

## 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: FOSTER GOLF COURSE LARGE WOOD MITIGATION: Project Manager: Andy Levesque \_\_\_\_\_

River/River Mile/Bank: Green/RM10.27/RB \_\_\_\_\_ Date: 06/26/2014 \_\_\_\_\_

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. The Project is intended to satisfy Hydraulic Permit Approval (HPA) requirements issued by the Washington Department of fish and Wildlife (WDFW) for the removal of trees from the riverbank in nearby Tukwila levee locations in 2009. Removal of the trees was mandated by the Seattle District Corps of Engineers for continuing maintenance and operation of the federal Section 205 Levee upstream. The HPA issued by WDFW for the tree cutting mandated by the Corps requires the placement of 13 logs into the river. The location of the project was based on availability of riverbank area owned by the City of Tukwila, with the added consideration that the Project may also help to stabilize undercut and sloughing riverbanks at the project location.
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 Project goals are to complete the required mitigation actions established by WDFW in the 2009 HPA issued for tree cutting on the federal Tukwila 205 Levee system upstream. This is important to retain the integrity of the County's levee maintenance program efforts with respect to meeting its mitigation needs. Funding for the work is provided by the King County Flood Control District.
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 site is just upstream from a sharp river bend where flows encounter a rock-armored railroad ROW. The sharp bend and hard armor at this downstream location results in a large reverse eddy at the project site, where currents near the bank are locally both upwelling and flowing upstream. The effects of this upwelling reverse current at the Project location have been to undermine the lower portions of the riverbank, with resulting sloughing of the embankment both at the Project location, and both locally upstream and downstream. Several trees are toppled within the channel margins just downstream. The site is in an area influenced by tidal fluctuations, including tidally influenced exchange of saline waters at depths near the bed. Such locations are important to juvenile salmonids, especially out-migrating juvenile Chinook salmon listed as threatened under the Endangered Species Act, which use the transition to salt water to acclimate to their oceanic migration on their way to the sea. The relative absence of transitional areas for juveniles was identified as a limiting factor or "bottleneck" in assessing restoration needs for recovery of

Chinook salmon in the WRIA9 Salmon Habitat Plan. By providing additional structural diversity, localized velocity gradients, and cover, it is anticipated placement of these logs may result in a modest improvement at this site.

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 site on the riverbank adjoins the City of Tukwila's municipal Riverview Golf Course. Similar mitigation work was performed at a separate location on the riverbank at this golf course in 2008. While construction can interfere with golfing due to the presence of moving trucks and large machinery, the work is both localized in extent and constrained in duration, and site restoration of any disturbed golf course areas is an integral part of project planning. Instream recreational use within the lower Green River was documented by King County contractors using surveys of recreationists, tabulation of direct observations using standardized information checklists, and photo-interpretation of time-series images obtained by fixed "wildlife" cameras throughout the summer months of 2013. While these results were obtained at locations upstream from the actual project site, they are likely representative of in-stream uses within the lower reaches of the Green River. Data obtained in these surveys shows up to approximately 40 individual user "craft" observed upstream near Briscoe Park in Kent, during the summer recreational season of 2013. The great majority of observed users were in kayaks within the monitoring reach; much smaller numbers of canoes, rafts, inner-tubes, and "other" float-toys were also observed.
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. Mitigation requirements at this site include the placement of thirteen trees with rootwads attached. The log placement location was selected at a failing riverbank location, where an upwelling reverse eddy has undercut the slope and created a small alcove along the riverbank. This location lies between trees imbedded in river sediments immediately upstream from the placement location, and a number of naturally fallen trees extending into the channel just downstream. The logs will be placed in the "shadow" of this existing, naturally occurring fallen wood, whether one approaches the site from upstream, or with the reverse eddy current, from downstream. Although no direct comments were received on presentation of the project alternatives at public meetings held on June 10, 2014, the 30% design plans for this installation have included the addition of another four logs without rootwads, two at each end of the log emplacement, to serve as "buffer" logs for any kayakers or other instream users inadvertently encountering the logs, for a total of 17 logs. These buffer logs were included, based on general commentary received from representatives of the recreational boating community at those meetings. Logs are specified as measuring two feet in diameter at the base, and from 25 to 30 feet in length. Some portions of the cut tops of the logs will be imbedded within the base of the steep, failing riverbank, with the remainder of the logs, rootwads, and buffer logs placed onto the bed of the channel. All logs will be anchored in place with chains secured to driven, untreated wooden pilings, with the tops of both the logs and the pilings at or near the line of the Ordinary High Water Mark. Portions of the logs will be exposed along the margins of the channel during summer low flows, and all logs and pilings will be submerged during seasonal high flow events, when recreational use is not anticipated to be present.
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 primary function of the placed wood is to replace habitat structure that would have naturally occurred if the trees cut from the levee upstream in 2009 were allowed to complete their life cycle as recruited input to the river. Placing the wood is the primary goal and objective of the project. A secondary objective is to modestly increase the stability of the failing riverbank location, both with the pilings and wood placed at the base of the slope, and with native riparian plantings on the riverbank following wood placement, which is also required as part of the mitigation effort. While it is anticipated that existing trees downstream from the site may continue to fall into the channel margins, the project is not intended to either increase the rate of recruitment or to entrain any logs floating within the channel from upstream sources. It is unlikely any significant pieces of wood would encounter this backwater eddy location when floating with the main current into the bend downstream. It is possible that small wood pieces, twigs, and associated debris may come and go within the eddy, at the margins of the placed wood. It is not expected that incidental accumulations of small wood pieces and twigs will pose any concern to river users here.

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. A small tree previously failed into the channel from upstream, but will not be impacted by the project, which is located in a small alcove within the riverbank created by ongoing undercutting at an upwelling reverse eddy current location. A number of trees have toppled into the channel downstream where this reverse eddy undercuts the bank; since the site is essentially in the hydraulic "shadow" of this naturally occurring wood recruitment location, the project is not anticipated to have any impact on the presence, mechanism, or rate of this adjacent log recruitment location. The project will locally stabilize and re-vegetate the adjoining riverbank. It is possible that minor deposition of sediments may gradually imbed some portions of the wood placed within the project area, below the line of the OHWM. The project is intended itself to be a substitute for the absence of natural wood dynamics within leveed portions of the lower Green River. Other than that, the project is not expected to have any potential effect on natural wood dynamics.
8. Describe how public safety considerations have been incorporated into the preliminary project design. For placed wood, address each of the considerations:
- Type, frequency, and seasonality of recreational use; Recreational monitoring upstream near the Briscoe Park in Kent during the summer months of 2013 is expected to be representative of instream uses in the lower Green River. This monitoring disclosed up to approximately 40 individual user "craft," the vast majority being kayakers in this portion of the river. Other instream users were infrequently observed, in canoes, rafts, inner tubes, and "other" float-toys as well. Winter use is expected to be rare.
  - Wood location, positioning, and anchoring techniques; Thirteen pieces of placed wood with rootwads will be secured with chains to driven untreated wooden pilings, along the riverbed, at or below the line of the OHWM, within a small erosional alcove along the riverbank created by an upwelling reverse eddy current. Two additional logs without rootwads will be secured to function as "bumper" logs at each end of the project, for a total of 17 logs.
  - Maximizing achievement of project goals and objectives while minimizing potential public safety risks; The wood will be placed in a localized erosional alcove, with naturally occurring wood already present both upstream and downstream. The required mitigation logs will be positioned with two additional logs secured at each end, without rootwads, to serve as "bumper" logs for any recreationists who may visit the site.
  - Use of established and recognized engineering, geological, and ecological expertise. The project team includes an experienced County Engineer, an experienced County Ecologist, and an engineering consultant team with added river and habitat engineering, ecological, and geotechnical design experience.
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 has been designed by a Licensed Professional Engineer, as part of a consultant design team which also includes a Licensed Geologist and Engineering Geologist, with input by a Licensed Ecologist. The Engineer of Record is expected to be the Engineering Supervisor for the WLRD River and Floodplain Management Section. Since the project is being posted at the 30% Plan stage of project development, the design plans have not yet been professionally sealed by these persons. County review and approval is ongoing, and will lead to production of 60% and 90% complete design plans, which will be professionally stamped and sealed.
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)? The 30% Plans for the project have been prepared by a consultant design team which includes a Professional Ecologist and have been reviewed by a County Ecologist with an advanced degree in aquatic sciences from an accredited university, and

previous experience with river ecology. The County Ecologist, Kerry Bauman, will be the Reviewing Ecologist for the project, and has participated in review of project alternatives resulting in the 30% design plans to date. Public input has been solicited at the recently completed June 10, 2014 public meetings with participation by interested parties, including resource agency staff and members of the recreational boating community and other interested citizens. The 30% design plans were submitted by the consultant to King County following this public input, on June 13, 2014, and are now posted here, on this King County website, for additional public review and input. It is expected that 60% plans will be finalized early in July, 2014, and will be submitted for WDFW permits, and for City of Tukwila Shorelines and grading permit approvals by July 18, 2014. It is expected that work will take less than two weeks to construct, and will be completed by mid-August, 2014.

  
Andrew T. Levesque

06/27/2014

Project Manager

Date

  
Lorin Reinelt, Interim Green River Supervising Engineer

06/27/2014

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?

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Project Manager

Date



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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.

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Project Manager

Date

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Supervising Engineer, Project Supervisor or Unit Manager

Date