

INSTREAM PROJECT DESIGN CHECKLIST

For Design and Construction of Flood and Erosion Protection Facilities and Habitat Restoration Projects that May Include Large Wood Placement or Natural Wood Recruitment

Project Name Mitigation for Hazard log repositioning in May 2014 Project Manager Phyllis Meyers

River/River Mile/Bank Snoqualmie/32.8/Left Date November 19, 2014

Check one or both:

Project includes placement of large wood elements

Project may influence the recruitment, mobility and accumulation of natural large wood.

Note: If the project is comprised of emergency work, then fill out and file this form within 30 days of completion of emergency work.

I. Project Background and Preliminary Design (30-40 Percent) Information

(Provide general information at a conceptual level)

1. Describe the overall river management context, strategy and objectives for the river reach. Refer to pertinent plans, policies or documents pertaining to flood hazards, salmon recovery, etc.

River management approaches in this reach are informed by several recent plans and related documents that provide context for habitat, floodplain management, and recreation safety considerations. The Snohomish River Basin Salmon Conservation Plan (2005) provides a snapshot of this mainstem reach on pages 11-29 and 11-43. The recovery focus is to restore watershed processes by restoring forest, increasing floodplain connectivity, and increasing channel complexity. The greatly diminished quantity and quality of rearing habitat, particularly along the channel margins is a problem. For the Snoqualmie River, the lack of large wood in the river is specifically called out. In addition, King County River and Floodplain Management has issued several strategy documents citing this reach as a target area for setting levees back and encouraging natural river processes.

To understand recreational use levels and types, in 2013 King County conducted a survey of recreational use on the Snoqualmie River, as described in a report titled *Synthesis of 2013 River Recreation Studies* prepared for King County by Herrera Environmental Consultants in 2014. The Snoqualmie River mainstem extending from Snoqualmie Falls to Fall City is the most heavily used reach in King County for recreation. In contrast, the reach immediately downstream of the bridge has significantly lower numbers of recreational users. This reach just downstream of the SR202 Bridge in Fall City is a part of the river where efforts are underway to restore natural and dynamic fluvial processes consistent with the Snohomish Basin salmon conservation plan and the River and Floodplain Management program strategies described above. These are documented in the Snoqualmie at Fall City Reach Restoration Assessment report prepared in 2011.

The first large restoration project in this downstream reach – the Upper Carlson project – was constructed in the summer of 2014 just across the river from the site where mitigation logs are now being proposed. As part of the design process for the Upper Carlson project, a stakeholder work group was convened to consult on recreational safety issues. This work group – comprised of a diverse range of interests including boaters, tribal representatives, environmental agencies, local residents, and others – recommended using different management approaches to large wood in the reaches above and below the SR202 Bridge. The reach above the bridge was recommended for more proactive management of large wood given the high level of recreation use, and the reach below the bridge was recommended for allowing natural river processes, in particular accumulation of large wood. Consistent with these recommendations, a hazard log was trimmed and repositioned upstream of Fall City in spring 2014 (as described below). Placing mitigation wood downstream of Fall City – as proposed by this current project – is also consistent with the stakeholder recommendations, as well as the recent Upper Carlson project across the river from the mitigation site.

2. Describe the goals and objectives of the project and its relative importance to the success of DNRP program goals and mandates. Identify funding source(s) and describe any applicable requirements or constraints.

The King County River and Floodplain Management Section (RFMS) cut and repositioned large wood at approximately River Mile 36 in response to a report from the sheriff's office (dated May 14, 2014). RFMS obtained a permit from the Washington Dept. of Fish and Wildlife to do the work that requires large wood placement elsewhere as mitigation. The project objective is to meet a permit requirement for the hazard wood alteration upstream. Both actions are consistent with the plans described above, as well as with the recommendations of the recreational safety stakeholder committee that was convened for the Upper Carlson project. Funding for this current action is from the King County Flood Control District and is part of the budget for the upstream site recreational safety wood repositioning.

3. Describe the existing (and historic, if relevant) site and reach conditions, including structural features, channel form, and the presence of naturally-deposited large wood. Describe known utilization by salmonids and any important or unique biological or ecological attributes.

The Snohomish River Basin Salmon Conservation Plan (2005) describes the reach as the mid-mainstem Snoqualmie sub-basin and it is part of the mainstem primary restoration strategy. The strategy group contains core Chinook salmon spawning and freshwater rearing habitat in the Snohomish Basin. While the site and reach have been constrained by the presence of levees on both banks, the site where we plan to place the two logs (directly on the prism of the Aldair Levee) is across the river from the Upper Carlson project and is within an area where river widening and channel migration is expected to occur in the coming years. As part of the Upper Carlson project, extensive riparian vegetation including more than 200 large trees, was pushed over at the Upper Carlson site and integrated into the floodplain. This wood is expected to be moved by the river as natural processes play out over time. In addition, natural wood from upstream areas migrates through this reach during flood events. The two logs being placed by this current location represent a very small contribution to the overall wood loading in this part of the Snoqualmie.

4. Describe what is known about adjacent land uses and the type, frequency, and seasonality of recreational uses in the project area. Are there nearby trail corridors, schools or parks? What is the source(s) of your information?

The parcel and levee where the two logs are being placed are owned by King County, in the floodplain and floodway and on the Snoqualmie River, across from the Upper Carlson floodplain restoration project, which was completed October 2014. The Upper Carlson Restoration project is located on a large King County-owned natural area. While these parcels are publicly owned, they are managed as natural areas rather than active parks with extensive public use.

The town of Fall City is more than a mile upstream. Fall City is not incorporated but is a community with several commercial businesses, several schools, and a branch of the King County Library. River recreation studies indicate that most people using the river for recreation take out at Fall City. Fall City Park is just downstream of the SR 202 Bridge in the take-out area. The level of recreational use in the project area is low. During a pilot study described in the *Synthesis of 2013 River Recreation Studies* prepared for King County by Herrera Environmental Consultants in 2014, an average of 220 to 302 people recreated on the river upstream of Fall City compared to an average of 7 per day downstream

5. If the project includes wood placement, describe the conceptual design of large wood elements of the project, including, if known at this stage in the design, the amount, size, location, orientation, elevation, anchoring techniques, and type of interaction with the river and stream at a range of flows.

Two logs, at least 12 inches in diameter and 20 feet long, would be placed on the lower portion of the levee, un-anchored. They are expected to be transported downstream when flows increase, and to accumulate within the river environment similarly to natural wood of a similar size class.

6. If the project includes wood placement, what is the intended structural, ecological or hydraulic function of the placed wood? What role does the placed wood have in meeting the project's goals and objectives? Is the project intended to recruit or trap additional large wood that may be floating in the river?

The wood placement is required mitigation for logs cut upstream. WDFW specified wood be placed in the low flow channel near the site. We are opting to place wood downstream of the SR-202 bridge at Fall City because river recreation use is significantly lower, several restoration and floodplain management projects are completed or planned for this reach, and placing wood downstream of the bridge is more consistent with recommendations from the Snoqualmie at Fall City recreational safety stakeholder committee. While the logs are not specifically intended to trap additional wood, it is likely they will migrate downstream during high flows and accumulate naturally themselves.

7. Is the project likely to affect the recruitment, mobility or accumulation of natural large wood, e.g., by encouraging wood deposition on or near the site or promoting bank erosion that may cause tree toppling? Describe expected site evolution and its potential effects on natural wood dynamics.

No. The placed wood is not anticipated to affect recruitment of other natural wood. However, since the two logs will not be anchored and are expected to launch during high flows and move downstream, they will likely accumulate themselves in areas of natural wood accumulation. Any effects these two logs would have on other logs being trapped are considered minor and would not be measurable. In addition, since the wood will be mobile, it is not expected to create any significant site evolution at the location of placement. Overall these two pieces will not be a significant part of the overall wood budget for this portion of the Snoqualmie River.

8. Describe how public safety considerations have been incorporated into the preliminary project design. For placed wood, address each of the considerations:
 - a. Type, frequency, and seasonality of recreational use; This placement for mitigation logs is in a reach with much lower recreational use than where hazard wood was altered.
 - b. Wood location, positioning, and anchoring techniques; This placement is not expected to be static but rather should mobilize in a small flood event. No anchor is proposed, and no particular positioning is needed.
 - c. Maximizing achievement of project goals and objectives while minimizing potential public safety risks; The genesis of the project was hazard wood removal from a heavy recreational use area. The goal of the mitigation wood placement is to comply with the permit for hazard wood removal. Its location in a reach with low recreational use and where it will be a small portion of the background mobile wood minimizes any public safety risks associated with its placement.
 - d. Use of established and recognized engineering, geological, and ecological expertise. The location of the wood placement was proposed by a senior ecologist in the River and Floodplain Management section, with oversight by a Supervising Engineer. It is felt to be consistent with the goals for the reach and with the recommendations of the recreational safety stakeholder group convened for the Upper Carlson project. The assumptions about the wood's likely mobility and future accumulation of the wood are informed by work on both the Upper Carlson project and the Snoqualmie at Fall City feasibility study, both of which incorporated engineering, geological, and ecological expertise from multiple staff in the King County Water and Land Resources Division.

9. Has the project been reviewed and approved by a Licensed Professional Civil Engineer? Please list other licensed technical staff who have reviewed and provided input on the design (e.g., Licensed Geologist and Licensed Engineering Geologist). Specify the Engineer of Record for the design and any other Licensed Professionals who have sealed their portion of the design plans. Were all reviews and approvals completed?
The project is small scale and does not involve any anchoring or earth work; therefore no engineering design is required and no signed drawings have been produced.

10. Has the project been reviewed and approved by a King County Professional Ecologist (e.g., person with an advanced degree in aquatic and/or biological sciences from an accredited university or equivalent level of experience) if ecological benefits are an intended project objective, to evaluate the consistency of the design with project goals, existing environmental policies and regulations, and expected or known permit conditions? Specify the Reviewing Ecologist for the project. Was this review and approval completed? What is the anticipated schedule for completing project milestones (30-40% design, final design, major construction/earthmoving) and for soliciting public input)?

A senior ecologist for the River and Floodplain Management section obtained permits for the hazard log relocation work upstream and selected the mitigation location at the Aldair levee. This location and placement technique is consistent with the strategies and context for the reach described above, as well as with existing environmental policies and regulations. Discussions with WDFW have indicated the placement is consistent with the mitigation conditions established in the Hydraulic Project Approval permit for the log repositioning upstream. This current action does not require any engineering design with accompanying design milestones. The actual wood placement is anticipated to occur in the fall of 2014, after this public review process is completed

Phyllis Meyer 12/18/14
Project Manager Date

[Signature] 12-18-14
Supervising Engineer, Project Supervisor or Unit Manager Date

II. Pre-Construction Information (70% or 100% design with permits) *These questions relate to the designed and permitted project. Information should include input resulting from permit review process, SEPA, boater safety meetings and any other stakeholders.*

11. Have any answers provided in Section I at the Preliminary Design Phase changed in the interim? If so, provide the new answers and the rationale for the change.
12. What regulatory review or permits are required for the project (e.g. HPA, Clearing and Grading permit, COE permits)? List any conditions or requirements included in the permit approvals relevant to placement of large wood in the project.
13. What specific actions or project elements were employed to address public safety in the final, permit-approved design?
14. Describe how the project team solicited public input on the preliminary design. Describe the input received from the public and how, if appropriate, the project team has responded to this input.
15. Describe any additional design modifications or mitigating actions that were or will be taken in response to the public comments.
16. Will further educational or informational materials be made available to the public to heighten awareness of the project (e.g., public meeting, press release, informational website, or temporary or permanent signage posted in the vicinity of the project)? If so, explain.
17. If the project is expected to influence the recruitment, mobility or accumulation of natural wood, has a Public Safety Management Plan been completed?

Project Manager

Date

Supervising Engineer, Project Supervisor or Unit Manager

Date

III. Post-Construction Actions or Project Modifications

18. Have any answers provided in Sections I and II at the Preliminary design and Pre-Construction phases changed in the interim? If so, provide the new answers and the rationale for the change.

19. Briefly describe the scope and timing of post-construction monitoring and inspection activities planned for the project as they relate to large wood. If a Public Safety Management Plan or Monitoring Plan has been developed for the project, you may simply reference and attach that document.

20. If post construction monitoring or inspections result in modifications to the project, please describe the action taken and the rationale and consistency with the Public Safety Management Plan, if applicable.

Project Manager

Date

Supervising Engineer, Project Supervisor or Unit Manager

Date