0.004719 0.000259 0.000498 0.000003
0.769231 0.004568 0.000285 0.000609 0.000003
0.807692 0.004420 0.000312 0.000738 0.000004
0.846154 0.004274 0.000341 0.000887 0.000006
0.884615 0.004131 0.000371 0.001058 0.000007
0.923077 0.003990 0.000403 0.001253 0.000009
0.961538 0.003851 0.000437 0.001474 0.000011
1.000000 0.003715 0.000473 0.001576 0.000011
1.038462 0.003581 0.000510 0.001811 0.000012
1.076923 0.003450 0.000549 0.002104 0.000015
1.115385 0.003321 0.000590 0.002431 0.000018
1.153846 0.003195 0.000633 0.002796 0.000021
1.192308 0.003071 0.000677 0.003202 0.000025
1.230769 0.002950 0.000724 0.003651 0.000030
1.269231 0.002831 0.000773 0.004107 0.000031
1.307692 0.002714 0.000824 0.004324 0.000034
1.346154 0.002600 0.000877 0.004889 0.000040
1.384615 0.002488 0.000932 0.005508 0.000046
1.423077 0.002379 0.000989 0.006186 0.000054
1.461538 0.002272 0.001048 0.006925 0.000063
1.500000 0.002168 0.001105 0.007730 0.000073
1.538462 0.002066 0.001163 0.008603 0.000084
1.576923 0.001967 0.001223 0.009298 0.000084
1.615385 0.001870 0.001286 0.009900 0.000093
1.653846 0.001775 0.001351 0.010952 0.000106
1.692308 0.001683 0.001418 0.012080 0.000121
1.730769 0.001593 0.001487 0.012644 0.000133
1.769231 0.001506 0.001559 0.013230 0.000146
1.807692 0.001421 0.001633 0.013825 0.000160
1.846154 0.001339 0.001709 0.014429 0.000174
1.884615 0.001259 0.001788 0.015043 0.000188
1.923077 0.001182 0.001870 0.015665 0.000202
1.961538 0.001107 0.001954 0.016297 0.000216
2.000000 0.001034 0.002041 0.016938 0.000230
2.038462 0.000964 0.002130 0.017588 0.000244
2.076923 0.000897 0.002222 0.018248 0.000258
2.115385 0.000831 0.002316 0.018916 0.000272
2.153846 0.000769 0.002414 0.019593 0.000286
2.192308 0.000708 0.002514 0.020280 0.000300
2.230769 0.000650 0.002617 0.020975 0.000314
2.269231 0.000595 0.002723 0.021679 0.000328
2.307692 0.000542 0.002831 0.022393 0.000342
2.346154 0.000491 0.002943 0.023115 0.000356
2.384615 0.000443 0.003058 0.023846 0.000370
2.423077 0.000398 0.003175 0.024586 0.000384
2.461538 0.000355 0.003296 0.025335 0.000398
2.500000 0.000314 0.003420 0.026093 0.000412
2.500000 0.000275 0.004074 0.031093 0.000574

```

```

END FTABLE 6
FTABLE 5
 27 6

```

Time*** (Minutes)***	Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Outflow3 (cfs)	Velocity (ft/sec)	Travel
0.000000	0.000275	0.000000	0.000000	0.000000	0.000000	0.000199		
0.038462	0.008048	0.000306	0.000000	0.000000	0.024347	0.000199		
0.076923	0.008248	0.000619	0.000000	0.000000	0.026230	0.000400		
0.115385	0.008450	0.000940	0.000000	0.000000	0.027528	0.000604		
0.153846	0.008655	0.001269	0.000000	0.000000	0.028866	0.000810		
0.192308	0.008862	0.001606	0.000000	0.000000	0.030244	0.001019		
0.230769	0.009071	0.001951	0.000000	0.000000	0.031663	0.001230		
0.269231	0.009283	0.002304	0.000000	0.000000	0.033122	0.001444		
0.307692	0.009498	0.002665	0.000000	0.000000	0.034624	0.001660		
0.346154	0.009714	0.003035	0.000000	0.000000	0.036168	0.001879		
0.384615	0.009934	0.003412	0.000000	0.000000	0.037754	0.002100		
0.423077	0.010155	0.003799	0.000000	0.000000	0.039385	0.002323		
0.461538	0.010379	0.004194	0.000000	0.000000	0.041059	0.002549		
0.500000	0.010606	0.004597	0.000000	0.000000	0.042778	0.002778		
0.538462	0.010835	0.005010	0.079976	0.079976	0.044542	0.003009		



```

0.576923 0.011067 0.005431 0.225672 0.046352 0.003242
0.615385 0.011300 0.005861 0.412175 0.048208 0.003478
0.653846 0.011537 0.006300 0.627270 0.050111 0.003716
0.692308 0.011776 0.006748 0.859995 0.052062 0.003957
0.730769 0.012017 0.007206 1.099144 0.054061 0.004200
0.769231 0.012261 0.007673 1.333311 0.056108 0.004446
0.807692 0.012507 0.008149 1.551565 0.058204 0.004694
0.846154 0.012755 0.008635 1.744468 0.060351 0.004945
0.884615 0.013006 0.009130 1.905359 0.062547 0.005198
0.923077 0.013260 0.009635 2.031838 0.064795 0.005454
0.961538 0.013516 0.010150 2.127417 0.067094 0.005712
1.000000 0.013774 0.010675 2.203335 0.069444 0.005972

```

```

END FTABLE 5
END FTABLES

```

EXT SOURCES

```

<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # tem strg<-factor->strg <Name> # # <Name> # # ***
WDM 2 PREC ENGL 1.333 PERLND 1 999 EXTNL PREC
WDM 2 PREC ENGL 1.333 IMPLND 1 999 EXTNL PREC
WDM 1 EVAP ENGL 0.76 PERLND 1 999 EXTNL PETINP
WDM 1 EVAP ENGL 0.76 IMPLND 1 999 EXTNL PETINP
WDM 2 PREC ENGL 1.333 RCHRES 1 EXTNL PREC
WDM 2 PREC ENGL 1.333 RCHRES 3 EXTNL PREC
WDM 2 PREC ENGL 1.333 RCHRES 5 EXTNL PREC
WDM 1 EVAP ENGL 0.5 RCHRES 1 EXTNL POTEV
WDM 1 EVAP ENGL 0.76 RCHRES 2 EXTNL POTEV
WDM 1 EVAP ENGL 0.5 RCHRES 3 EXTNL POTEV
WDM 1 EVAP ENGL 0.76 RCHRES 4 EXTNL POTEV
WDM 1 EVAP ENGL 0.5 RCHRES 5 EXTNL POTEV
WDM 1 EVAP ENGL 0.76 RCHRES 6 EXTNL POTEV

```

END EXT SOURCES

EXT TARGETS

```

<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name> # <Name> # #<-factor->strg <Name> # <Name> tem strg strg***
RCHRES 2 HYDR RO 1 1 1 WDM 1000 FLOW ENGL REPL
RCHRES 2 HYDR O 1 1 1 WDM 1001 FLOW ENGL REPL
RCHRES 2 HYDR O 2 1 1 WDM 1002 FLOW ENGL REPL
RCHRES 2 HYDR STAGE 1 1 1 WDM 1003 STAG ENGL REPL
RCHRES 1 HYDR STAGE 1 1 1 WDM 1004 STAG ENGL REPL
RCHRES 1 HYDR O 1 1 1 WDM 1005 FLOW ENGL REPL
COPY 1 OUTPUT MEAN 1 1 48.4 WDM 701 FLOW ENGL REPL
COPY 501 OUTPUT MEAN 1 1 48.4 WDM 801 FLOW ENGL REPL
RCHRES 4 HYDR RO 1 1 1 WDM 1006 FLOW ENGL REPL
RCHRES 4 HYDR O 1 1 1 WDM 1007 FLOW ENGL REPL
RCHRES 4 HYDR O 2 1 1 WDM 1008 FLOW ENGL REPL
RCHRES 4 HYDR STAGE 1 1 1 WDM 1009 STAG ENGL REPL
RCHRES 3 HYDR STAGE 1 1 1 WDM 1010 STAG ENGL REPL
RCHRES 3 HYDR O 1 1 1 WDM 1011 FLOW ENGL REPL
RCHRES 6 HYDR RO 1 1 1 WDM 1012 FLOW ENGL REPL
RCHRES 6 HYDR O 1 1 1 WDM 1013 FLOW ENGL REPL
RCHRES 6 HYDR O 2 1 1 WDM 1014 FLOW ENGL REPL
RCHRES 6 HYDR STAGE 1 1 1 WDM 1015 STAG ENGL REPL
RCHRES 5 HYDR STAGE 1 1 1 WDM 1016 STAG ENGL REPL
RCHRES 5 HYDR O 1 1 1 WDM 1017 FLOW ENGL REPL

```

END EXT TARGETS

MASS-LINK

```

<Volume> <-Grp> <-Member-><--Mult--> <Target> <-Grp> <-Member->***
<Name> <Name> # #<-factor-> <Name> <Name> # #***
MASS-LINK 2
PERLND PWATER SURO 0.083333 RCHRES INFLOW IVOL
END MASS-LINK 2

MASS-LINK 3
PERLND PWATER IFWO 0.083333 RCHRES INFLOW IVOL
END MASS-LINK 3

```

```

    MASS-LINK          5
IMPLND      IWATER SURO      0.083333      RCHRES      INFLOW IVOL
    END MASS-LINK          5

    MASS-LINK          8
RCHRES      OFLOW  OVOL      2              RCHRES      INFLOW IVOL
    END MASS-LINK          8

    MASS-LINK          12
PERLND      PWATER SURO      0.083333      COPY      INPUT  MEAN
    END MASS-LINK          12

    MASS-LINK          13
PERLND      PWATER IFWO      0.083333      COPY      INPUT  MEAN
    END MASS-LINK          13

    MASS-LINK          15
IMPLND      IWATER SURO      0.083333      COPY      INPUT  MEAN
    END MASS-LINK          15

    MASS-LINK          17
RCHRES      OFLOW  OVOL      1              COPY      INPUT  MEAN
    END MASS-LINK          17

    MASS-LINK          18
RCHRES      OFLOW  OVOL      2              COPY      INPUT  MEAN
    END MASS-LINK          18

END MASS-LINK

END RUN

```

## *Predeveloped HSPF Message File*

ERROR/WARNING ID: 211 3

END INGRP was specified but, since ingroup contains no operations,  
entire ingroup is ignored.

---

ERROR/WARNING ID: 211 4

END EXGRP was explicitly or implicitly specified but, since exgroup  
contains no operations, entire exgroup is ignored.

---

*Mitigated HSPF Message File*

## *Disclaimer*

### *Legal Notice*

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**APPENDIX 4 – Geotechnical Report**



## **GEOTECHNICAL SITE INVESTIGATION REPORT**

### **PROPOSED ROCK CREEK COVE DEVELOPMENT**

**PARCEL # 02070100130200, 02070100130300 & 02070100130400**

**ROCK CREEK DRIVE, STEVENSON, WASHINGTON**

**GNN PROJECT NO. 219-1183**

**JANUARY 2020**

*Prepared for*

**FDM DEVELOPMENT INC.  
5101 NE 82ND AVENUE, SUITE 200  
VANCOUVER, WA 98662**



*Prepared by*

**GN NORTHERN, INC.  
CONSULTING GEOTECHNICAL ENGINEERS  
YAKIMA, WASHINGTON  
(509) 248-9798 / (541) 387-3387**

*Common Sense Approach to Earth and Engineering  
Since 1995*



*At GN Northern our mission is to serve our clients in the most efficient, cost effective way using the best resources and tools available while maintaining professionalism on every level. Our philosophy is to satisfy our clients through hard work, dedication and extraordinary efforts from all of our valued employees working as an extension of the design and construction team.*



January 13, 2020

FDM Development Inc.  
5101 NE 82nd Ave, Suite 200  
Vancouver, WA 98662

Attn: Zachary Pyle, PE, Development Manager

CC: F. Dean Maldonado, Principal

**Subject: Geotechnical Site Investigation Report  
Proposed Rock Creek Cove Development  
Parcel # 02070100130200, 02070100130300 & 02070100130400  
Rock Creek Drive, Stevenson, Washington**

**GNN Project No. 219-1183**

Gentlemen,

As requested, GN Northern (GNN) has completed a geotechnical site investigation for the proposed Rock Creek Cove vacation homes project to be constructed at the vacant site located on Rock Creek Drive, east of the intersection with Attwell Road, in the City of Stevenson, Washington.

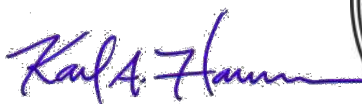
Based on the findings of our subsurface study, we conclude that the site is suitable for the proposed construction provided that our geotechnical recommendations presented in this report are followed during the design and construction phases of the project.

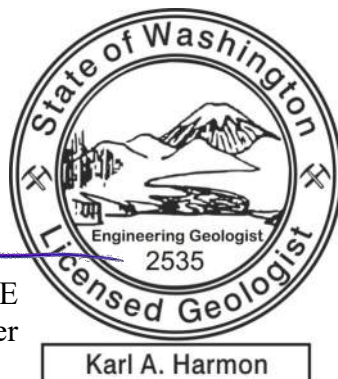
This report describes in detail the results of our investigation, summarizes our findings and presents our recommendations concerning earthwork and the design and construction of foundation for the proposed project. It is important that GN Northern provide consultation during the design phase as well as field compaction testing and geotechnical monitoring services during the earthwork phase to ensure implementation of the geotechnical recommendations.


If you have any questions regarding this report, please contact us at 509-248-9798 or 541-387-3387.

Respectfully submitted,

**GN Northern, Inc.**

  
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**TABLE OF CONTENTS**

	<i>Page No.</i>
<b>1.0 PURPOSE AND SCOPE OF SERVICES .....</b>	<b>1</b>
<b>2.0 PROPOSED CONSTRUCTION .....</b>	<b>2</b>
<b>3.0 FIELD EXPLORATION &amp; LABORATORY TESTING .....</b>	<b>2</b>
<b>4.0 SITE CONDITIONS .....</b>	<b>3</b>
<b>5.0 SITE &amp; REGIONAL GEOLOGY .....</b>	<b>4</b>
<b>6.0 SUBSURFACE CONDITIONS.....</b>	<b>5</b>
6.1 NRCS SOIL SURVEY.....	6
6.2 GROUNDWATER .....	6
<b>7.0 SOIL INFILTRATION TESTING .....</b>	<b>6</b>
<b>8.0 GEOLOGIC HAZARDS.....</b>	<b>7</b>
8.1 LANDSLIDES .....	7
8.2 REGIONAL FAULTING & SURFACE FAULT RUPTURE.....	8
8.3 EARTHQUAKES & SEISMIC CONDITIONS.....	8
8.4 SOIL LIQUEFACTION.....	9
8.5 SECONDARY SEISMIC HAZARDS .....	9
8.6 SITE SLOPES .....	10
8.7 FLOODING AND EROSION .....	10
<b>9.0 SLOPE STABILITY ANALYSIS.....</b>	<b>10</b>
<b>10.0 SEISMIC DESIGN PARAMETERS.....</b>	<b>12</b>
<b>11.0 SUMMARY OF FINDINGS &amp; CONCLUSIONS.....</b>	<b>13</b>
<b>12.0 GEOTECHNICAL RECOMMENDATIONS .....</b>	<b>15</b>
12.1 SITE DEVELOPMENT – GRADING.....	15
12.2 CLEARING AND GRUBBING .....	15
12.3 SUITABILITY OF THE ONSITE SOILS AS ENGINEERED FILL .....	16
12.4 TEMPORARY EXCAVATIONS .....	16
12.5 UTILITY EXCAVATION, PIPE BEDDING AND TRENCH BACKFILL.....	17
12.6 IMPORTED CRUSHED ROCK STRUCTURAL FILL .....	18
12.7 COMPACTION REQUIREMENTS FOR ENGINEERED FILL.....	18
12.8 BUILDING PAD & FOUNDATION SUBGRADE PREPARATION.....	18
12.9 SLAB-ON-GRADE FLOORS .....	20
12.10 RETAINING WALLS.....	20
12.11 SLOPE SETBACKS.....	21
12.12 FLEXIBLE PAVEMENT .....	22
12.13 SUBGRADE PROTECTION .....	23
12.14 SURFACE DRAINAGE.....	24
12.15 WET WEATHER CONDITIONS.....	24
<b>13.0 REFERENCES .....</b>	<b>26</b>
<b>14.0 CONTINUING GEOTECHNICAL SERVICES .....</b>	<b>27</b>
<b>15.0 LIMITATIONS OF THE GEOTECHNICAL SITE INVESTIGATION REPORT .....</b>	<b>28</b>

**APPENDICES**

- APPENDIX I – VICINITY MAP (FIGURE 1), SITE EXPLORATION MAP (FIGURE 2), CRITICAL AREAS MAP (FIGURE 3)
- APPENDIX II – EXPLORATORY TEST-PIT LOGS, KEY CHART (FOR SOIL CLASSIFICATION)
- APPENDIX III – LABORATORY TESTING RESULTS
- APPENDIX IV – SITE & EXPLORATION PHOTOGRAPHS
- APPENDIX V – HISTORIC AERIAL PHOTOGRAPHS
- APPENDIX VI – SLOPE STABILITY ANALYSIS
- APPENDIX VII – NRCS SOIL SURVEY

## 1.0 PURPOSE AND SCOPE OF SERVICES

This report has been prepared for the proposed Rock Creek Cove vacation homes project to be constructed at the vacant site located on Rock Creek Drive, east of the intersection with Attwell Road, in the City of Stevenson, Washington; site location is shown on the *Vicinity Map* (Figure 1, Appendix I). Our investigation was conducted to collect information regarding subsurface conditions and present recommendations for suitability of the subsurface materials to support the proposed building structures and allowable bearing capacity for the proposed construction.

GN Northern, Inc. has prepared this report for use by the client and their design consultants in the design of the proposed development. Do not use or rely upon this report for other locations or purposes without the written consent of GN Northern, Inc.

Our study was conducted in general accordance with our *Proposal for Geotechnical Engineering Services* dated October 29, 2019. Notice to proceed was provided in the form of a signed/authorized copy of our proposal via email on November 19, 2019.

A conceptual site plan (*Concept D*, prepared by FDM Development, dated 10/28/2019), along with a topographic survey of the project site (Lots 2, 3, and 4 of Rock Creek Cove, prepared by S&F Land Services, dated 12/11/2019), were provided by Mr. Pyle via email on December 17, 2019. Field exploration, consisting of twelve (12) test-pits and one (1) infiltration test, was completed on December 23, 2019. Locations of the exploratory test-pits and infiltration test are shown on the *Site Exploration Map* (Figure 2, Appendix I), and detailed test-pit logs are presented in Appendix II.

This report has been prepared to summarize the data obtained during this study and to present our recommendations based on the proposed construction and the subsurface conditions encountered at the site. Results of the field exploration were analyzed to develop recommendations for site development, earthwork, pavements, and foundation bearing capacity. Design parameters and a discussion of the geotechnical engineering considerations related to construction are included in this report.

## 2.0 PROPOSED CONSTRUCTION

Based on the preliminary information presented on the conceptual site plan and communication with your office, we understand that the proposed development will likely include approximately 15 to 25 structures. The various vacation rental structures are anticipated to consist of 6 to 8 single-room studio units along with 8 to 16 multi-story 3-bedroom units. Based on the current site layout, the studio units are planned across the southern finger, while the multi-story units are planned across the northern and western portions of the site. Proposed development will also include a 3-story central building with upstairs suite, central floor reception area, and lower floor kitchen and bar. Site development will also include associated infrastructure elements consisting of underground utilities, stormwater facilities, parking areas, and drive lanes. While the current site plan calls for a proposed wedding chapel/shelter on the eastern finger, we understand that development across this portion of the site may not be permitted.

Structural loading information was not available at the time of this report. Based on our experience with similar projects, we expect maximum wall loads to be on the order of 2,500 plf and maximum column loads to be less than 80 kips. It shall be noted that assumed loading is based on limited preliminary information provided at the time of this report. If loading conditions differ from those described herein, GNN should be given an opportunity to perform re-analysis. Settlement tolerances for structures are assumed to be limited to 1 inch, with differential settlement limited to ½ inch.

## 3.0 FIELD EXPLORATION & LABORATORY TESTING

The field exploration was completed on December 23, 2019. A local public utility clearance was obtained prior to the field exploration. Twelve (12) exploratory test-pits were completed at various locations within the footprint of the proposed development. Test-pits were excavated by Riley Materials using a Link-Belt 145x4 excavator to depths of approximately 8 to 14.5 feet below existing ground surface (BGS) and logged by a GNN field geologist/engineer. Additionally, an infiltration test was performed on the north side of the entrance driveway. Upon completion, all excavations were loosely backfilled with excavation spoils. Test-hole locations are shown on *Site Exploration Map* (Figure 2)

The soils observed during our field exploration were classified according to the Unified Soil Classification System (USCS), utilizing the field classification procedures as outlined in ASTM D2488. A copy of the USCS Classification Chart is included in Appendix II. Photographs of the site and exploration are presented in Appendix IV. Depths referred to in this report are relative to the existing ground surface elevation at the time of our investigation. The surface and subsurface conditions described in this report are as observed at the time of our field investigation.

Representative samples of the subsurface soils obtained from the field exploration were selected for testing to determine the index properties of the soils in general accordance with ASTM procedures. The following laboratory tests were performed:

**Table 1: Laboratory Tests Performed**

Test	To determine
Particle Size Distribution (ASTM D6913)	Soil classification based on proportion of sand, silt, and clay-sized particles
Natural Moisture Content (ASTM D2216)	Soil moisture content indicative of in-situ condition at the time samples were taken

Results of the laboratory test are included on the test-pit logs and are also presented in graphic form in Appendix III attached to the end of the report.

#### 4.0 SITE CONDITIONS

The project site is located east of the intersection of Rock Creek Drive and Attwell Road, approximately ½-mile north of State Highway 14, in the City of Stevenson, Washington. The 6.4-acre project site is currently comprised of three separate parcels identified by the Skamania County Assessor as Parcel Numbers: 020701001302000 (Lot 2), 020701001303000 (Lot 3), and 020701001304000 (Lot 4) located within the SW ¼ of the NW ¼ of Section 1, Township 2 North and Range 7 East, Willamette Meridian.

The subject site is generally characterized as an irregular shaped peninsula with several fingers extending east from Rock Creek Drive into Rock Cove. The majority of the upper surface of the site is relatively flat, while the irregular shaped peninsula fingers typically include steep slopes along the perimeter down to the shoreline. Surface conditions across the site include a variety of gravel covered and paved areas (asphalt and concrete), as well as areas with a dense growth of mature trees and vegetation, with selected areas across slope faces that include a veneer of angular

rock (apparent rip-rap). Recently placed stockpiles of apparent landscape clippings are present across an area located south of the existing entrance driveway.

Surface topography across the subject site has been historically altered by previous grading activity related to the preexisting use. The upper historically graded portions of the site are relatively flat at elevations ranging from approximately 95' to 101' across a majority of the site. Site grades step down towards that eastern finger with surface elevations ranging from approximately 87' to 90'. The surrounding edges of the various peninsula fingers typically include relatively steep slopes, with gradients as steep as 1H:1V, from the upper flat portions descending down to the shoreline.

The history of past use and development of the property was not investigated as part of our scope of services for this geotechnical site investigation. Based on our cursory review of available historic aerial photos (Appendix V) and topographic maps, along with a previously completed phase II environmental site assessment (Maul Foster Alongi, 2017), the site is known to have been historically developed with an industrial lumber mill facility. Scattered buried remnants related to the noted previous development and operations at the site including concrete foundation and slabs, miscellaneous utilities, trash and debris should be anticipated. Additionally, the eastern finger extending into Rock Cove appears to have been created by historic filling of the area between the main portion of the site and a preexisting island toward the eastern tip. The 1935 aerial photograph taken prior to historic site development of the site shows the site vicinity at the time when the Rock Cove had not been flooded by construction of the Bonneville Dam.

## **5.0 SITE & REGIONAL GEOLOGY**

The City of Stevenson and Skamania County are located in the South Cascades physiographic province that extends from the Columbia River to the south to Interstate 90 to the north, and is dominated by three massive stratovolcanoes. The current day volcanoes are the most recent installments of a 40-million-year-old volcanic complex called the Cascades Volcanic Arc. The bedrock geology of the western Columbia Gorge is dominated by Oligocene to early Miocene volcanoclastic rocks and minor interbedded lava flows of the ancestral Cascade Volcanic Arc. At many locations, the ancestral arc rocks are unconformably overlain by lava flows of the middle Miocene Columbia River Basalt Group, late Miocene to Pliocene fluvial deposits, or Quaternary olivine-phyric mafic lavas (Pierson et al., 2016).

The western part of the Columbia River Gorge is characterized by massive landslides on the Washington side, and the instability of these land masses is associated with abundant rainfall, high relief, composition and structure of the underlying rocks, tectonic uplift associated with the structural evolution of the Cascade Range and Yakima Fold Belt, and valley-side erosion by the incising Columbia River, which flows across the uplifting terrains (Pierson et al., 2016). The Cascade landslide complex is one such landslide feature that spans from the town of North Bonneville to the western portion of Stevenson. The Cascade landslide complex is subdivided into four individual landslides: the Carpenters Lake, Bonneville, and Red Bluffs landslides, as well as a reactivated part of the Red Bluffs landslide body known as the Crescent Lake landslide. Immediately east of the Cascade landslide complex is the newly recognized Stevenson landslide which is occupied by the City of Stevenson.

The project site is located near the eastern toe of the Red Bluffs landslide, approximately 1-mile east of the reactivated Crescent Lake landslide. The head scarp of the Red Bluffs landslide is located approximately 3½ miles northwest of the site. Surface geology at the site is mapped as Quaternary landslide deposits [Qls] of the Red Bluffs landslide (mass wasting deposits), consisting of poorly sorted blocks, boulders, gravels, and fines sediments produced by the gravitational failure and rotational-translational slide of bedrock and/or unconsolidated sediments above the bedrock (Korosec, 1987).

## **6.0 SUBSURFACE CONDITIONS**

Based on the findings of our field exploration, subsurface soils at the project site include a variably-thick layer of artificial fill soils likely associated with historic site development, atop the native silty gravel with sand stratum (mass wasting deposits). The undocumented artificial fill soils were noted to depths of approximately 3 to 8 feet across the upper portion of the site. Test-pit TP-9 excavated on the lower eastern finger encountered fill to the full depth of exploration (~8 feet) that is believed to represent historic fill placed to create new land. Fill soils were generally classified as silty gravel with sand and variable amounts of cobbles and boulders, and with some areas also including organics, wood debris and miscellaneous trash. The fill soils at the site are likely to be related to the previous historic development at the site. The apparent native underlying soils were classified as Silty Gravel with Sand (GM) and included varying amounts of cobbles and boulders. The native soil stratum typically appeared medium dense. Due to similar soil condition between

the upper fills and the underlying native stratum, the fill/native transition was typically ambiguous and therefore not clearly discernable within the test-pits. Test-pit logs in Appendix II show detailed descriptions and stratification of the soils encountered.

### **6.1 NRCS Soil Survey**

Although altered at the surface, the soil survey map of the site prepared by the Natural Resources Conservation Service (NRCS) identifies the site soils as *Arents* with typical profile described as *gravelly sandy loam* grading to *extremely gravelly sandy loam*. Based on the NRCS map (Appendix VII), these units generally consist of *well drained* materials.

### **6.2 Groundwater**

Groundwater was encountered within two of the exploratory test-pits at depths ranging from approximately 12 to 14 feet BGS at the time of our exploration in late December. Approximate correlating groundwater elevations ranged from approximately 83' in TP-3 in the western portion, down to 78' in TP-8 near the eastern portion. A review of the Washington Department of Ecology's online water well log database revealed a lack of nearby water wells in the site vicinity. Water levels within the adjacent Rock Cove portion of the Columbia River, controlled by the down-river Bonneville Dam, are typically noted at an elevation approximately 20 to 25 feet below the upper leveled-off site elevation. Therefore, we believe groundwater at the site is not directly affected by pool elevations in the Columbia River, and is likely controlled by the complex hydrogeological conditions of the up-gradient mass-wasting landslide deposits, as well as regional precipitation and snowmelt. Groundwater levels will fluctuate with irrigation, precipitation, drainage, and regional pumping from wells.

## **7.0 SOIL INFILTRATION TESTING**

A single infiltration test was performed on the north side of the existing entrance drive at a depth of approximately 5.5 feet BGS using a small-scale Pilot Infiltration Test (PIT). To the degree possible, care was exercised during excavation to attempt to maintain relatively uniform side walls, and the resulting size and geometry of the finished test-pit was carefully recorded in the field. Water was introduced into the test-pit using a garden hose connected to a nearby fire hydrant. The water flow into the test-pit was continued until the soils with the test-pit were saturated and a



constant flow rate was established. The stabilized inflow rate was measured and recorded, and the resulting un-factored infiltration rates are presented in the table below:

**Table 2: Infiltration Test Results**

Test ID	Approximate Location (GPS Coordinates)	Soil Tested	Field Infiltration Rate
P-1	45°41'20.69"N, 121°53'56.06"W	Silty Gravel	<b>4 inches/hour</b>

The infiltration rate presented herein represents the un-factored field soil infiltration rate. An appropriate factor of safety should be applied to the field infiltration rate to determine long-term design infiltration rate. Determination of safety factors for long-term design infiltration should consider the following: pretreatment, potential for bio-fouling, system maintainability, horizontal and vertical variability of soils, and type of infiltration testing. Typical factors of safety for these soils generally range from 2 to 3. If stormwater management facilities are selected at other locations, additional site-specific infiltration testing shall be performed.

## **8.0 GEOLOGIC HAZARDS**

Potential geologic hazards that may affect the proposed development include: [i] landslides & slope instability, [ii] seismic hazards (ground shaking, surface fault rupture, soil liquefaction, and other secondary earthquake-related hazards), and [iii] flooding & erosion. The perimeter/shoreline edges of the subject property are generally all mapped by the City of Stevenson’s Critical Areas & Geologic Hazards Map as ‘Potentially Unstable Slope’ which refers to an area with slopes of 25% or greater per Stevenson Municipal Code (SMC), Chapter 18.13, Section 18.13.090, Critical Area - Geologically Hazardous Areas. A discussion follows on the specific hazards to this site:

### **8.1 Landslides**

As discussed above in Section 5.0, the project site lies within the Cascade landslide complex that is subdivided into four individual landslides (Carpenters Lake, Bonneville, Red Bluffs, & Crescent Lake landslide). The Bonneville landslide has been dated to have occurred from 1416-1452 A.D. by a combination of dating methods. The Red Bluffs landslide has crosscutting morphologic features suggesting a younger age than that of the Bonneville landslide, with an age range of 1760-1770 A.D. The Crescent Lake landslide has reactivated within the last few decades and currently is moving downslope at an average rate of 11–18 cm/year and possibly as fast as 25 cm/year (Pierson et al., 2016). Results of another recent study (Hu et al., 2015) showed that the central upper part of

the Crescent Lake landslide moved a total of 700 mm downslope during a 4-year observation period from 2007 to 2011, and that the movement was seasonal and showed a strong correlation with winter precipitation. In contrast to the Crescent Lake landslide, coherent parts of Red Bluffs, Bonneville and Stevenson landslides were observed to remain stable during the observation period.

Although considered a recent landslide (< 1,000 years old), the Red Bluffs landslide is not considered an active landslide (movement in last 20 years). Based on Table 18.13.090-1, Landslide Hazard Classification, of the Stevenson Municipal Code (SMC), the landslide hazard for the site classifies as ‘Moderate Hazard’.

### ***8.2 Regional Faulting & Surface Fault Rupture***

The nearest regional faulting with Quaternary displacement (< 130,000 years) consists of the faults near The Dalles located approximately 12 miles east of the project site (Czajkowski, 2014). Published slip rates for these faults are listed at less than 0.2 mm/year. For the purposes of this report, an active fault is defined as a fault that has had displacement within the Holocene epoch or last 11,700 years. Due to the lack of any known active fault traces in the immediate site vicinity, surface fault rupture is unlikely to occur at the subject property. While future fault rupture could occur at other locations, rupture would most likely occur along previously established fault traces.

### ***8.3 Earthquakes & Seismic Conditions***

Earthquakes caused by movements along crustal faults, generally in the upper 10 to 15 miles, occur on the crust of the North America tectonic plate when built-up stresses near the surface are released. The two largest crustal earthquakes felt in the state of Washington included the 1872, M 6.8 quake near Lake Chelan and the 1936, M 6.0 Walla Walla earthquake. Noteworthy to the City of Stevenson, the Mount Saint Helens Seismic Zone is located approximately 30 miles towards the north-northwest. The following list provides information gathered from the online USGS database regarding historic earthquakes ( $\geq 4.0$  M) within the past 50 years for epicenters within 100 kilometers of project site, sorted by magnitude (largest to smallest):

**Table 3: Earthquakes within 100-kilometers of project site**

<b>Date(s) of Event</b>	<b>Magnitude(s)</b>	<b>Nearby Faults / Seismic Zone</b>	<b>Approx. Distance from Site (miles)</b>
March to May, 1980	4.0 - 5.7	Mt. Saint Helens Seismic Zone	33 – 47
March 25, 1993	5.6	Mt. Angel Fault Zone	57
February 14, 1981	5.2	Mt. Saint Helens Seismic Zone	48

May 13, 1981	4.5	Mt. Saint Helens Seismic Zone	50
June 29, 2002	4.5	Faults near The Dalles	26
March 1, 1982	4.4	Mt. Saint Helens Seismic Zone	48
February 14, 2011	4.3	Mt. Saint Helens Seismic Zone	44
July 14, 2008	4.2	<i>Unknown</i>	60
December 13, 1974	4.1	Faults near The Dalles	33
February 2, 1981	4.0	Toppenish Ridge Fault Zone	59

Based on seismic scenarios published by the Washington State Department of Natural Resources (DNR), M 7.0 Mount Saint Helens and M 7.1 Mill Creek earthquake events would result in a shaking intensity of ‘V’ (moderate shaking) on the Modified Mercalli Intensity (MMI) scale. We further used the USGS deaggregation tool which provides the relative contributions of hazard for each seismic source based on Probabilistic Seismic Hazard Analysis (PSHA). Based on the deaggregation, it appears that about 23% of the contribution to the probabilistic hazard at the site comes from the Cascadia Subduction Zone, with the remaining contribution primarily from the shallower sources.

#### ***8.4 Soil Liquefaction***

Liquefaction is the loss of soil strength from sudden shock (usually earthquake shaking), causing the soil to become a fluid mass. In general, for the effects of liquefaction to be manifested at the surface, groundwater levels must be within 50 feet of the ground surface and the soils within the saturated zone must also be susceptible to liquefaction. Based on the published Liquefaction Susceptibility Map of Skamania County, Washington (Palmer et al., 2004a), the site is mapped with a ‘low to moderate’ relative susceptibility for seismically-induced liquefaction to occur. A detailed assessment of the liquefaction potential at the site, including liquefaction-induced settlement and the effects of lateral spreading, is beyond the scope of this investigation.

#### ***8.5 Secondary Seismic Hazards***

Additional secondary seismic hazards related to ground shaking include ground subsidence, tsunamis, and seiches. The site is far inland, so the hazard from tsunamis is non-existent. The potential hazard of seiches from a significant seismic event is relatively low for development on the upper portion of the project site that is elevated approximately 20 to 25 feet above Rock Cove.

### **8.6 Site Slopes**

Surface topography across the subject site has been historically altered by previous grading activity related to the preexisting lumber mill facility. The upper historically graded portions of the site are relatively flat at elevations ranging from approximately 95' to 101'. The surrounding edges of the various peninsula fingers typically include relatively steep slopes, with gradients as great as 1H:1V, from the upper flat portions descending down to the shoreline. A field reconnaissance of the subject property was performed to observe site conditions and look for common geomorphic features of landslides as well as indications of possible signs demonstrating recent activity and instability of slide masses. While several areas across the site include a relatively dense cover of vegetation, no apparent indications of recent failures or significant slope instability were observed. Section 9.0 presents results of a preliminary slope stability analysis completed at the site and Section 12.0 provides recommendations for appropriate structure setbacks.

### **8.7 Flooding and Erosion**

The subject property is mapped by Federal Emergency Management Agency (FEMA) as Zone 'C' which translates to areas of minimal flooding. Portions of the subject property are however situated in areas where sheet flow and erosion may occur. Soil erodibility is only one of several factors affecting the erosion susceptibility. Soil erosion by water also increases with the length and steepness of the site slopes due to the increased velocity of runoff and resulting greater degree of scour and sediment transport. The need for and design of erosion protection measures is within the purview of the design Civil Engineer. Appropriate erosion and sediment control plan(s) and a drainage plan shall be prepared by the project civil engineer with the final construction drawings. Erosion should be mitigated with appropriate BMPs consisting of proper drainage design including collecting and disposal (conveyance) of water to approved points of discharge in a non-erosive manner. Appropriate project design, construction, and maintenance will be necessary to mitigate the site erosion hazards.

## **9.0 SLOPE STABILITY ANALYSIS**

A preliminary slope stability analysis was conducted for a critical slope section across the southern finger as shown on Figure 2. The analysis was conducted using a generalized geologic cross-section model developed from the existing site topography and data obtained from our subsurface exploration. An output of our slope stability analysis is attached in Appendix VI.

The slope stability analysis was conducted by a two-dimensional limit equilibrium stability analysis of selected trial failure surfaces using the computer program *SLIDE (Version 7)*. Potential circular-arc failure surfaces were evaluated using the Spencer method under static conditions. The computer program searched for critical potential failure surfaces with low computed factors of safety. The computed factor of safety (FS) against slope failure is simply the ratio of total resisting forces or moments (strength of the slope) to the total driving forces or moments for planar or circular failure surfaces respectively. A slope with a factor of safety of 1.0 is in equilibrium, indicating that the disturbing forces driving the slope down are equal to its strength to resist failure. Simply put slope-failure result when the strength of the slope is overcome by gravity.

The selection of unit weight and shear strength parameters for the various earth materials were based on judgment and data obtained during our field investigation, laboratory testing, review of previous studies, research and previous experience with similar materials in similar geotechnical and geologic settings. Engineering and geologic judgment must be applied to the estimated shear strength parameters in order to consider lateral and vertical variations in the subsurface conditions, such as degree of cementation, fracturing, planes of weakness, and gradational characteristics. The following geotechnical strength parameters were used in our stability calculations:

**Table 4: Estimated Strength Parameters**

Material	Shear Strength Parameters		Unit Weight (pcf)
	Friction Angle: $\phi$	Cohesion: c (psf)	
Fill/Disturbed Soil	33	25	120
Native Silty Gravel w/ Sand	35	50	130 (moist)
			138 (saturated)

GN Northern recommends that any existing or reconfigured slopes should meet or be designed and constructed to meet a minimum factor of safety of 1.5 for the static condition and 1.1 under seismic loading. Based on the results of our slope stability analysis, we conclude that the steep perimeter slopes do not meet minimum recommended safety factors. Consequently, the currently proposed layout with future structures sited at/over the edge of slopes is generally considered unfeasible, and remedial grading and/or other appropriate mitigation measures will be required to increase slope safety factors and provide adequate subgrade support for the proposed structures.

In lieu of appropriate remediation of the slope stability concerns, in order to provide sufficient vertical and lateral support for the proposed foundations without significant risk of detrimental settlement, appropriate increased setbacks/embedment for the new building foundations should be maintained. It should be understood however that while the proposed structures may not be at significant risk from slope instability, the existing slopes will remain at risk for some future failure if not appropriately remediated.

## 10.0 SEISMIC DESIGN PARAMETERS

Based on subsurface data obtained during or field exploration, along with our review of the published NEHRP Site Class Map of Skamania County, Washington (Palmer et al., 2004b), a site class ‘D’ as defined by 2015 International Building Code (IBC) is applicable. According to Mapped Spectral Acceleration obtained from the USGS Seismic Design Maps using the 2015 IBC, the following site-specific design values may be used:

**Table 5: IBC Design Response Spectra Parameters**

Seismic Design Parameter	Value (unit)
$S_s$	0.657 (g)
$S_1$	0.292 (g)
$F_a$	1.274 (unitless)
$F_v$	1.816 (unitless)
$SM_s$	0.837 (g)
$SM_1$	0.530 (g)
$SD_s$	0.558 (g)
$SD_1$	0.354 (g)

$S_s$  = MCE spectral response acceleration at short periods

$S_1$  = MCE spectral response acceleration at 1-second period

$F_a$  = Site coefficient for short periods

$F_v$  = Site coefficient for 1-second period

$SM_s$  = MCE spectral response acceleration at short periods as adjusted for site effects

$SM_1$  = MCE spectral response acceleration at 1-second period as adjusted for site effects

$SD_s$  = Design spectral response acceleration at short periods

$SD_1$  = Design spectral response acceleration at 1-second period

It shall be noted that determination of an appropriate site class requires shear wave velocity, soil undrained shear strength, or standard penetration resistance (N-value) data in the upper 100 feet of the subsurface profile, which was beyond the scope of this investigation.

## 11.0 SUMMARY OF FINDINGS & CONCLUSIONS

Conditions imposed by the proposed development have been evaluated on the basis of assumed elevations and engineering characteristics of the subsurface materials encountered in the exploratory test-pits, and their anticipated behavior both during and after construction. The following is a summary of our findings, conclusions and professional opinions based on the data obtained from a review of selected technical literature and the site evaluation.

- Based on the findings of this geotechnical evaluation and our understanding of the proposed development, from a geotechnical perspective, it is our opinion that the site is suitable for the proposed development, provided the soil design parameters and site-specific recommendations in this report are followed in the design and construction of the project.
- Final design plans for the proposed development, including grading, drainage and finished elevations, were not provided at the time of this report. Once the plans are finalized, GNN **must** be provided an opportunity to review final design plans to provide revised recommendations if/as necessary.
- Site soils include a variably-thick layer of artificial fill soils believed to be related to historic site development, atop the native silty gravels with sand. The undocumented artificial fill soils, largely made-up of similar soils that were apparently derived from onsite and/or near sources, extend to depths ranging from 3 to 8 feet and include some areas with miscellaneous trash and debris. Our estimation of the depth of fill materials is based on selected, localized points of exploration, and cannot quantify the full extent of the onsite fill. Additional undocumented fill soils with trash/debris, buried within the subsurface profile, may extend to greater depths at isolated locations across the site.
- Groundwater was encountered within the two of our test-pits at depths ranging from approximately 12 to 14 feet BGS at the time of our exploration in late December. Approximate correlating groundwater elevations ranged from approximately 83' in TP-3 in the western portion, down to 78' in TP-8 near the eastern portion. We believe groundwater at the site is not directly affected by pool elevations in the Columbia River, and is likely controlled by the complex hydrogeological conditions of the up-gradient mass-wasting landslide deposits, as well as regional precipitation and snowmelt.

- The onsite silty gravel soils, screened and processed to be free of oversize rocks (>5 inches) and any deleterious materials including trash and debris, are generally suitable for reuse as engineered fill and utility trench backfill.
- The proposed building structures may be supported on conventional shallow foundations bearing on a layer of crushed rock atop the recompacted native subgrade in accordance with the recommendations of this report. However, due to presence of artificial fill soils across future building footprints, over-excavation of the existing fill soils to a competent native stratum and replacement with engineered fill will be required.
- Due to ecological constraints, it appears that remedial grading of the onsite slopes to improve long-term stability is not considered feasible. Therefore, deeper embedment of the building foundations will be required in order to meet the minimum setback requirements while ignoring the stability of the onsite slopes.
- Appropriate slope setbacks for future structures should be incorporated in the final planning and design of the project. Slopes setbacks shall adhere to IBC 2015 Section 1808.7 *Foundations on or Adjacent to Slopes*, as well as the recommendations of this report.
- Site grading shall incorporate the requirements of IBC 2015, Appendix J *Grading*.
- Upon completion, all test-pit excavations were loosely backfilled with excavation spoils. The contractor is responsible to locate the test-pits to re-excavate the loose soils and re-place as compacted engineered fill.
- The underlying geologic condition for seismic design is site class 'D'. The *minimum* seismic design should comply with the 2015 International Building Code (IBC) and ASCE 07-10, *Minimum Design Loads for Buildings and Other Structures*.
- The near-surface site soils are susceptible to wind and water erosion when exposed during grading operations. Preventative measures and appropriate BMPs to control runoff and reduce erosion should be incorporated into site grading plans.
- Based on our evaluation, the risk for liquefaction at the project site is considered low to moderate. A site-specific liquefaction analysis to assess the risk of soil liquefaction and liquefaction-induced settlement was beyond the scope of this geotechnical evaluation and would require additional exploration including a 50-foot deep boring with continuous penetration testing.



## 12.0 GEOTECHNICAL RECOMMENDATIONS

The following geotechnical recommendations are based on our current understanding of the proposed project as shown on the conceptual site plan (Concept D, prepared by FDM Development, dated 10/28/2019), and as described in Section 2.0 of this report. The report is prepared to comply with the 2015 International Building Code Section 1803, Geotechnical Investigations, and as required by Subsection 1803.2, Investigations Required. Please note that Soil Design Parameters and Recommendations presented in this report are predicated upon appropriate geotechnical monitoring and testing of the site preparation and foundation and building pad construction by a representative of GNN's Geotechnical-Engineer-of-Record (GER). Any deviation and nonconformity from this requirement may invalidate, partially or in whole, the following recommendations. We recommend that we be engaged to review grading and foundation plans in order to provide revised, augmented, and/or additional geotechnical recommendations as required.

### *12.1 Site Development – Grading*

Site grading shall incorporate the requirements of IBC 2015 Appendix J. The project GER or a representative of the GER should observe site clearing, grading, and the bottoms of excavations before placing fills. Local variations in soil conditions may warrant increasing the depth of over-excavation and recompaction. Seasonal weather conditions may adversely affect grading operations. To improve compaction efforts and prevent potential pumping and unstable ground conditions, we suggest performing site grading during dryer periods of the year.

Soil conditions shall be evaluated by in-place density testing, visual evaluation, probing, and proof-rolling of the imported fill and re-compacted on-site soil as it is prepared to check for compliance with recommendations of this report. A moisture-density curve shall be established in accordance with the ASTM D1557 method for all onsite soils and imported fill materials used as structural fill.

### *12.2 Clearing and Grubbing*

At the start of site grading, any vegetation, large roots, non-engineered/artificial fill, including trash and debris, and any abandoned underground utilities shall be removed from the proposed building and structural areas. The surface shall be stripped of all topsoil and/or organic growth

(vegetation) that may exist within the proposed structural areas. The topsoil and organic rich soils shall either be stockpiled on-site separately for future use or be removed from the construction area. Depth of stripping can be minimized with real-time onsite observation of sufficient removals. Areas disturbed during clearing shall be properly backfilled and compacted as described below.

### ***12.3 Suitability of the Onsite Soils as Engineered Fill***

The onsite silty gravel with sand soils, screened and processed to be free of oversize rocks (>5 inches) and deleterious materials including trash and debris, are generally suitable for reuse as engineered fill and utility trench backfill. Suitable onsite soils shall be placed in maximum 8-inch lifts (loose) and compacted to at least 95% relative compaction (ASTM D1557) near its optimum moisture content. Compaction of these soils shall be performed within a range of  $\pm 2\%$  of optimum moisture to achieve the proper degree of compaction.

### ***12.4 Temporary Excavations***

It shall be the responsibility of the contractor to maintain safe temporary slope configurations since the contractor is at the job site, able to observe the nature and conditions of the slopes and be able to monitor the subsurface conditions encountered. Unsupported vertical cuts deeper than 4 feet are not recommended if worker access is necessary. The cuts shall be adequately sloped, shored or supported to prevent injury to personnel from caving and sloughing. The contractor and subcontractors shall be aware of and familiar with applicable local, state and federal safety regulation including the current OSHA Excavation and Trench Safety Standards, and OSHA Health and Safety Standards for Excavations, 29 CFR Part 1929, or successor regulations.

According to chapter 296-155 of the Washington Administrative Code (WAC), it is our opinion that the soil encountered at the site is classified as Type C soils. We recommend that temporary, unsupported, open cut slopes shall be no steeper than 1.5 feet horizontal to 1.0 feet vertical (1.5H:1V) in Type C soils. No heavy equipment should be allowed near the top of temporary cut slopes unless the cut slopes are adequately braced. Final (permanent) fill slopes should be graded to an angle of 2H:1V or flatter. Where unstable soils are encountered, flatter slopes may be required.

### ***12.5 Utility Excavation, Pipe Bedding and Trench Backfill***

To provide suitable support and bedding for the pipe, we recommend the utilities be founded on suitable bedding material consisting of clean sand and/or sand & gravel mixture. To minimize trench subgrade disturbance during excavation, the excavator should use a smooth-edged bucket rather than a toothed bucket.

Pipe bedding and pipe zone materials shall conform to Section 9-03.12(3) of the *WSDOT Standard Specifications*. Pipe bedding should provide a firm uniform cradle for support of the pipes. A minimum 4-inch thickness of bedding material beneath the pipe should be provided. Prior to installation of the pipe, the pipe bedding should be shaped to fit the lower part of the pipe exterior with reasonable closeness to provide uniform support along the pipe. Pipe bedding material should be used as pipe zone backfill and placed in layers and tamped around the pipes to obtain complete contact. To protect the pipe, bedding material should extend at least 6 inches above the top of the pipe.

Placement of bedding material is particularly critical where maintenance of precise grades is essential. Backfill placed within the first 12 inches above utility lines should be compacted to at least 90% of the maximum dry density (ASTM D1557), such that the utility lines are not damaged during backfill placement and compaction. In addition, rock fragments greater than 1 inch in maximum dimension should be excluded from this first lift. The remainder of the utility excavations should be backfilled and compacted to 95% of the maximum dry density as determined by ASTM D1557.

Onsite soils are considered suitable for utility trench backfill provided they are free of oversize material and trash/debris and can be adequately compacted. All excavations should be wide enough to allow for compaction around the haunches of pipes and underground tanks. We recommend that utility trenching, installation, and backfilling conform to all applicable federal, state, and local regulations such as OSHA and WISHA for open excavations.

Compaction of backfill material should be accomplished with soils within  $\pm 2\%$  of their optimum moisture content in order to achieve the minimum specified compaction levels recommended in this report. However, initial lift thickness could be increased to levels recommended by the

### ***12.6 Imported Crushed Rock Structural Fill***

Imported structural fill shall consist of well-graded, crushed aggregate material meeting the grading requirements of Washington State Department of Transportation (WSDOT) Standard Specification 9-03.9(3) (1-1/4 inch minus Base Course Material) presented here:

**Table 6: WSDOT Standard Spec. 9-03.9(3)**

<b>Sieve Size</b>	<b>Percent Passing (by Weight)</b>
1¼ Inch Square	99 - 100
1 Inch Square	80 - 100
5/8 Inch Square	50 – 80
U.S. No. 4	25 - 45
U.S. No. 40	3 – 18
U.S. No. 200	Less than 7.5

A fifty (50) pound sample of each imported fill material shall be collected by GNN personnel prior to placement to ensure proper gradation and establish the moisture-density relationship (proctor curve).

### ***12.7 Compaction Requirements for Engineered Fill***

All fill or backfill shall be approved by a representative of the GER, placed in uniform lifts, and compacted to a minimum 95% of the maximum dry density as determined by ASTM D1557. The compaction effort must be verified by a representative of the GER in the field using a nuclear density gauge in accordance with ASTM D6938. The thickness of the loose, non-compacted, lift of structural fill shall not exceed 8 inches for heavy-duty compactors or 4 inches for hand operated compactors.

### ***12.8 Building Pad & Foundation Subgrade Preparation***

Building structures may be supported on conventional shallow foundations bearing on subgrade prepared in accordance with the recommendations of this report. We recommend that all building foundations, including all exterior footings, interior footings and isolated column footings for any over-hang patio roof/decks, be supported on uniform improved native subgrade support conditions. The minimum footing depth shall be 24 inches below adjacent grades for frost protection and bearing capacity considerations. Interior footings may be supported at nominal depths below the floor. All footings shall be protected against weather and water damage during/after construction.

Following completion of site clearing and grubbing operations, all foundation areas shall be over-excavated to expose the native silty gravels. We anticipate the native soils in the vicinity of the currently proposed building footprints will range from depths of approximately 3 to 8 feet BGS. In order to reduce the risk of differential settlement, we recommend the differential in depth of foundation over-excavation (thickness of fill) be limited to 50%; i.e. if the deepest required foundation over-ex is 6 feet, then no portion of the foundation excavation shall be less than 3 feet below footing elevation. The exposed native gravelly stratum shall be moisture-conditioned (as necessary) and proof-compacted to a dense and non-yielding surface. Any soft spots encountered during compaction shall be over-excavated an additional 12 inches and replaced as compacted fill. Although not anticipated, deeper foundation over-excavations may extend into groundwater; consequently, employment of appropriate means of dewatering by the contractor may be required.

Foundation backfill shall consist of suitable screened/processed onsite soils (see *Suitability of Onsite Soils as Engineered Fill*) and/or imported 2-inch minus Gravel Borrow material (meeting the grading and quality requirements of WSDOT Standard Spec. Sec. 9-03.14(1)). The upper 12 inches of backfill directly below the foundations shall consist of imported 1¼"-minus crushed rock structural fill placed as engineered fill, moisture-conditioned and compacted to at least 95% of the maximum dry density as determined by the ASTM D1557. Crushed rock structural fill shall extend minimum 12 inches beyond the edges of the footings.

Where future buildings are proposed near or on the existing slopes, building foundations will be required to be constructed with appropriate setbacks in accordance with IBC 2015 Section 1808.7 (see *Slope Setbacks* section below). In general, if buildings are constructed with the current proposed layout, deeper embedment of the foundations will be required in order to meet the minimum setback, such that a minimum distance of 10 feet from the exterior face of the footings to a projected 2H:1V slope face from the toe of the existing slope is maintained. These recommendations may require the need for stepped foundations across the building structure, or deeper foundations such as taller stem-walls or columns.

Footings constructed in accordance with the above recommendations may be designed for an allowable bearing capacity of **2,500 pounds per square foot (psf)**. The allowable bearing pressure may be increased by 1/3 for short-term transient loading conditions. The estimated total settlement

for footings is approximately 1-inch with differential settlement less than half that magnitude. The weight of the foundation concrete below grade may be neglected in dead load computations.

Lateral forces on foundations from short term wind and seismic loading would be resisted by friction at the base of foundations and passive earth pressure against the buried portions. We recommend an allowable passive earth pressure for the compacted onsite soil of **220 pcf**. This lateral foundation resistance value includes a factor of safety of 1.5. We recommend a coefficient of friction of **0.45** be used between cast-in-place concrete and imported crushed rock fill. An appropriate factor of safety should be used to calculate sliding resistance at the base of footings.

### ***12.9 Slab-on-Grade Floors***

We recommend placing a minimum 6-inch layer of crushed aggregate fill beneath all slabs. The material shall meet the WSDOT Specification 9-03.9 (3), “Crushed Surfacing Top Course”. The crushed rock material shall be compacted to at least 95% of the maximum dry density as determined by the ASTM D1557 method. Prior to placement of crushed aggregate fill, the building pad shall be prepared as described above in the *Building Pad & Foundation Subgrade Preparation* section. We recommend a modulus of subgrade reaction equal to 120 pounds per cubic inch (pci) based on a value for gravel presented in the Portland Cement Association publication No. EB075.01D. Slab thickness, reinforcement and joint spacing shall be determined by a licensed engineer based on the intended use and loading.

An appropriate vapor retarder (15-mil polyethylene liner) shall be used (ASTM E1745/E1643) beneath areas receiving moisture sensitive resilient flooring/VCT where prevention of moisture migration through slab is essential. The slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder. The architect shall determine the need and use of a vapor retarder.

### ***12.10 Retaining Walls***

The following table presents recommendations for lateral earth pressures for use in retaining wall design. The values are given in terms of equivalent fluid pressures without surcharge loads and are based on the assumption that proper drainage is provided behind the wall, the backfill is horizontal and that no-buildup of hydrostatic pressure occurs.

**Table 7: Lateral Earth Pressures**

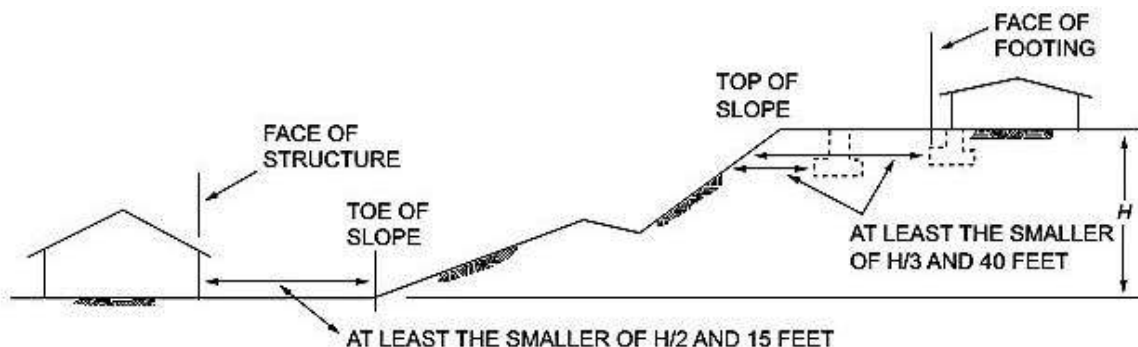
Lateral Pressures	Suitable Onsite Soils
Active Pressure Use when wall is permitted to rotate 0.1 to 0.2% of wall height for granular backfill	38 pcf - level ground
At-Rest Pressure	56 pcf - level ground

Drainage: Retaining structures should include adequate back drainage to avoid build-up of hydrostatic pressures. Positive drainage for retaining walls should consist of a vertical layer of permeable material (chimney drain), such as a pea gravel or crushed rock (typically ¼- to ¾-inch crushed), at least 18 inches thick, positioned between the retaining wall and the backfill. We recommend installing a non-woven filter fabric such as Mirafi 140N between the drainage material and the general backfill to prevent fines from migrating into the drainage material. A 4-inch diameter perforated or slotted drain-pipe, wrapped or socked in filter fabric, shall be installed at the bottom of the chimney drain.

Backfill and Subgrade Compaction: Compaction on the retained side of the wall within a horizontal distance equal to one wall height should be performed by hand-operated or other lightweight compaction equipment. This is intended to reduce potential locked-in lateral pressures caused by compaction with heavy grading equipment. Retaining wall foundations and subgrade improvements shall be constructed in accordance with the recommendations of this report.

**12.11 Slope Setbacks**

In accordance with IBC 2015 Section 1808.7 *Foundations on or Adjacent to Slopes*: “foundations on or adjacent to slope surfaces shall be founded in firm material with an embedment and setback from the slope surface sufficient to provide vertical and lateral support for the foundation without detrimental settlement.” IBC Figure 1808.7.1 (presented below) defines the appropriate minimum setbacks from ascending and descending slope surfaces:



Appropriate setbacks can be accommodated by lateral offset and/or increased embedment. The long-term performance of the structure near slopes is dependent on the protection of slopes from erosion or over steepening from subsequent slope grading. Slopes should be maintained to prevent erosion or undermining of the toe.

### ***12.12 Flexible Pavement***

Due to the presence of undocumented fills throughout the project site, remedial grading will be required to minimize the risk of pavement distress. We recommend that the new pavement section be constructed on an improved subgrade. Due to the presence of artificial fills soils that include some miscellaneous trash and debris, the pavement subgrade over-excavation be completed in accordance with one of the following two options:

- (1) Pavement areas shall be fully over-excavated to remove the artificial fill soils. Based on our site exploration, we anticipate that the maximum depth of excavation could be as great as approximately 8 feet.
- (2) Excavate the proposed pavement areas to a minimum depth of 12 inches BGS. We recommend installing a Mirafi 600X geotextile fabric at the bottom of the over-ex. It must be understood that if this option is selected, the owner must accept some risks related to future distresses to the pavements including the potential for settlement and cracking.

After appropriate over-excavation is complete and confirmed by a representative of the GER, the exposed native subgrade shall be moisture-conditioned and compacted to a dense and non-yielding surface. After a suitable subgrade is confirmed by a representative of the GER, the over-excavation shall be backfilled with engineered structural fill soil consisting of suitable/screened onsite soil (see Section 12.3) and/or imported 2-inch minus Gravel Borrow material (meeting the grading and quality requirements of WSDOT Standard Spec. Sec. 9-03.14(1)). Engineered structural fill soils shall be placed in max. 8-inch thick loose lifts and each lift compacted to 95% of ASTM D1557. The following table presents recommended light duty and heavy-duty asphalt pavement sections for proposed project to constructed atop the prepared subgrade:



**Table 8: Recommended Asphalt Concrete Paving Sections**

Traffic	Asphalt Thickness (inches)	Crushed Aggregate Base Course (inches)
Heavy Duty†	4.0	10*
Standard Duty ††	3.0	6

†Heavy duty applies to pavements subjected to truck traffic and drive lanes

††Standard duty applies to general parking areas

\*The upper 2” of crushed rock should be top course rock placed over the base course layer

Pavement section recommendations assume proper drainage and construction monitoring. Pavement shall be constructed on a dense and non-yielding surface. All fills used to raise low areas must be compacted structural fills and shall be placed under engineering control conditions.

Soils containing roots or organic materials shall be completely removed from the proposed paved areas prior to subgrade construction. The upper 12 inches of subgrade soils beneath the pavement section shall be moisture conditioned and proof-compacted to a dense and non-yielding condition. All fills used to raise low areas must be compacted onsite soils or structural gravel fill and shall be placed under engineering control conditions. The finished surface shall be smooth, uniform and free of localized weak/soft spots. All subgrade deficiency corrections and drainage provisions shall be made prior to placing the aggregate base course. All underground utilities shall be protected prior to grading.

The HMAC utilized for the project should be designed and produced in accordance with Section 5-04 Hot Mix Asphalt of the *Washington Department of Transportation 2014 Standard Specifications for Road and Bridge Construction* (WSDOT Specifications). Aggregate Base material shall comply with Section 9-03.9(3) Crushed Surfacing of the *WSDOT Specifications*. Aggregate base or pavement materials should not be placed when the surface is wet.

### **12.13 Subgrade Protection**

The degree to which construction grading problems develop is expected to be dependent, in part, on the time of year that construction proceeds and the precautions which are taken by the contractor to protect the subgrade. The fine-grained soils currently present on site are considered to be moisture and disturbance sensitive due to their fines content and may become unstable (pumping) if allowed to increase in moisture content and are disturbed (rutted) by construction traffic if wet. If necessary, the construction access road should be covered with a layer of gravel or

quarry spalls course. The soils are also susceptible to erosion in the presence of moving water. The soils shall be stabilized to minimize the potential of erosion into the foundation excavation. The site shall be graded to prevent water from ponding within construction areas and/or flowing into excavations. Accumulated water must be removed immediately along with any unstable soil. Foundation concrete shall be placed and excavations backfilled as soon as possible to protect the bearing grade. We further recommend that soils that become unstable are to be either:

- Removed and replaced with structural compacted gravel fill, or
- Mechanically stabilized with a coarse crushed aggregate (possibly underlain with a geotextile) and compacted into the subgrade.

#### ***12.14 Surface Drainage***

With respect to surface water drainage, we recommend that the ground surface be sloped to drain away from the structure. Final exterior site grades shall promote free and positive drainage from the building areas. Water shall not be allowed to pond or to collect adjacent to foundations or within the immediate building area. We recommend that a gradient of at least 5% for a minimum distance of 10 feet from the building perimeter be provided, except in paved locations. In paved areas, a minimum gradient of 1% should be provided unless provisions are included for collection/disposal of surface water adjacent to the structure. Catch basins, drainage swales, or other drainage facilities should be aptly located. All surface water such as that coming from roof downspouts and catch basins be collected in tight drain lines and carried to a suitable discharge point, such as a storm drain system. Surface water and downspout water should not discharge into a perforated or slotted subdrain, nor should such water discharge onto the ground surface adjacent to the building. Cleanouts should be provided at convenient locations along all drain lines.

#### ***12.15 Wet Weather Conditions***

The project site soils are fine-grained and sensitive to moisture during handling and compaction. Proceeding with site earthwork operations using these soils during wet weather could add project costs and/or delays. The stability of exposed soils may rapidly deteriorate due to a change in moisture content. Therefore, if possible, complete site clearing, preparation, and earthwork during periods of warm, dry weather when soil moisture can be controlled by aeration. During/subsequent to wet weather, drying or compacting the on-site soils will be difficult. It may be necessary to

amend the on-site soils or import granular materials for use as structural fill. If earthwork takes place in wet weather/conditions, the following recommendations should be followed:

- Fill material should consist of clean, granular soil, and not more than 3% fines (by weight) should pass the No. 200 sieve. Fines should be non-plastic. These soils would have to be imported to the site.
- Earthwork should be accomplished in small sections and carried through to completion to reduce exposure to wet weather. Soils that becomes too wet for compaction should be removed and replaced with clean, granular material.
- The construction area ground surface should be sloped and sealed to reduce water infiltration, to promote rapid runoff, and to prevent water ponding.
- To prevent soil disturbance, the size or type of equipment may have to be limited.
- Work areas and stockpiles should be covered with plastic. Straw bales, straw wattles, geotextile silt fences, and other measures should be used as appropriate to control soil erosion.
- Excavation and fill placement should be observed on a full-time basis by a representative of GER to determine that unsuitable materials are removed and that suitable compaction and site drainage is achieved.

### 13.0 REFERENCES

- Czajkowski, J.L., and Bowman, J.D., 2014. Faults and Earthquakes in Washington State. Washington State Department of Natural Resources (DNR), Washington Division of Geology and Earth Resources, Open-File Report 2014-05.
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- U.S. Geologic Survey (USGS), Earthquake Hazards Program, U.S. Seismic Design Maps, online tool, website: [earthquake.usgs.gov/designmaps/us/application.php](http://earthquake.usgs.gov/designmaps/us/application.php)
- Washington State Department of Natural Resources (DNR), Washington Division of Geology and Earth Resources, on-line mapping tool, <https://fortress.wa.gov/dnr/protectiongis/geology/>

#### **14.0 CONTINUING GEOTECHNICAL SERVICES**

GNN recommends that the Client should maintain an adequate program of geotechnical consultation, construction monitoring, and soils testing during the final design and construction phases to monitor compliance with GNN's geotechnical recommendations. Maintaining GNN as the geotechnical consultant from beginning to end of the project will provide continuity of services. If GN Northern, Inc. is not retained by the owner/developer and/or the contractor to provide the recommended geotechnical inspections/observations and testing services, the geotechnical engineering firm or testing/inspection firm providing tests and observations shall assume the role and responsibilities of Geotechnical Engineer-of-Record.

GNN can provide construction monitoring and testing as additional services. The costs of these services are not included in our present fee arrangement, but can be obtained from our office. The recommended construction monitoring and testing includes, but is not necessarily limited to, the following:

- Consultation during the design stages of the project.
- Review of the grading and drainage plans to monitor compliance and proper implementation of the recommendations in GNN's Report.
- Observation and quality control testing during site preparation, grading, and placement of engineered fill as required by the local building ordinances.
- Geotechnical engineering consultation as needed during construction

## 15.0 LIMITATIONS OF THE GEOTECHNICAL SITE INVESTIGATION REPORT

This GEOTECHNICAL SITE INVESTIGATION REPORT (“Report”) was prepared for the exclusive use of the Client. GN Northern, Inc.’s (GNN) findings, conclusions and recommendations in this Report are based on selected points of field exploration, and GNN’s understanding of the proposed project at the time the Report is prepared. Furthermore, GNN’s findings and recommendations are based on the assumption that soil, rock and/or groundwater conditions do not vary significantly from those found at specific exploratory locations at the project site. Variations in soil, bedrock and/or groundwater conditions could exist between and beyond the exploration points. The nature and extent of these variations may not become evident until during or after construction. Variations in soil, bedrock and groundwater may require additional studies, consultation, and revisions to GNN’s recommendations in the Report.

In many cases the scope of geotechnical exploration and the test locations are selected by others without consultation from the geotechnical engineer/consultant. GNN assumes no responsibility and, by preparing this Report, does not impliedly or expressly validate the scope of exploration and the test locations selected by others.

This Report’s findings are valid as of the issued date of this Report. However, changes in conditions of the subject property or adjoining properties can occur due to passage of time, natural processes, or works of man. In addition, applicable building standards/codes may change over time. Accordingly, findings, conclusions, and recommendations of this Report may be invalidated, wholly or partially, by changes outside of GNN’s control. Therefore, this Report is subject to review and shall not be relied upon after a period of **one (1) year** from the issued date of the Report.

In the event that any changes in the nature, design, or location of structures are planned, the findings, conclusions and recommendations contained in this Report shall not be considered valid unless the changes are reviewed by GNN and the findings, conclusions, and recommendations of this Report are modified or verified in writing.

This Report is issued with the understanding that the owner or the owner’s representative has the responsibility to bring the findings, conclusions, and recommendations contained herein to the attention of the architect and design professional(s) for the project so that they are incorporated

into the plans and construction specifications, and any follow-up addendum for the project. The owner or the owner's representative also has the responsibility to verify that the general contractor and all subcontractors follow such recommendations during construction. It is further understood that the owner or the owner's representative is responsible for submittal of this Report to the appropriate governing agencies. The foregoing notwithstanding, no party other than the Client shall have any right to rely on this Report and GNN shall have no liability to any third party who claims injury due to reliance upon this Report, which is prepared exclusively for Client's use and reliance.

GNN has provided geotechnical services in accordance with generally accepted geotechnical engineering practices in this locality at this time. GNN expressly disclaims all warranties and guarantees, express or implied.

Client shall provide GNN an opportunity to review the final design and specifications so that earthwork, drainage and foundation recommendations may be properly interpreted and implemented in the design and specifications. If GNN is not accorded the review opportunity, GNN shall have no responsibility for misinterpretation of GNN's recommendations.

Although GNN can provide environmental assessment and investigation services for an additional cost, the current scope of GNN's services does not include an environmental assessment or an investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, surface water, groundwater, or air on, below, or adjacent to the subject property.

## *APPENDICES*



*Appendix I*  
*Vicinity Map (Figure 1)*  
*Site Exploration Map (Figure 2)*  
*Critical Areas Map (Figure 3)*



**FIGURE 1: VICINITY MAP**

**PROJECT NO. 219-1183**



FIGURE 2: SITE EXPLORATION MAP

PROJECT NO. 219-1183



*Appendix II*  
*Exploratory Test-Pit Logs*  
*Key Chart (for Soil Classification)*



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# TEST PIT NUMBER TP-1

PAGE 1 OF 1

**CLIENT** FDM Development **PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT NUMBER** 219-1183 **PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19 **GROUND ELEVATION** 98 ft **TEST PIT SIZE** 36 x 96 inches  
**EXCAVATION CONTRACTOR** Riley Materials **GROUND WATER LEVELS:**  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator **AT TIME OF EXCAVATION** ---  
**LOGGED BY** KAH **CHECKED BY** MYM **AT END OF EXCAVATION** ---  
**NOTES** Approx. GPS Coords.: 45°41'19.59"N, 121°53'55.44"W **AFTER EXCAVATION** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					~6" to 18" LANDSCAPE CUTTINGS / ORGANIC DEBRIS
2.5			GP-GM		FILL: POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray, moist to wet, appears loose to medium dense, with cobbles, with wood and organic debris  - pipe at ~3' BGS
5.0	GB	MC = 22% Fines = 18%	GC		CLAYEY GRAVEL WITH SAND, (GC) brown, wet, appears loose to medium dense, with organics and roots (APPARENT NATIVE)  - becomes blueish gray, moist, appears medium dense (NATIVE)  - with boulders from 10' to 11'
14.5					

- Significant amount of surface water flowing into test-pit excavation  
 - Referenced elevations are approximate and based on Survey Topography for Lots 2, 3, and 4 of Rock Creek Cove dated December 11, 2019 prepared by S&F Land Services  
 Bottom of test pit at 14.5 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 1/13/20 14:05 - C:\USERS\IGN NORTHERN\DR\OP\BOX15-ACTIVE PROJECTS\219-1183 ROCK CREEK COVE - STEVENSON\219-1183 LOGS.GPJ



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# TEST PIT NUMBER TP-2

PAGE 1 OF 1

**CLIENT** FDM Development  
**PROJECT NUMBER** 219-1183  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19  
**EXCAVATION CONTRACTOR** Riley Materials  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator  
**LOGGED BY** KAH **CHECKED BY** MYM  
**NOTES** Approx. GPS Coords.: 45°41'18.75"N, 121°53'55.09"W

**PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**GROUND ELEVATION** 98 ft **TEST PIT SIZE** 36 x 96 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** ---  
**AT END OF EXCAVATION** ---  
**AFTER EXCAVATION** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					
2.5					
5.0	GB	MC = 28% Fines = 47%	GM		<p>FILL: SILTY GRAVEL WITH SAND, (GM) brown, angular, moist, appears loose, with cobbles, with roots</p> <p>- becomes orange brown, appears loose to medium dense, some cobbles</p> <p>- with a significant amount of woody debris, organics, roots</p>
8.0					
10.0			GM		<p>SILTY GRAVEL WITH SAND, (GM) brown, subrounded, moist, appears medium dense to dense, with cobbles and boulders (APPARENT NATIVE)</p>
12.5					
14.0					

- Groundwater not encountered at time of excavation  
 - Referenced elevations are approximate and based on Google Earth topography  
 Bottom of test pit at 14.0 feet.

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# TEST PIT NUMBER TP-3

PAGE 1 OF 1

**CLIENT** FDM Development  
**PROJECT NUMBER** 219-1183  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19  
**EXCAVATION CONTRACTOR** Riley Materials  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator  
**LOGGED BY** KAH **CHECKED BY** MYM  
**NOTES** Approx. GPS Coords.: 45°41'20.75"N, 121°53'55.36"W

**PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**GROUND ELEVATION** 97 ft **TEST PIT SIZE** 36 x 96 inches  
**GROUND WATER LEVELS:**  
 ▽ **AT TIME OF EXCAVATION** 14.00 ft / Elev 83.00 ft  
**AT END OF EXCAVATION** ---  
**AFTER EXCAVATION** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					
2.5			GP-GM		FILL: POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, angular, wet, appears loose to medium dense, with cobbles
3.0					94.0
5.0			GM		SILTY GRAVEL WITH SAND, (GM) brown, subrounded, moist, appears medium dense, trace cobbles (APPARENT NATIVE)
7.5					
10.0					- becomes blueish gray
12.5	GB	MC = 29% Fines = 28%			
14.5					82.5



- Groundwater encountered at ~14' BGS at time of excavation  
 - Referenced elevations are approximate and based on Google Earth topography  
 Bottom of test pit at 14.5 feet.

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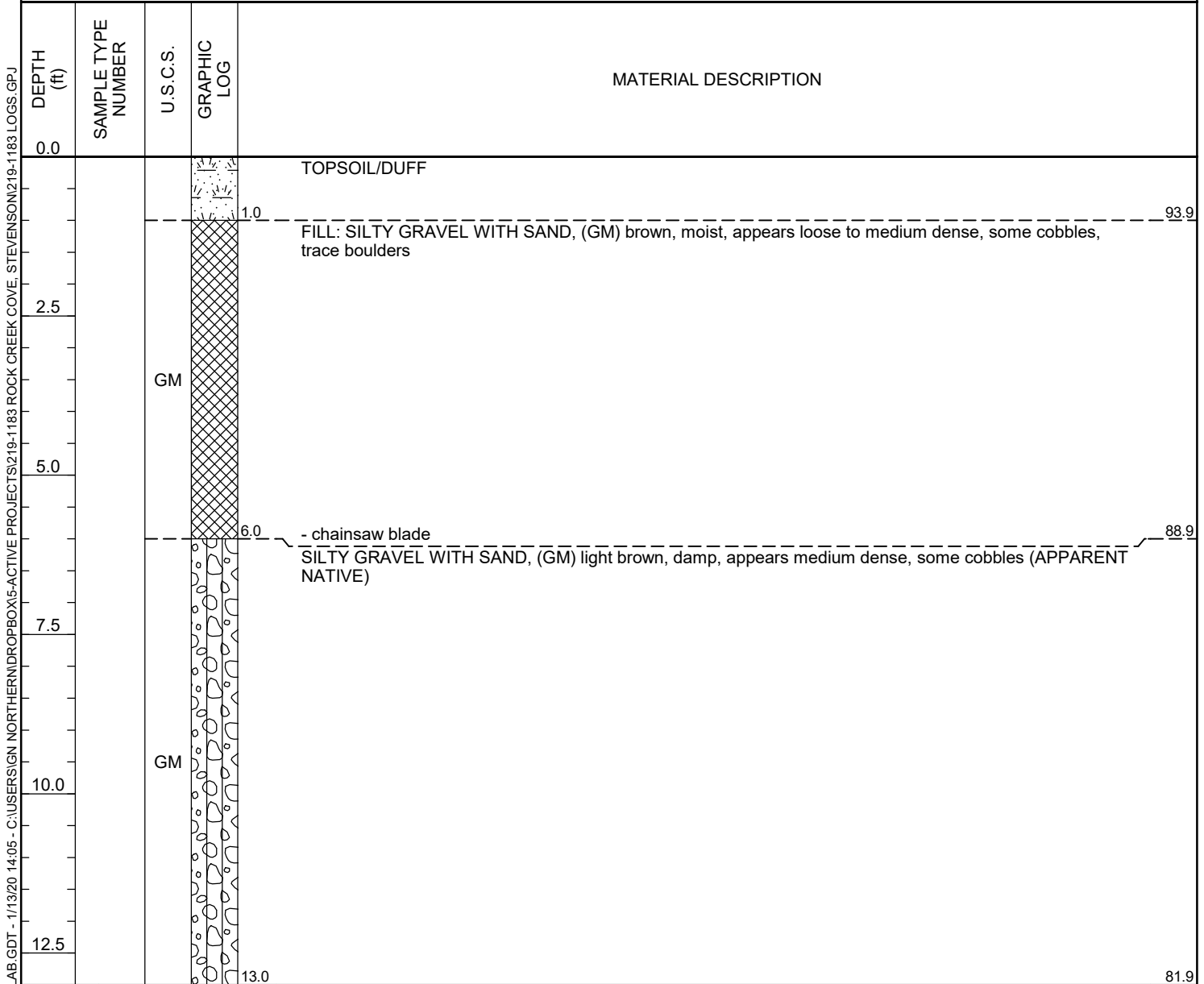


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# TEST PIT NUMBER TP-4

PAGE 1 OF 1

**CLIENT** FDM Development **PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT NUMBER** 219-1183 **PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19 **GROUND ELEVATION** 94.9 ft **TEST PIT SIZE** 36 x 96 inches  
**EXCAVATION CONTRACTOR** Riley Materials **GROUND WATER LEVELS:**  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator **AT TIME OF EXCAVATION** ---  
**LOGGED BY** KAH **CHECKED BY** MYM **AT END OF EXCAVATION** ---  
**NOTES** Approx. GPS Coords.: 45°41'23.09"N, 121°53'53.97"W **AFTER EXCAVATION** ---



- Groundwater not encountered at time of excavation  
 - Referenced elevations are approximate and based on Google Earth topography  
 Bottom of test pit at 13.0 feet.

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# TEST PIT NUMBER TP-5

PAGE 1 OF 1

**CLIENT** FDM Development **PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT NUMBER** 219-1183 **PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19 **GROUND ELEVATION** 96.9 ft **TEST PIT SIZE** 36 x 96 inches  
**EXCAVATION CONTRACTOR** Riley Materials **GROUND WATER LEVELS:**  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator **AT TIME OF EXCAVATION** ---  
**LOGGED BY** KAH **CHECKED BY** MYM **AT END OF EXCAVATION** ---  
**NOTES** Approx. GPS Coords.: 45°41'22.14"N, 121°53'53.51"W **AFTER EXCAVATION** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION
0.0				TOPSOIL/SLASH/DUFF	
1.0					95.9
2.5		GM		APPARENT FILL: SILTY GRAVEL WITH SAND, (GM) brown, moist, appears loose to medium dense, some cobbles, trace boulders	
5.0					91.9
7.5		GM		SILTY GRAVEL WITH SAND, (GM) light brown, damp to moist, appears medium dense, some cobbles (APPARENT NATIVE)	
10.0					
12.0					84.9

- Groundwater not encountered at time of excavation  
 - Referenced elevations are approximate and based on Google Earth topography  
 Bottom of test pit at 12.0 feet.

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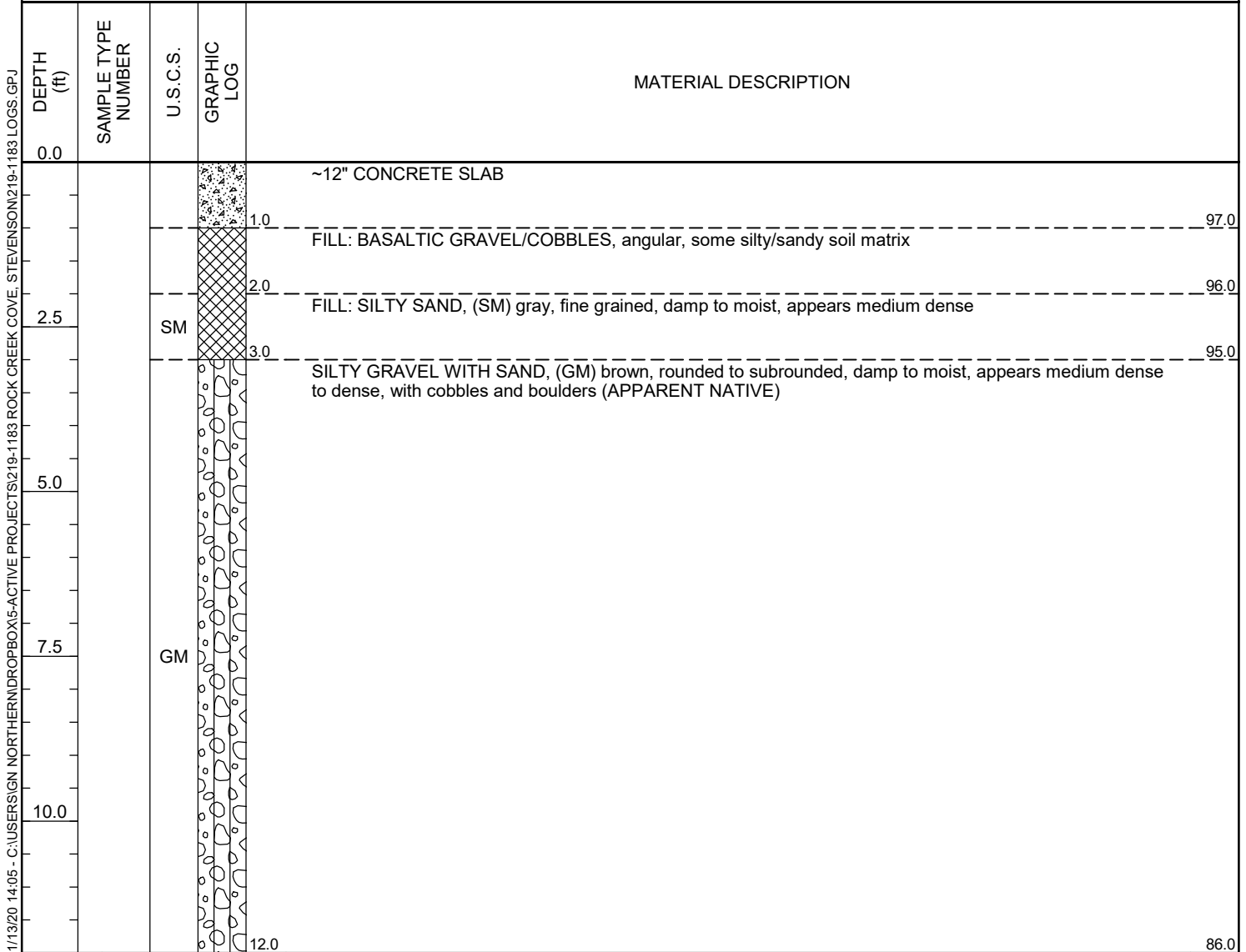
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# TEST PIT NUMBER TP-6

PAGE 1 OF 1

**CLIENT** FDM Development  
**PROJECT NUMBER** 219-1183  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19  
**EXCAVATION CONTRACTOR** Riley Materials  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator  
**LOGGED BY** KAH **CHECKED BY** MYM  
**NOTES** Approx. GPS Coords.: 45°41'21.16"N, 121°53'53.95"W

**PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**GROUND ELEVATION** 98 ft **TEST PIT SIZE** 36 x 96 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** ---  
**AT END OF EXCAVATION** ---  
**AFTER EXCAVATION** ---



- Groundwater not encountered at time of excavation  
 - Referenced elevations are approximate and based on Google Earth topography  
 Bottom of test pit at 12.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 1/13/20 14:05 - C:\USERS\IGN NORTHERN\IDROPBOX\ACTIVE PROJECTS\219-1183 ROCK CREEK COVE - STEVENSON\219-1183 LOGS.GPJ



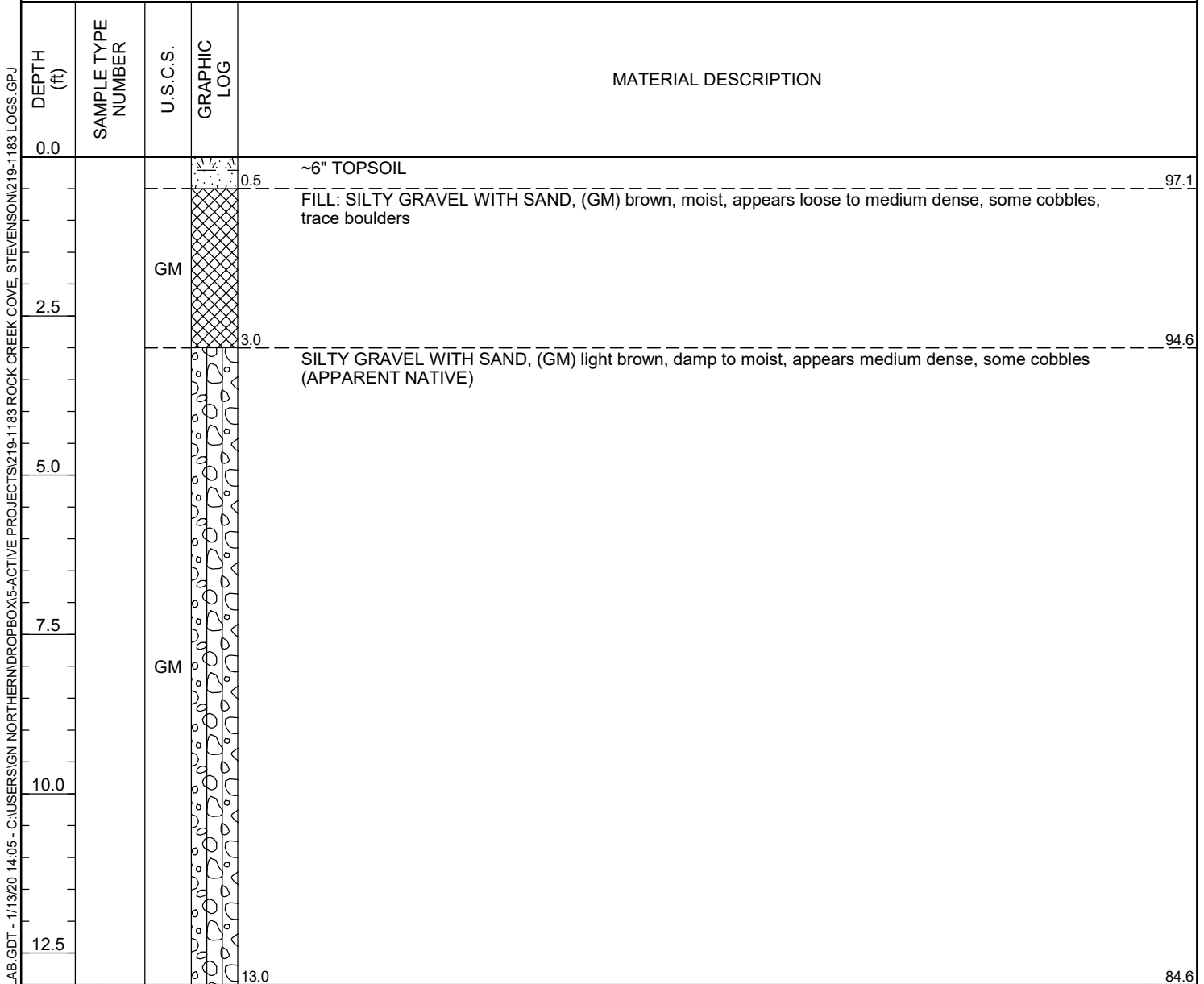
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# TEST PIT NUMBER TP-7

PAGE 1 OF 1

**CLIENT** FDM Development  
**PROJECT NUMBER** 219-1183  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19  
**EXCAVATION CONTRACTOR** Riley Materials  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator  
**LOGGED BY** KAH **CHECKED BY** MYM  
**NOTES** Approx. GPS Coords.: 45°41'19.86"N, 121°53'52.14"W

**PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**GROUND ELEVATION** 97.6 ft **TEST PIT SIZE** 36 x 96 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF EXCAVATION** ---  
**AT END OF EXCAVATION** ---  
**AFTER EXCAVATION** ---



- Groundwater not encountered at time of excavation  
 - Referenced elevations are approximate and based on Google Earth topography  
 Bottom of test pit at 13.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 1/13/20 14:05 - C:\USERS\IGN NORTHERN\DRIDROPBOX\5-ACTIVE PROJECTS\219-1183 ROCK CREEK COVE - STEVENSON\219-1183 LOGS.GPJ

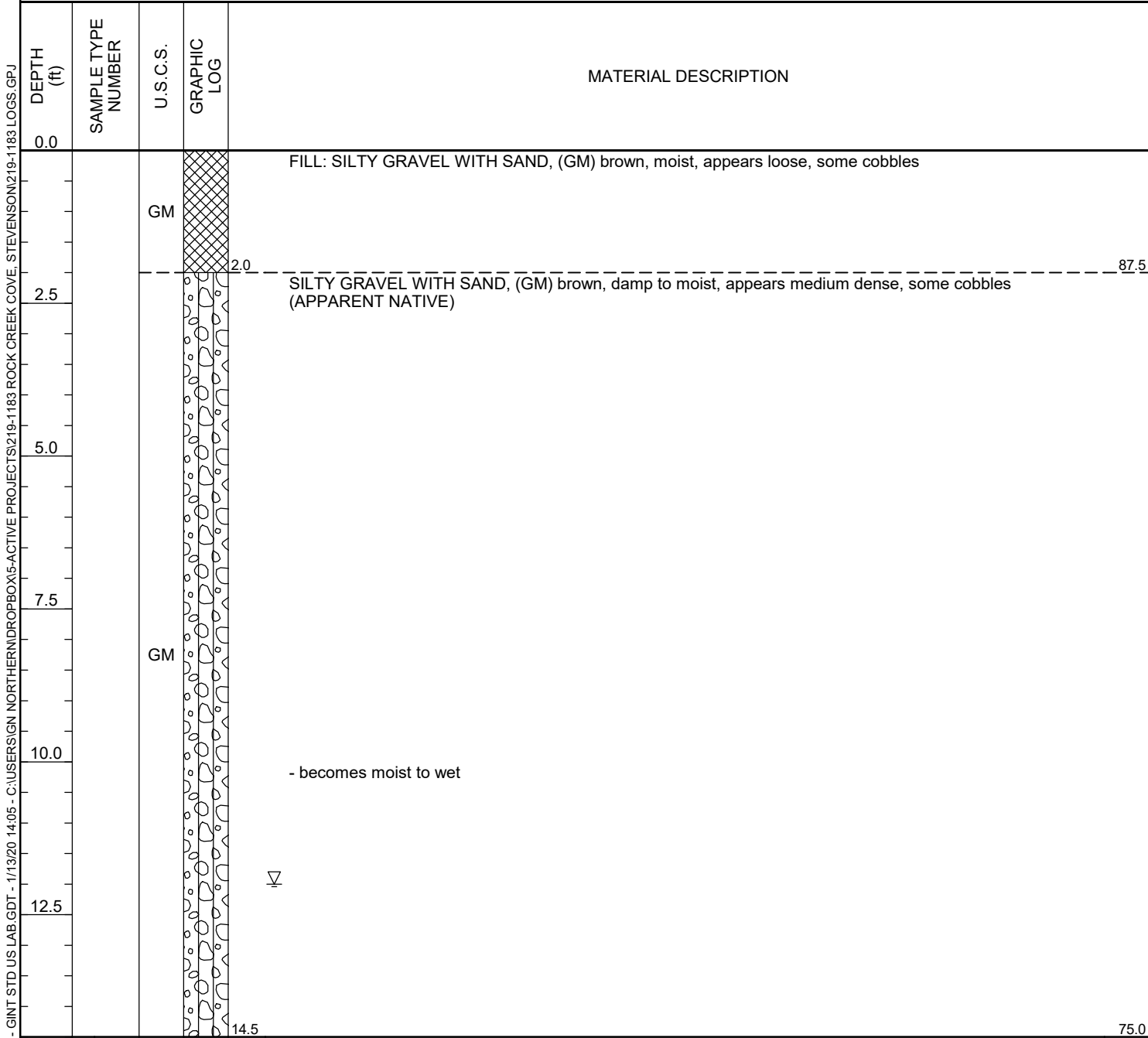


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# TEST PIT NUMBER TP-8

PAGE 1 OF 1

**CLIENT** FDM Development **PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT NUMBER** 219-1183 **PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19 **GROUND ELEVATION** 89.5 ft **TEST PIT SIZE** 36 x 96 inches  
**EXCAVATION CONTRACTOR** Riley Materials **GROUND WATER LEVELS:**  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator  **AT TIME OF EXCAVATION** 12.00 ft / Elev 77.50 ft  
**LOGGED BY** KAH **CHECKED BY** MYM **AT END OF EXCAVATION** ---  
**NOTES** Approx. GPS Coords.: 45°41'20.44"N, 121°53'51.63"W **AFTER EXCAVATION** ---



GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 1/13/20 14:05 - C:\USERS\IGN NORTHERN\IDROPBOX\ACTIVE PROJECTS\219-1183 ROCK CREEK COVE - STEVENSON\219-1183 LOGS.GPJ



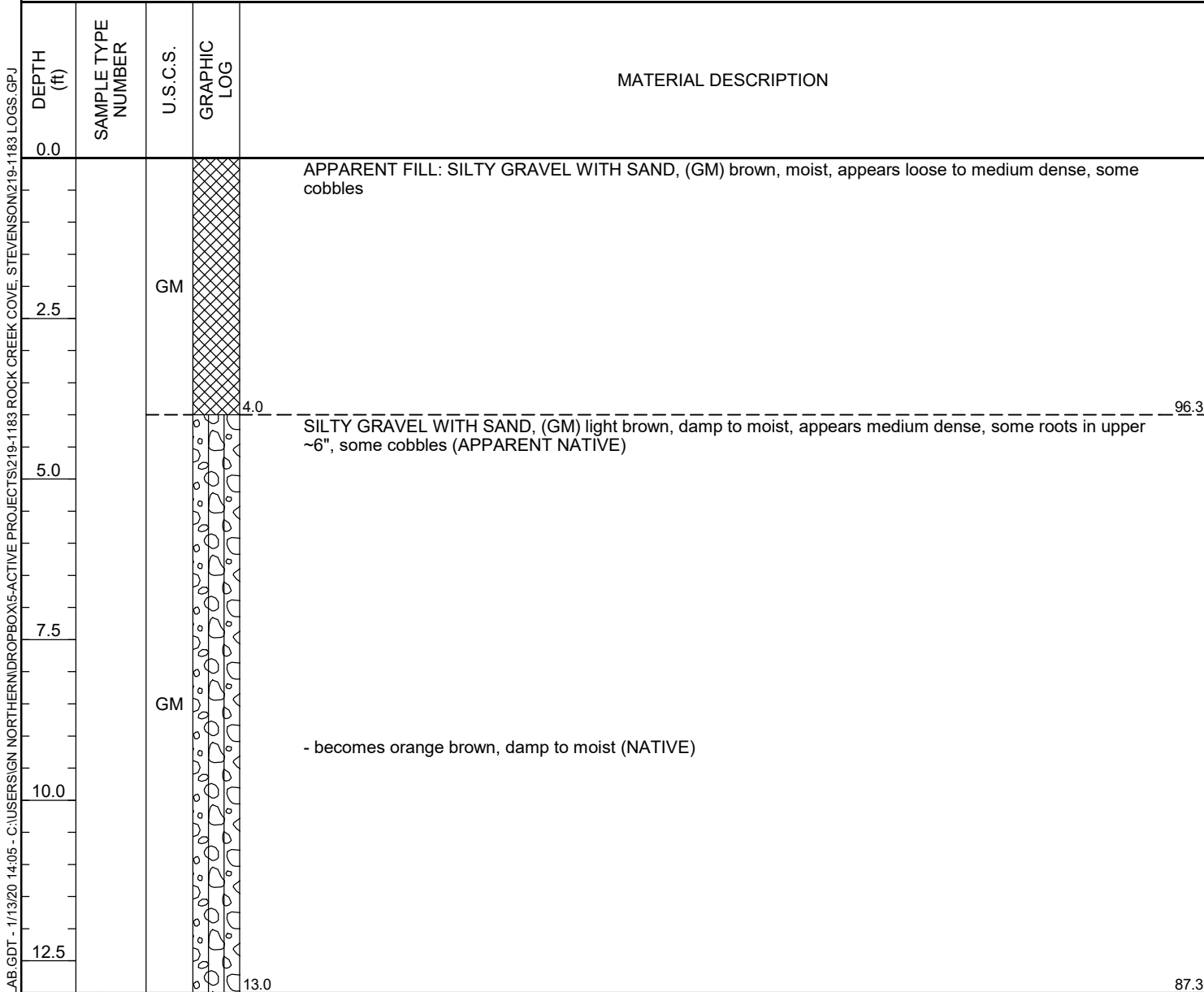


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# TEST PIT NUMBER TP-10

PAGE 1 OF 1

<b>CLIENT</b> <u>FDM Development</u>	<b>PROJECT NAME</b> <u>Proposed Rock Creek Cove Development</u>
<b>PROJECT NUMBER</b> <u>219-1183</u>	<b>PROJECT LOCATION</b> <u>Rock Creek Drive, Stevenson, WA</u>
<b>DATE STARTED</b> <u>12/23/19</u> <b>COMPLETED</b> <u>12/23/19</u>	<b>GROUND ELEVATION</b> <u>100.3 ft</u> <b>TEST PIT SIZE</b> <u>36 x 96 inches</u>
<b>EXCAVATION CONTRACTOR</b> <u>Riley Materials</u>	<b>GROUND WATER LEVELS:</b>
<b>EXCAVATION METHOD</b> <u>Link-Belt 145x4 Excavator</u>	<b>AT TIME OF EXCAVATION</b> <u>---</u>
<b>LOGGED BY</b> <u>KAH</u> <b>CHECKED BY</b> <u>MYM</u>	<b>AT END OF EXCAVATION</b> <u>---</u>
<b>NOTES</b> <u>Approx. GPS Coords.: 45°41'15.46"N, 121°53'49.93"W</u>	<b>AFTER EXCAVATION</b> <u>---</u>



- Groundwater not encountered at time of excavation  
 - Referenced elevations are approximate and based on Google Earth topography  
 Bottom of test pit at 13.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 1/13/20 14:05 - C:\USERS\IGN NORTHERN\IDROP\BOX15-ACTIVE PROJECTS\219-1183 ROCK CREEK COVE - STEVENSON\219-1183 LOGS.GPJ



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# TEST PIT NUMBER TP-11

PAGE 1 OF 1

**CLIENT** FDM Development **PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT NUMBER** 219-1183 **PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19 **GROUND ELEVATION** 104 ft **TEST PIT SIZE** 36 x 96 inches  
**EXCAVATION CONTRACTOR** Riley Materials **GROUND WATER LEVELS:**  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator **AT TIME OF EXCAVATION** ---  
**LOGGED BY** KAH **CHECKED BY** MYM **AT END OF EXCAVATION** ---  
**NOTES** Approx. GPS Coords.: 45°41'16.39"N, 121°53'50.59"W **AFTER EXCAVATION** ---

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 1/13/20 14:05 - C:\USERS\IGN NORTHERN\DR\PROJECTS\219-1183 ROCK CREEK COVE - STEVENSON\219-1183 LOGS.GPJ

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					
2.5			SM		FILL: SILTY SAND WITH GRAVEL, (SM) dark gray brown, fine grained, damp to moist, appears loose to medium dense, with misc. trash/metal debris  - becomes cemented, very dense
3.5					100.5
5.0	GB	MC = 17% Fines = 12%	SM		APPARENT FILL: SILTY SAND, (SM) reddish brown, fine grained, damp, appears medium dense, some gravel
6.0					98.0
7.5			GM		SILTY GRAVEL WITH SAND, (GM) light brown, damp to moist, appears medium dense, with cobbles, with boulders (APPARENT NATIVE)
10.0					94.0

- Groundwater not encountered at time of excavation  
 - Referenced elevations are approximate and based on Google Earth topography  
 Bottom of test pit at 10.0 feet.



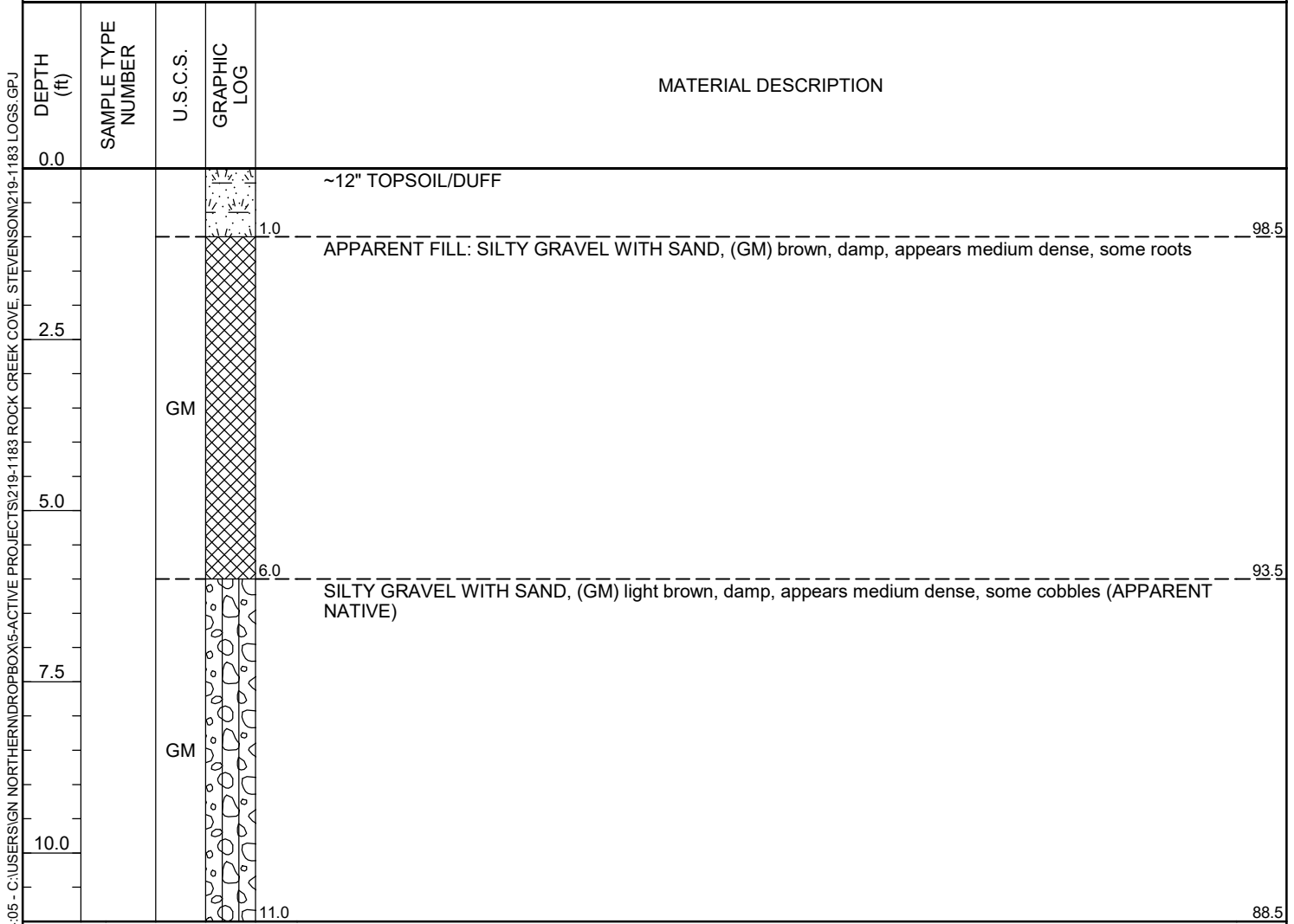


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# TEST PIT NUMBER TP-12

PAGE 1 OF 1

**CLIENT** FDM Development **PROJECT NAME** Proposed Rock Creek Cove Development  
**PROJECT NUMBER** 219-1183 **PROJECT LOCATION** Rock Creek Drive, Stevenson, WA  
**DATE STARTED** 12/23/19 **COMPLETED** 12/23/19 **GROUND ELEVATION** 99.5 ft **TEST PIT SIZE** 36 x 96 inches  
**EXCAVATION CONTRACTOR** Riley Materials **GROUND WATER LEVELS:**  
**EXCAVATION METHOD** Link-Belt 145x4 Excavator **AT TIME OF EXCAVATION** ---  
**LOGGED BY** KAH **CHECKED BY** MYM **AT END OF EXCAVATION** ---  
**NOTES** Approx. GPS Coords.: 45°41'17.30"N, 121°53'51.73"W **AFTER EXCAVATION** ---



- Groundwater not encountered at time of excavation  
 - Referenced elevations are approximate and based on Google Earth topography  
 Bottom of test pit at 11.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 1/13/20 14:05 - C:\USERS\IGN NORTHERN\DRIDROP\BOX15-ACTIVE PROJECTS\219-1183 ROCK CREEK COVE - STEVENSON\219-1183 LOGS.GPJ

# KEY CHART

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE					
COARSE-GRAINED SOILS			FINE-GRAINED SOILS		
DENSITY	N (BLOWS/FT)	FIELD TEST	CONSISTENCY	N (BLOWS/FT)	FIELD TEST
Very Loose	0 – 4	Easily penetrated with ½-inch reinforcing rod pushed by hand	Very Soft	0 – 2	Easily penetrated several inches by thumb
Loose	4 – 10	Difficult to penetrate with ½-inch reinforcing rod pushed by hand	Soft	2 – 4	Easily penetrated one inch by thumb
Medium -Dense	10 – 30	Easily penetrated with ½-inch rod driven with a 5-lb hammer	Medium-Stiff	4 – 8	Penetrated over ½-inch by thumb with moderate effort
Dense	30 – 50	Difficult to penetrate with ½-inch rod driven with a 5-lb hammer	Stiff	8 – 15	Indented about ½-inch by thumb but penetrated with great effort
Very Dense	> 50	penetrated only a few inches with ½-inch rod driven with a 5-lb hammer	Very Stiff	15 – 30	Readily indented by thumb
			Hard	> 30	Indented with difficulty by thumbnail

USCS SOIL CLASSIFICATION						
MAJOR DIVISIONS			GROUP DESCRIPTION			
Coarse-Grained Soils  <50% passes #200 sieve	Gravel and Gravelly Soils <50% coarse fraction passes #4 sieve	Gravel (with little or no fines)		GW	Well-graded Gravel	
		Gravel (with >12% fines)		GP	Poorly Graded Gravel	
		Sand and Sandy Soils >50% coarse fraction passes #4 sieve	Sand (with little or no fines)		GM	Silty Gravel
			Sand (with >12% fines)		GC	Clayey Gravel
	Fine-Grained Soils  >50% passes #200 sieve	Silt and Clay Liquid Limit < 50		SW	Well-graded Sand	
				SP	Poorly graded Sand	
			SM	Silty Sand		
Silt and Clay Liquid Limit > 50			SC	Clayey Sand		
			ML	Silt		
Highly Organic Soils			CL	Lean Clay		
			OL	Organic Silt and Clay (low plasticity)		
			MH	Inorganic Silt		
			CH	Inorganic Clay		
			OH	Organic Clay and Silt (med. to high plasticity)		
			PT	Peat	Top Soil	

LOG SYMBOLS		
	2S	2" OD Split Spoon (SPT)
	3S	3" OD Split Spoon
	NS	Non-Standard Split Spoon
	ST	Shelby Tube
	CR	Core Run
	BG	Bag Sample
	TV	Torvane Reading
	PP	Penetrometer Reading
	NR	No Recovery
	GW	Groundwater Table

MODIFIERS	
DESCRIPTION	RANGE
Trace	<5%
Little	5% – 12%
Some	>12%

MOISTURE CONTENT	
DESCRIPTION	FIELD OBSERVATION
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but not visible water
Wet	Visible free water

## SOIL CLASSIFICATION INCLUDES

- Group Name
- Group Symbol
- Color
- Moisture content
- Density / consistency
- Cementation
- Particle size (if applicable)
- Odor (if present)
- Comments

MAJOR DIVISIONS WITH GRAIN SIZE							
SIEVE SIZE							
12"	3"	3/4"	4	10	40	200	
GRAIN SIZE (INCHES)							
12	3	0.75	0.19	0.079	0.0171	0.0029	
Boulders	Cobbles	Gravel		Sand			Silt and Clay
		Coarse	Fine	Coarse	Medium	Fine	

Conditions shown on boring and testpit logs represent our observations at the time and location of the fieldwork, modifications based on lab test, analysis, and geological and engineering judgment. These conditions may not exist at other times and locations, even in close proximity thereof. This information was gathered as part of our investigation, and we are not responsible for any use or interpretation of the information by others.

*Appendix III*  
*Laboratory Testing Results*



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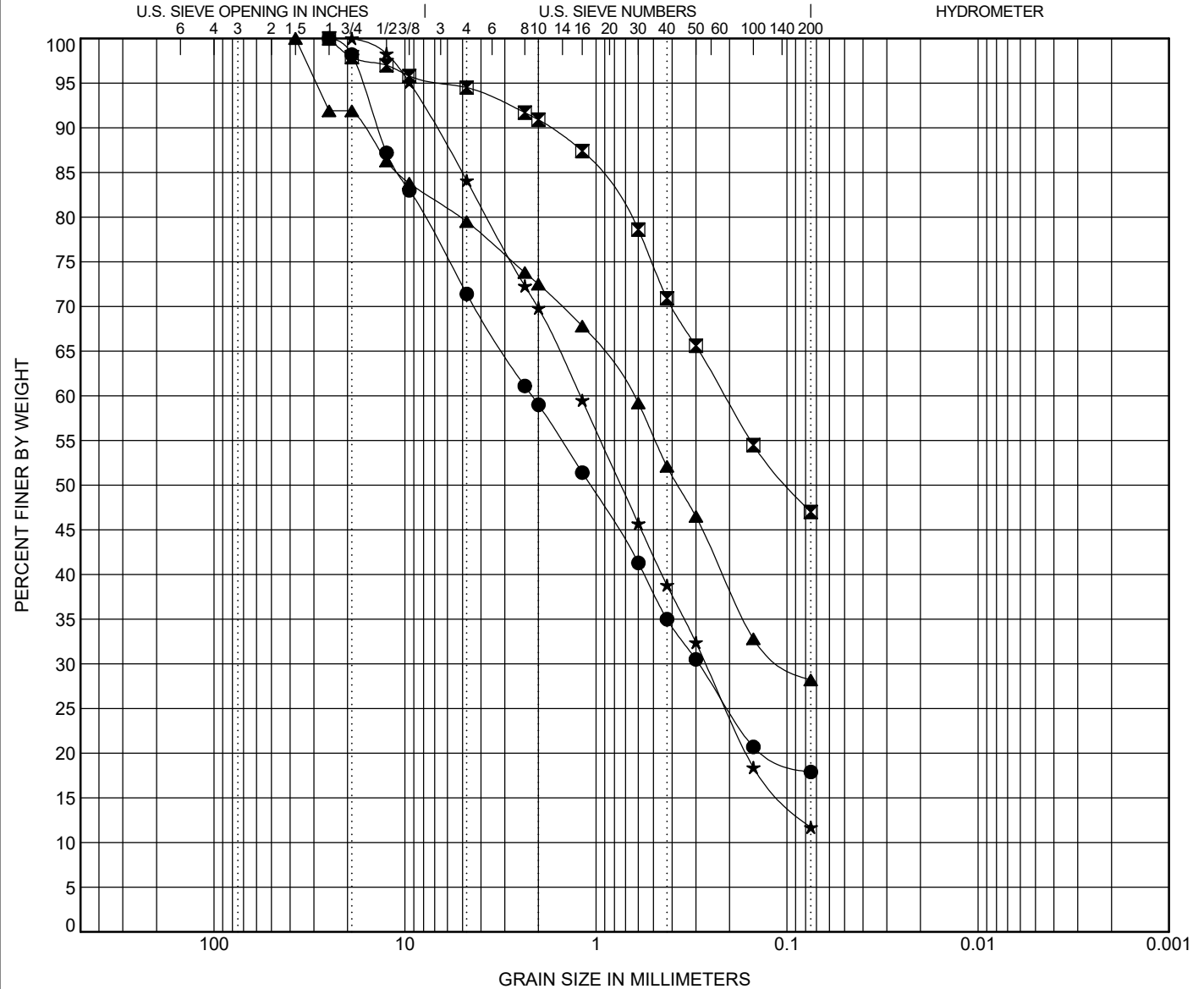
# GRAIN SIZE DISTRIBUTION

CLIENT FDM Development

PROJECT NAME Proposed Rock Creek Cove Development

PROJECT NUMBER 219-1183

PROJECT LOCATION Rock Creek Drive, Stevenson, WA



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification	LL	PL	PI	Cc	Cu
● TP-1	5.0	SILTY SAND WITH GRAVEL (SM)					
☒ TP-2	3.5	SILTY SAND (SM)					
▲ TP-3	11.0	SILTY SAND WITH GRAVEL (SM)					
★ TP-11	4.0	SILTY SAND WITH GRAVEL (SM)				0.93	19.25

BOREHOLE	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TP-1	5.0	25	2.164	0.29		28.6	53.5	17.9	
☒ TP-2	3.5	25	0.211			5.5	47.5	47.0	
▲ TP-3	11.0	37.5	0.639	0.098		20.5	51.3	28.2	
★ TP-11	4.0	19	1.211	0.266		15.9	72.4	11.7	

GRAIN SIZE - TEMPLATE - JESSE.GDT - 1/13/20 14:06 - C:\USERS\GN NORTHERN\IDROPBOX\5-ACTIVE PROJECTS\219-1183 ROCK CREEK COVE, STEVENSON\219-1183 LOGS.GPJ

*Appendix IV*  
*Site & Exploration Photographs*



*Excavation of test-pit TP-1, looking west*



*Exposed subsurface soil profile within test-pit TP-1*



*Excavation of test-pit TP-2, looking southwest*



*Exposed subsurface soil profile within test-pit TP-2*



*Excavation of test-pit TP-3, looking west*



*Exposed subsurface soil profile within test-pit TP-3*



*View of site conditions near test-pit TP-4*



*Exposed subsurface soil profile within test-pit TP-4*



*Excavation of test-pit TP-5, looking east*



*Exposed subsurface soil profile within test-pit TP-5*



*Excavation of test-pit TP-6, looking north*



*Exposed subsurface soil profile within test-pit TP-6*



*View of site conditions near test-pit TP-7, looking north*



*View of site conditions*



*View of site conditions near test-pit TP-8, looking west*



*Exposed subsurface soil profile within test-pit TP-8*



*Exposed subsurface soil profile within test-pit TP-9*



*Exposed subsurface soil profile within test-pit TP-10*





*Exposed subsurface soil profile within test-pit TP-11*



*Exposed subsurface soil profile within test-pit TP-11*



*Excavation of test-pit TP-12, looking southwest*



*Exposed subsurface soil profile within test-pit TP-12*



*View of site conditions near test-pit TP-12, looking northwest*



*Infiltration test setup at test-pit P-1*

*Appendix V*  
*Historic Aerial Photographs*



*1935 Historic USGS Aerial*



*1952 Historic USGS Aerial*



*1955 Historic USGS Aerial*



*1973 Historic USGS Aerial*



*1975 Historic USGS Aerial*



*1979 Historic USGS Aerial*



*1981 Historic USGS Aerial*



*1984 Historic USGS Aerial*



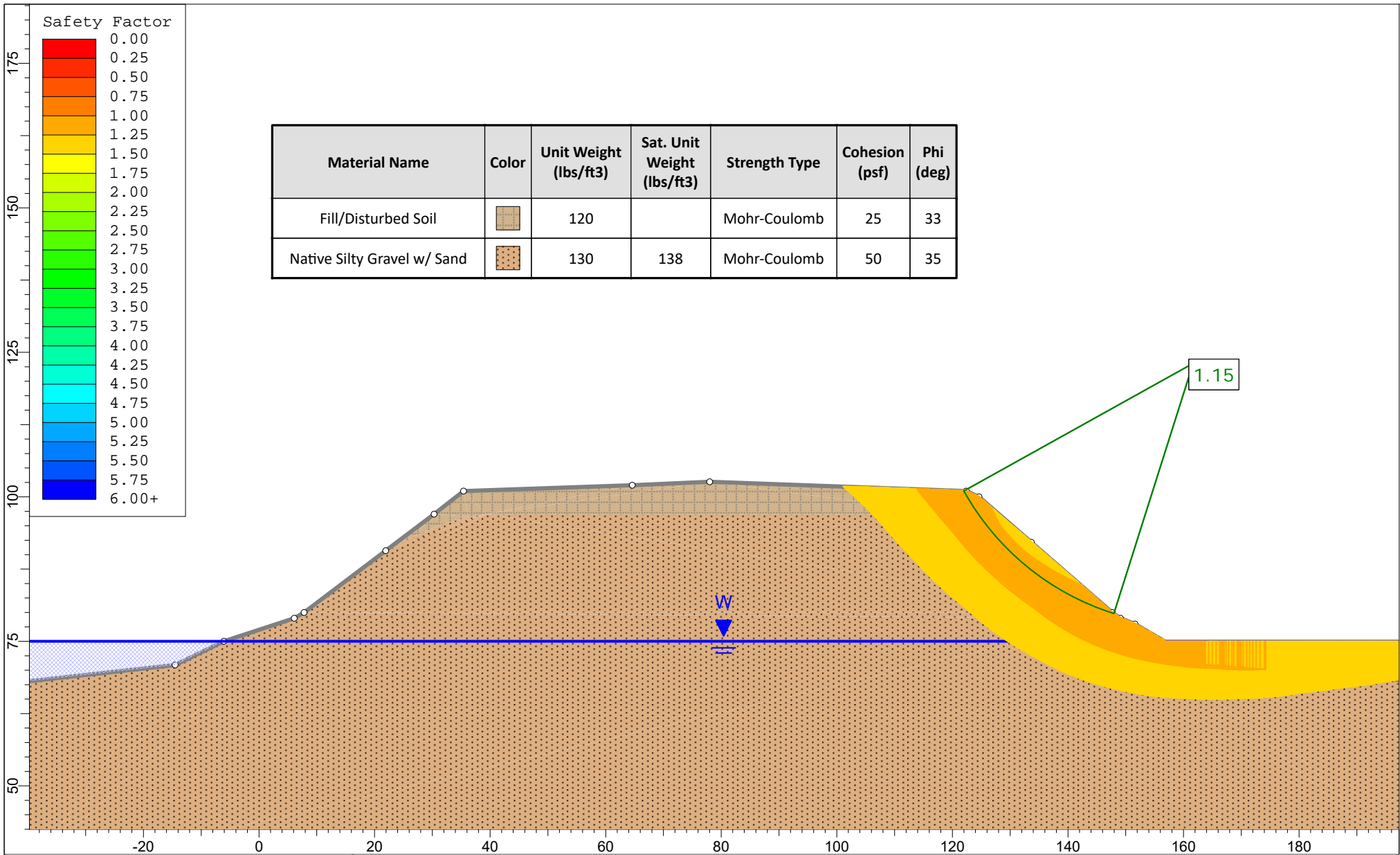
*1993 Historic USGS Aerial*



*2007 Historic USGS Aerial*

*Appendix VI*  
*Slope Stability Analysis*





Material Name	Color	Unit Weight (lbs/ft3)	Sat. Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Fill/Disturbed Soil		120		Mohr-Coulomb	25	33
Native Silty Gravel w/ Sand		130	138	Mohr-Coulomb	50	35

**Northern, Inc.**  
 Consulting Engineers Environmental Scientists Geologists  
 Construction Materials Testing Geophysical Services

Project				Rock Creek Cove Vacation Homes Project	
Analysis Description				Existing Slopes Across Southern Peninsula - Spencer Method - Static	
Drawn By	MYM	Scale	1:276	Company	GN Northern, Inc,
Date		File Name	Slide1.slim		

*Appendix VII*  
*NRCS Soil Survey*



United States  
Department of  
Agriculture

**NRCS**

Natural  
Resources  
Conservation  
Service

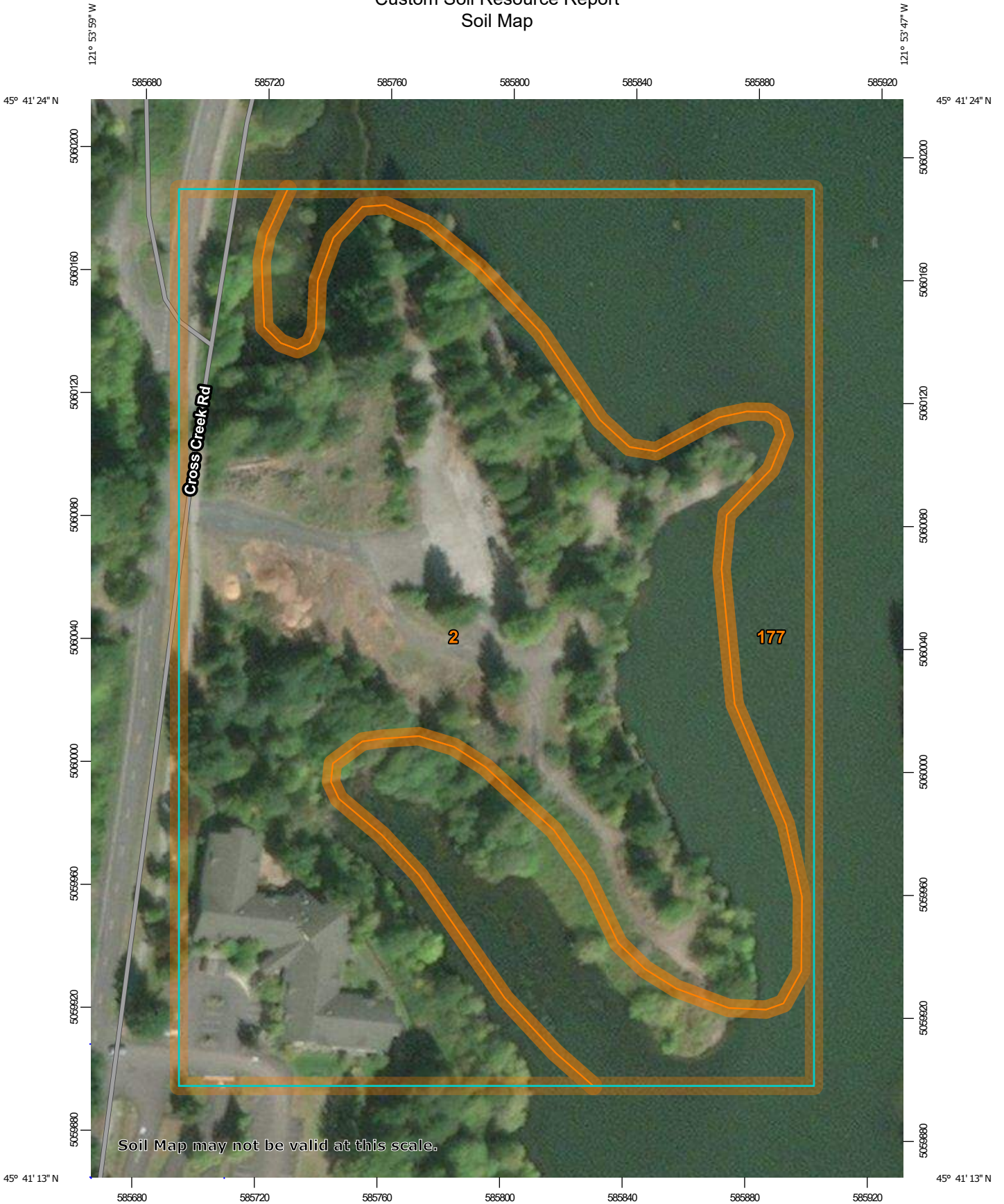
A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Skamania County Area, Washington

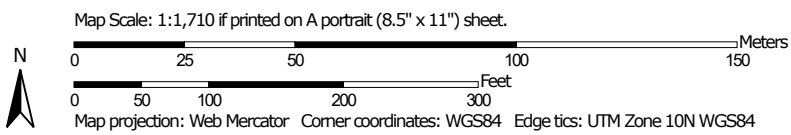
## Rock Creek Cove Vacation Homes Project



# Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.



## Skamania County Area, Washington

### 2—Arents, 0 to 5 percent slopes

#### Map Unit Setting

*National map unit symbol:* 1hhrw

*Elevation:* 0 to 200 feet

*Mean annual precipitation:* 40 to 80 inches

*Mean annual air temperature:* 45 to 52 degrees F

*Frost-free period:* 90 to 200 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Arents and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Arents

##### Setting

*Landform:* Terraces

##### Typical profile

*H1 - 0 to 24 inches:* gravelly sandy loam

*H2 - 24 to 60 inches:* extremely gravelly sandy loam

##### Properties and qualities

*Slope:* 0 to 5 percent

*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water storage in profile:* Moderate (about 6.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3s

*Hydrologic Soil Group:* A

*Hydric soil rating:* No

### 177—Water

#### Map Unit Composition

*Water:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**APPENDIX 5 – Critical Areas Assessment**



January 21, 2020

Zachary Pyle, PE  
Development Manager  
FDM Development, Inc.  
5453 Ridgeline Dr #160  
Kennewick, WA 99338  
[zpyle@fdmdevelopment.com](mailto:zpyle@fdmdevelopment.com)  
(210) 849-5592

Re: Rock Cove Preliminary Critical Areas Assessment

Zach,

Ecological Land Services (ELS) completed a field assessment for FDM Development to determine whether wetlands or fish and wildlife habitat conservation areas (hereafter collectively termed critical areas) are located on or adjacent to parcels 02070100130300, 02070100130400, and 02070100130200 (hereafter referred to as the study area) in the City of Stevenson, Skamania County, Washington. The study area is in the SW  $\frac{1}{4}$  of the NW  $\frac{1}{4}$  of Section 1, Township 2 N, and Range 7 East of the Willamette Meridian, coordinates 45.6890, -121.8992, and accessed from Rock Cove Drive (Figure 1). City of Stevenson zoning is "Commercial Recreation" (CR).

ELS completed fieldwork for a critical areas determination on December 30, 2019 in collaboration with Washington Department of Ecology (Ecology) staff. This letter provides a description of the study area's existing conditions as observed on December 30<sup>th</sup> and a summary of critical areas findings in accordance with Stevenson Municipal Code (SMC), Title 18 "Environmental Protection", Chapters 18.08 "Shoreline Management" and 18.13 "Critical Areas and Natural Resource Lands", and Stevenson's Shoreline Master Programs (SMP) dated 1977 (approved) and 2018 (in review).

#### *Site Description*

The study area consists of three parcels that form a peninsula in Rock Cove; Rock Cove is a side channel of the Columbia River formed by the berm for Lewis and Clark Hwy (WA 14) and an adjacent railroad. An unnamed tributary enters Rock Cove north of the study area and Rock Creek enters Rock Cove to the east (Figure 3). An open connection between Rock Cove and the Columbia River is present at its confluence with Rock Creek, southeast of the study area. The study area is currently undeveloped (there are no buildings) but it retains improvements from prior industrial land uses that include concrete and gravel surfaces, gravel roads accessing various points within the study area, a graveled boat launch, and riprap embankments that span the majority of shoreline. A line of abandoned wooden pilings is located just offshore northeast.

Dominant vegetation in the study area included Douglas fir (*Pseudotsuga menziesii*) and red alder (*Alnus rubra*) with Himalayan blackberry (*Rubus armeniacus*) in the understory and rooted in riprap along the

shoreline, and clusters of reed canarygrass (*Phalaris arundinacea*) and soft rush (*Juncus effuses*) rooted in places along the water's edge, at the head of sediment bars and mudflats, and along the river's ordinary high water mark (OHWM).

### *Methods*

ELS followed the U.S. Army Corps of Engineers (Corps) Routine Determination Method described in the "Wetland Delineation Manual" (Environmental Laboratory 1987) and the "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)" (Corps 2010). To make determinations about the presence of wetland in the study area. For regulatory purposes under the Clean Water Act (Section 404) the Environmental Protection Agency (EPA) defines wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (EPA 2014). Wetlands are regulated as "Waters of the United States" by the Corps, as "Waters of the State" by Ecology, and locally by the City of Stevenson.

The Revised Code of Washington (RCW) 90.58.030(2)(b) and Washington Administrative Code (WAC) 173-22-030(11), defines ordinary high water mark as the action of water "so common and usual and so long continued in all ordinary years as to mark upon the soil a character distinct from that of the abutting upland." In collaboration with Ecology staff, ELS used principles in this guidance to identify transitions in vegetation, wrack lines, scouring under trees and exposed roots, and breaks in topography to distinguish the OHWM of the Columbia River along the study area boundary. Ecology and ELS flagged the OHWM with consecutively numbered orange tape flagging. The flag locations were professionally surveyed by S&F Land Services.

### *Critical areas findings*

ELS and Ecology identified one unnamed tributary north of the study area (Figures 2 and 3). The tributary is identified as a Type F (fish-bearing) water by Washington Department of Natural Resources (DNR) (Figure 4). Rock Creek is east of the study area and is designated as Type S, a shoreline of the state. Rock Cove surrounds the study area on three sides. The Columbia River is designated Type S and is a shoreline of statewide significance. There were no wetlands or other surface waters in the study area, and no priority habitat for terrestrial wildlife. According to SMC 18.13.095(D), the area designated as a fish and wildlife habitat conservation area (FWHCA) for Type F waters is 100 feet and for Type S waters, 150 feet.<sup>1</sup> SMC 18.13.095(D)(3) addresses functionally isolated buffers, indicating areas that "do not protect the FWHCA from adverse impacts due to features such as "lawns, pre-existing roads, structures, or vertical separation" are exempt from buffer criteria. Accordingly, portions of the study area are exempt from the FWHCA for Rock Cove due to areas of maintained vegetation and the presence of riprap which is both structural and vertical separation from Rock Cove (Figure 2).

SMC 18.13.095(D)(6) outlines provisions for buffer averaging or riparian habitat buffer reduction with mitigation to allow reasonable use of a parcel.

---

<sup>1</sup> Table 18.13.095-1 - Fish & Wildlife Habitat Conservation Area Protective Buffer Widths



Averaged buffers must meet the following conditions:

- a. There are no feasible alternatives to the site design
- b. The averaged buffer will not result in degradation of the FWHCA's functions and values.
- c. The total buffer area after averaging is equal to the area required without averaging.
- d. The buffer at its narrowest point is never less than 75% of the required base buffer width.

Reduced buffers must meet the following conditions:

- a. mitigation involves restoration or enhancement of all remaining buffers.
- b. Conservation covenants shall--and performance bonds may--be required.
- c. Reduced buffers do not result in a net loss of existing buffer functions.

#### *December 2018 SMP requirements*

The standard shoreline management area (or shoreline setback) for all designated shorelines is 200 feet, measured landward from the OHWM. The study area is zoned "active waterfront"; according to the 2018 SMP, setbacks for development proposed in active waterfront is typically 50 feet.<sup>2</sup>

Regarding improvements from prior industrial land uses including concrete and gravel surfaces, gravel roads, the graveled boat launch, and riprap embankments, the following condition applies:

A shoreline use that was lawfully constructed prior to the effective date of the SMA or the December 2018 SMP and that does not conform to the current SMP standards is considered a nonconforming use. For the purposes of the December 2018 SMP, existing roads (whether asphalt, gravel, or dirt) are considered nonconforming uses and do not need a Shoreline Conditional Use Permit to be retained or improved (SMP 2018).

Thank you for the opportunity to provide this information. The findings in this letter are intended for FDM Development's planning strategy and should be considered preliminary until they're reviewed and approved in writing by the City of Stevenson and Washington Department of Ecology. If you have any questions, please contact me by phone (360) 578-1371 or email [andrew@eco-land.com](mailto:andrew@eco-land.com).

Sincerely,



Andrew R. Allison  
Wetland Scientist, Principal

Attachments:

Figures 1-4

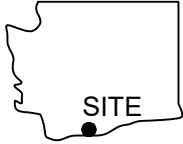
Photoplates 1-4

City of Stevenson 2018 SMP "Table 5.1 Shoreline Use & Setback Standards"

---

<sup>2</sup> Tables identifying setback distances per development type are attached to this letter for reference.

WASHINGTON



Latitude: 45.6886°  
Longitude: -121.8981°

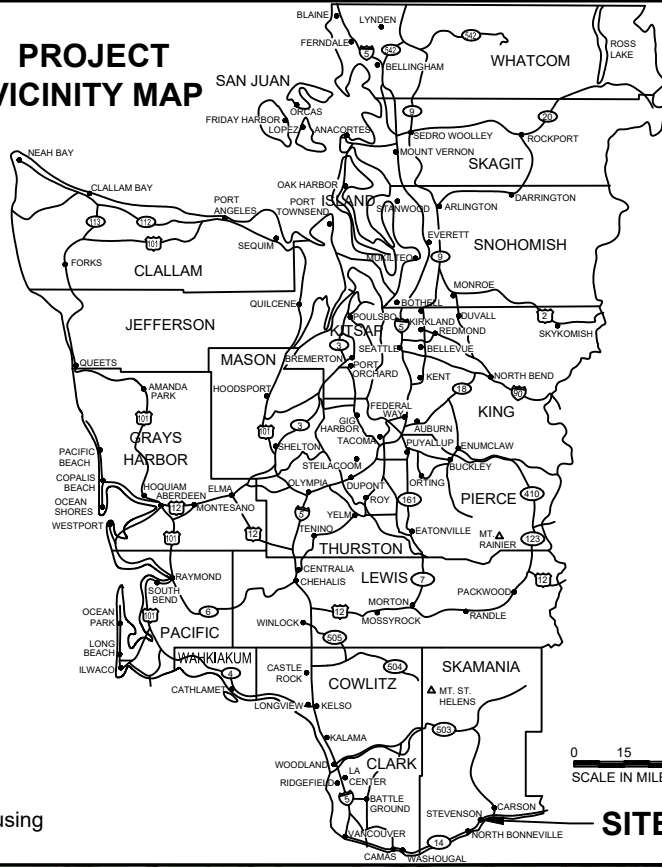
LOCATION MAP

**R 7 E**


**T 2 N**

**NOTE:**  
USGS topographic quadrangle map reproduced using  
MAPTECH Inc., Terrain Navigator Pro software.

### PROJECT VICINITY MAP



0 15 30  
SCALE IN MILES

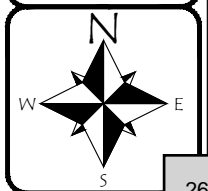
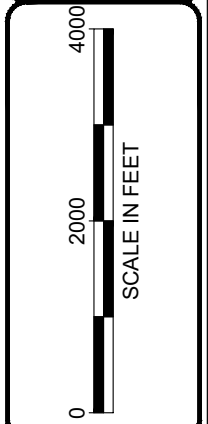
**SITE**

Figure 1

VICINITY MAP  
Rock Cove CAR  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 3E, W.M.

DATE: 1/17/20  
DWN: EF  
REQ. BY: AA  
PRJ. MGR: AA  
CHK: AA  
PROJECT NO:  
2682.02

1157 3rd Ave., Suite 220A  
Longview, WA 98632  
Phone: (360) 578-1371  
Fax: (360) 414-9305  
www.eco-land.com



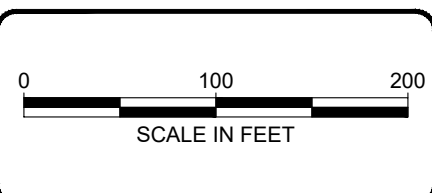
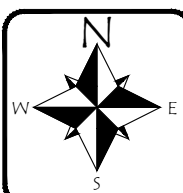


**LEGEND:**

- Site Boundary
- OHWM
- Stream with Flow Direction
- FWHCA Buffer for Type F
- FWHCA Buffer for Type S
- Shoreline Management Plan Setback
- Culvert
- Existing Graveled or Concrete Surfacing
- Existing Rip Rap

**NOTE(S):**

1. Aerial from Google Earth™.
2. OHWM line was determined through a joint effort by Ecological Land Services and Washington Department of Ecology on December 30, 2019. OHWM flags were professionally surveyed by S&F Land Services December 30-31, 2019.
3. FWHCA buffer is functionally isolated along existing riprap and existing graveled or concrete surfacing.






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DATE: 1/17/20  
 DWN: EF  
 REQ. BY: AA  
 PRJ. MGR: AA  
 CHK: AA  
 PROJECT NO:  
 2682.02

Figure 2  
 SITE MAP  
 Rock Cove CAR  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 3E, W.M.

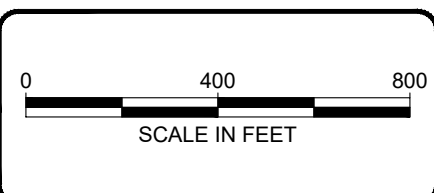
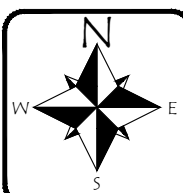


**LEGEND:**

-  Site Boundary
-  OHWM
-  Stream with Flow Direction

**NOTE(S):**

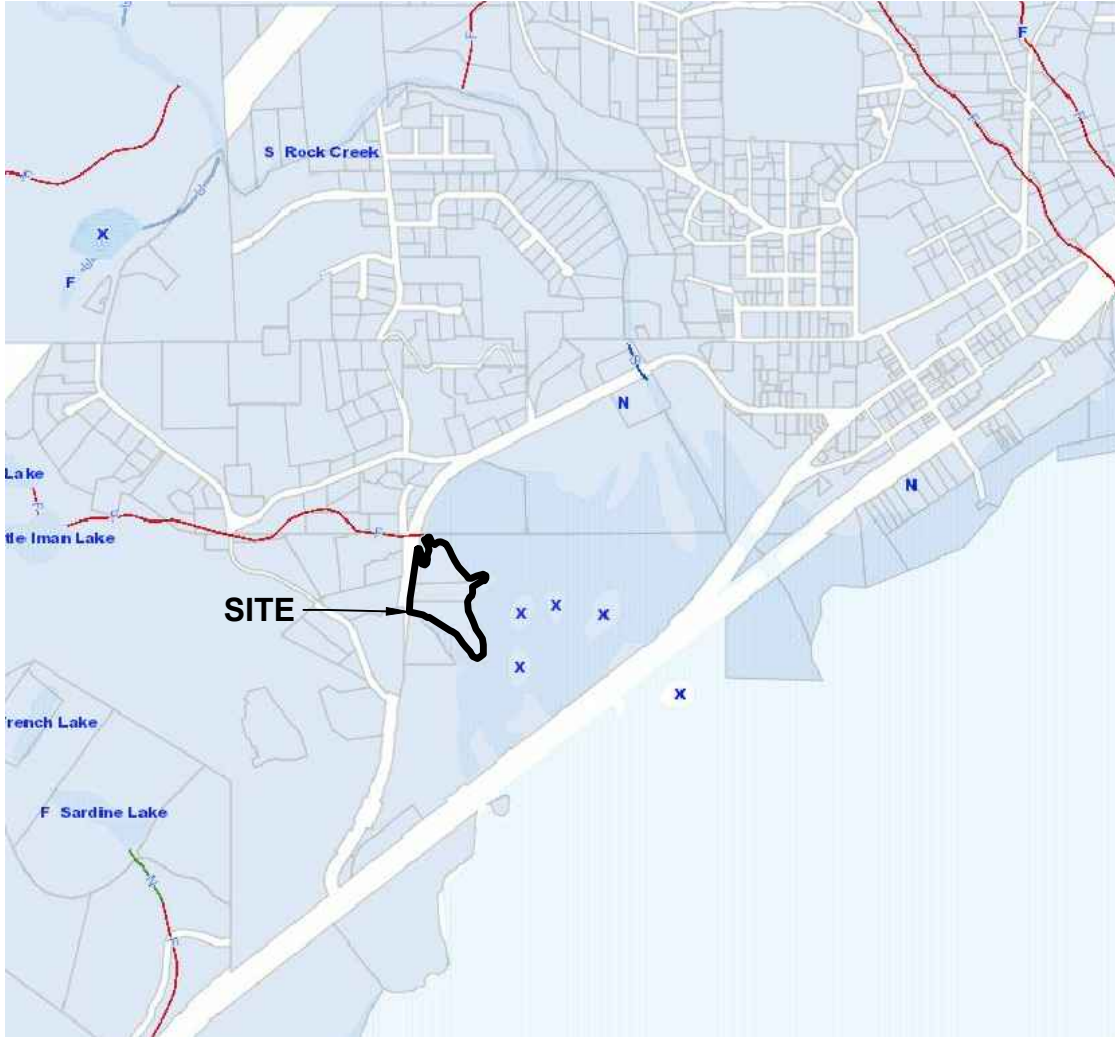
1. Aerial from Google Earth™.




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www.eco-land.com

DATE: 1/17/20  
DWN: EF  
REQ. BY: AA  
PRJ. MGR: AA  
CHK: AA  
PROJECT NO:  
2682.02

Figure 3  
SITE OVERVIEW MAP  
Rock Cove CAR  
FDM Development  
City of Stevenson, Skamania County, Washington  
Section 1, Township 2N, Range 3E, W.M.



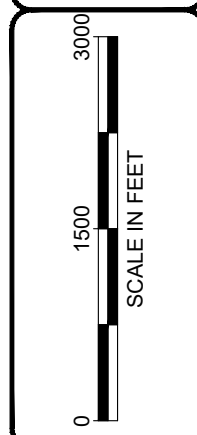
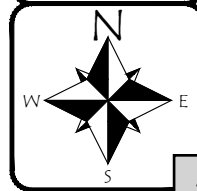
No mapped streams indicated onsite by the Washington State Department of Natural Resources (DNR).

**LEGEND:**

**Streams**

Streams

- Type S
- Type F
- Type N, Np, Ns
- U, unknown
- X, non-typed per WAC 222-16



**Ecological Land Services**

1157 3rd Ave., Suite 220A  
 Longview, WA 98632  
 Phone: (360) 578-1371  
 Fax: (360) 414-9305  
[www.eco-land.com](http://www.eco-land.com)

DATE: 1/17/20  
 DWN: EF  
 REQ. BY: AA  
 PRJ. MGR: AA  
 CHK: AA  
 PROJECT NO:  
 2682.02

Figure 4  
**DNR STREAM TYPE MAP**  
 Rock Cove CAR  
 FDM Development  
 City of Stevenson, Skamania County, Washington  
 Section 1, Township 2N, Range 3E, W.M.



**Photo 1. Inflow point of the unnamed tributary via concrete culvert.**



**Photo 2. Unnamed tributary flowing toward Rock Cove.**



**Photo 3. Overview of unnamed tributary's confluence with Rock Cove.**



**Photo 4. Mud flat adjoining Rock Cove.**



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MGR: ARBA  
PR#: 2682.02

**Photoplate 1**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



**Photo 1. Vegetated shoreline on the north end of the study area.**



**Photo 2. Vegetated shoreline extending toward the unnamed tributary.**



**Photo 3. Riprap on the eastern shoreline, facing north.**



**Photo 4. Riprap on the eastern shoreline, facing south.**



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MGR: ARBA  
PR#: 2682.02

**Photoplate 2**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington



**Photo 1. Graveled boat launch on the east side of the study area.**



**Photo 2. Vegetated shoreline on the west side, facing south.**



**Photo 3. Vegetated shoreline and mud flat in the southwest portion of the study area, facing south.**



**Photo 4. Groomed vegetation in the center of the study area.**



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 Longview, WA 98632  
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DATE: 1/17/20  
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 MGR: ARBA  
 PR#: 2682.02

**Photoplate 3**  
**Site Photos**  
 Rock Cove Preliminary Critical Areas Assessment  
 FDM Development, Inc.  
 City of Stevenson, Washington





**Photo 1. Existing concrete and gravel surfacing.**



**Photo 2. Existing concrete and gravel surfacing.**



**Photo 3. Groomed vegetation in the center of the study area.**



**Photo 4. Existing gravel road.**



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Fax: (360) 414-9305

DATE: 1/17/20  
DWN: ARBA  
MGR: ARBA  
PR#: 2682.02

**Photoplate 4**  
**Site Photos**  
Rock Cove Preliminary Critical Areas Assessment  
FDM Development, Inc.  
City of Stevenson, Washington

<b>TABLE 5.1 – SHORELINE USE &amp; SETBACK STANDARDS</b>										
	<b>Shoreline Environment Designation</b>									
	<b>Most Restrictive</b>					<b>Least Restrictive</b>				
	<b>AQUATIC</b>		<b>NATURAL</b>		<b>SHORELINE RESIDENTIAL</b>		<b>URBAN CONSERVANCY</b>		<b>ACTIVE WATERFRONT</b>	
	<b>Allowance</b>	<b>Setbacks (ft)</b>	<b>Allowance</b>	<b>Setbacks (ft)</b>	<b>Allowance</b>	<b>Setbacks (ft)</b>	<b>Allowance</b>	<b>Setbacks (ft)</b>	<b>Allowance</b>	<b>Setbacks (ft)</b>
P= Permitted, C=Conditional Use, X= Not Permitted, n/a= Not Applicable										
<b>Agriculture &amp; Mining</b>										
Agriculture	X	n/a	X	n/a	X	n/a	X	n/a	X	n/a
Mining	X	n/a	X	n/a	X	n/a	X	n/a	X	n/a
<b>Aquaculture</b>										
Water-Oriented	C	n/a	X	n/a	X	n/a	C	0	C	0
Non-Water Oriented	X	n/a	X	n/a	X	n/a	X	n/a	C	150
<b>Boating Facilities &amp; Overwater Structures</b>										
Non-motorized Boat Launch	See Adjacent Upland Environment		C		P		P		P	
Motorized Boat Launch			X		C		C		P	
Mooring Buoy			C		C		P		P	
Float			X		C		C		P	
Private Leisure Deck			X	n/a	C	n/a	C	n/a	P	n/a
Public Leisure Pier			X		C		P		P	
Single-User Residential Dock			X		C		C		P	
Joint-Use Moorage			X		P		P		P	
Marina		X		X		C		P		
<b>Commercial &amp; Industrial</b>										
Water-Dependent	P				X <sup>1</sup>	0	P	0	P	0
Water-Related, Water Enjoyment	C	n/a	X	n/a	X <sup>1</sup>	75	P	50	P	33
Non-Water-Oriented	X				X	-	C <sup>2</sup>	150	C <sup>2</sup>	100
<b>Forest Practices</b>										
All	X	n/a	C	50	P	50	P	50	P	25
<b>Institutional</b>										
Water-Dependent	C		C	0	C	0	P	0	P	0
Water-Related	X	n/a	X	n/a	C	100	P	75	P	50
Non-Water-Oriented	X		X	n/a	C	100	C	100	P	100
Cemetery	X		X	n/a	C	50	P	50	C	50
<b>Instream Structures</b>										
All	C	n/a	C	0	C	0	C	0	C	0

**TABLE 5.1 – SHORELINE USE & SETBACK STANDARDS, CONT.**

	Shoreline Environment Designation									
	Most Restrictive					Least Restrictive				
	AQUATIC		NATURAL		SHORELINE RESIDENTIAL		URBAN CONSERVANCY		ACTIVE WATERFRONT	
	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)
P= Permitted, C=Conditional Use, X= Not Permitted, n/a= Not Applicable										
<b>Land Division</b>										
All	C	n/a	C	n/a	P	n/a	P	n/a	P	n/a
<b>Recreational</b>										
Water-Dependent	P		P	0	P	0	P	0	P	0
Water-Related/Water-Enjoyment	X		C	100	P	50	P	50	P	50
Trail Parallel to the Shoreline, View Platform	C	n/a	P	50	P	50	P	33	P	25
Dirt or Gravel Public Access Trail to the Water	X		P	0	P	0	P	0	P	0
Non-Water-Oriented (golf course, sports field)	X		X	n/a	X	n/a	C	150	C	100
<b>Residential</b>										
Single-Family	X		X		P	50	C	50	X	N/A
Multi-Family	X	n/a	X	n/a	P	50	P	50	P	50
Over-Water Residence	X		X		X	n/a	X	n/a	X	n/a
<b>Transportation &amp; Parking Facilities</b>										
Highway/Arterial Road	C		X	n/a	C	100	P	50	P	50
Access & Collector Road	X		C	100	P	100	P	50	P	50
Private Road	X		C	100	P	50	C	50	C	50
Bridge	C	n/a	C	0	C	0	P	0	P	0
Railroad	C		C	100	C	100	P	50	P	50
Airport	X		X	n/a	X	n/a	C	150	C	150
Primary Parking Facility	X		X	n/a	X	n/a	X	n/a	X	n/a
Accessory Parking (On-Site Parking Serving another Use, Including Recreation/Vista Uses)	X		P	100	P	100	P	50	P	33

**TABLE 5.1 – SHORELINE USE & SETBACK STANDARDS, CONT.**

	Shoreline Environment Designation									
	Most Restrictive					Least Restrictive				
	AQUATIC		NATURAL		SHORELINE RESIDENTIAL		URBAN CONSERVANCY		ACTIVE WATERFRONT	
	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)
P= Permitted, C=Conditional Use, X= Not Permitted, n/a= Not Applicable										
<b>Utilities</b>										
Water-Oriented	P	n/a	C	0	C	0	P	0	P	0
Non-Water-Oriented (Parallel)	X	n/a	C	100	C	50	P	50	P	33
Non-water-Oriented (Perpendicular)	C	n/a	C	0	C	0	C	0	P	0
1 – All Industrial uses are prohibited, however, a Water-Oriented Commercial use may be allowed as a conditional use in the Shoreline Residential SED. 2 – Conditionally allowed only when a) the project provides a significant public benefit with respect to SMA objectives (e.g., providing public access and ecological restoration) and i) is part of a mixed-use project that includes water-dependent uses or ii) navigability is severely limited or b) the site is physically separated from the shoreline by another property or public right-of-way.										

**APPENDIX 6 – Operation and Maintenance Manuals**

## **STORMWATER FACILITIES OPERATIONS AND MAINTENANCE PLAN**

**Owner:** FDM Development

**Project Name:** Rock Creek Cove Hospitality

**Engineer:** Harper Houf Peterson Righellis Inc.  
1220 Main Street, Suite 150  
Vancouver, WA 98660

**Date:** May 2023

The following Operations and Maintenance (O&M) outlines the necessary requirements for stormwater conveyance and water quality facilities for Rock Creek Cove Hospitality.

**This manual is provided in addition to the City of Stevenson's General Requirements.**

Water Quality facilities on this project will be owned and maintained by FDM Development.

### **Summary:**

The facilities to be maintained under this plan consist of inlets, pipes, manholes, and bioretention facilities. These facilities are shown on the civil improvement plans for the project.

**General O&M Requirements and Performance Measures**

**O&M Activity**

System Component	Remove Sediment, Trash, Debris, and Vegetation	Clean Out/ Control pollution	Manage Vegetation
<p><i>Structural Storm Sewer Devices</i></p> <p>Sedimentation Compartment/ Catch Basin</p>	<p>Sediment Accumulation does Not exceed 1 foot deep or exceed design specifications for sediment storage.</p>	<p>No flammable Chemicals or vapors are present in amounts that would present a fire hazard, exceed pollution control requirements presented in this table, or produce vapors that exceed 10% of the lower explosive limit for that chemical.</p>	
<p>Inlets/Outlets</p>	<p>No trash/debris/ Sediment obstructs more than 25% of the inlet/outlet structure. Flow is not restricted or impounded.</p>		

## Maintenance and Inspection Procedures

### Catch Basin and Inlet Inspection/Cleaning

Inspection of catch basins and ditch inlets to be performed no less than annually or in the event of system failure.

	Action	Response/Remark
1.	Check the amount of trash, debris, and other material at the catch basin/ditch inlet.	Make note of the amount of trash and other material at the catch basin. Measure the sediment (in inches) in the catch basin or ditch inlet. Note significant evidence of pollution (oil, grease, foam, odors, etc.)
2.	Remove accessible trash, debris, sediment, etc. from the catch basin/ditch inlet.	Place the debris on a truck so that it can be hauled to disposal.
3.	Inspect the catch basin/ditch inlet, checking that the grate and cover are in place and in good condition.	Check that: <ul style="list-style-type: none"> <li>• The frame is even with the curb and the top slab is free of holes and cracks.</li> <li>• The frame is sitting flush on the top slab.</li> <li>• The inlet grate is in place and is undamaged.</li> </ul>
4.	Check for cracks in the catch basin/ditch inlet structure	Check the basin walls, bottom, and at the joints of the inlet/outlet pipes. Look for dirt entering the catch basin or ditch inlet through cracks.
5.	Check for settling and/or misalignment of the catch basin/ditch inlet.	Check if: <ul style="list-style-type: none"> <li>• The frame has settled more than 1 inch.</li> <li>• The frame has rotated more than 2 inches out of alignment.</li> </ul>
6.	Make notes for machine cleaning, major repair, or replacement of the catch basin/ditch inlet.	Note any particular problems at the catch basin.



### Drywells/Manholes Inspection/Cleaning

Inspection of manholes to be performed no less that annually or in the event of system failure.

#### Inspection

	Action	Response/Remark
1.	Test the manholes or flow structure for a hazardous atmosphere.	
2.	Inspect the manhole or flow structure frame and cover.	Check that: <ul style="list-style-type: none"> <li>• The cover is accessible.</li> <li>• The manhole cover is in place and in good working condition.</li> <li>• All bolts and locks are in place.</li> <li>• The cover locks properly.</li> <li>• The cover is not difficult to remove.</li> </ul>
3.	Check the amount of sediment in the manhole or structure.	Measure the depth of sediment. Record the depth of sediment. Remove sediment when depths exceeds 1/3 the sump depth.
4.	Check for plugging of the manhole or control structure inlet.	
5.	Make notes for cleaning and repair of the manhole or flow structure.	Note any particular structural problems at the manhole or flow structure. Note visual evidence of pollution or unusual odors. Report all problems immediately for follow-up action.
6.	Report the work completed.	Record: <ul style="list-style-type: none"> <li>• Quantity of debris removed.</li> <li>• Significant evidence of pollution.</li> <li>• Types of defects observed.</li> </ul>

#### Cleaning

	Action	Response/Remark
1.	Test the manhole or flow structure manhole for a hazardous atmosphere.	
2.	Follow vactor manufacturer guidelines to pump water and debris from the manhole or flow structure. Closely monitor the level of accumulation material.	Note any significant signs of pollution, such as oil and grease, foam and unusual odors.
3.	Make notes for repairs to manhole or flow structure.	The manhole cover or flow control frame should be in place and in good condition.
4.	Report the work completed	Record: <ul style="list-style-type: none"> <li>• Amount of debris removed in CY.</li> <li>• Significant signs of pollution.</li> </ul>

### **Stormwater Bioretention Facilities Operation and Maintenance**

The stormwater bioretention facilities are designed to trap pollutants by filtering and slowing flows, allowing particles to settle out. All facility components, vegetation, and source controls shall be inspected for proper operations and structural stability, at a minimum, quarterly for the first 2 years from the date of installation, 2 times per year thereafter, and within 48 hours after each major storm event. The maintenance staff must keep a log, recording all inspection dates, observations, and maintenance activities. The following items shall be inspected and maintained as stated:

Bioretention Inlet (pipe) shall maintain a calm flow of water entering the planter.

- Source of erosion shall be identified and controlled when native soil is exposed or erosion channels are forming.
- Sediment accumulation shall be hand-removed with minimum damage to vegetation using proper erosion control measures. Sediment shall be removed if it is more than 4" thick or so thick as to damage or kill vegetation.
- Inlet shall be cleared when conveyance capacity is plugged. Sources of sediment and debris shall be identified and corrected.
- Splash blocks shall be inspected and any deficiencies in structure such as cracking, rotting, and failure shall be repaired.

Bioretention Soil Media (BSM) shall allow stormwater to percolate uniformly through the planter/swale. If it does not drain within 48 hours, it shall be tilled and replanted according to design specifications.

- Annual or semi-annual tilling shall be implemented if compaction or clogging continues.
- Debris in quantities that inhibit operation shall be removed routinely (e.g., no less than quarterly), or upon discovery.

Bioretention Outlet shall maintain sheet flow of water exiting the planter/swale unless a catch basin is installed. Source of erosion damage shall be identified and controlled when native soil is exposed or erosion channels are forming.

- Outlets shall be cleared when 50% of the conveyance capacity is plugged.
- Sources of sediment and debris shall be identified and corrected.

Vegetation shall be healthy and dense enough to provide filtering while protecting underlying soils from erosion.

Mulch shall be replenished as needed to ensure survival of vegetation.

- Vegetation, large shrubs or trees that interfere with planter/swale operation shall be pruned.
- Fallen leaves and debris from deciduous plant foliage shall be removed.
- Nuisance vegetation (such as blackberries and English Ivy) shall be removed when discovered. Invasive vegetation contributing up to 25% of vegetation of all species shall be removed and replaced.
- Dead vegetation and woody material shall be removed to maintain less than 10% of area coverage or when planter/swale function is impaired. Vegetation shall be replaced within 3 months, or immediately if required to maintain cover density and control erosion where soils are exposed.

Spill Prevention measures shall be exercised when handling substances that contaminate stormwater. Releases of pollutants shall be corrected as soon as identified.

Insects & Rodents shall not be harbored in the planter/swale. Pest control measures shall be taken when insects/rodents are found to be present.

- If sprays are considered, then a mosquito larvicide, such as Bacillus thurensensis or Altoside formulations can be applied only if absolutely necessary, and only by a licensed individual or contractor.

## Operation and Maintenance Plan

- Holes in the ground located in and around the planter/swale shall be filled.

Check Dams shall control and distribute flow.

- Causes for altered water flow shall be identified, and obstructions cleared upon discovery.
- Causes for channelization shall be identified and repaired.

# CULTURAL RESOURCES REPORT COVER SHEET

DAHP Project Number: \_\_\_\_\_ (Please contact the lead agency for the project number. If associated to SEPA, please contact [SEPA@dahp.wa.gov](mailto:SEPA@dahp.wa.gov) to obtain the project number before creating a new project.)

Author: Donald D. Pattee and Bill R.Roulette

Title of Report: Results of a Cultural Resources Study of the Proposed Rock Creek Cove Resort Property, Stevenson, Washington

Date of Report: February 4, 2020

County(ies): Skamania Section: 1 Township: 2N Range: 7E

Quad: Bonneville Dam, OR-WA; Carson, WA-OR 2017 Acres: 6.4

PDF of report submitted (REQUIRED)  Yes

Historic Property Inventory Forms to be Approved Online?  Yes  No

Archaeological Site(s)/Isolate(s) Found or Amended?  Yes  No

TCP(s) found?  Yes  No

Replace a draft?  Yes  No

Satisfy a DAHP Archaeological Excavation Permit requirement?  Yes # \_\_\_\_\_  No

Were Human Remains Found?  Yes DAHP Case # \_\_\_\_\_  No

DAHP Archaeological Site #:

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- Submission of PDFs is required.
- Please be sure that any PDF submitted to DAHP has its cover sheet, figures, graphics, appendices, attachments, correspondence, etc., compiled into one single PDF file.
- Please check that the PDF displays correctly when opened.

# RESULTS OF A CULTURAL RESOURCES STUDY OF THE PROPOSED ROCK CREEK COVE RESORT PROPERTY, STEVENSON, WASHINGTON



By  
Donald D. Pattee, M.A., RPA 32246885,  
and  
Bill R. Roulette, M.A., RPA 11132,

Report submitted to

FDM Development, Inc.  
Kennewick, Washington

February 4, 2020

**APPLIED ARCHAEOLOGICAL RESEARCH, INC., REPORT NO. 2292**



APPLIED  
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**RESULTS OF A CULTURAL RESOURCES STUDY  
OF THE PROPOSED ROCK CREEK COVE RESORT  
PROPERTY, STEVENSON, WASHINGTON**

By:

Donald D. Pattee, M.A., RPA 32246885  
Bill R. Roulette, M.A., RPA 11132

Report submitted to

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Kennewick, Washington

February 4, 2020

**APPLIED ARCHAEOLOGICAL RESEARCH, INC., REPORT NO. 2292**

## ABSTRACT

FDM Development, Inc. (FDM) proposes to develop the Rock Creek Cove resort on an industrial property, formerly occupied by the Hegewald Veneer Mill (HVM), located in the western part of the town of Stevenson in Skamania County, Washington. Developments will include the construction of 14 vacation rental homes, a property management building, and paved parking areas around each structure.

The development site is within an urban exempt area of the Columbia River Gorge National Scenic Area. Therefore, the proposed project is not required to follow the guidelines for cultural resource surveys described in the Columbia River Gorge National Scenic Area Management Plan. However, the project is required to comply with the State Environmental Policy Act as implemented by Skamania County Code (16.04). The State Environmental Policy Act requires all developers to consider the impacts a project may have on the environment and to cultural resources before making permitting decisions. FDM contracted with Applied Archaeological Research, Inc. (AAR) to assist it in determining the effects of its proposed project on cultural resources.

AAR's study was designed to locate cultural resources that may be affected by the development and included background research and a field study. The latter included an intensive pedestrian survey and the excavation of four shovel test pits.

As a result, AAR determined that the entire project area had been impacted by the construction and operation of the HVM. Two concrete pads are all that remain of the mill operations. They mark the locations of the main sawmill building and another mill building. In AAR's opinion, the pads are not archaeological and they were not recorded as an archaeological resource.

In terms of Line 13 of the State Environmental Policy Act checklist, it is AAR finding that the project area does not contain any buildings, structures, or sites, that are listed in or eligible for listing in national, state, or local preservation registers. AAR recommends no further archaeological work is warranted in the current project area.

Although considered unlikely, there is always a possibility that an archaeological resource may be discovered during future development activity on the property. For that reason, the applicant and any contractors that may work on the property need to be aware that under the Revised Code of Washington at 27.53.060, it is unlawful to knowingly damage, deface, or destroy an archaeological site on public or private land in Washington. The Revised Code of Washington at 27.44.040 makes it a class C felony to knowingly remove, mutilate, deface, injure, or destroy any cairn or grave of any native Indian. Thus, in the event that archaeological materials, Indian cairns, or human remains are encountered during the development of the property, all construction activities must stop in the vicinity of the finds and the Department of Archaeology and Historic Preservation should immediately be notified and work halted in the vicinity of the finds until they can be inspected and assessed. Procedures outlined under Washington Administrative Code 25-48 will be followed and work will not resume until mitigation measures have been agreed upon.

**TABLE OF CONTENTS**

Abstract ..... ii  
List of Figures ..... iv  
List of Tables ..... iv

**Introduction** ..... 1  
    Project Description and Staffing ..... 1  
    Conventions ..... 1  
    Description of the Project Area ..... 1  
    Project Background ..... 4

**Environmental, Cultural, and Historical Contexts** ..... 6  
    Environmental Setting ..... 6  
    Ethnographic Overview ..... 7  
    Historical Overview ..... 8  
    Historical Maps Research ..... 9  
    Previous Archaeology in the Project Area and Vicinity ..... 9

**Methods and Results** ..... 16  
    Fieldwork Methods ..... 16  
    Results of the Field Investigations ..... 16

**Summary and Recommendations** ..... 19  
    Summary ..... 19  
    Recommendations ..... 19

**References Cited** ..... 20



**LIST OF FIGURES**

Figure 1. Location of the project area ..... 2

Figure 2. Aerial photomap of the project area ..... 3

Figure 3. Photographic overview looking east at the concrete foundation of the main sawmill building of the HVM ..... 4

Figure 4. Photographic overview looking north of an area cleared of brush ..... 5

Figure 5. Photographic overview looking northeast of an area that had been trenched prior to fieldwork..... 5

Figure 6. Photographic overview looking west showing typical vegetation throughout the project area at the time of fieldwork ..... 6

Figure 7. Location of the project area as depicted on the Hood River, Wash.-Oreg., 30-minute topographic quadrangle published in 1929..... 10

Figure 8. Location of the project area and the HVM as depicted on the Bonneville Dam, Oreg.- Wash. 15-minute topographic quadrangle published in 1957..... 11

Figure 9. Aerial photomap taken of the HVM sometime between 1952 and 1973..... 12

Figure 10. Aerial photomap of the project area showing the locations of the concrete slabs representing mill structures, STPs, and pedestrian transects walked..... 17

Figure 11. Representative view of the gravelly fill encountered in the STPs..... 18

Figure 12. Representative view showing the amount of rock found in the STPs. .... 18

**LIST OF TABLES**

Table 1. Cultural Resource Surveys Conducted within 2 Miles of the Project Area..... 14

Table 2. Summary Results of STPs Excavated..... 19

## INTRODUCTION

### Project Description and Staffing

FDM Development, Inc. (FDM) proposes to develop the former site of the Hegewald Veneer Mill (HVM) located at Rock Creek Cove resort into a resort that would include 14 vacation rental homes, a property management building, associated infrastructure, and paved parking areas. The development site is within an urban exempt area of the Columbia River Gorge National Scenic Area (CRGNSA). Therefore, the proposed project is not required to follow the guidelines for cultural resource surveys described in the CRGNSA Management Plan. However, the project is required to comply with the State Environmental Policy Act (SEPA) as implemented by Skamania County Code (16.04). SEPA requires all developers to consider the impacts a project may have on the environment and to cultural resources before making permitting decisions. To assist FDM in its compliance with SEPA requirements, Applied Archaeological Research, Inc. (AAR) conducted a cultural resource survey of the proposed development site.

Archaeological fieldwork for the project was supervised by Donald D. Pattee, M.A., RPA 32246885 who was assisted by Michelle R. Lynch, M.A., RPA 429967347. The project was under the technical supervision of Bill R. Roulette, M.A., RPA 11132, AAR's Principle Investigator. Mr. Pattee, Ms. Lynch, and Mr. Roulette meet the Secretary of the Interior's professional qualification standards.

### Conventions

In this report, measurements for common distances, elevations, and areas are in United States customary units (e.g., feet, miles, and acres). Measurements related to archaeological techniques and artifact analyses are in metric units (e.g., meters, centimeters, and millimeters). Numbers in the thousands used to express ages and distances feature commas to denote thousands. Calendar dates and dates used to express years before present (B.P.) do not use commas to denote the thousands place but do use commas to denote the ten thousands place.

### Description of the Project Area

The proposed resort development site is in the western part of the town of Stevenson in Skamania County, Washington, in Section 1, Township 2 North, Range 7 East, Willamette Meridian (Figure 1). It is privately owned and encompasses 6.4 acres. It is composed of three contiguous tax parcels numbered 02070100130300, 02070100130400, and 02070100130200, that together form an irregularly-shaped tract that is maximally 1,022 feet (ft) measured north-to-south and 580 ft measured east-to-west. The property is located on a peninsula that projects into Rock Creek Cove on the northern bank of the Columbia River. The cove was created in 1937 as a result of flooding that occurred along the banks of the river east of Cascade Locks soon after the Bonneville Dam began operation. Its west side is bordered by Rock Creek Drive. Its other sides are defined by the boundaries of the proposed development footprint and the cove (Figure 2).

The project area is at an elevation of about 102 ft above mean sea level (amsl). Its surface has been artificially flattened and built up. The modifications are most likely related to the development of the property by the HVM in the early 1950s (see below). Its central part contains two concrete pads that mark the former locations of mill buildings. The largest pad is 337 ft long and 86 ft wide. It marks the former location of the main sawmill (Figure 3). The other pad is 59 ft long and 45 ft wide and most likely marks the location of a second mill building, possibly a machine shop.

Prior to AAR's fieldwork parts of the property had been disturbed by heavy equipment that was used to clear brush and remove trees. Cleared vegetation and soil were pushed into low piles that

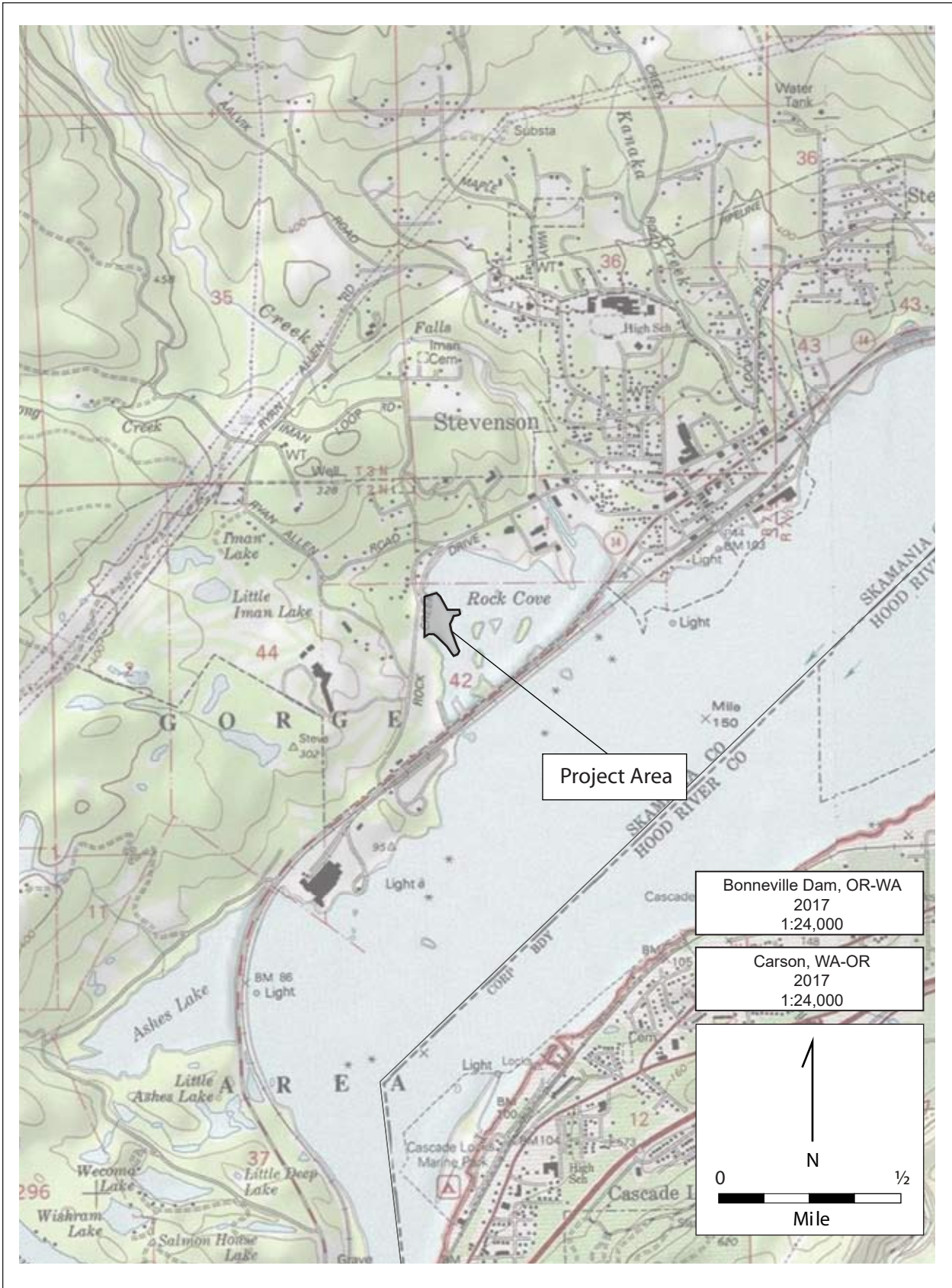


Figure 1. Location of the project area.



Figure 2. Aerial photomap of the project area.



Figure 3. Photographic overview looking east at the concrete foundation of the main sawmill building of the HVM.

remain in place (Figure 4). At least two trenches had been excavated in the eastern part of the property and partly backfilled (Figure 5). The ground surface in the parts of the property that were not disturbed or otherwise obscured by gravel or building foundations were covered in grasses, blackberry brambles, and a scattering of Douglas-fir, alder, and maple trees (Figure 6).

### **Project Background**

In 2016, Skamania County initiated an inventory of all brownfield sites (i.e. abandoned properties where there may be environmental contamination) located in the county to better understand their impacts on surrounding communities and to study their potential for commercial development. As part of the inventory, the county conducted a Phase II environmental site assessment (ESA) of the project area to evaluate the potential environmental impacts associated with the historical operation of the HVM. No cultural resource investigations were conducted on the property in advance of or as part of the assessment. The ESA included the use of ground penetrating radar across the site to check for buried infrastructure (e.g. tanks, tank pits, pipes, or septic systems). In addition, ten test pits were excavated in select areas to extract soil samples to be analyzed for metals, petroleum, and dioxins. The GPR results showed that there were no buried infrastructure and no petroleum was detected in the soil. Some metals and dioxins were detected, but did not exceed contamination levels considered by the Model Toxics Control Act to be harmful to humans. The ESA recommended that no further environmental remediation of the site was warranted.



Figure 4. Photographic overview looking north of an area cleared of brush. The vegetation and displaced soil have been pushed into low piles.



Figure 5. Photographic overview looking northeast of an area that had been trenched prior to fieldwork.



Figure 6. Photographic overview looking west showing typical vegetation throughout the project area at the time of fieldwork.

## ENVIRONMENTAL, CULTURAL, AND HISTORICAL CONTEXTS

### Environmental Setting

The project area is located in the southernmost part of the Southern Washington Cascade physiographic province where the mountains have been incised by the Columbia River Gorge. The province is characterized by deeply dissected and weathered mountains set on a generally western sloping terrace. It contains rugged mountainous areas, river floodplains, and low terraces.

The modern topography of the Gorge reflects the down cutting of the Columbia River through basalt bedrock. The basalt was laid down during the Miocene in a number of individual flows that collectively are known as the Columbia River Basalts. The lava from these flows originated in central and eastern Washington and Oregon and streamed westward down the Columbia River valley to the sea (Allen et al. 1986). Exposures of these flows can be seen in the steep walls framing the Gorge.

Following the deposition of the basalts, the Cascades were up-arched. As the mountains were rising, the Columbia River was cutting down through the range, creating its deep canyon. Later, toward the end of the Pliocene and into the Pleistocene, volcanic activity resumed in the Cascades, producing lava flows which filled the tributaries of the Columbia and which displaced the river to the north, near its present position. The strato volcano peaks of Mt. Hood, Mt. St. Helens, and Mt. Adams began to rise some 700,000 years ago, a process which continues into the present. The up-arching of the Cascades created a barrier to easterly flowing moist marine air and resulted in the climatic division of the region into the moist western and dry eastern portions (Allen et al. 1986). In the Columbia River Gorge, this climatic change occurs around White Salmon and Hood River, a short distance upriver, or east, of the project area.

Although the basalt flows of the Miocene laid the foundation for the physiography of the Gorge, the geological events of the Pleistocene shaped it into its present configuration. The most important of these events were the Missoula Floods (known variously as the Bretz or Spokane floods) that occurred between about 17,000 and 12,700 years ago (Clague et al. 2003; Waitt 1994). The floodwaters originated in Glacial Lake Missoula, a body of water formed when the Purcell Trench Lobe of the Cordilleran ice sheet blocked the Clark Fork River in Montana. When the waters of Lake Missoula breached the ice dam, a wall of water estimated to have been ca. 2,000 ft high was released. In a single flood, somewhere near 500 cubic miles of water rushed across the Columbia Plateau and entered the Columbia River system (Alt and Hyndman 1993:172). The tremendous force and volume of the floods scoured away the soils of the Gorge and altered the river valley from its previous V shape to its present U-shaped cross-sectional profile (Allen et al. 1986:159).

The floods led to the oversteepening of the Gorge walls, particularly in areas where the Columbia River basalts are underlain by the easily erodible Eagle Creek Formation. These conditions have made a nearly 50-square-mile area toward the west end of the Gorge prone to landslides. The project area is situated near the leading edge of a debris deposit from the quaternary-aged Red Bluff landslide, which is part of the greater Cascade Landslide Complex. The deposits extend further southward and are submerged in Rock Creek Cove (Pierson et al. 2016; Randall 2012).

The project area is in the *Tsuga heterophylla* zone, a classification of plant associations that is found throughout western Washington and Oregon in wet maritime climates between sea level and about 2,300 ft amsl (Franklin and Dyrness 1988). Throughout the zone, Douglas-fir, western hemlock, and western redcedar with few hardwoods dominate typical overstory vegetation in forested areas. Common forest understory plants throughout the zone include vine maple, hawthorn, wild rose, blackberry, thimbleberry, and snowberry.

The primary soil mapped within the project area is Arents, 0 to 5 percent slopes (Haggen 1990). It is an anthropogenic soil that developed as the result of disturbance and redeposition through various human activities such as mining, dredging of water bodies, road building, and construction (Sencindiver and Ammons 2000). It does not represent a native soil body, but rather formed in spoils that have been removed from their original context and redeposited. No single profile of Arents is typical. One commonly observed includes a 24-inch-thick "A horizon" of dark brown, gravelly sandy loam. The underlying material extends to a depth of 5 ft below surface and consists of stratified gravelly to very gravelly loamy sand (Haagen 1990).

### **Ethnographic Overview**

The project area is located at the eastern periphery of the traditional territory of the Cascade people that spoke an Upper Chinook dialect and were closely aligned with other Upper Chinook peoples that occupied both sides of the Columbia River between from roughly the mouth of the Washougal River to a point above Dallesport including the Hood River, White Salmon, Wasco, and Wishram (French and French 1998:360-363). The territory of the Cascades Chinook included lands on each side of the Columbia River in the vicinity of the Cascades of the Columbia, a section of river narrowed and obstructed with landslide debris where the river dropped about 40 ft in elevation through a series of rapids over a distance of several miles. The Cascades controlled the portages around the rapids and the important salmon fishery centered there.

The Cascade people and other Upper Chinookan groups lived in autonomous villages without overarching political organization or centralized government (French and French 1998:369). Villages were presided over by chiefs who held office based primarily on a system of hereditary leadership rights (Silverstein 1990:541). Chiefs were usually persons of the highest rank within the hierarchically organized Chinook society, and chiefly status was conferred on members of wealthy and politically



influential families. Status, class, and rank were used as organizational principles in Chinook society. Chiefs, along with shamans, warriors, and traders, formed a small upper class with slaves forming the bottom of the social hierarchy. Commoners ranged between these hierarchical poles and were probably ranked along numerous socially recognized gradations. High rank and high class was strongly linked to wealth.

Winters were spent in permanent settlements consisting of one or more rectangular, gabled-roofed, upright-cedar-plank houses (Hajda 1994; Silverstein 1990) that featured raised sleeping and storage platforms that lined the house walls. In 1805, Lewis and Clark encountered the Chinook village of Wishram on the north side of the Columbia River (near what is now Columbia Hills State Park) and described some 20 homes constructed of wood, the first wooden houses the expedition had seen since leaving Illinois (Wilke et al. 1983:75-76). Chinook subsistence was oriented toward fishing and root-and-berry gathering. Most subsistence activities were organized around small groups that dispersed to smaller camps focused on task-specific subsistence activities.

Native peoples that lived along the Columbia River came into contact with European and American sea-borne fur traders in the late-eighteenth century. Diseases introduced by the traders, especially small pox, influenza, and malaria, spread rapidly upriver and throughout the region with catastrophic results. The first historical reports of a malarial epidemic are from 1830. Within four years 75 to 90 percent of the regional native population was dead (Boyd 1985). Displaced groups and individuals formed *ad hoc* communities or joined those still existing, and either attempted to follow traditional patterns or adopted the life ways of the Euroamericans (Hajda and Boyd 1988:45-46).

## Historical Overview

The first Euroamericans to pass through the Columbia River Gorge were explorers and fur traders in the early decades of the nineteenth century. Among the explorers were Lewis and Clark who led their Corps of Discovery expedition down the Columbia River in 1805, and David Thompson, who traversed the length of the Columbia River in 1811. After the establishment of a land-based fur trade around 1811, a greater number of Euroamericans traveled throughout the region in search of furs. Travel logs left by early traders in the region document the spread of disease among the native populations of the Columbia River as early as the 1830s, resulting in a catastrophic population loss (Minor et al. 1986:54-55). By 1834, missionaries began trickling into the region, followed several years later by the initial waves of pioneers heading to the Willamette Valley along the Oregon Trail. Between 1841 and 1851 all travelers and settlers heading west had to pass through the Columbia River Gorge, where, just east of the city of Stevenson, they were forced to portage along the north bank of the river around the rapids known as the Upper, Middle, and Lower Cascades.

The passing of the Oregon Donation Land Act of 1850 resulted in a steady influx of Euroamerican settlers that initially used the area for grazing livestock and logging (Mack and McClure 1999). As more settlers arrived to the region, small communities were established along the banks of the Columbia River, which provided needed services for travelers passing through the gorge. These included lodging, supplies, and improved portage routes. One such community was Stevenson, which shared the name of its founder, George Stevenson. The town was founded in 1893 and quickly became an important way-stop for travelers passing through the gorge. River transportation improved with the construction of the Cascade Locks in 1896 allowing boats to by-pass the cascades. Incoming travelers to the region could now navigate the Columbia River from Portland as far as The Dalles. Easier river travel spurred economic development in Stevenson and by 1900 the town featured two hotels, two saloons, two restaurants, as well as a general store, drug store, post-office, jail, print shop, and court house (Skamania County Chamber of Commerce 2020; Wilma 2006). The town was officially incorporated in 1908. That same year, the Spokane, Portland, and Seattle rail line arrived and connected the town to the major cities of the Pacific Northwest (Wilma 2006).

The rail line and the more navigable river resulted in logging and milling becoming one of the more important economic pursuits in the region as timber products could be transported with relative ease to Portland or Seattle and then shipped overseas where demand was high. In the following decades, the logging industry became vital to the economy of Stevenson. Trees logged in the hills backing the town were transported by flumes down to sawmills that lined the shoreline including the HVM.

The HVM operated between 1952 and 1973. It was primarily used for the production of wood veneer, which was peeled from tree logs and then pressed into 8-foot-long sheets (Hunt 1964). The sheets were used to line doors, table tops, and cabinetry panels. At the height of its operation, the mill produced 60,000,000 square feet of veneer annually (Hunt 1964). Waste produced from the process (e.g. wood chips or parts of the log not suitable for milling) was burned in two conical structures referred to at the time as “wigwam burners” (Hunt 1964). Tree logs were stored in Rock Creek Cove, which was enclosed by wooden booms that prevented the logs from floating downriver. In 1973, the mill was sold to Louisiana Pacific, which operated it until its closure in 1975. Around that same time, other sawmills in the Stevenson area closed resulting in the loss of hundreds of jobs and severely impacting the economy of the town. It did not fully recover until the early 1990s (Wilma 2006).

### **Historical Maps Research**

As part of the background research, historical maps were reviewed to determine the likelihood that the project area contains undocumented historic-era features and to trace land ownership. Maps reviewed include those produced by the General Land Office (GLO) as part of the cadastral survey and those prepared by the United States Geologic Survey (USGS). Historic aerial photographs were also reviewed.

The earliest maps that depict the project area are cadastral survey maps produced by the General Land Office (GLO) in 1860, 1876, 1903, and 1906. The project area is shown as devoid of developments on the maps (GLO 1860, 1876, 1903, 1906). An 1864 GLO map shows lands taken out of federal ownership through land claims. The project area is shown as within a 319.91-acre land claim filed by D. Baughman (GLO 1864).

A 30-minute (1:125,000) map published by the United States Geological Survey (USGS) in 1929 shows the project area before inundation of the Bonneville Pool (also known as Bonneville Lake) the reservoir behind Bonneville Dam (USGS 1929). No buildings or other developments are depicted in it (Figure 7). A 15-minute map published by the USGS in 1957 shows the project area after completion of the Bonneville Dam and formation of the reservoir behind it (USGS 1957). A large rectangular structure is shown on the map to be in the project area representing the main HVM sawmill building (Figure 8).

An aerial photograph taken of the mill sometime between 1952 and 1973 on display in the Columbia Gorge Interpretive Center Museum, shows that HVM in full development (Figure 9). The mill complex can be seen to cover the entire project area with much of it covered by buildings, what appear to be graveled surfaces, stockpiled wood products, and general debris. The photograph shows the main sawmill and the second mill building in locations corresponding to where concrete pads remain. It also shows two wigwam burners that were located in the southern part of the property (Western Ways, Inc., n.d.).

### **Previous Archaeology in the Project Area and Vicinity**

A review of records on file at the Washington State Department of Archaeology and Historic Preservation (DAHP) accessed online using its Washington Information System for Architectural and Archaeological Records Data (WISAARD) database showed that the project area has not previously been surveyed for cultural resources. Thirty-three cultural resource investigations have been conducted within

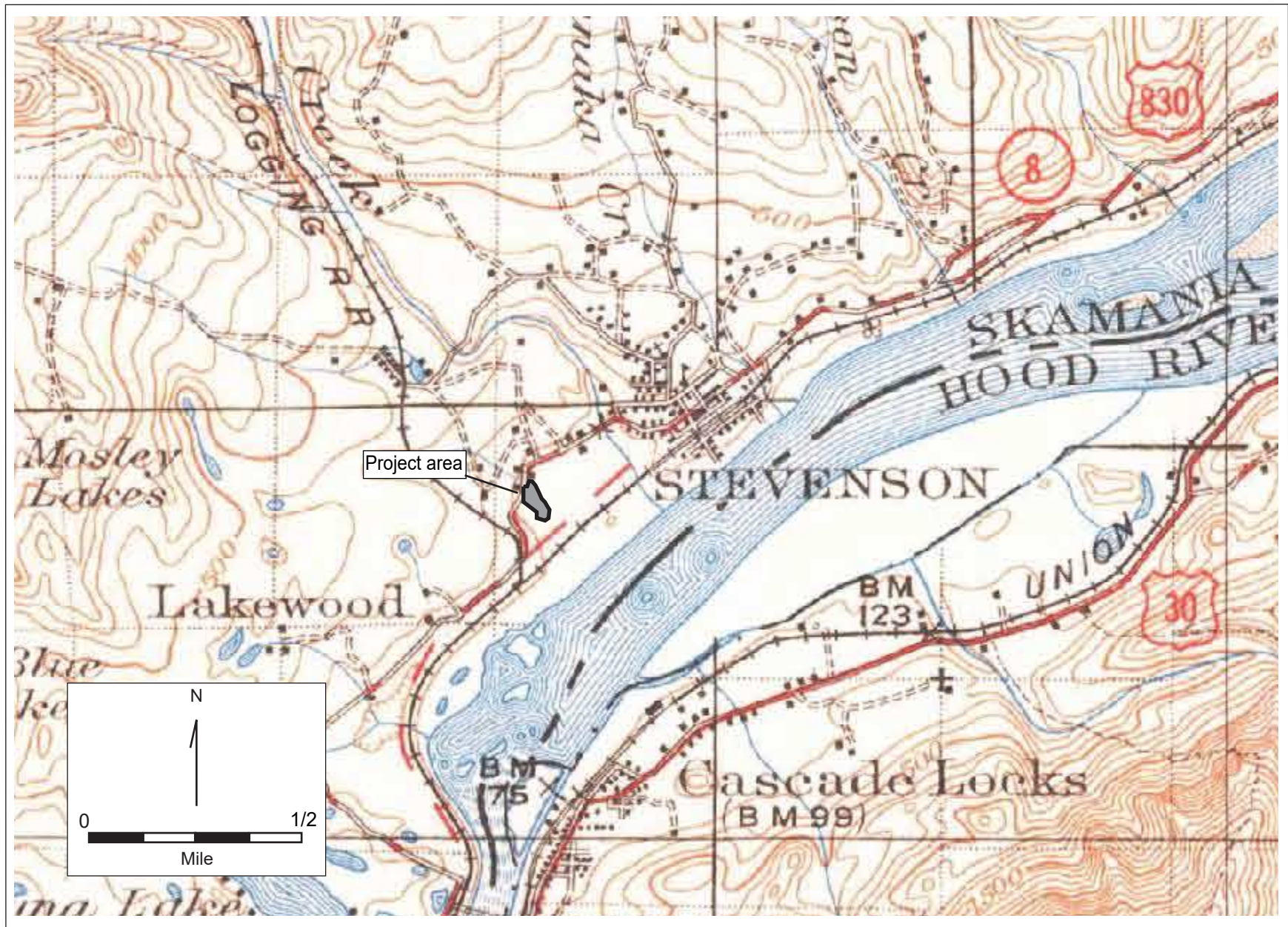


Figure 7. Location of the project area as depicted on the Hood River, Wash.-Oreg., 30-minute topographic quadrangle published in 1929.

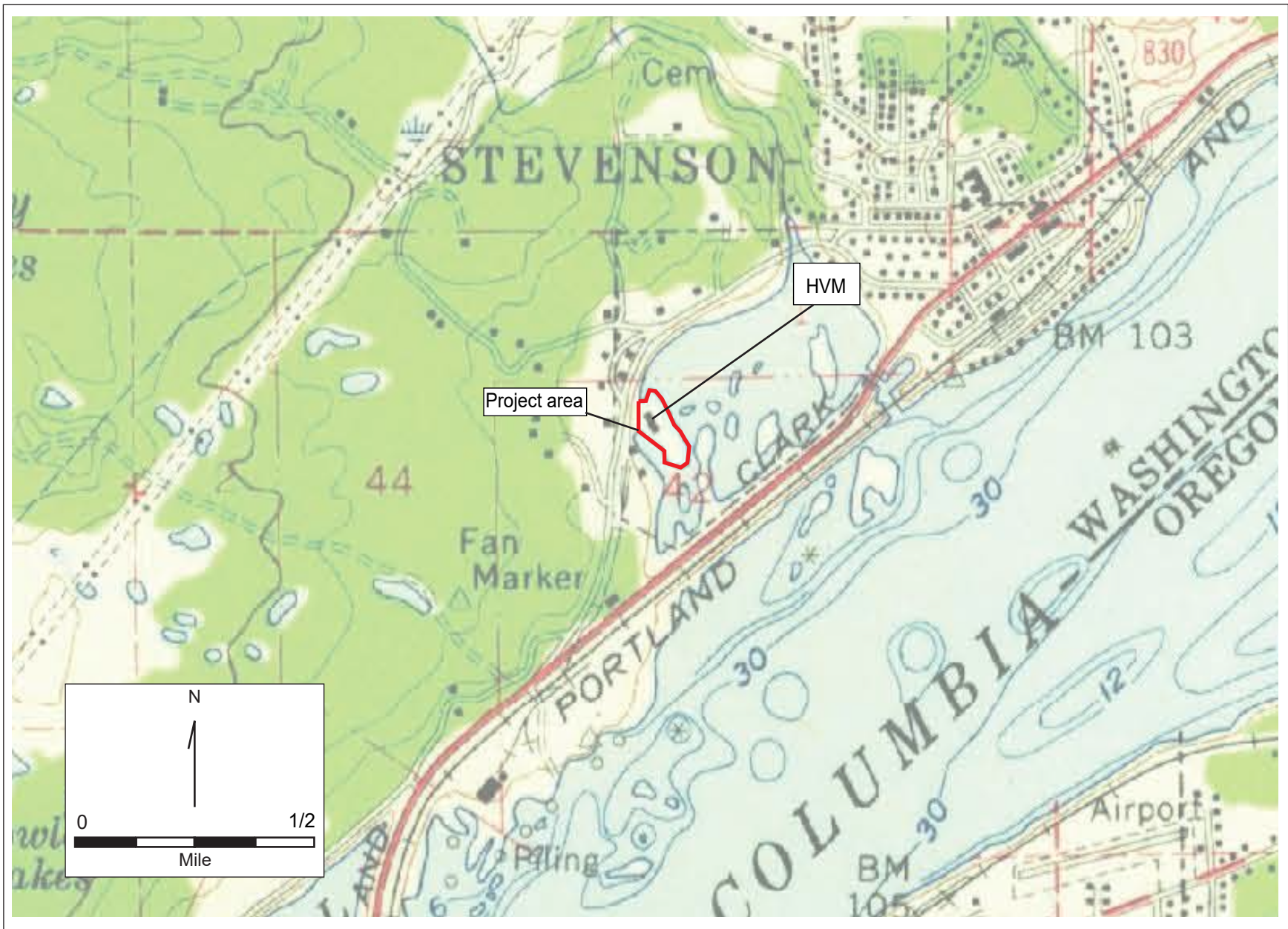


Figure 8. Location of the project area and the HVM as depicted on the Bonneville Dam, Oreg.-Wash., 15-minute topographic quadrangle published in 1957.



Figure 9. Aerial photomap taken of the HVM sometime between 1952 and 1973. Photomap is currently on display in the Columbia Gorge Interpretive Center Museum.

two miles of it (Table 1). The studies have generally consisted of reconnaissance and formal surveys that have resulted in the identification of multiple component sites 45SA20 and 45SA541, pre-contact sites 45SA210, 45SA600, 45SA633, 45SA650, pre-contact isolate 45SA585, and historic-era sites 45SA8, 45SA121, 45SA501, and 45SA502.

Of the previously recorded sites, 45SA20, the Ice House Lake site, has been the most intensively studied. The site was recorded during a cultural resources survey conducted by the University of Washington in advance of the construction of a powerhouse at Bonneville Dam (Mesrobian and Sunstrom 1976). It is located about 1.4 miles to the southwest of the project area on terraces overlooking the northern shore of the Columbia River. Evaluative test excavations were conducted at the site in 1988. They included a surface inspection as well as the excavation of six 1-x-1 meter (m) test units (TUs) and six auger test probes. The investigation resulted in the recovery of a variety of pre-contact and historic-era artifacts as well as floral and faunal remains.

Pre-contact artifacts recovered from the site included 11,243 pieces of cryptocrystalline silicate (CCS), obsidian, basalt, and petrified wood debitage and 99 stone tools. Tools included projectile points, preforms, knife fragments, bifaces, flake knives, perforators, used flakes, hammerstones, pounders, anvils, choppers, cobble flake knives, spall tools, abraders, and cores (Minor 1988). Most of the projectile points identified were small, narrow necked forms consistent with Types 7, 8, 10, and 12 described in Pettigrew's (1981) projectile point chronology of the Portland Basin. Broad-necked projectile points of the Type 2 variety were also observed (Pettigrew 1981).

The 439 historic-era artifacts recovered during the investigations included fragments of earthenware, porcelain, stoneware, and Chinese ware, clay pipes, vessel glass, machine cut nails, spikes, brace plates, iron bolts, staples, wire, bullets, metal scraps, and gunflint. A few pieces of charred nut shell and 148 animal bones were also recovered. Most of the bones were small fragments. Most were from sturgeon but they also included horse, elk, deer, cow, salmonids, and cyprinid bones (Minor 1988).

Minor (1988) determined that the site represented the village *Wahlala* (Curtis 1911) or *Walala* (Spier and Sapir 1930) occupied by the Cascade Chinook. It is described in the journal of Lewis and Clark as consisting of eight plank slab houses that were inhabited part of the year during the fishing season. Based on the results of the investigation, the site was interpreted to have been continually used by Chinook as a seasonal fishing village during the pre-contact period and into historic times. Initial occupation of the site was thought to have occurred 830 years ago. The site was likely abandoned around 1850 when the United States established a strong military presence throughout the Columbia River Gorge (see below). The site was recommended as eligible for listing on the National Register of Historic Places (NRHP).

The other multicomponent site within two miles of the project area is 45SA541. The site was recorded based on the inadvertent discovery of human remains in the side wall of a utility trench during the installation of buried telecommunications equipment. The discovery triggered emergency archaeological excavations and the screening of a sample of the spoils created during the trenching. Recovered were 86 human or potentially human bones and mixed historical; and prehistoric artifacts all of which were contained in a thick layer of imported fill (Paraso and Ellis 2010).

Of the previously recorded pre-contact resources, three of them (45SA210, 45SA585, and 45SA650) consist of low density, lithic scatters that have not been documented past the initial survey phase. Site 45SA210 was identified 1.5 miles to the southwest of the project area on the north shore of Ashes Lake. As documented, the site contains one desert side-notched projectile point, a piece of human bone, and pieces of lithic debitage (Cole and Southard 1971). Only lithic debitage was identified at the other resources with site 45SA585 containing 10 pieces of CCS and basalt debitage and isolated find 45SA650 containing a single piece of CCS debitage (Becker and Roulette 2017; Olander et al. 2011).

Table 1. Cultural Resource Surveys Conducted within 2 Miles of the Project Area

Author(s) of Report/Year	Type of Investigation	Size of Study Area	Findings
Cole and Southard 1971	Formal survey	Not listed	45SA210 identified and documented
Dunnell and Lewarch 1974	Formal survey	Not listed	45SA8 identified and documented
Mesrobian and Sundstrom 1976	Formal survey	Not listed	45SA20 identified and recorded
Minor 1988	Evaluative testing	Not listed	Additional study at 45SA20 that refined its boundaries and expanded its artifact assemblage.
Minor and Beckham 1988	Evaluative testing	Not listed	45SA121 identified and documented
Freed 1989	Damage Assessment	Not listed	Additional study at 45SA20 that expanded its artifact assemblage.
Boynton 1995	Formal survey	82 acres	Archaeological resources identified and documented at distances greater than 2 miles from the project area
Musil 1999	Formal survey	120 acres	No archaeological resources identified
Easton and Roulette 2002	Formal survey	Not listed	No archaeological resources identified
Stilson 2002	Formal survey	4.4 acres	Archaeological resources identified and documented at distances greater than 2 miles from the project area
Scott 2003	Cultural resource monitoring	47 mile linear corridor	Archaeological resources identified and documented at distances greater than 2 miles from the project area
White and Ozburn 2003	Reconnaissance survey	Not listed	No archaeological resources identified
Boynton and Fagan 2006	Formal survey	4.2 acres	45SA501 and 45SA502 identified and documented
Gall 2006	Formal survey	25.4 acres	No archaeological resources identified
Dryden 2007	Reconnaissance survey	0.90 acre	No archaeological resources identified
Dryden 2009	Reconnaissance survey	0.01 acre	No archaeological resources identified
Lloyd-Jones and Ozburn 2009	Formal survey	5 acres	No archaeological resources identified
Dryden 2010a	Reconnaissance survey/cultural resource monitoring	2 acres	No archaeological resources identified
Dryden 2010b	Reconnaissance survey	0.15 acre	No archaeological resources identified
Paraso and Ellis 2010	Emergency archaeological excavations	Not listed	45SA541 identified and documented
Olander et al. 2011	Formal survey	Not listed	45SA585 identified and documented
Kiers 2012	Formal survey	<0.1 acre	No archaeological resources identified
Knutson et al. 2012	Formal survey	8.6 acres	45SA600 identified and documented. Numerous other resources identified at distances greater than 2 miles from the project area.
Harris et al. 2013	Formal survey	3.5 acres	No archaeological resources identified
O'Donnchadha 2013	Formal survey	1 acre	No archaeological resources identified
Bard et al. 2014	Formal survey	123.5 acres	Archaeological resources identified and documented at distances greater than 2 miles from the project area

Table 1. Cultural Resource Surveys Conducted within 2 Miles of the Project Area, continued

Author(s) of Report/Year	Type of Investigation	Size of Study Area	Findings
Jenkins and Reese 2014	Formal survey	2.6 acres	No archaeological resources identified
Pattee and Roulette 2014	Formal survey	8.26 acres	No archaeological resources identified
Smith and Gall 2014	Formal survey	30 acres	Additional study at 45SA600 that refined its boundaries. 45SA633 identified and documented.
Holschuh 2015	Formal survey	1 acre	No archaeological resources identified
Becker and Roulette 2017	Formal survey	1 acre	45SA650 identified and documented
Homan and O'Donnchadha 2017	Formal survey	52.51 acres	No archaeological resources identified
Gall and Smith 2019	Formal survey	41.5 acres	Additional study at 45SA8 that refined its boundaries and expanded its artifact assemblage. Archaeological resources identified and documented at distances greater than 2 miles of the project area.

Pre-contact sites 45SA600 and 45SA633 were observed to contain shallow pit features that had been excavated into a talus slope. The sites are located about two miles to the southwest of the project area. The date, origin, and function of the pits could not be determined. They are similar to those identified on the summit of Wind Mountain located approximately seven miles to the northeast of the project area, which are considered sacred to past and contemporary Native American groups. Because of this, the features were recorded as archaeological sites (Knutson et al. 2012; Smith and Gall 2014).

Historic-era site 45SA121 is located about 1.2 miles to the southwest and consists of the remnants of the U.S. Army's Fort Lugenbeel and the civilian town site of Upper Cascades. The town was established in 1851 and became one of the first frontier communities in the Columbia River Gorge. It contained hotels, homes, storage buildings, a portage tramway, and a sawmill. By 1855 the U.S. Army had established Fort Cascades at the Lower Cascades and Fort Rains at the Middle Cascades to the west to ensure the safe passage of troops and supplies from Fort Vancouver. Both forts were attacked and destroyed by Native Americans in 1856. Following the attack, the U.S. Army regained control of the area and constructed Fort Lugenbeel on a ridge above the community at Upper Cascades to deter future attacks (Minor and Beckham 1988). Evaluative testing at the site in 1988 resulted in the identification of multiple building foundations associated with the fort and town site as well as the recovery of 4,630 artifacts. These included ceramic and glass fragments, nails, spikes, bricks, various items related to firearms, clay pipe fragments, buttons, and faunal remains (Minor and Beckham 1988). The fort and town site were used between 1850 and 1880. The site has been listed on the NRHP under Criterion D.

Historic-era site 45SA8 was initially identified in 1974 as an historical homestead based on anecdotal information (Dunnell and Lewarch 1974). At the time of its recording, the location of the site was not field verified. In 2019, the site was the subject of a formal cultural resources survey that resulted in the discovery of a sparse, subsurface historic-era debris scatter. Observed artifacts included amber, aqua, amethyst, and colorless vessel glass, cut nails, several bottle bases, fragments of whiteware ceramics, and metal fragments (Gall and Smith 2019). Based on the identification of temporally sensitive artifacts during the investigation, the site deposit was determined to have formed between 1880 and 1920 (Gall and Smith 2019).

Historic-era sites 45SA501 and 45SA502 are located approximately 1 mile to the northeast of the project area. They were identified during a cultural resources survey conducted in advance of the construction of a residential subdivision. Site 45SA501 consists of a small dump of household debris, which includes oval Postum tins, a Hazel-Atlas bottle base, zinc caps, rusted cans, canning jars, and



fragments of machine molded glass. The dump has been interpreted to have formed in the early 20<sup>th</sup> century (Boynton and Fagan 2006). Site 45SA502 consists of the ruins of an historic-period residential structure that was constructed in 1895 (Boynton and Fagan 2006).

Two historic-era cemeteries, which were recorded as cultural resources, are located within two miles of the project area. They are sites 45SA555, the Iman Cemetery, and 45SA651, the Gropper Cemetery. The first is located on land that was owned by Feliz Grundy Iman and was established in 1889 (Anonymous n.d.a). The second is located on the northern end of Stevenson and was established in 1905 (Anonymous n.d.b).

## METHODS AND RESULTS

### Fieldwork Methods

Fieldwork was conducted on January 8 and 15, 2020. The approach to the fieldwork was informed by the results of the background research that showed that the entire development site had been significantly impacted by past development that appears to have included grading and leveling the ground surface. Subsequent to that soil and gravel were dumped across the landform and compacted. With that history of land use in mind, the potential for buried archaeological deposits to be present was assessed as very low. Consequently, the fieldwork consisted of an intensive surface survey and the excavation of four shovel-test-pits (STPs) to verify the suspected level of disturbance and to examine the character of subsurface conditions (Figure 10).

The STPs were 30 centimeters (cm) in diameter and were excavated in 20-cm or thinner levels to depths that ranged between 20 and 50 cm below surface (cmbs). All sediments removed from the probes were screened through one-eighth-inch-mesh hardware cloth. Afterward, the STPs were completely backfilled and their locations were recorded using a handheld Trimble Geo7X global positioning system (GPS) device. GPS data were then corrected and exported to a graphics program for final editing and formatting.

### Results of the Field Investigations

The ground surface was inspected by walking transects spaced no more than 10 m apart. Ground surface visibility was variable. In the parts of the property that were obscured by building foundations, gravel, or trampled blackberry brambles, surface visibility was zero percent. Areas that had been trenched and then backfilled prior to fieldwork had 100 percent visibility. Other areas of the property were covered in a thin layer of grass and duff. Surface visibility in these areas was about 25 percent. No artifacts were found on the ground surface. The two concrete pads, mentioned above, were observed. They appear to be all that remains of the HVM. All other mill facilities have been completely removed. The slabs are overgrown and covered with a thin layer of moss and grass.

No artifacts were found in the STPs. Soil profiles encountered during the excavations consisted entirely of fill material, which matched the description of Arents, 0 to 5 percent slopes mapped on the property. Profiles generally included a 5- to 20-cm-thick organic layer of very dark brown (7.5YR 2/2) sandy loam, which capped a 10- to 45-cm-thick layer of brown (10YR 4/3), sandy loam (Figure 11). At least three quarters of the soil matrix in the latter layer contained angular gravel intermixed with small to medium angular cobbles (Figure 12). STP 3 and 4 terminated at 20 cmbs due to an impenetrable layer of angular cobbles (Table 2).



Figure 10. Aerial photomap of the project area showing the locations of the concrete slabs representing mill structures, STPs, and pedestrian transects walked.



Figure 11. Representative view of the gravelly fill encountered in the STPs.



Figure 12. Representative view showing the amount of rock found in the STPs.

Table 2. Summary Results of STPs Excavated

STP #	Depth (cmbs)	Sediments (Moist)	Results
1	0-5	Organic layer of very dark brown (10YR2/2) sandy loam	No artifacts
	45-50	Brown (10YR4/3) sandy loam. Numerous angular gravels and cobbles.	
2	0-20	Organic layer of very dark brown (10YR2/2) sandy loam	No artifacts
	20-50	Brown (10YR4/3) sandy loam. Numerous angular gravels and cobbles.	
3	0-5	Organic layer of very dark brown (10YR2/2) sandy loam	No artifacts
	5-20	Brown (10YR4/3) sandy loam. Numerous angular gravels and cobbles. Terminated at impenetrable layer of angular cobbles.	
4	0-5	Organic layer of very dark brown (10YR2/2) sandy loam	No artifacts
	5-20	Brown (10YR4/3) sandy loam. Numerous angular gravels and cobbles. Terminated at impenetrable layer of angular cobbles.	

## SUMMARY AND RECOMMENDATIONS

### Summary

This report has described the results of a cultural resources study conducted by AAR of a 6.4-acre property that FDM proposes to develop into the Rock Creek Cove resort. The study included background research and field investigations. The results of the background research indicate that the property has been significantly altered such that it has low potential to contain archaeological resources. AAR’s fieldwork included an intensive surface survey and excavation of four STPs. No artifacts were found. Profiles exposed in the probes showed that a thick layer of imported gravelly fill covers the entire development site.

The only trace of the HVM consists of two concrete pads that mark the location of two of the mill buildings. In AAR’s view, the pads are not archaeological and they were not recorded as an archaeological resource.

### Recommendations

AAR’s study was done to assist FDM in complying with SEPA as implemented by Skamania County Code (16.04). In terms of Line 13 of the SEPA checklist, it is AAR finding that the project area does not contain any buildings, structures, or sites, that are listed in or eligible for listing in national, state, or local preservation registers. AAR recommends no further archaeological work is warranted in the current project area.

Although considered unlikely, there is always a possibility that an archaeological resource may be discovered during future development activity on the property. For that reason, the applicant and any contractors that may work on the property need to be aware that under the Revised Code of Washington at 27.53.060, it is unlawful to knowingly damage, deface, or destroy an archaeological site on public or private land in Washington. Under the Revised Code of Washington at 27.44.040 it is a class C felony to knowingly remove, mutilate, deface, injure, or destroy any cairn or grave of any native Indian. Thus, in the event that archaeological materials, Indian cairns, or human remains are encountered during the development of the property, all construction activities must stop in the vicinity of the finds and the DAHP should immediately be notified and work halted in the vicinity of the finds until they can be inspected and assessed. Procedures outlined under Washington Administrative Code at 25-48 will be followed and work will not resume until mitigation measures have been agreed upon.

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**CITY OF STEVENSON  
SMC 18 SHORELINE MANAGEMENT**

Regarding a request by FDM Development Inc. to construct 19 )  
cabins that will serve as nightly and weekly lodging, as well as an )  
event space to be used for private weddings, reunions, and parties. )  
On-site parking, public pedestrian access, landscaping, and )  
enhancements to the riverbank will also be provided. Additionally, )  
a plat vacation is proposed to provide a more cohesive property )  
under one ownership group. )

SHORELINE SUBSTANTIAL  
DEVELOPMENT PERMIT

October XXth, 2023

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**PROPOSAL:** The applicant requests a Shoreline Substantial Development Permit (SSDP) to construct 19 cabins that will serve as nightly and weekly lodging, as well as an event space to be used for private weddings, reunions, and parties. On-site parking, public pedestrian access, landscaping, and enhancements to the riverbank will also be provided. Additionally, a plat vacation is proposed to provide a more cohesive property under one ownership group.

<b>APPLICANT:</b> Brad Kilby, AICP Harper Houf Peterson Righellis Inc. 205 SE Spokane Street, Suite 200 Portland, OR 97202 (503) 221-1131	<b>ENGINEER:</b> Bruce Haunreiter, P.E. Harper Houf Peterson Righellis Inc. 1220 Main Street, Suite 150 Vancouver, WA 98660 (360) 750-1131
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**OWNER:** Den Maldonado  
FDM Development Inc.  
PO Box 353  
Ridgefield, WA 98642  
(360) 719-0276

**LOCATION:** 968 SW Rock Creek Drive. 40 SW Cascade Avenue. The site has been assigned Tax Lot Numbers 02-07-01-0-0-1302-00 and 20-07-01-0-0-1303-00 by the County Assessor.

<b>SHORELINE WATERBODY:</b>	Rock Cove
<b>SHORELINE ENVIRONMENT DESIGNATION:</b>	Active Waterfront
<b>SHORELINE USE PROPOSED:</b>	Commercial & Industrial (Water-Enjoyment), Land Division, Recreational (Trail Parallel to the Shoreline, View Platform), Transportation & Parking Facilities (Accessory Parking)
<b>SHORELINE MODIFICATION PROPOSED:</b>	Vegetation Removal

**BACKGROUND:** Previously a veneer mill, the development site has been vacant for decades. Part of this time the site was under county ownership. In 1999, Skamania County divided the site into 3 legal lots. It remained vacant and was informally used for physical access to Rock Cove. In 2019, the County sold the property to an investment group. That investment group obtained a Mitigated Determination of Non-Significance under City File SEPA2020-01 for "a three-phased development, beginning with the condo-style units. Phase 2 will add the commercial venue

space and restore waterside portions of the property for enhanced, publicly-accessible observation and enjoyment. Phase 3 completes the development with the studio-sized units.” A Shoreline Substantial Development Permit (SSDP) was issued for phase 1 of that proposal under City File SHOR2020-01. The SSDP was issued under the *Skamania County Shoreline Management Master Program* as it was adopted by the City in August 1975. The project was delayed during the COVID pandemic and SHOR2020-01 expired. This proposal is for a new SSDP. The project’s site plan is different from the previous approval and construction is proposed under a single phase. The proposal is subject to the *Stevenson Shoreline Master Program* as it was adopted in March 2022.

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## STANDARDS, FINDINGS AND CONCLUSIONS

### **SMC 18 SHORELINE MANAGEMENT**

Chapter 18.08 of the Stevenson Municipal Code is separated into 17 sections relating to management of shoreline water bodies (Columbia River, Rock Cove, Rock Creek). These sections adopt the Stevenson Shoreline Master Program (SMP) and detail procedures for obtaining approvals under the SMP. The SMP contains 7 chapters detailing submittal requirements, policies and regulations applicable when review activities are proposed in Shoreline Jurisdiction. Certain review activities require approval by the Shoreline Administrator, others require approval by the Stevenson Planning Commission, still others require approval by the Stevenson Planning Commission and the Washington Department of Ecology. The sections below relate to Shoreline Substantial Development Permits (SSDP), the mechanism involved when the Planning Commission approves review activities.

### **SMC 18.08 – Shoreline Management**

Chapter 18.08 of the Stevenson Municipal Code (SMC) establishes procedural standards for implementation of the City’s shoreline management program. The chapter is separated into 17 sections detailing program administration and project review. There are 14 sections reviewed prior to issuance of a Substantial Development Permit, 6 of which are the responsibility of the applicant. Findings and conclusions related to each section are detailed below.

**CRITERION §18.08.010 – ADMINISTRATION AUTHORIZED.** “A. The "shoreline administrator" or "administrator" or that person's designee, is hereby vested with: [5 specific duties/authorities]  
B. The City of Stevenson Planning Commission is hereby vested with:  
1. Authority to issue shoreline permits as required herein. "Shoreline permits" include shoreline substantial development permits, shoreline conditional use permits, and shoreline variances.”

**FINDING(S):**           a. The proposal submitted involves activities, developments, and/or uses requiring issuance of a shoreline permit.  
                                  b. The Planning Commission is authorized to issue this shoreline permit.

**CONCLUSIONS OF LAW:**       This project will comply with SMC 18.08.010 subject to the review conducted herein.

**CRITERION §18.08.020 – SHORELINE MASTER PROGRAM AND MAP ADOPTION.** “A. There is made a part of this chapter a management plan which shall be known as the “Stevenson Shoreline Master Program,” adopted March 17<sup>th</sup>, 2022, as well as a map which shall be officially known as the “Stevenson Shoreline Environment Designation Map.” These documents shall be

made available to the general public upon request.

B. The Shoreline Environment Designation Map generally shows the shoreline areas of the city which are under the jurisdiction of the Act and the shoreline environments as they affect the various lands and waters of the city. The precise location of shoreline jurisdiction and shoreline environment boundaries shall be determined according to the appropriate provisions of the SMP."

- FINDING(S):**
- a. The proposal is subject to review according to the provisions of the Stevenson Shoreline Master Program.
  - b. The proponents' application included precise locations of shoreline jurisdiction and shoreline environment boundaries pursuant to the Stevenson Shoreline Management Program.

**CONCLUSIONS OF LAW:** This project will comply with SMC 18.08.020 without conditions.

**CRITERION §18.08.050 – APPLICABILITY OF PROVISIONS, SHORELINES DESIGNATED.** "A. Unless specifically exempted by state statute, all proposed uses and development occurring within shoreline jurisdiction must conform to chapter 90.58 RCW, the Shoreline Management Act, and the Stevenson Shoreline Master Program.

B. This chapter applies to all areas within shoreline jurisdiction as designated in the SMP, including:

- 1. That portion of the Columbia River shoreline which lies within city limits. This chapter will apply to any Columbia River shoreline which lies within city limits. This chapter will apply to any Columbia River shoreline which is annexed into the city. The entire Columbia River shoreline is a Shoreline of State-Wide Significance;
- 2. The Rock Cove shoreline;
- 3. That portion of the Rock Creek shoreline which lies within city limits. This chapter will apply to any Rock Creek shoreline which is annexed into the city.
- 4. Any portion of the Ashes Lake shoreline which is annexed into the city; provided, the annexed shoreline has been predesignated within the SMP."

- FINDING(S):**
- a. The proposal is not specifically exempted by state statute.
  - b. The proposal is located within the shoreline jurisdiction of a portion of Rock Cove lying within city limits.
  - c. The proposal must conform to the Shoreline Management Act and the Stevenson Shoreline Management Program.

**CONCLUSIONS OF LAW:** This project will comply with SMC 18.08.050 without conditions.

**CRITERION §18.08.080 – SHORELINE PERMITS & APPROVALS—REQUIRED WHEN.** "A. Any person wishing to undertake activities requiring a Minor Project Authorization or a Shoreline Permit (Shoreline Substantial Development Permit, Shoreline Conditional Use Permit, or Shoreline Variance) within shoreline jurisdiction shall apply to the Shoreline Administrator for appropriate approval.

B. In addition to the provisions contained herein, the authorization to undertake use or development in shoreline jurisdiction is subject to review according to the applicability, criteria, and process described in the SMP, especially SMP Chapter 2."

- FINDING(S):**
- a. The proponents wish to undertake an activity requiring a Shoreline Permit and submitted a complete application for a Substantial Development Permit on August 11<sup>th</sup>, 2023.
  - b. Review according to SMP Chapter 2 is addressed below.

**CONCLUSIONS OF LAW:** This will comply with SMC 18.08.080 without conditions.

**CRITERION §18.08.100 – PERMITS—APPLICATION PROCEDURE.** "A. Any person required to comply with the Shorelines Management Act of 1971 and this chapter shall obtain the proper application forms from the city planning department. The completed application shall then be submitted to the shoreline administrator.

B. Upon receipt of an application, the shoreline administrator shall determine which category of proposal has been submitted:

1. Category A applications involve requests for all shoreline permits, including a) Shoreline Substantial Development Permits, b) Shoreline Conditional Use Permits, c) Shoreline Variances, and d) revisions to any previously authorized Category A proposal.

2. Category B applications involve requests for a) a Minor Project Authorization issued pursuant to WAC 173-27-050, b) limited utility extensions and bulkheads approved pursuant to WAC 173-27-120, c) revisions to any previously authorized Category B proposal, and d) extensions of shoreline substantial development permits and Minor Project Authorizations”

C. After determining the application category, the administrator will then review the application for completeness according to this chapter and the SMP.

**FINDING(S):** a. The proponents submitted a complete application on August 11, 2023.  
b. Upon submission of the application, the Shoreline Administrator determined the application as complete for a proposal involving a Category A Shoreline Permit.

**CONCLUSIONS OF LAW:** This project will comply with SMC 18.08.100 without conditions.

**CRITERION §18.08.110 – PERMITS—NOTICE PUBLICATION.** “A. Within 14 days after a determination of completeness under SMC 18.08.100, the Shoreline Administrator shall provide a notice of application for all Category A proposals as follows:

1. Content. The content of the notice shall be identical to that set forth in WAC 173-27-110(2). In addition, the notice shall state the time and place of the open record public hearing to be held for the Category A proposal.

2. On-Site Notice. No less than 2 notices shall be posted by the administrator in conspicuous places on or adjacent to the subject property.

3. Mailing. The notice shall be mailed to a) the land owner, b) all property owners of record within a radius of 300 feet of the exterior boundaries of the subject property, c) all agencies with jurisdiction per chapter 43.21C RCW, and d) individuals, organizations, tribes, and agencies that request such notice in writing.

4. Newspaper. The notice shall be published at least once a week, on the same day of the week, for two consecutive weeks in a newspaper circulating and published within the city.

B. Category B proposals reviewed under WAC 173-27-120 require the same notice of application as Category A proposals. All other Category B proposals do not require notice of application.”

**FINDING(S):** a. The notice prepared for this proposal includes the content set forth in WAC 173-27-110(2).  
b. The notice was posted on site on August 22, 2023. On August 26, 2023 staff observed that the notice was removed. On August 29, 2023, the notices were replaced.  
c. The notice was mailed to the required recipients on or about August 22, 2023.  
d. The notice was published in *The Columbian* on August 29 and September 5, 2023.

**CONCLUSIONS OF LAW:** This project will comply with SMC 18.08.110 without conditions.

**CRITERION §18.08.120 – PERMITS—FEES.** “A. An application for an approval under this chapter shall be accompanied by an application fee payable to the city in an amount established and periodically adjusted by the city council.

B. Payment of an application fee does not guarantee that a permit will be issued.

**FINDING(S):** a. The proponents submitted the applicable fee on August 11<sup>th</sup>, 2023.

**CONCLUSIONS OF LAW:** This project will comply with SMC 18.08.120 without conditions.

**CRITERION §18.08.140 – PERMITS—INTERESTED PARTIES—COMMENT PERIOD.** “A. For any Category A proposal, any member

of the public may provide written comments for thirty days after the last publication of the notice of application.  
B. For Category B proposals reviewed under WAC 173-27-120, any member of the public may provide written comments for twenty days after the last publication of the notice of application.  
C. During the public comment periods established in this section, any member of the public may also request to be notified of the action taken by the city.

- FINDING(S):**
- a. The City received written comments from: (none).
  - b. The City received requests to be notified of action from: (none).

**CONCLUSIONS OF LAW:** This project will comply with SMC 18.08.120 without conditions.

**CRITERION §18.08.180 – PLANNING COMMISSION ACTION—CATEGORY A PROPOSALS.** “A. No authorization to undertake proposed Category A use or development shall be granted by the planning commission until at least one open record public hearing has been held and the proposed use and development is determined to be consistent with the policy and provisions of the SMA and the SMP.  
B. At the public hearing scheduled for consideration of a Category A proposal by the planning commission, the commission shall, after considering all relevant information available and evidence presented to it, either grant, conditionally grant, or deny the permit.  
C. In granting or revising a permit, the commission may attach thereto such conditions, modifications and restrictions regarding the location, character and other features of the proposed development as it finds necessary. Such conditions may include the requirement to post a performance bond assuring compliance with other permit requirements, terms and conditions.  
D. The decision of the planning commission shall be the final decision of the city on all applications for Category A proposals. The commission shall render a written decision including findings, conclusions and a final order, and transmit copies of its decision to the persons who are required to receive copies of the decision pursuant to Section 18.08.190.

- FINDING(S):**
- a. The Planning Commission held an open record public hearing on October 9, 2023.
  - b. This document catalogues the Planning Commission’s consideration of information available and evidence presented regarding this Category A proposal.
  - c. The Planning Commission has not required the posting of a performance bond to assure compliance with the permit.
  - d. This document constitutes the written decision of the Planning Commission and the City’s final decision on this permit.

**CONCLUSIONS OF LAW:** This project will comply with SMC 18.08.120 upon satisfaction of the conditions contained herein.

**CRITERION §18.08.185 –SHORELINE ADMINISTRATOR ACTION—CATEGORY B PROPOSALS.** [THIS SECTION APPLIES TO A DIFFERENT TYPE OF PROJECT THAN HAS BEEN PROPOSED. NO CONSISTENCY REVIEW IS NECESSARY.]

**CRITERION §18.08.190 –NOTIFICATION AND FILING OF ACTION.** [THIS SECTION APPLIES TO CITY PROCEDURES AFTER A DECISION IS MADE. NO CONSISTENCY REVIEW IS NECESSARY.]

**CRITERION §18.08.200 – APPEAL FROM PERMIT DECISION.** “Any person aggrieved by the granting or denying of a substantial development permit, conditional use permit, variance, or by the rescinding of a permit pursuant to the provisions of this chapter may seek review from the shorelines hearing board. Such an appeal must be filed as a request for the same within twenty-one days of receipt of the final order and by concurrently filing copies of such request with ecology and the attorney general's office. The state hearings board regulations of RCW 90.58.180 and Chapter 461-08 WAC apply. A copy of such

appeal notice shall also be filed promptly with the City of Stevenson. Upon issuance of a final order after an appeal, the city shall provide said order to ecology according to WAC 173-27-130(10).

- FINDING(S):
- a. The appeal process applies to the proponent and any person aggrieved by the City decision.
  - b. The appeal period coincides with the timelines established in SMC 18.08.210.
  - c. A condition is appropriate to provide guidance on this procedure.

CONCLUSIONS OF LAW: This project will comply with SMC 18.08.120 upon satisfaction the condition below.

CONDITIONS:

- 1. Timely appeals shall be filed by the proponent within 21 days of Receipt of the Final Decision.

CRITERION §18.08.205 –APPEAL FROM ADMINISTRATOR DECISION. [THIS SECTION APPLIES TO A DIFFERENT TYPE OF PROJECT THAN HAS BEEN PROPOSED. NO CONSISTENCY REVIEW IS NECESSARY.]

CRITERION §18.08.210 – PERMIT ISSUANCE AND EFFECT. "A. The effective date of a substantial development permit shall be the date of filing as provided in RCW 90.58.140(6).  
B. Each shoreline permit shall contain a provision that construction pursuant to the permit shall not begin and is not authorized until twenty-one days from the date of filing with ecology, per WAC 173-27-190 or as subsequently amended, or until all review proceedings initiated within twenty-one days from the date of such filing have been terminated.  
C. Issuance of a permit does not obviate the applicant from meeting requirements of other federal, state and county permits, procedures and regulations.

- FINDING(S):
- a. A condition is appropriate to incorporate SMC 18.08.210(B) into the permit decision.

CONCLUSIONS OF LAW: This project will comply with SMC 18.08.210 upon satisfaction of the conditions contained herein.

CONDITIONS:

- 2. **Construction pursuant to this Permit shall not begin** and is not authorized until 21 days from the date of filing with Ecology, per WAC 173-27-190 or as subsequently amended, or until all review proceedings initiated within 21 days from the date of such filing have been terminated.

CRITERION §18.08.220 – PERMIT DURATION—EXTENSIONS. "A. Construction activities shall be commenced, or where no construction activities are involved, the use or activity shall be commenced within two years of the effective date of an authorization or shoreline permit issued under this chapter. However, the city may authorize a single extension for a period not to exceed one year based on reasonable factors, if a request for extension has been filed before the expiration date and notice of the proposed extension is given to ecology and parties of record on the original authorization or permit.  
B. Authorization to conduct development activities shall terminate five years after the effective date of an authorization or shoreline permit. However, the city may authorize a single extension for a period not to exceed one year based on reasonable factors, if a request for extension has been filed before the expiration date and notices of the proposed extension is given to ecology and parties of record on the original authorization or permit.  
C. Upon a finding of good cause, based on the requirements and circumstances of the specific project proposed and consistent with the policies and provisions of the SMP and WAC 173-27, the city may adopt different time limits from those



set forth above as a part of action on a shoreline permit.

D. The time periods in this section do not include the time during which a use or activity was not actually pursued due to the pendency of administrative appeals or legal actions or due to the need to obtain any other government permits and approvals for the development that authorize the development to proceed, including all reasonably related administrative or legal actions on any such permits or approvals.

- FINDING(S):
- a. Timelines differing from this set forth in SMC 18.08.220(A) & (B) are not necessary for this permit.
  - b. Conditions are appropriate to incorporate the timelines of SMC 18.08.220(A), (B), and (D) into the permit decision.
  - c. Conditions are necessary to ensure permit timelines continue to be met in the face of unforeseen delays under SMC 18.08.220(D).

CONCLUSIONS OF LAW: This project will comply with SMC 18.08.220 upon satisfaction of the conditions contained herein.

CONDITIONS:

- 3. **Within 2 years of the effective date of this permit**, construction activities associated with this permit shall commence or a written request for a maximum 1-year extension shall be submitted to the City. If construction activities do not commence accordingly, the permit shall expire.
- 4. **Within 5 years of the effective date of this permit**, all development activities associated with this permit shall terminate or a written request for a maximum 1-year extension shall be submitted to the City.
- 5. **Prior to the start of construction**, the proponent shall submit the City documentation sufficient to establish an accurate timeline of any activity justifying an extension of the permit's duration based on SMC 18.08.220(D). No such documentation will be accepted by the City after construction commences.

CRITERION §18.08.235 –VARIANCE AND CONDITIONAL USE PERMITS—ECOLOGY REVIEW. [THIS SECTION APPLIES TO A DIFFERENT TYPE OF PROJECT THAN HAS BEEN PROPOSED. NO CONSISTENCY REVIEW IS NECESSARY.]

CRITERION §18.08.250 – ENFORCEMENT—PENALTIES. "All provisions of this chapter shall be enforced by the shoreline administrator and/or a designated representative. The enforcement procedures and penalties contained in WAC 173-27 and RCW Chapter 90.58 are hereby incorporated by reference."

- FINDING(S):
- a. A condition is appropriate to incorporate SMC 18.08.250 into the permit decision.

CONCLUSIONS OF LAW: This project will comply with SMC 18.08.250 upon satisfaction of the conditions contained herein.

CONDITIONS:

- 6. **Throughout the Duration of this Permit**, the proponents shall provide reasonable access to the Shoreline Administrator to ensure enforcement of this permit and the SMP.
- 7. **Throughout the Duration of Construction**, the proponents shall contact the Shoreline Administrator prior to constructing any change to the proposal to determine whether the

change should be permitted and whether the permission should be through a revision to this Minor Project Authorization or through a Shoreline Permit.

8. **Prior to the Start of Construction** the applicants shall provide construction documents for approval by the Shoreline Administrator. The review shall be limited, ensuring the project's consistency with the proposal and ensuring the conditions of City permits have been appropriately incorporated. Should the Administrator fail to respond within 7 days of receipt, the construction documents shall be presumptively approved.

### **Stevenson Shoreline Master Program**

The *Stevenson Shoreline Master Program* (SMP) is adopted by SMC 18.08.020 Chapter 18.08. The program is divided into 7 chapters. Each chapter contains several sections of standards addressing specific aspects of shoreline management. Findings and conclusions related to each section are detailed below.

### **CHAPTER 1 - INTRODUCTION**

CRITERIA §1.1, §1.2, §1.3.1, §1.3.2, §1.4, §1.6, §1.7, §1.8, §1.9, §1.10. [THESE SECTIONS CONTAINS GUIDANCE APPLICABLE TO ALL CRITERION IN THE SMP BUT NO SPECIFIC REGULATIONS. NO CONSISTENCY REVIEW IS NECESSARY.]

CRITERION §1.3.3 – SHORELINE ENVIRONMENT DESIGNATION MAP. "The approximate shoreline jurisdictional area and the Shoreline Environment Designations (SEDs) are delineated on the map(s), hereby incorporated as a part of this SMP that shall be known as the "Stevenson Shoreline Environment Designation Map" (See Appendix A). The boundaries of the shoreline jurisdiction on the maps are approximate. The actual extent of shoreline jurisdiction for specific project proposals shall be based upon the actual location of the OHWM, floodway, and the presence and delineated boundaries of associated wetlands as determined after an on-site inspection and in accordance with SMP Sections 1.3.1 and 1.3.2, Chapter 3, Chapter 7, and RCW 90.58.030."

- FINDING(S):
- a. The Critical Areas Report prepared by Ecological Land Services, Inc. and submitted with this proposal includes a map of shoreline jurisdiction based on the actual location of the OHWM as observed in the field.
  - b. The proposal is located within an area designated as Active Waterfront and extends through an area designated Aquatic on the Stevenson Shoreline Environment Designation Map.

CONCLUSIONS OF LAW: This project will comply with SMP 1.3.2 without conditions.

CRITERION §1.5 – SHORELINE MASTER PROGRAM APPLICABILITY TO DEVELOPMENT. "The SMP shall apply to all land and waters under the jurisdiction of Stevenson as identified in SMP Sections 1.3.1, 1.3.2, and 1.3.3 above. This SMP shall apply to every person (i.e., individual, partnership, corporation, association, organization, cooperative, public or municipal corporation, or agency of the state or local governmental unit however designated) that uses, develops, owns, leases, or administers lands, wetlands, or waters that fall under the jurisdiction of the SMA. The SMP shall not apply to federal agency activities on federal lands. See SMP Chapter 2 below for more information on when a permit is required. The SMP applies to all review activities (i.e., shoreline uses, development, and modifications) proposed within shoreline jurisdiction. Some review activities under this program do not require a shoreline substantial development permit. However, such activities must continue to demonstrate compliance with the policies and regulations contained in this SMP in accordance with WAC 173-27-040(1)(b) and be authorized by a minor project authorization."

- FINDING(S):
- a. The SMP is applicable to this proposal by this proponent, for a project occurring within the jurisdiction of Stevenson as identified herein.

CONCLUSIONS OF LAW: This project will comply with SMP 1.5 without conditions.

## **CHAPTER 2 – ADMINISTRATIVE PROVISIONS**

CRITERIA §2.1, §2.2, §2.3.2, §2.4.1, §2.5, §2.7, §2.8, §2.9. [THESE SECTIONS CONTAIN GUIDANCE APPLICABLE TO ALL AND/OR DIFFERENT TYPES OF PROJECT THAN HAS BEEN PROPOSED. NO CONSISTENCY REVIEW IS NECESSARY.]

CRITERION §2.3.1 – PRE-APPLICATION CONFERENCE—REQUIRED. “A pre-application conference for all proposed review activities within shoreline jurisdiction is required. The Shoreline Administrator may waive this requirement if the applicant requests such in writing and demonstrates that the usefulness of a pre-application meeting is minimal.”

FINDING(S): a. A series of pre-application conferences, emails, and phone calls throughout the Spring and Summer of 2023 occurred in advance of this project’s application.

CONCLUSIONS OF LAW: This project will comply with SMP 2.3.1 without conditions.

CRITERION §2.3.3 – DETERMINATION OF ORDINARY HIGH WATER MARK. “For any development where a determination of consistency with the applicable regulations requires a precise location of the OHWM, the mark shall be located precisely with assistance from Ecology and City staff, or a qualified professional, and the biological and hydrological basis for the location shall be included in the development plan. Where the OHWM is neither adjacent to or within the boundary of the project, the plan shall indicate the distance and direction to the nearest OHWM of a shoreline.”

FINDING(S): a. The Critical Areas and FWHCA Report prepared by Ecological Land Services, Inc., a qualified professional, and submitted with this proposal includes a determination of the OHWM as observed in the field.

CONCLUSIONS OF LAW: This project will comply with SMP 2.3.3 without conditions.

CRITERION §2.4.2 – APPLICATION CONTENTS. [THIS SECTION CONTAINS 2 LISTS OF REQUIRED SUBMITTALS FOR APPROVAL OR PROJECTS IN SHORELINE JURISDICTION AND PROVIDES THE SHORELINE ADMINISTRATOR AUTHORITY TO REQUIRE ADDITIONAL INFORMATION. FOR BREVITY, THE FULL TEXT OF THIS SECTION IS OMITTED.]

FINDING(S): a. The findings of SMC 18.08.100 related to the acceptance of a complete application are relevant to this criterion.

CONCLUSIONS OF LAW: This project will comply with SMP 2.3.3 without conditions.

CRITERION §2.4.3 – APPLICATION REVIEW & PROCESSING. “1. When an application is deemed complete, the Administrator may request third-party peer review of any report, assessment, delineation, or mitigation plan by a qualified professional and/or state or federal resource management agency. Such request shall be accompanied by findings supporting the Administrator’s decision, which is appealable to the City Council. The City may incorporate recommendations from such third-party reports in findings approving or denying an application. In general, the cost of any third-party review will be the responsibility of the applicant; however, where a project would provide a beneficial public amenity or service, on a case-by-case basis by City Council action, costs may be shared by the City.  
2. The Shoreline Administrator shall review the information submitted by the applicant and, after an optional site visit shall determine the category of project proposed according to SMC 18.08.100.  
3. Applications shall be processed according to the timelines and notice procedures listed in SMC 18.08.100 through SMC 18.08.190, the review criteria of this Chapter, and WAC 173-27.  
4. The City shall use an existing, or establish a new, mechanism for tracking all project review actions in shoreline areas, and a process to evaluate the cumulative effects of all authorized development on shoreline conditions.”

- FINDING(S):**
- a. Third-party peer review occurred during the 2020 permitting process. No additional third-party peer review was deemed necessary by the Shoreline Administrator for this proposal.
  - b. The Shoreline Administrator determined this project is a Category A Shoreline Substantial Development Permit.
  - c. The findings of related to the Stevenson Municipal Code related to application and review procedures are relevant to this criterion.

**CONCLUSIONS OF LAW:** This project will comply with SMP 2.4.3 without conditions.

**CRITERION §2.6.1 – SHORELINE SUBSTANTIAL DEVELOPMENT PERMITS – PURPOSE – APPLICABILITY – CRITERIA.** “The purpose of a Shoreline Substantial Development Permit (SSDP) is to assure consistency with the provisions of the SMA and this SMP. In authorizing a SSDP, the City may attach conditions to the approval as necessary to assure the project is consistent with all applicable standards of the SMA and this SMP. The following criteria shall assist in reviewing proposed SSDPs:

- 1. SSDPs may not be used to authorize any use that is listed as conditional or prohibited in a shoreline designation.
- 2. SSDPs may not be used to authorize any development and/or use which does not conform to the specific bulk, dimensional, and performance standards set forth in this SMP.
- 3. SSDPs may be used to authorize uses which are listed or set forth in this SMP as permitted uses.
- 4. To obtain a SSDP, the applicant must demonstrate compliance with all of the following review criteria as listed in WAC 173.27.150:
  - a. That the proposal is consistent with the SMA;
  - b. That the proposal is consistent with WAC 173-27 – Shoreline Management Permit and Enforcement Procedures; and
  - c. That the proposal is consistent with this SMP and SMC 18.08 – Shoreline Management.”

**FINDING(S):** a. The sum of the findings contained herein are relevant to review of this criterion.

**CONCLUSIONS OF LAW:** This project will comply with SMP 2.6.1 upon fulfillment of the conditions contained herein.

**CRITERION §2.6.2 – SHORELINE SUBSTANTIAL DEVELOPMENT PERMITS – PERMIT PROCESS.** “Proposals for SSDPs are subject to the City’s permit procedures articulated in SMC 18.08 – Shoreline Management and the State’s permit procedures articulated in WAC 173-27 – Shoreline Management Permit and Enforcement Procedures.”

**FINDING(S):** a. The findings of SMC 18.08 are relevant to this criterion.

**CONCLUSIONS OF LAW:** This project will comply with SMP 2.6.2 without conditions.

**CHAPTER 3 – SHORELINE ENVIRONMENT DESIGNATIONS**

**CRITERIA §3.1, §3.2.1, §3.2.2, §3.2.3, §3.2.4.** [THESE SECTIONS CONTAIN GUIDANCE APPLICABLE TO ALL AND/OR DIFFERENT LOCATIONS THAN HAS BEEN PROPOSED. NO CONSISTENCY REVIEW IS NECESSARY.]

**CRITERION §3.2.5 – ACTIVE WATERFRONT ENVIRONMENT.** “1 Purpose: The purpose of the Active Waterfront Environment is to recognize the existing pattern of mixed-use development and to accommodate new water-oriented commercial, transportation, recreation, and industrial uses while protecting existing ecological functions of open space, floodplain, and other sensitive lands and restoring ecological functions in areas that have been previously degraded.

2. Location Criteria: The Active Waterfront SED may apply to shorelands that 1) currently support or 2) are appropriate and planned for water-oriented commercial, transportation, recreation, and industrial development that is compatible with protecting or restoring of the ecological functions of the area.

3. Management Policies:

a. Prefer uses that preserve the natural character of the area or promote preservation of open spaces and sensitive lands, either directly or over the long term. Allow uses that result in restoration of ecological functions if the use is otherwise compatible with the purpose of the environment and the setting.

b. Give priority to water-oriented uses, with first priority to water-dependent, then second priority to water-related and water-enjoyment uses. For shoreline areas adjacent to commercially navigable waters, give highest priority to water-dependent uses.

c. Prohibit new non-water-oriented uses, except: i) As part of mixed use development; ii) In limited situations where they do not conflict with or limit opportunities for water-oriented uses; iii) On sites where there is no direct access to the shoreline; iv) As part of a proposal that result in a disproportionately high amount of restoration of ecological functions.

d. Assure no net loss of shoreline ecological functions as a result of new development through shoreline policies and regulations. Where applicable, new development shall include environmental cleanup and restoration of the shoreline to comply in accordance with any relevant state and federal law.

e. Require public visual and physical access and implement public recreation objectives whenever feasible and where significant ecological impacts can be mitigated."

- FINDING(S):**
- a. The proposal is located in the Active Waterfront Shoreline Environment Designation (SED) and involves water-enjoyment commercial, a use preferred in the SED.
  - b. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.
  - c. Public visual and physical access is feasible on this site where significant ecological impacts can be mitigated and avoided.

**CONCLUSIONS OF LAW:** This project will comply with SMP 3.2.5 without conditions.

#### **CHAPTER 4 – GENERAL PROVISIONS FOR ALL SHORELINE ACTIVITIES**

**CRITERIA §4.1, §4.4.5, §4.5, §4.8.** [THESE SECTIONS CONTAIN GUIDANCE APPLICABLE TO ALL AND/OR DIFFERENT LOCATIONS OR PROJECT TYPES THAN HAS BEEN PROPOSED. NO CONSISTENCY REVIEW IS NECESSARY.]

**CRITERION §4.2.3 – [CULTURAL RESOURCES] REGULATIONS.** "1 Site Inspections, Evaluations, and Surveys – Required When:

a. When a shoreline use or development is within 500 feet of an area documented to contain, or likely to contain, archaeological, cultural, or historic resources based on information from DAHP, a prior archaeological report/survey, or a state or federal register, the applicant shall provide a site inspection and evaluation report prepared by a qualified cultural resource professional prior to issuance of any Shoreline Permit or approval, including a Minor Project Authorization. Work may not begin until the inspection and evaluation have been completed, and the City has issued its permit or approval.

b. A survey to identify archaeological, cultural, and historic resources 50 years of age and older may be required to be conducted based on the recommendations of a cultural resources professional contained in the site inspection and evaluation report. The cultural resource survey process shall conform to the most recent update of DAHP's Standards for Cultural Resource Reporting found at this link:

<https://dahp.wa.gov/sites/default/files/CR%20Update%20August%202018%20final.pdf>

2. Cultural Resources Avoidance. If an archaeological site inspection or evaluation identifies the presence of significant archaeological, cultural, or historic resources at the site, the applicant shall first seek to avoid impacts to the resource.

3. Cultural Resources Management Plan. If an archaeological site inspection or evaluation identifies the presence of significant archaeological, cultural, or historic resources that will be impacted by a project and if recommended by a qualified cultural resource professional, a cultural resource management plan shall be prepared prior to the City's approval of the project. A qualified cultural resource professional(s) shall prepare the cultural resource management plan. Cultural resource management plans shall be developed in consultation with DAHP and affected Tribes. In addition, a permit or other requirement administered by DAHP pursuant to RCW 27.44 and RCW 27.53 may apply. If the cultural resource professional determines that impacts to an archaeological, cultural, or historic resource can be adequately avoided by establishing a work limit area within which no project work or ground disturbance may occur, then a cultural resources management plan is not required.

4. Inadvertent discovery. If any item of possible archaeological interest (including human skeletal remains) is discovered on site during construction or site work, all the following steps shall occur:

- a. Stop all work in the immediate area (initially allowing for a 100' buffer, this number may vary by circumstance) immediately;
- b. Implement reasonable measures to protect the discovery site, including any appropriate stabilization or covering;
- c. Take reasonable steps to ensure the confidentiality of the discovery site;
- d. Take reasonable steps to restrict access to the site of discovery;
- e. Notify the City, DAHP, and Yakama, Nez Perce, Warm Springs, Umatilla, and Cowlitz tribes of the discovery.
- f. A stop-work order will be issued.
- g. The Shoreline Permit will be temporarily suspended.
- h. All applicable state and federal permits shall be secured prior to commencement of the activities they regulate and as a condition for resumption of development activities.
- i. Development activities may resume only upon receipt of City approval.
- j. If the discovery includes human skeletal remains, the Skamania County Coroner and local law enforcement shall be notified in the most expeditious manner possible. The County Coroner will assume jurisdiction over the site and the human skeletal remains, and will make a determination of whether they are crime-related. If they are not, DAHP will take jurisdiction over the remains and report them to the appropriate parties. The State Physical Anthropologist will make a determination of whether the remains are Native American and report that finding to the affected parties. DAHP will handle all consultation with the affected parties as to the preservation, excavation, and disposition of the remains "

**FINDING(S):**

- a. A cultural resources study, was prepared for this site on February 4, 2020 by Applied Archaeological Research, Inc. which recommended an inadvertent discovery plan be followed.
- b. In 2020 under City File SEPA2020-01, a Mitigated Determination of Nonsignificance (MDNS) was issued on the basis of that report, and a mitigation measure incorporated an Inadvertent Discovery Policy into the project's expectations. The City received comments on the MDNS from DAHP requesting preparation and implementation of a monitoring plan. In its final decision on the Shoreline Substantial Development Permit under the old SMP, the City Council disregarded the DAHP request and no monitoring plan was required.
- c. Construction activities completed under the 2020 approvals involved installation of underground utilities; however additional excavations are likely under this permit and the current SMP is more directive related in terms of cultural resources protection.
- d. Through a proposal involving similar excavations in areas where cultural resources might be encountered, the City of Stevenson Public Works Department prepared and implemented a monitoring plan as part of it's inadvertent discovery policy.
- e. Conditions are appropriate to incorporate an inadvertent discovery policy and monitoring plan into the project's construction.

**CONCLUSIONS OF LAW:** This project will comply with SMP 4.2.3 upon fulfillment of the conditions below.

**CONDITIONS:**

9. In areas where excavation will exceed the depth of fill materials, an archaeological monitor will be required to be on site during the excavation. The monitoring plan shall be reviewed by DAHP, include an inadvertent discovery plan, and be incorporated into the project construction documents.

**CRITERION §4.3.3 – [ENVIRONMENTAL PROTECTION & NO NET LOSS] REGULATIONS.**

“1. Mitigation Sequence. In order to ensure that review activities contribute to meeting the no net loss provisions by avoiding, minimizing, and mitigating for adverse impacts to ecological functions or ecosystem-wide processes, applicants shall describe how the proposal will follow the sequence of mitigation as defined below:

- a. Avoid the impact altogether by not taking a certain action or parts of an action;
  - b. Minimize the impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps (e.g., project redesign, relocation, timing to avoid or reduce impacts, etc.);
  - c. Rectify the impact by repairing, rehabilitating, or restoring the affected environment to the conditions existing at the time of the initiation of the project or activity;
  - d. Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action;
  - e. Compensate for the impact by replacing, enhancing, or providing substitute resources or environments; and
  - f. Monitor the impact and the compensation projects and take remedial or corrective measures when necessary.
2. The mitigation sequence is listed in the order of priority. Applicants shall consider and apply lower priority measures only where higher priority measures are determined to be infeasible or inapplicable.
3. SEPA Compliance. To the extent SEPA applies to a proposal, the analysis of environmental impacts and mitigation related to the proposal shall be conducted consistent with WAC 197-11—SEPA Rules and SMC 18.04—Environmental Policy.
4. Cumulative Impacts. As part of the assessment of environmental impacts subject to this SMP, new uses, developments, and modifications shall evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions. Evaluation of cumulative impacts shall consider:
- a. Current circumstances affecting the shorelines and relevant natural processes;
  - b. Reasonably foreseeable future development and use of the shoreline; and
  - c. Beneficial effects of any established regulatory programs under other local, state, and federal laws.
5. Mitigating for Impacts. When impacts related to a proposal require mitigation, the following shall apply:
- a. The proposal shall achieve no net loss of ecological functions.
  - b. The City shall not require mitigation in excess of that necessary to assure the proposal 1) results in no net loss of ecological function and 2) does not have a significant adverse impact on other shoreline functions fostered by this SMP.
  - c. Compensatory mitigation shall give preference to measures that replace the impacted function directly and in the immediate vicinity of the impact. However, alternative compensatory mitigation located elsewhere in the same reach or watershed that addresses limiting factors or identified critical needs for shoreline resource conservation may be authorized, including appropriate actions identified in the Restoration Plan.
  - d. Unless waived by the City, authorization of compensatory mitigation shall require appropriate safeguards, terms or conditions (e.g. performance bonding, monitoring, conservation covenants) as approved by the City Attorney and necessary to ensure no net loss of ecological functions.
6. Environmental protection and no net loss shall be achieved by complying with the combination of use regulations, shoreline setbacks, critical area buffers, and vegetation removal restrictions:
- a. Shoreline Allowances & Setbacks – Table 5.1 establishes a list of permitted, conditional, and prohibited uses in each shoreline environment designation (SED). This table also establishes the minimum shoreline setback applicable to each use, activity, or development within each SED where development cannot occur; and
  - b. Critical Areas Buffers – Section 4.4 Critical Area provisions, including separately incorporated SMC 18.13 provisions that establish Wetland and Riparian buffer standards as additional areas where mitigation sequencing must be applied and unavoidable impacts must be mitigated; and
  - c. Modifications & Vegetation – Shoreline modification standards, vegetation standards, and prescriptive mitigation measures of Chapter 6 apply to all vegetation impacts occurring within shoreline jurisdiction.

**FINDING(S):**

- a. The application contains detailed narratives, stormwater, landscape and mitigation plans contending consistency with this criterion.
- b. Via written comment, the Washington Department of Ecology contends the applicant has not met its the burden of proof in describing the mitigation sequence was followed for this site.
- c. The mitigation sequence, as more fully described through supplemental

information submitted into the record at the public hearing on this application, has been appropriately followed.

d. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.

CONCLUSIONS OF LAW: This project will comply with SMP 4.3.3 upon fulfillment of the conditions contained herein.

CRITERION §4.4.3 – GENERAL CRITICAL AREA REGULATIONS. “1 The City of Stevenson shall not issue any Shoreline Permit (i.e., SSDP, SCUP, shoreline variance) or Minor Project Authorization (MPA), or otherwise issue any authorization to alter the condition of any land, water, or vegetation, or to construct or alter any structure or improvement in, over, or on a shoreline critical area or associated buffer, without first assuring compliance with the requirements of this section and SMC 18.13, as applicable.

2. Early Disclosure and Verification. When an applicant submits an application for any development proposal, it shall indicate whether any critical areas or buffers are located on or within 300 feet of the site. The presence of critical areas may require additional studies and time for review. However, the City shall review proposals involving critical areas protection under a single application, timeline, fee, and permit as the required Shoreline Permit or MPA. Early disclosure of critical areas will reduce delays during the permit review process. If the applicant states there are no known critical areas, the City should review and confirm whether critical areas exist, and, if critical areas are present, require the applicant to complete a critical areas report.

3. Studies generated as part other federal or state permit processes (e.g., SEPA submittals, biological opinions, biological evaluations, etc.) shall be provided and may be determined by the Administrator as adequate to satisfy the critical areas report requirements of this SMP if the project has been developed in enough detail to have evaluated site-specific impacts and mitigation measures.

4. New development and the creation of new lots are prohibited in all SEDs when they would cause foreseeable risk from geological conditions, or require structural flood hazard reduction measures in the floodway or CMZ, during the life of the development, consistent with SMP Section 5.4.8 Land Division, and other provisions of this Program.”

FINDING(S):

- a. The application contains detailed narratives, stormwater, landscape and mitigation plans contending consistency with this criterion.
- b. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.
- c. The applicant’s narratives and reports responding to SMP 4.3, SMP 4.4, and SMC 18.13 result in protective buffers from Rock Cove. However, the submittals do not document the project’s consistency with buffer demarcation requirements of SMC 18.13.057(A-C).
- d. The applicants supplied a Critical Areas Report in support of the 2020 permit request, which was subsequently reviewed and determined consistent with the Stevenson Critical Areas Code (SMC 18.13) by an independent third-party.
- e. Updated Critical Areas Report supplied in support of the current permit request retains the key findings of the previous assessment, while addressing additional development phases for which a permit was not previously requested.
- f. Via written comment, the Washington Department of Ecology contends the applicant’s proposed on-site mitigation is insufficient to satisfy the Stevenson Critical Areas Code (SMC 18.13).
- e. Off-site mitigation, as more fully described through supplemental information submitted into the record at the public hearing on this application, is sufficient to address the additional development phases and satisfy the Stevenson Critical Areas Code.



[REDACTED]

**CONCLUSIONS OF LAW:** This project will comply with SMP 4.4.3 upon fulfillment of the conditions below.

CONDITIONS:

10. **Prior to the Start of Construction** the applicants shall update the Critical Areas and FWHCA Report to include construction staking and permanent demarcation of the functionally isolated buffer consistent with SMC 18.13.057(A and C) and, where appropriate, incorporate it into project construction documents.
  11. **Prior to the Start of Construction** the property owner shall record a deed notice related to the critical habitat area. This approval, together with the updated Critical Areas Report and Buffer Enhancement Plan shall be attached to the notice.
- [REDACTED]

CRITERION §4.4.4 – FISH & WILDLIFE HABITAT CONSERVATION AREA REGULATIONS. “1 Any use, development, or modification proposed within or adjacent to an FWHCA with which state or federally endangered, threatened, or sensitive species have a primary association, shall ensure the FWHCA is protected as required by this SMP. If the Shoreline Administrator determines that a proposal is likely to impact an FWHCA adversely, additional protective measures (e.g., protective buffer standards, mitigation, and monitoring programs under SMC 18.13) may be required..

2. Applicants shall provide a preliminary FWHCA assessment for all proposals involving riparian areas. The assessment must recognize the buffer necessary to ensure no net loss of ecological functions occurring at the reach-scale for the riparian area in question.

3. The City shall condition the approval of activities located in the FWHCA or its buffer as necessary. Approval conditions shall require the applicant to mitigate any potential adverse impacts according to the approved critical area report, mitigation, and monitoring plans.

4. Structures that prevent the migration of salmonids shall not be allowed in the portion of water bodies currently or historically used by anadromous fish. Fish bypass facilities shall be provided, as necessary, to allow the upstream and downstream migration of all salmonid life stages and shall prevent juveniles migrating downstream from being trapped or harmed.”

- FINDING(S):
- a. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.
  - b. The proposal involves no structures preventing migration of salmonids.

**CONCLUSIONS OF LAW:** This project will comply with SMP 4.3.3 upon fulfillment of the conditions contained herein.

CRITERION §4.6.3 – PUBLIC ACCESS REGULATIONS. “1 Consistent with legal/constitutional limitations, provisions for adequate public access shall be incorporated into all proposals for Shoreline Permits that have one or more of the following characteristics:

- a. The proposed development or use will create a demand for, or increase demand for public access;
- b. The proposed use is water-enjoyment, water-related, or non water-dependent, except for individual single-family residences not part of a development planned for 5 or more parcels;
- c. The proposed use involves the subdivision of land into 5 or more parcels;
- d. The proposed development or use will interfere with existing access by blocking access or discouraging use of existing access;
- e. The proposed development or use will interfere with public use of waters of the state;

- f. The proposed development or use will involve public funding or occur on public lands, provided that such access would not result in a net loss of ecological function. Public funding includes any funds from federal, state, municipal or local taxation districts.
2. Additional public access will not be required where suitable public access is already provided by an existing public facility on or adjacent to the site and the Planning Commission makes a finding that the proposed development would not negatively impact existing visual or physical public access nor create a demand for shoreline public access that could not be accommodated by the existing public access system and existing public recreational facilities in the immediate vicinity.
3. Public access will not be required where the applicant demonstrates it is infeasible due to at least one of the following:
- Unavoidable health or safety hazards to the public exist that cannot be prevented by any practical means;
  - Inherent security requirements of the use cannot be satisfied through the application of alternative design features or other solutions;
  - The cost of providing the access, easement, or an alternative amenity are unreasonably disproportionate to the total long-term cost of the proposed development or other legal/constitutional limitations preclude public access;
  - Unacceptable environmental harm will result from the public access which cannot be mitigated;
  - Significant unavoidable conflict between the proposed access and adjacent uses would occur and cannot be mitigated.
4. To meet any of the conditions under Regulation 3 above, the applicant must first demonstrate to the satisfaction of the Planning Commission that all reasonable alternatives have been exhausted including, but not limited to, the following:
- Regulating access by such means as maintaining a gate and/or limiting hours of use;
  - Designing separation of uses and activities (e.g., fences, terracing, use of one-way glazings, hedges, landscaping);
  - Provisions for access at a site geographically separated from the proposal such as a street end, vista or trail system;
  - Sharing the cost of providing and maintaining public access between public and private entities.
5. For projects that meet the criteria of Regulation 3 above, the City may consider off-site public access or, if approved by the Planning Commission and agreed to by the applicant, the applicant may contribute a proportional fee to the local public access fund (payment in lieu).
6. If the City determines that public access is required pursuant to Regulation 1 above, the City shall impose permit conditions requiring the provision of public access that is roughly proportional to the impacts caused by the proposed development or use. The City shall demonstrate in its permit decision document that any such public access has a nexus with the impacts of the proposed development and is consistent with the rough proportionality standard.
7. When required, public access shall:
- Consist of a dedication of land or a physical improvement in the form of a walkway, trail, bikeway, corridor, viewpoint, park, deck, observation tower, pier, boat launch, dock or pier area, or other area serving as a means of view and/or physical approach to public waters and may include interpretive centers and displays, view easements, and/or decreased building bulk through height, setback, or façade limitations;
  - Include features for protecting adjacent properties from trespass and other possible adverse impacts;
  - Be fully developed and available for public use at the time of occupancy of the proposed use or activity;
  - Result in no net loss of shoreline ecological functions.
8. When required, physical public access shall be constructed to meet the following requirements for location, design, operation and maintenance:
- Public access sites shall be connected directly to the nearest public street or non-motorized trail through a parcel boundary, tract, or easement, wherever feasible;
  - Signs indicating the public's right of access to shoreline areas shall be installed and maintained in conspicuous locations.
  - Public access easements and permit conditions shall be recorded on the deed of title and/or on the face of a plat or short plat as a condition running in perpetuity with the land, provided, that the Planning Commission may authorize a conveyance that runs contemporaneous with the authorized land use for any form of public access other than parallel pedestrian access. Said recording with the County Auditor's Office shall occur at the time of permit approval.
  - Maintenance of the public access facility shall be the responsibility of the owner unless otherwise accepted by a public or nonprofit agency through a formal agreement approved by the City and recorded with the County Auditor's Office.
  - Public access sites shall be made barrier-free for the physically disabled where feasible, and in accordance with the ADA.
  - Any trail constructed shall meet the conditions described for shoreline areas in any trail or parks plan officially adopted by the City Council.
9. Views of the shoreline from public properties or substantial numbers of residences shall be protected through adherence to height and setback limits specified in this SMP. Where new development would completely obstruct or significantly

reduce the aesthetic quality of views from public properties or substantial numbers of residences, mitigation shall be required as follows:

a. The City may require administrative modifications to standard setbacks, clustering of proposed structures, and modifications to landscaping and building massing when the Planning Commission determines that such modifications are necessary to maintain public views of the shoreline.

b. The City shall work with the applicant to minimize the economic impacts of view mitigation. While upper story setbacks and other changes to building placement and form may be required to provide view corridors, in no case shall the applicant be required to reduce the maximum building height for more than 30% of the building's width.

c. The City may require specific public access improvements (e.g., public viewing decks, etc.) as mitigation in lieu of more significant modifications to site and building design when the Planning Commission finds such modifications would be an unreasonable financial burden on the applicant.

10. Where there is a conflict between water-dependent shoreline uses or physical public access and maintenance of views from public properties or substantial numbers of residences that cannot be resolved using the techniques in Regulation 9 above, the water-dependent uses and physical public access shall have priority, unless the Planning Commission finds a compelling reason to the contrary.

11. Future actions by the applicant, successors in interest, or other parties shall not diminish the usefulness or value of the public access provided."

**FINDING(S):**

a. The proposal has one or more of the characteristics requiring public access.

b. The application contains detailed narratives, stormwater, landscape and mitigation plans contending consistency with this criterion.

c. The site is subject to numerous public access easements which conflict with and/or where no public access project is proposed, however, the application makes no contention regarding the infeasibility of providing such public access.

d. Via written comment, the Washington Department of Ecology contends the proposal has not appropriately addressed public access.

e. Public access, as more fully described through supplemental information submitted into the record at the public hearing on this application, has been adequately provided at this site.

**CONCLUSIONS OF LAW:**

This project will comply with SMP 4.6.3.without conditions.

**CRITERION §4.7.3 – WATER QUALITY & NON-POINT SOURCE POLLUTION REGULATIONS.**

"1 Design, construction and operation of shoreline uses and developments shall incorporate measures to protect and maintain surface and groundwater quality in accordance with all applicable laws, so that there is no net loss of ecological functions.

2. Design, construction and operation of shoreline uses and developments shall incorporate measures to protect and maintain surface and groundwater quantity and quality in accordance with all applicable laws, so that significant impacts to aesthetic qualities or recreational opportunities do not occur. A significant impact to aesthetics or recreation would occur if a stormwater facility and accessory structures (e.g., fences or other features) have the potential to block or impair a view of shoreline waters from public land or from a substantial number of residences per RCW 90.58.320, or if water quality were degraded so as to discourage normal uses (e.g., swimming, fishing, boating, viewing, etc.).

3. Shoreline development and uses shall adhere to all required setbacks, buffers, and standards for stormwater facilities.

4. All review activities shall comply with the applicable requirements of all applicable City stormwater, drinking water protection, and public health regulations and the Stormwater Management Manual for Western Washington, including using low impact development techniques whenever feasible.

5. Sewage management. To avoid water quality degradation, sewer service is subject to the requirements outlined below.

a. Any existing septic system or other on-site system that fails or malfunctions will be required to connect to the City sewer system if feasible, or make system corrections approved by Skamania County Community Development Department.

b. Any new development, business, or multifamily unit shall connect to the City sewer system if feasible, or install an on-site septic system approved by Skamania County Community Development Department.

6. Materials requirements. All materials that may come in contact with water shall be untreated or treated wood, concrete, plastic composites or steel as approved by the USACE or WDFW, that will not adversely affect water quality or aquatic plants or animals.”

- FINDING(S):**
- a. The proposal includes a Stormwater Report prepared consistent with the Stormwater Management Manual for Western Washington.
  - b. The findings related to Chapter 5 are relevant to this criterion.

**CONCLUSIONS OF LAW:** This project will comply with SMP 4.7.3 without conditions.

## **CHAPTER 5 – SHORELINE USE REGULATIONS**

**CRITERIA §5.1, §5.3, §5.4.1, §5.4.2, §5.4.3, §5.4.5, §5.4.6, §5.4.7, §5.4.10, §5.4.12, §5.4.13.** [THESE SECTIONS CONTAIN GUIDANCE APPLICABLE TO ALL AND/OR DIFFERENT LOCATIONS OR PROJECT TYPES THAN HAS BEEN PROPOSED. NO CONSISTENCY REVIEW IS NECESSARY.]

**CRITERION §5.2.2 – PROVISIONS APPLICABLE TO ALL USES.** “1. When determining allowable uses and resolving use conflicts within the City’s shoreline jurisdiction, the following preferences shall apply in the order listed below:

- a. Reserve appropriate areas for protecting and restoring ecological functions to control pollution and prevent damage to the natural environment and public health.
  - b. Reserve shoreline areas for water-dependent and associated water-related uses.
  - c. Allow mixed uses projects that include or support water-dependent uses.
  - d. Reserve shoreline areas for other water-related and water-enjoyment uses that are compatible with ecological protection and restoration objectives.
  - e. Located single-family residential uses where they are appropriate and can be developed without significant impact to ecological functions or displacement of water-dependent uses.
  - f. Limit nonwater-oriented uses to those locations where the above described uses are inappropriate or where nonwater-oriented uses demonstrably contribute to the objectives of the SMA.
2. New use and development shall be subject to the setback requirements and height limitations contained in Section 5.3 Shoreline Use Table, including Table 5.1 – Shoreline Use & Setback Standards.”

- FINDING(S):**
- a. No Use conflicts are identified in association with this proposal.
  - b. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.

**CONCLUSIONS OF LAW:** This project will comply with SMP 5.2 upon satisfaction of the conditions contained herein.

**CRITERION §5.4.4.4 – COMMERCIAL & INDUSTRIAL REGULATIONS.** “a. Water-dependent commercial and industrial uses shall be given preference over water-related and water-enjoyment commercial and industrial uses. Second preference shall be given to water-related and water-enjoyment commercial and industrial uses over non-water-oriented commercial and industrial uses.

- b. Prior to approval of water-dependent uses, the City shall review a proposal for design, layout and operation of the use and shall make specific findings that the use qualifies as a water-dependent use.
- c. When allowed, industrial development shall be located, designed and constructed in a manner that assures no net loss of shoreline ecological functions.
- d. Commercial development that is not water-dependent shall not be allowed over water except where it is located within the same existing building and is necessary to support a water-dependent use.
- e. Overwater and in-water construction of non-water-oriented industrial uses is prohibited. This provision is not intended to preclude the development of docks, piers, or boating facilities, or water-related uses that must be located in or over water (e.g., security worker booths, etc. that are necessary for the operation of the water-dependent or water-related use).
- f. Only those portions of water-oriented industrial uses that require over or in-water facilities shall be permitted to

locate waterward of the OHWM, provided they are located on piling or other open-work structures, and they are limited to the minimum size necessary to support the structure's intended use.

g. Water-related and water-enjoyment uses shall avoid impacts to existing navigation, recreation, and public access.

h. Non-water-oriented commercial and industrial development shall not be allowed unless:

i. The use is part of a mixed-use project that includes water-dependent uses, and provides a significant public benefit with respect to provisions of public access or ecological restoration; or

ii. Navigability is severely limited at the proposed site, and the commercial use provides a significant public benefit with respect to provision of public access or ecological restoration; or

iii. The site is designated for commercial use and is physically separated from the shoreline by another property or a public right-of-way.

i. New commercial and industrial developments shall provide public access to the shorelines, subject to SMP Section 4.6.

j. Public access and ecological restoration shall be considered as potential mitigation of impacts to shoreline resources and values for all water-related or water dependent development unless such improvements are demonstrated to be infeasible or inappropriate.

k. New industrial developments shall mitigate for the impacts of the use's intensity by providing shoreline restoration consistent with the shoreline restoration plan adopted by the City.

**FINDING(S):** a. The application contains detailed narratives, stormwater, landscape and mitigation plans contending consistency with this criterion.  
b. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.

**CONCLUSIONS OF LAW:** This project will comply with SMP 5.4.4 upon fulfillment of the conditions contained herein.

**CRITERION §5.4.8.4 – LAND DIVISION REGULATIONS.** "a Plats and subdivisions shall be designed, configured and developed in a manner that assures no net loss of ecological functions results from the plat or subdivision at full build-out of all lots..

b. The layout of lots within 1) new plats and subdivisions, 2) plat amendments, or 3) boundary line adjustments shall:

i. Prevent the need for new shoreline stabilization or flood hazard reduction measures that would cause significant impacts to other properties or public improvements or a net loss of shoreline ecological functions.

ii. Not result in lots containing inadequate buildable space due to critical areas and/or their buffers.

c. To ensure the success of restoration and long-term maintenance, the City may require that critical areas and/or aquatic lands be placed in a separate tract which may be held by an appropriate natural land resource manager (e.g., homeowner's association, land trust, natural resource agency, etc.)."

**FINDING(S):** a. The application contains detailed narratives, stormwater, landscape and mitigation plans contending consistency with this criterion.  
b. The proposed action under the City's Land Division Code is a combination of lots via boundary line adjustment. No additional lot is proposed.  
c. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.

**CONCLUSIONS OF LAW:** This project will comply with SMP 5.4.8 without conditions.

**CRITERION §5.4.9.4 – RECREATIONAL REGULATIONS.** "a Water-oriented recreational development shall be given priority and shall be primarily related to access, enjoyment, and use of the water and shorelines.

b. Non-water-oriented recreational developments may be permitted only where it can be demonstrated that:

i. A water-oriented use cannot feasibly locate on the proposed site due to topography and/or other physical features, surrounding land uses, or the site's separation from the water;

ii. The proposed use does not usurp or displace land currently occupied by a water-oriented use and will not interfere with adjacent water-oriented uses;

iii. The proposed use will be of appreciable public benefit by increasing ecological functions together with public use,

enjoyment, or access to the shoreline.

c. Non-water-oriented accessory uses (e.g., offices and parking areas that are part of recreational facilities) should be located landward of water-oriented facilities.

d. Recreational facilities shall include features such as buffer strips, screening, fences, and signs, if needed to protect the value and enjoyment of adjacent or nearby private properties and natural areas from trespass, overflow and other possible adverse impacts.

e. Recreation facilities shall demonstrate that they are located, designed, and operated in a manner consistent with the purpose of the shoreline environment designation in which they are located and will result in no net loss of shoreline ecological functions.

f. Where fertilizers and pesticides are used in recreational developments, waters in and adjacent to such developments shall be protected from drainage and surface runoff.

- FINDING(S):**
- a. The application contains detailed narratives, stormwater, landscape and mitigation plans contending consistency with this criterion.
  - b. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.
  - c. The proposal does not involve nonwater-oriented recreational development, recreational conflicts with adjacent uses, or persistent use of fertilizers or pesticides.

**CONCLUSIONS OF LAW:** This project will comply with SMP 5.4.9 upon fulfillment of the conditions contained herein.

**CRITERION §5.4.11.4 – TRANSPORTATION & PARKING FACILITIES REGULATIONS.** "a. Applications for redevelopment of transportation facilities in shoreline jurisdiction shall include:

- i. Analysis of alternative alignments or routes, including, where feasible, alignments or routes outside of shoreline jurisdiction;
  - ii. Description of construction, including location, construction type, and materials; and, if needed,
  - iii. Description of mitigation and restoration measures.
- b. Proposed transportation projects shall plan, design, and locate where routes:
- i. Will have the least possible adverse effect on unique or fragile shoreline features,
  - ii. Will not result in a net loss of shoreline ecological functions, and
  - iii. Will not adversely impact existing or planned water-dependent uses.
- c. Alternative designs for transportation facilities that have less impact on shoreline resources (i.e., narrower rights-of-way, realignment) shall be considered in compliance with the SMC.
- d. Roads and railroads of all types shall cross shoreline jurisdiction by the most direct route feasible, unless such a route would result in greater impacts on wetlands and fish and wildlife habitat conservation areas, or channel migration than a less direct route.
- e. Wherever feasible and in compliance with the SMC, transportation facilities, including local access roads and surface parking facilities, shall be shared across shoreline uses to reduce the need for redundant facilities.
- f. New, replacement and enlarged transportation facilities shall provide public access pursuant to SMP Section 4.6.
- g. The City shall seek opportunities to obtain public easements and construct pedestrian connections over or under the railroad and state highway. The City shall place the pedestrian connection in its capital improvement plan and may require it as a condition of approval for Shoreline Permits, including permits involving new or replacement bridges and other transportation facilities.
- h. Primary parking facilities (pay parking lots, park-and-rides) are not allowed within shoreline jurisdiction. Accessory parking (including parking for vista purposes) and loading facilities necessary to support an authorized shoreline use are permitted.
- i. All of the following conditions shall be met when an accessory parking facility is proposed in the shoreline jurisdiction:
- i. The facilities shall be located landward, adjacent to, beneath or within the building being served.
  - ii. Upland parking facilities shall provide safe and convenient pedestrian circulation from the parking area to the shoreline.
  - iii. Loading spaces for development in the shoreline jurisdiction shall be located on the landward or side wall of non-water-dependent uses or activities.

- iv. All facilities shall provide parking suitable to the expected usage of the facility, with preference given to pavement or other dust-free all-weather surfaces.
- v. All facilities shall be screened from adjacent, dissimilar uses through the use of perimeter landscaping, fencing, or some other approved material.

**FINDING(S):**

- a. The application contains detailed narratives, stormwater, landscape and mitigation plans contending consistency with this criterion.
- b. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.
- c. The proposal does not involve new, replacement, enlarged or redeveloped transportation facilities, roads, railroads, or primary parking facilities.

**CONCLUSIONS OF LAW:** This project will comply with SMP 5.4.11 without conditions.

**CHAPTER 6 – SHORELINE MODIFICATION PROVISIONS**

**CRITERIA §6.1, §6.4.2, §6.4.3, §6.4.4, §6.4.5, §6.4.6.** [THESE SECTIONS CONTAIN GUIDANCE APPLICABLE TO ALL AND/OR DIFFERENT LOCATIONS OR PROJECT TYPES THAN HAS BEEN PROPOSED. NO CONSISTENCY REVIEW IS NECESSARY.]

**CRITERION §6.2.2 – GENERAL PROVISIONS FOR ALL SHORELINE MODIFICATIONS - REGULATIONS.** “All proposed shoreline modifications shall:

- a. Meet the mitigation sequencing requirements in SMP Section 4.3.
- b. Satisfy all specific shoreline modification provisions of this chapter.

**FINDING(S):** a. The findings of SMP Chapters 4, 5, and 6 are relevant to this criterion.

**CONCLUSIONS OF LAW:** This project will comply with SMP 6.2.2 upon satisfaction of the conditions contained herein.

**CRITERION §6.3 – GENERAL PROVISIONS FOR ALL SHORELINE MODIFICATIONS - REGULATIONS.** “The shoreline modification table below determines whether a specific shoreline modification is allowed within each of the shoreline environments. This table is intended to work in concert with the specific modification policies and regulations that follow, however, where there is a discrepancy between this table and the text of the SMP, the text shall take precedence....[Table 6.1 – Allowed Shoreline Modifications omitted for brevity]”

**FINDING(S):** a. The proposal involves Vegetation Removal, a permitted modification in the Active Waterfront SED.

**CONCLUSIONS OF LAW:** This project will comply with SMP 6.3 upon satisfaction of the conditions contained herein.

**CRITERION §6.4.1.3 – VEGETATION REMOVAL - REGULATIONS.** “a. Vegetation removal shall be limited to the minimum necessary to accommodate approved shoreline development that is consistent with all other provisions of this SMP. This includes the design, location, and operation of the structure or development, including septic drain fields, which shall minimize vegetation removal and meet all applicable requirements.  
 b. If removal of shoreline vegetation is unavoidable, vegetation removal shall be mitigated in accordance with the requirements in SMP Table 6.2 – Mitigation for Vegetation Removal within Shoreline Jurisdiction. Exceptions:  
 i. The removal of native vegetation within established gardens, landscaping that serve a horticultural purpose shall not require mitigation under SMP Table 6.2.  
 ii. Mitigation plans prepared by a qualified professional may establish mitigation ratios that deviate from SMP Table 6.2.  
 c. No tree containing an active nest of an eagle, osprey, or other protected bird (as defined by WDFW or the Bald and

Golden Eagle Protection Act) shall be removed and the nest shall not be disturbed unless the applicant obtains approval from WDFW.

d. Vegetation removal conducted for the purposes outlined in SMC 18.13.025(D)(1)(a through d) shall comply with the regulations therein.

e. Aquatic weed control shall be allowed only where the presence of aquatic weeds will affect native plant communities, fish and wildlife habitats, or an existing water dependent use adversely. Aquatic weed control efforts shall comply with all applicable laws and standards. [Table 6.2 – Mitigation for Vegetation Removal within Shoreline Jurisdiction omitted for brevity]

f. Mitigation Area, Location. The location of the mitigation area shall:

- i. Be on site unless there is insufficient area on site;
- ii. Improve an area of low habitat functionality;
- iii. Be within 50 feet of the OHWM or as close as possible to the shoreline waterbody; and
- iv. Prioritize south and west banks of waterbodies to provide shade.

g. Mitigation Area, Monitoring.

- i. The project shall be monitored annually for 5 years to document plant survivorship.
- ii. Monitoring reports shall be provided to the Administrator once per year.
- iii. The planted mitigation area shall achieve a plant survival standard of 80% at the end of 5 years.
- iv. Monitoring results may require additional/replacement planting to meet the survival standard. If the survival standard is not met, then additional planting may be required and the monitoring period extended.
- v. A conservation covenant may be established which prevents future development or alteration within the mitigation area."

- FINDING(S):**
- a. The proposal involves Vegetation Removal, a permitted modification in the Active Waterfront SED.
  - b. Vegetation removal is unavoidable and subject to mitigation within and outside Fish & Wildlife Habitat Conservation Areas.
  - c. The application contains detailed narratives, landscape and mitigation plans contending consistency with this criterion and SMP Table 6.2.
  - d. The proposal does not involve trees with active nests of protected birds, vegetation removal under SMC 18.13.025(D)(1), or aquatic weed control.

**CONCLUSIONS OF LAW:** This project will comply with SMP 6.4.1 upon satisfaction of the conditions contained herein.

**CONDITIONS:**

**TO BE COLLATED UPON DECISION**

### **FINAL ORDER**

The preceding discussion describes the City's review of the information relevant to the SHOR2023-02 "Rock Cove Hospitality". The findings and conclusions of this document justify issuance of this Shoreline Substantial Development Permit under SMC 18.08.180. The project will be consistent with the policy and provisions of the SMA and the SMP upon satisfactions of the conditions listed herein.

DATED this \_\_\_\_ day of October 2023



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Jeff Breckel, Chair  
City of Stevenson Planning Commission

Action Expected	Condition	Performance Bond Eligible

Attachments

1- | |



Ben Shumaker &lt;ben@ci.stevenson.wa.us&gt;

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## SDP 968 SW Rock Creek Dr

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**Tait, Meghan (ECY)** <mtai461@ecy.wa.gov>  
To: Ben Shumaker <ben@ci.stevenson.wa.us>

Fri, Sep 29, 2023 at 1:40 PM

Thank you for sending the critical areas report. Proposed development in the FWHCA does not trigger a variance per the City of Stevenson SMP. Below are my comments after reviewing the critical areas report.

The applicant must follow the required mitigation sequencing per SMP Section 4.3.2. This includes first avoiding impacts to the FWHCA, then minimizing impacts, and then providing compensatory mitigation for any unavoidable impacts. The applicant could increase avoidance of impacts to the FWHCA by reconfiguring the site plan and should avoid impacts to the greatest extent possible. The current site plan does not demonstrate proper mitigation sequencing as there is a large area outside of the FWHCA available for development. In addition, the proposed path should be located outside of the shoreline setback and FWHCA.

If the site plan is reconfigured, the buffer enhancement shall remain per City of Stevenson code 18.13.095(D)(3). This provision states that if the existing development causes the width of the remaining buffer to be less than 50%, the buffer remaining shall be enhanced. The buffer has been completely eliminated for much of the site following the functionally isolated buffer provision.

Thank you,

### Meghan Tait

Wetland/Shoreland Specialist

Shorelands & Environmental Assistance Program

WA Department of Ecology | Vancouver Field Office

(360) 210-2783 | [meghan.tait@ecy.wa.gov](mailto:meghan.tait@ecy.wa.gov)



*This communication is public record and may be subject to disclosure as per the Washington State Public Records Act, RCW 42.56.*

[Quoted text hidden]



Ben Shumaker &lt;ben@ci.stevenson.wa.us&gt;

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## SDP 968 SW Rock Creek Dr

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Tait, Meghan (ECY) <mtai461@ecy.wa.gov>  
To: Ben Shumaker <ben@ci.stevenson.wa.us>

Tue, Oct 3, 2023 at 11:02 AM

Hi Ben,

Thank you for providing the Department of Ecology the opportunity to review and comment on Rock Creek Hospitality located on parcels 02070100130300 and 02070100130200 in the City of Stevenson.

### Functionally Isolated Buffer

The Fish and Wildlife Habitat Conservation Area (FWHCA) buffer is only functionally isolated when lawns, walkways driveways, or other mowed or paved areas, do not protect the FWHCA from adverse impacts due to pre-existing roads, structures or vertical separation (Stevenson CAO 18.13.095(D)(3)). The FWHCA buffer shall not be considered functionally isolated due to exposed dirt or vegetation clearing, such as the area of the property on the back side of the peninsula close to Rock Cove Drive. Any area where the remaining buffer is to be less than 50%, the reduced buffer shall be enhanced unless the area is utilized for activities consistent with water-dependent uses (Stevenson CAO 18.13.095(D)(3)(a)). The enhanced buffer area shall not count as mitigation and the buffer cannot be further reduced through averaging or on-site mitigation (Stevenson CAO 18.13.095(D)(3)(b)).

### No Net Loss

The proposed development shall follow mitigation sequencing to achieve no net loss of shoreline ecological function. The required mitigation sequencing is first avoidance of impacts, including avoiding impacts to the FWHCA and native vegetation within shoreline jurisdiction, and then minimizing impacts to shoreline ecological function (SMP 4.3.2). The applicant should demonstrate how the project achieves no net loss, including how the site plan avoids and minimizes impacts to the FWHCA to the greatest extent possible.

Mitigation for vegetation removal within shoreline jurisdiction shall follow ratios outlined in SMP Table 6.2. The Critical Areas and FWHCA Report, dated May 3, 2023, prepared by Ecological Land Services Inc. does not address vegetation removal within shoreline jurisdiction or propose mitigation for vegetation removal following SMP Table 6.2.

### Shoreline Public Access

If the proposed development is considered a water-related or water-enjoyment commercial use, the use must be open to the general public and the shoreline-oriented space within the project must be devoted to the specific aspects of the use that fosters shoreline enjoyment (WAC 173-26-020; SMP 7.2). It is unclear in the current site plan how the proposed development is providing public access.

Please let me know if I can provide further technical assistance or answer any questions.

**Meghan Tait**

Wetland/Shoreland Specialist

Shorelands & Environmental Assistance Program

WA Department of Ecology | Vancouver Field Office

(360) 210-2783 | [meghan.tait@ecy.wa.gov](mailto:meghan.tait@ecy.wa.gov)



*This communication is public record and may be subject to disclosure as per the Washington State Public Records Act, RCW 42.56.*

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**From:** Ben Shumaker <[ben@ci.stevenson.wa.us](mailto:ben@ci.stevenson.wa.us)>  
**Sent:** Friday, September 29, 2023 1:14 PM  
**To:** Tait, Meghan (ECY) <[mtai461@ECY.WA.GOV](mailto:mtai461@ECY.WA.GOV)>

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[Quoted text hidden]



State of Washington  
DEPARTMENT OF FISH AND WILDLIFE  
Southwest Region 5 • 5525 South 11<sup>th</sup> St Ridgefield, WA 98642  
Telephone: (360) 696-6211 • Fax: (360) 906-6776

October 6, 2023

City of Stevenson - Planning Department  
City Hall  
PO Box 371  
Stevenson, WA 98648

Re: City of Stevenson – Notice of Public Hearing – Shorelines Substantial Development Permit

To whom it may concern,

Thank you for the opportunity to comment on the Shoreline Substantial Development Permit for 968 Rock Creek Drive (parcels 02070100130200, 02070100130300). Stevenson's Shoreline Master Program (SMP) was drafted in 2018, had public comment in 2019, and was approved in 2022. After the public comment period, the Washington Department of Fish and Wildlife (WDFW) published new riparian management recommendations entitled, *Riparian Ecosystems, Volume 1: Science Synthesis and Management Implications* (Quinn et al. 2020) and *Riparian Ecosystems, Volume 2: Management Recommendations* (Rentz et al. 2020). This is considered the Best Available Science (BAS) for managing riparian areas, so we would like to take this as an opportunity to offer direction for future projects. Additionally, we would like to acknowledge some concerns regarding riparian impacts, stormwater runoff, and shoreline armoring/bank protection. Below, we elaborate on these concerns and provide technical guidance for your consideration.

Riparian habitat provides valuable ecological functions including, but are not limited to: stream morphology, erosion and sedimentation process, fish and wildlife habitat availability, wood recruitment, stream temperature, shading, pollutant removal, and nutrient cycling (Quinn et al. 2020). WDFW's new riparian guidance recommends using Site Potential Tree Height at 200 years (SPTH200) to identify the riparian ecosystem that has the greatest functionality. Additionally, science supports a riparian width of 100ft as the distance that helps minimize pollutant runoff into streams (Rentz et al. 2020). SPTH200 utilizes the Natural Resource Conservation Service (NRCS) forest productivity site index values and is measured from the edge of the active floodplain/channel. Where NRCS data is missing, the riparian setback should encompass the width of the existing riparian vegetation community or the pollutant removal function of 100ft, whichever is greater. Since NRCS data is not available at this location, further evaluation is needed to determine the proper riparian setback to protect ecosystem functions. At a minimum, **we do not recommend developing within 100ft of the ordinary high-water line to protect the pollutant removal function.**

Additionally, this proposal will lead to an increase in shoreline use, allowing more opportunities for recreation and the chance for visitors to develop a greater appreciation for this scenic area. To minimize impacts to the riparian area with this increased traffic, we encourage constructing permeable trails and consolidating shoreline access. This area can be delineated with signage and educational materials that explain the importance of riparian ecosystems and functions. In addition, having an adequate number of trash receptacles will also be vital to minimizing human impact on the surrounding natural area. **Implementing Best Management Practices (BMPs) will meet shoreline access objectives while protecting riparian ecosystem functions.**

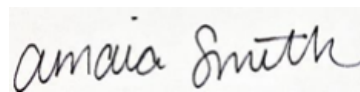
The impact of runoff from roadways on migrating salmon is of particular concern. In a study conducted by Tian et al (2021), they linked a chemical found in tires, commonly known as 6PPD-quinone, with decades of stormwater-linked coho mortality events in urban streams in the Pacific Northwest. Fragments of tire break off and are carried into streams from surface water runoff. While their study was focused on coho, they hypothesized that this compound was likely toxic to other aquatic organisms as well. The introduction of 6PPD-quinone into Rock Cove can be reduced by having effective stormwater management and ensuring riparian buffers are at least 100ft wide. **Given this new research, we discourage any road surfaces within 100ft of the active floodplain/channel.**

The Critical Areas and FWHCA Report (CAR) for the Rock Creek Cove Hospitality proposed development, prepared by Ecological Land Services (ELS) and dated May 3, 2023, describes the critical areas, potential impacts, and compensatory mitigation measures associated with this project. The CAR states approximately 65 percent of the shoreline is armored and satisfies the buffer exemption criteria per SMC 18.13.095(B)(3). **If the existing riprap is being used as justification to lessen riparian protection, WDFW recommends further review to determine if the riprap was legally permitted and installed.** We were unable to locate records that indicate if the riprap was legally permitted. Removing this riprap is a unique shoreline enhancement opportunity to restore shoreline functions. If bank protection is a concern, we encourage that the riprap is removed and replaced with a bioengineered solution to enhance shoreline function. Lastly, we recommend that the applicant evaluates design alternatives that do not impact the existing riparian vegetation. Avoiding impacts is required as outlined in SMC 18.13.055. Given the degraded nature of the riparian area, it is increasingly important to protect the existing vegetation. While enhancing the riparian area is beneficial, it does not mitigate for a reduction of riparian habitat.

Outside of providing technical assistance for land use proposals, WDFW issues Hydraulic Project Approval (HPA) permits for construction activities that impact the bed or bank of state waters. This includes issuing Emergency HPAs for bank stabilization when structures are threatened by erosion or flood events. Given the impacts of climate change, we precaution building close to floodplains. Building near floodplains increases risk to infrastructure so I would encourage being mindful of risks before approving developments. Ultimately, **WDFW wants to avoid a situation where structures are approved for development near waters that will require future emergency protection.** We encourage diligent review of this risk prior to approval.

We hope that these environmental impacts are considered and that the applicant considers alternative designs that further avoid impacts to riparian habitat. We are happy to provide additional technical assistance upon request.

Thank you,



Amaia Smith, Habitat Biologist  
Washington Department of Fish and Wildlife  
5525 S 11<sup>th</sup> St, Ridgefield, WA 98642

References

- Quinn, T., G.F. Wilhere, and K.L. Krueger, technical editors. 2020. Riparian Ecosystems, Volume 1: Science Synthesis and Management Implications. Habitat Program, Washington Department of Fish and Wildlife, Olympia
- Rentz, R., A. Windrope, K. Folkerts, and J. Azerrad. 2020. Riparian Ecosystems, Volume 2: Management Recommendations. Habitat Program, Washington Department of Fish and Wildlife, Olympia. <https://wdfw.wa.gov/publications/01988>
- Tian et al. 2021. A ubiquitous tire rubber–derived chemical induces acute mortality in Coho Salmon. *Science*, 371(6525), 185–189. <https://doi.org/10.1126/science.abd6951>

SHORT SUBDIVISION  
TAX LOT 02-07-01-1300

**Pre-2020**  
 Easement/No Path (z)

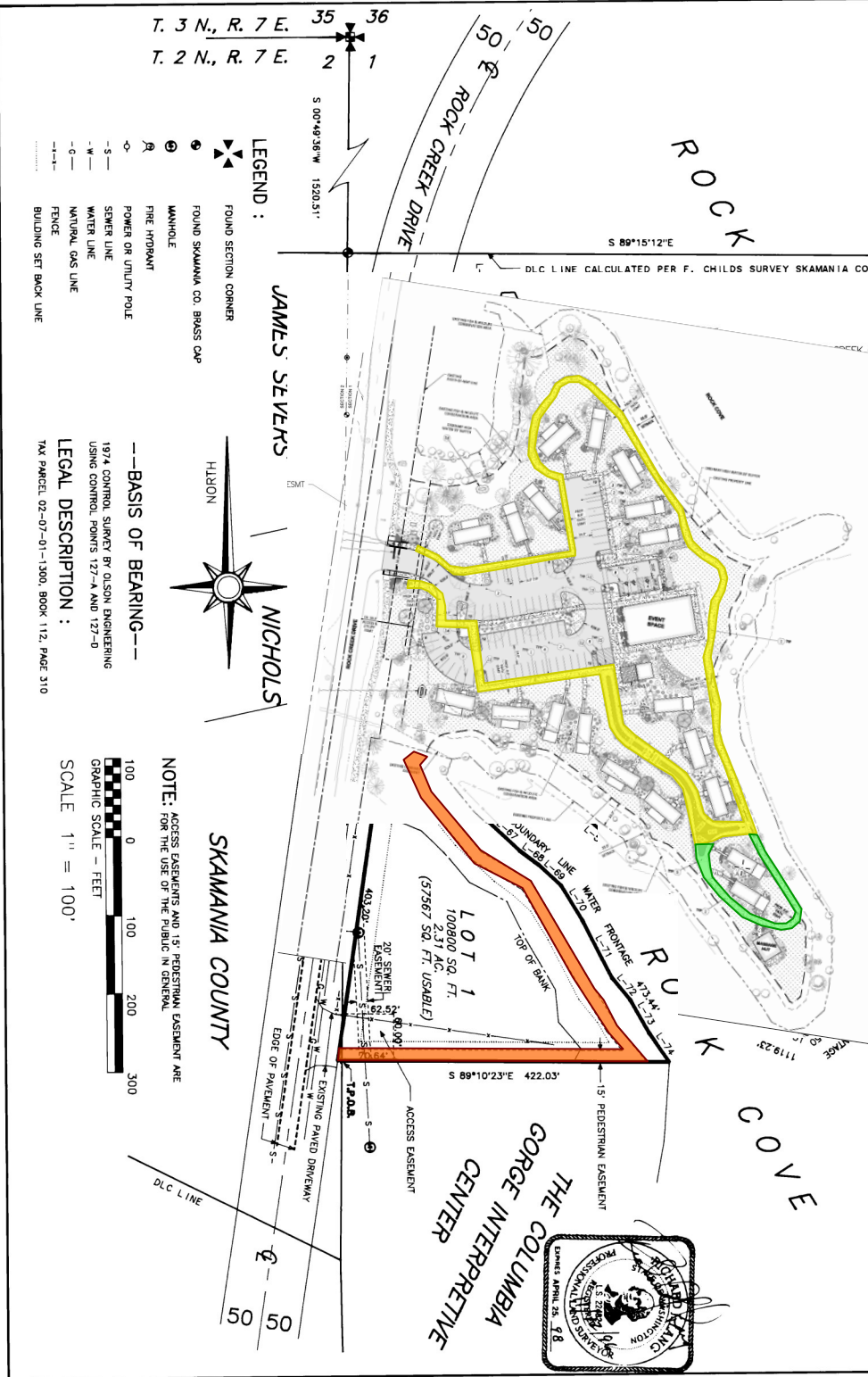
**Applicant's 2020 Proposal**

**2020 Staff Recommendation**

**2020 CC Requirement**

**Applicant's 2023 Proposal**  
 Loop Path (d)  
 "Florida" Path (f)

COURSE	BEARING	DISTANCE
L-58	N 68°11'43"W	19.65'
L-59	N 47°50'27"W	136.60'
L-60	N 58°03'38"W	33.32'
L-61	S 82°02'11"W	34.35'
L-62	S 82°02'11"W	34.35'
L-63	N 58°20'43"W	41.95'
L-64	N 77°51'42"W	15.29'
L-65	S 83°59'45"W	51.90'
L-66	S 48°57'51"E	60.88'
L-67	S 53°02'31"E	29.25'
L-68	S 47°08'48"E	52.20'
L-69	S 47°08'48"E	52.20'
L-70	S 26°43'09"E	82.47'
L-71	S 26°43'09"E	36.82'
L-72	S 34°10'17"E	45.16'
L-73	S 34°10'17"E	45.16'



I hereby certify that the legal description of the land to be subdivided is correct and that the subdivision complies with all applicable laws, ordinances, and rules of the City of Skamania County, Washington, in which there is an interest by reason of ownership, contract for purchase, earnest money agreement, or option by any person, firm or corporation in any manner connected with the subdivision of all such persons, firms or corporations. Furthermore, I certify that the land described herein has not been divided in any manner within the past five years.

**CHAIRPERSON**  
 [Signature] DATE 11/21/96

**COMMISSIONER**  
 [Signature] DATE 11/21/96

**COMMISSIONER**  
 [Signature] DATE 11/21/96

**CITY ORDER AND SEWER UTILITIES ARE AVAILABLE TO THE TOL IN THIS SHORT PLOT**  
 [Signature] DATE 11/21/96

**SOUTHWEST WASHINGTON HEALTH DISTRICT**  
 [Signature] DATE 11/21/96

I hereby certify that the city road cutting the proposed subdivision is of sufficient width to provide for the proposed subdivision without requiring additional right of way and that road right of way upon or adjoining the proposed subdivision is of sufficient width to assure maintenance and to permit the subdivision to be constructed in accordance with the most current city standards and that city water and sewer services are available to the proposed short subdivision, except as noted below.

[Signature] DATE 11/21/96

**PUBLIC WORKS DIRECTOR**  
 DATE

I hereby certify that the taxes and assessments have been duly paid, discharged or satisfied in regard to the lands involved with the above proposed short subdivision.

[Signature] DATE 11-22-96

**SKAMANIA COUNTY TREASURER**  
 DATE

I hereby certify that this short subdivision complies with the Skamania Short Plot Ordinance and is approved subject to property being recorded and filed with the Skamania County Auditor within 30 days of the summary approval.

[Signature] DATE 11/21/96

**SHORT PLOT ADMINISTRATOR**  
 DATE

This map correctly represents a survey made by me or under my direction in conformance with the requirements of the Survey Act of 1896.

[Signature] DATE 11/21/96

**STATE OF WASHINGTON**  
 COUNTY OF SKAMANIA )  
 I hereby certify that the within instrument of writing filed by  
 Richard Lang of Public Works at 3:26 PM on  
 November 22, 1996, was recorded in Book T  
 of  
 Town Plats at page 100.  
 [Signature] DATE 11/21/96

**RECORDING OFF SKAMANIA COUNTY, WASHINGTON**  
 COUNTY CLERK  
 [Signature] DATE 11/21/96

Land within this short subdivision shall not be further subdivided for a period of 5 years except as provided by the City Short Plot Ordinance unless a final plat is filed pursuant to Skamania City Code, Title 16, Subdivisions.  
 Private road maintenance agreement recorded in Book \_\_\_\_\_  
 Page \_\_\_\_\_ Skamania County Auditor's records.











### Shoreline Public Access & Trail Plan Goal Met:

Increase recreational opportunities for the public in the shoreline (RCW 90.58.020(6))

### Sequence of Opportunities:

- City coordinates with private landowner and assisted living facility to understand opportunities and constraints for development of the existing pedestrian easements.

- City determines budget for shoreline enhancement options in coordination with the landowner
- City conducts public outreach to determine which enhancement options to prioritize
- City constructs and maintains shoreline recreation facilities



SA.8 West Rock Cove shoreline trail easement enhancement			
<b>Description/Proposed Feature and Amenity</b>	Proposed easement would allow for the extension of the pedestrian trail along the shoreline, and a hand carry boat launch on the west side of the cove. Proposed features include: <ul style="list-style-type: none"> <li>• 1,000 LF of trail</li> <li>• QTY: 1 new hand carry boat launch and boat wash station</li> <li>• Remove boat launch</li> </ul>	<b>Category</b>	<b>Score</b>
		GIS Score	5.3
		Alignment with Existing Long Range Planning	Yes (1)
		Community Support	4
		<b>Score Summary</b>	20
		<b>Project Readiness Score</b>	11
<b>Cost</b>	<b>\$549,000.</b>		
<b>Project Readiness</b>	Coordination with multiple parties prior to design implementation <b>X</b> Can be executed immediately <b>X</b> Enact by 2030 <input type="checkbox"/> Enact by 2040 and beyond. <i>Collaboration can begin immediately. Design and construction could be possible by 2030.</i>		
<b>Public Access Type</b>	<b>X</b> Physical Access (Beach/Boat Launch) <b>X</b> Visual (Trail/View Point) <input type="checkbox"/> Other (Trailhead, Non-Physical, etc.)		
<b>Project Type</b>	<input type="checkbox"/> Maintenance/Rehabilitation <input type="checkbox"/> Infrastructure Improvement <input type="checkbox"/> New Infrastructure <b>X</b> Restoration of Ecological Functions <input type="checkbox"/> Acquisition/Easement <input type="checkbox"/> Other – Educational resource		
<b>Summary of Public Comments</b>	The public comments were neutral to skeptical about the feasibility of this project; however, they also agreed it would be a popular and highly used public amenity if it were able to be constructed.		
<b>Need Addressed</b>	<input type="checkbox"/> Continuous pedestrian experience <input type="checkbox"/> Connection between districts <input type="checkbox"/> Neighborhood Amenity <input type="checkbox"/> Visitor Trailhead <input type="checkbox"/> Non-motorized water access <input type="checkbox"/> Reconnection to the Columbia River		
<b>Proposed Next Steps</b>	Work is partially on established public easements, city and WSDOT rights-of-way. The city would work with the landowner to provide shoreline trail easement adjustment to less environmentally complex locations for future public use, as well as a boat launch consideration. Include fish barrier removal study (Foster Creek) as part of this project. Work requires a moderate level of coordination between city, private property owner, and WSDOT.		
<b>Permits Required</b>	Shoreline Substantial Development Permit, Site Plan Application, and Critical Areas Checklist. Moderate permitting complexity is expected for this task. If launch and Foster Creek culvert replacement are considered, a US Army Corps of Engineers Section 404 permit, Ecology 401 Water Quality Certification and WDFW HPA permit will be required, making this a more complex effort.		
<b>Mitigation Sequence &amp; Environmental Impact</b>	The recommended trail option was narrowed down to establish a set route around the shoreline in addition to signage and fencing, thereby minimizing impacts otherwise caused by having multiple routes in and around the shoreline. Shoreline vegetation impacted by this option will be mitigated for via enhancements in and around the shoreline. Further, the Foster Creek culvert evaluation can also be used to rectify the undersized culvert issue. No change to impact section.		
<b>Potential Issues/ Additional Information</b>	The shoreline is steep in parts. The trail could follow the top of slope to give public visual access to Rock Cove. Operations of Assisted living facility tend to discourage easier access to water. There are community concerns regarding the aesthetic quality (iron oxidizing bacteria) of the stormwater flowing at this location. Many large trees on the perimeter and shoreline areas of the site.		
<b>Ongoing Maintenance &amp; Estimated Annual Cost</b>	To be determined.		
<b>SMP Amendment</b>	Not applicable.		
<b>Comprehensive Plan Objectives Met</b>	1.12, 2.2, 2.5, 6.1, 6.3, 6.5, 6.6, 7.2, 7.4, 9.6, 9.7, 9.10	<b>Downtown Plan for SUCCESS!</b>	Not applicable.
<b>Recommended Option</b>	Coordinate with private landowner and assisted living facility to understand opportunities and constraints for development of the existing pedestrian easements.		



# City of Stevenson

## Planning Department

(509)427-5970

7121 E Loop Road, PO Box 371  
Stevenson, Washington 98648

**TO:** Planning Commission  
**FROM:** Ben Shumaker  
**DATE:** November 13<sup>th</sup>, 2023  
**SUBJECT:** 2024 Work Plan

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### **Introduction**

This memo presents the Planning Commission with the City Council's Strategic Plan priorities and a list of projects for the Planning Commission to prioritize for action at their meetings.

### **City Council Strategic Plan**

The City Council established 3 focus areas for City Hall over the next few years. Each focus area has 3 to 5 specific strategies to prioritize, and each strategy is associated with an evolving number of tactics and action items. The tactics are assigned to different staff leads or team members. The interactive plan is online at:

<https://city-stevenson-wa-clear.doc.cleargov.com/56/349/d>

### **Tactics Underway**

Planning staff is involved in the following projects to advance the Strategic Plan:

- **Organizational Health and Sustainability**
  - CloudPermit System Implementation – Not supported by external funding. An online portal for building permit application and review will be place in the winter of 2023-2024. An online portal for planning permit application will follow in 2024. Planning Commission involvement is generally not expected.
  - Informed Consent Training – Not supported by external funding. City leadership is involved in efforts to systematize and better integrate public involvement into public projects. Training has occurred, will continue, and will be reflected in project processes. Planning Commission involvement is generally not expected.
  - Review Development and Plan Review Fees – Not supported by external funding. Building permit fees have been updated to ensure consistency with Skamania County. An omnibus fee schedule update is under consideration. Planning Commission involvement is generally not expected.
- **Build and Maintain the Municipal Infrastructure**
  - Establish Parking Fee In-Lieu Program – Not supported by external funding. This program is included as part of a suite of parking related plans, program and code changes are anticipated for Planning Commission/City Council review in the winter of 2023-2024.
  - Modify Parking Regulations – Not supported by external funding. Changes to on-street parking (SMC Title 10) are under consideration as part of a suite of parking related plans, program and code changes are anticipated for Planning Commission/City Council review in the winter of 2023-2024.
  - Establish Parking Improvement Plan – Not supported by external funding. Based on the Parking Advisory Committee's guidance, this plan will include projects to increase the inventory of both accessible curbside parking spaces and municipal parking spaces. It is part of a suite of parking

related plans, program and code changes are anticipated for Planning Commission/City Council review in the winter of 2023-2024.

- Utilities (Maintenance and Growth), Broadly – Planning staff is involved to conceptualize, prioritize, and obtain external funds to support utilities and streets on an ongoing basis. Planning Commission involvement is generally not expected.
- Develop Shoreline Access Plan – Plan creation supported by a Department of Ecology grant. A plan has been developed and adopted. The plan recommends amendments to the Shoreline Master Plan. These amendments have not been initiated and will require Department of Ecology approval prior to final adoption by the City. If prioritized, Planning Commission leadership on the amendments should be anticipated.
- Develop Parks Plan – Supported by a \$100k grant from the Recreation and Conservation Office. The City is leading a coalition including the County, Pool, Port and School to identify parks and recreation needs and prioritize improvements. The Plan is expected to be completed in Spring 2024. Limited Planning Commission review anticipated.
- Develop a Broadband Plan – Supported by technical assistance from MCEDD. Broadband needs and priorities identified for state review in advance of several new funding programs. Opportunities for and feasibility of fiber to the premises (FTTP) projects completed. Funding and/or partnership requests will follow. Planning Commission involvement is generally not expected.
- **Improve Land Use and Development Planning**
  - Development Review – Not supported by external funding and not specifically identified in the Strategic Plan. An unknown amount of development activity will occur in the coming year. Subdivision, conditional use, and shoreline permits all involve Planning Commission review. The amount and timing of these requests cannot be predicted.
  - Update Engineering Standards – Not supported by external funding. The Public Works Department is leading this effort, which controls how water, sewer, street, and storm systems are designed, installed and permitted. Planning Commission involvement expected when drafts or alternatives are identified.
  - Modify Parking Regulations – See also above. Not supported by external funding. Changes to off-street parking requirements (SMC Title 17) are under consideration as part of a suite of parking related plans, program and code changes are anticipated for Planning Commission/City Council review in the winter of 2023-2024.
  - Establish Parking Fee In-Lieu Program – See above.
  - Establish Annexation Policy – Not supported by external funding. The annexation policy will provide guidance for property owners initiating annexations. It will not advance City-initiated annexations. The Annexation Policy subcommittee of the Planning Commission is awaiting City Council decisions on public utility policies. Planning Commission involvement anticipated in Spring 2024.
  - Zoning/Minimum Density Requirements – See also attached. Not supported by external funding. The City Council has given little guidance on the scope of this effort and there is substantial room for Planning Commission leadership.
  - Align Zoning and Street Standards with Skamania County for Urban Growth Boundary – Not supported by external funding. Efforts to engage Skamania County leadership have been initiated but delayed in 2023 while staffing changes in the Skamania Community Development and Public Works departments have occurred. There is substantial room for Planning Commission leadership and partnership with Skamania County policy makers.



## **Tactics to Consider Prioritizing**

As the above projects are undertaken, some preliminary planning will need to occur for the next set of projects. Their scope and duration are yet to be developed and Planning Commissioner leadership can be incorporated in several ways.

- **Build and Maintain the Municipal Infrastructure**
  - Zoning/Minimum Density Requirements – See also attached. Outside funding is not anticipated. The City Council has given little guidance on the scope of this effort and there is substantial room for Planning Commission leadership.
- **Improve Land Use and Development Planning**
  - Zoning/Minimum Density Requirements – See also attached. Outside funding is not anticipated. The City Council has given little guidance on the scope of this effort and there is substantial room for Planning Commission leadership to address unsatisfactory aspects of the Zoning and/or Land Division Code.
- **Others** (Not specifically identified within the Strategic Plan)
  - Comprehensive Plan Amendment Cycle – Not supported by outside funding. No comprehensive plan amendments were submitted this biennium. In advance of the next biennial cycle, Planning Staff intends to prepare an amendment for public review. This amendment will be focus on incorporating the Downtown Plan for SUCCESS! into Goal 4. The proposal would not be reviewed by the Planning Commission until January 2026.
  - Comprehensive Plan: Background Maps – No supported by outside funding. As the Public Works Department digitizes its maps for display in GIS, the Background Maps in Chapter 4 of the Comprehensive Plan can be updated to display more current information. Planning Commission involvement in this project will likely only require 1 meeting.

Prepared by,

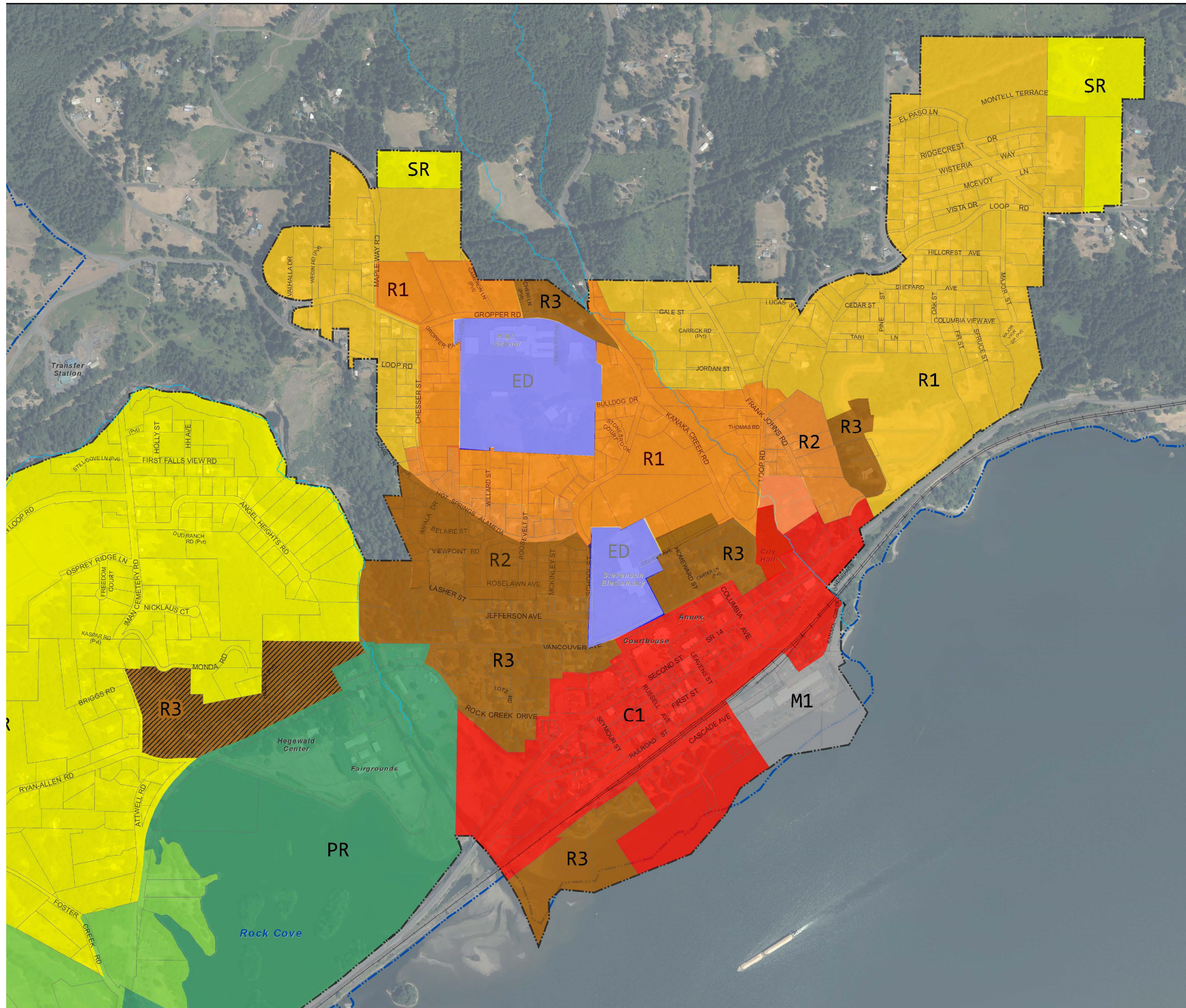
Ben Shumaker  
Community Development Director

### Attachments

- Status Report as of 2021 on recommendations related to the housing market
- Zoning Map/Past amendment concepts

Attachment 3 – Scope/Status of Potential Amendment

Potential Amendment Topic	Status
2020 Skamania County Housing Needs Analysis	
Expand Accessory Dwelling Unit Flexibility Allow Duplexes in R1 Align Zoning with Water/Sewer Plans & Improvements Consolidate R2 & R3 Districts  Reduce Minimum Lot Size in R2, R3, & CR Districts  Permit Senior Housing Options in R3 Conditionally Permit Senior Housing Options in R2 Permit Live/Work Spaces in C1 District Allow Lot Size Averaging  Reduce Setbacks  Increase Maximum Lot Coverage  Develop Shadow Platting Requirements Rezone Areas near Frank Johns Road, Loop Road, Vancouver Avenue, School Street Allow Utility Extension Beyond City Limits Subject to Annexation Agreements Jointly Plan with Skamania County through an Intergovernmental Agreement Perform City/County Fiscal Analyses of Annexation Jointly Pursue Funding for Utility Extensions Identify Publicly-owned Properties Suitable for Housing Acquire Tax-Delinquent Properties Pursue Community Land Trust Develop Regional [Wetland] Mitigation Banking Lobby Legislature for Homestead Taxation Authority	Not Considered Not Considered Being Discussed Being Discussed Adopted (R3/CR) Being Discussed (R2) Considered, Rejected Not Considered To Be Discussed Adopted Adopted (R3) Being Discussed (R2) Adopted (R3) Being Discussed (R2) To Be Discussed Being Discussed Being Discussed Not Considered Unrelated to Zoning Unrelated to Zoning Unrelated to Zoning Unrelated to Zoning Unrelated to Zoning Unrelated to Zoning Unrelated to Zoning
Draft Downtown Plan for SUCCESS!	
Establish Sub-Zones within Downtown Area to Guide Location of Housing Reduce Residential Parking Requirements Conditionally Approve Parking Reductions for Senior and Affordable Housing Conditionally Approve Other Parking Reductions Develop Fee-in-Lieu of On-Site Parking Requirements Incentivize Mixed-Use via Parking Reductions Reduce Parking for Food Service Uses & Retail Stores Expand Off-Site Parking Options for Hotels Develop Shared Parking Lots Improve Walking/Biking Routes to Shared Parking Lots Expand Options for Joint-Use of Parking Agreements Facilitate Innovation through Bikeshares, Employee Cash-out Programs, etc. Establish Minimum Densities for new Housing Development	To Be Discussed Adopted Adopted Adopted Adopted Adopted Adopted Adopted Future Discussion Future Discussion Adopted Not Considered To Be Discussed
Others (Incomplete List of Planning Commission-,Public- & Staff-Led Topics)	
Expand R2 & R3 Near Schools  Protect Pedestrians Near Driveways  Align Loop Road & Frank Johns Road Zoning with Comprehensive Plan Rezone Split-Zoned Parcels	Being Discussed Adopted (R3) Being Discussed (R2) Being Discussed Being Discussed

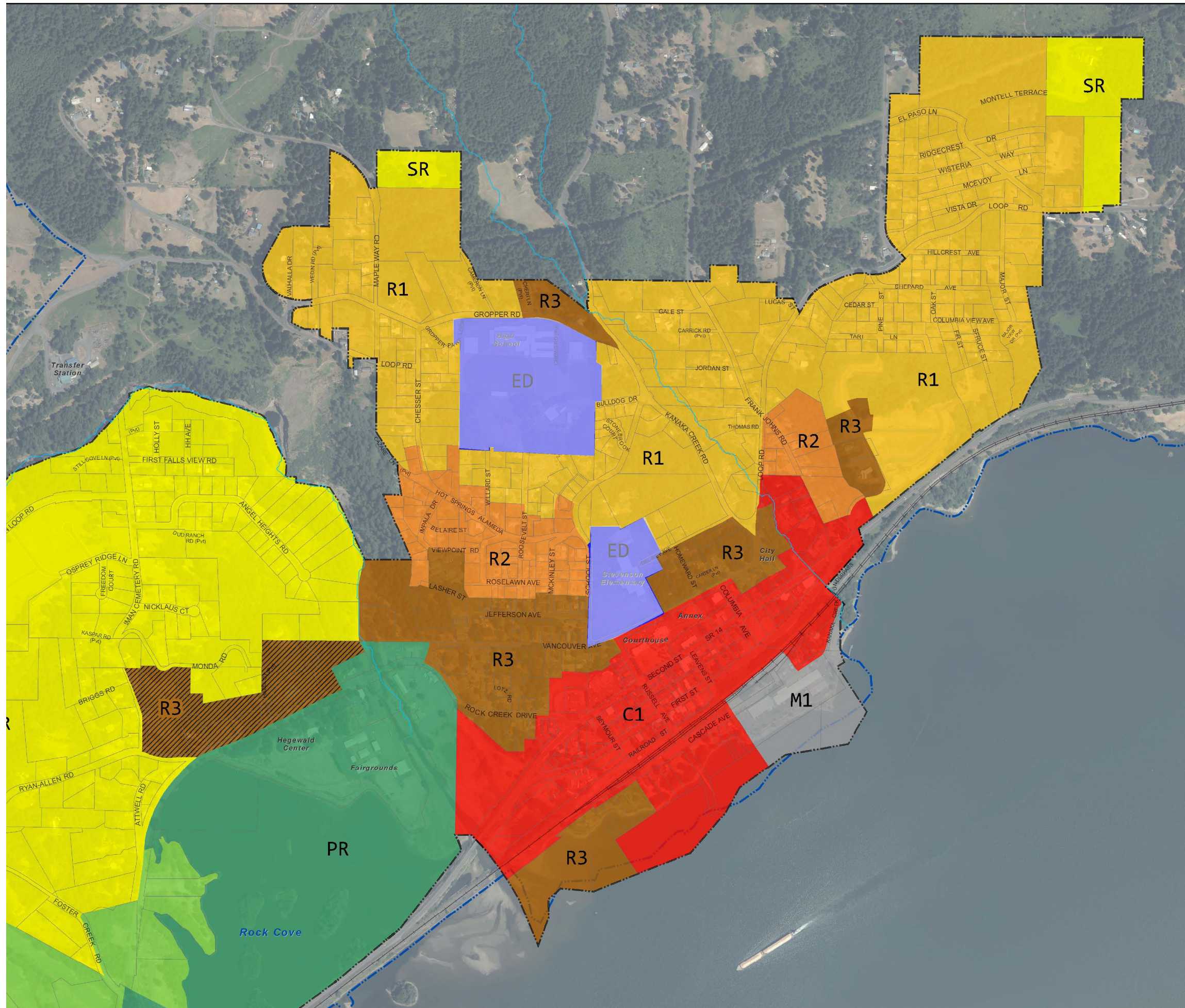


# Zoning Map

## April 12th Discussion Draft

- Commercial (C1)
- Education District (ED)
- Commercial Recreation (CR)
- Light Industrial (M1)
- Public Use and Recreation (PR)
- Single Family Residential (R1)
- Middle Density Residential (R2)
- Multi-Family Residential (R3)
- Multi-Family Residential Overlay (R3)
- Suburban Residential (SR)

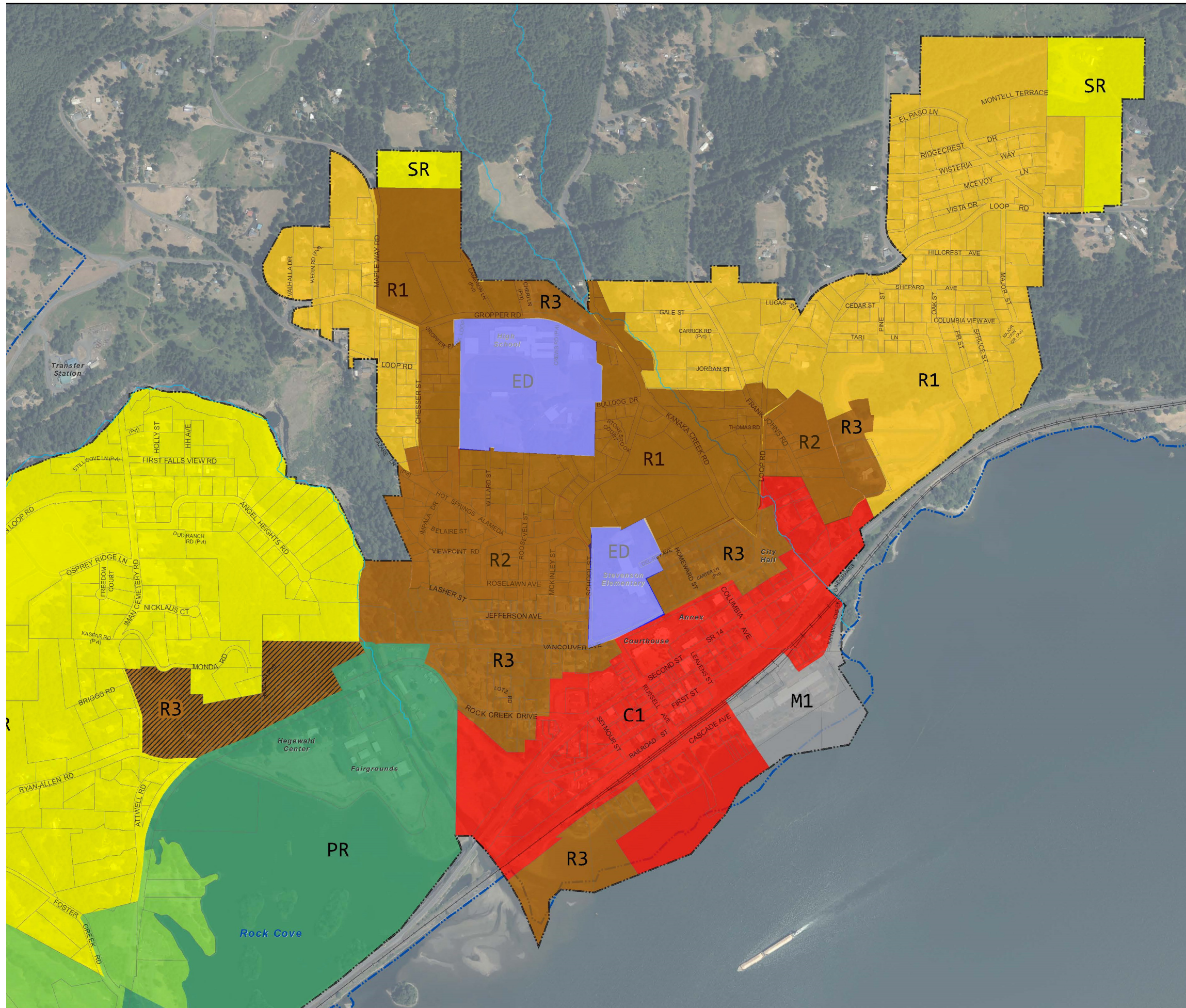
- Stream
- Parcel
- City Limits
- Urban Area



## Zoning Map Existing

- Commercial (C1)
- Education District (ED)
- Commercial Recreation (CR)
- Light Industrial (M1)
- Public Use and Recreation (PR)
- Single Family Residential (R1)
- Two Family Residential (R2)
- Multi-Family Residential (R3)
- Multi-Family Residential Overlay (R3)
- Suburban Residential (SR)

- Stream
- Parcel
- City Limits
- Urban Area



# Zoning Map

March 8th Discussion Draft

- Commercial (C1)
- Education District (ED)
- Commercial Recreation (CR)
- Light Industrial (M1)
- Public Use and Recreation (PR)
- Single Family Residential (R1)
- Multi-Family Residential (R3)
- Multi-Family Residential Overlay (R3)
- Suburban Residential (SR)

- Stream
- Parcel
- City Limits
- Urban Area