King County

INSTREAM PROJECT CHECKLIST

For Construction and Maintenance of Flood and Erosion Protection Facilities and Habitat Restoration Projects that may include large wood elements

Project Name: Reddington Levee Setback and Extension

Project Manager: Erik Peters

River/River Mile/Bank: Green River, RM 28.2 to 29.5, Left Bank

Date: June 3, 2013

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

(Provide general information at a conceptual level)

1. Describe the goals and objectives of the project and its relative importance to the success of DNRP program goals and mandates. (Note: If the project is comprised of emergency work, then fill out and file this form within 30 days of completion of emergency work.)

   The project has two main goals: 1) Improve flood protection for Auburn and the Green River valley and; 2) improve riparian processes and functions for listed species. Objectives include: 1) removing an existing, aging levee that doesn't meet current design standards; 2) building a new levee that is set back from the existing levee and river bank and; 3) extending levee protection further downstream.

2. Describe the existing (and historic, if relevant) site and reach conditions, including structural features, channel form, and the presence of naturally-deposited large wood.

   The river has a meandering channel that is entrenched (confined) by a terrace floodplain. The terrace floodplain developed when the White River still flowed into the Green just upstream of the project limits and the upper Green River valley was not controlled by the Howard Hanson Dam (HHD). The combined effects of the White River diversion and flow regulation from HHD have been a significant reduction of sediment transported into the project reach. The U.S. Army Corps of Engineers (USACE) began in 2002 annually adding gravel and cobble and in 2004 logs to the River downstream of HHD. A large, semi-permanent log jam at the Auburn Narrows (RM 32.5, roughly 112th Place SE, if extended) traps most of the logs from the upper watershed. The project area is downstream of this jam, so wood supply to the project area from upstream is limited. In the project area, natural large wood is scarce, averaging roughly 14 pieces per mile (Anchor 2003). A small natural log jam exists on the upstream end of an island roughly 0.7 miles upstream of the project (RM 30.2, roughly 20th Street NE, if extended). Large wood has also been installed along a 2009 repair of the Galli's levee immediately upstream of the project (RM 29.5 to 29.6, roughly 26th Street NE to 24th Street NE, if extended).

3. 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 adjacent land use is predominantly low to medium density residential. Cascade Middle School lies just across the street from the southern end of the project. Most of the project lies within City of Auburn park land adjacent to the River. The existing levee is a trail corridor with an asphalt or gravel surface along the levee crest. The opposite bank has continuous public access along Green River Road SE, which has informal gravel parking areas used by fishers and others. The opposite bank also has Issac Evans Park with more formal parking, a small swim beach, and informal put in access to the River.

   No formal studies of river recreation use along this segment of the Green River have been conducted to our knowledge. American Whitewater (www.americanwhitewater.org) lists three Green River runs for boaters; all are well upstream of the project area. To the best of our knowledge use of the river within the project length is primarily by fisherman standing along the river banks. Informal swimming in the river occurs during the

warmer summer days at sand bars and the constructed beach at Issac Evans Park. Use of watercraft in this reach of the river appears to be relatively infrequent.

4. 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.

   The design includes large wood along two river reaches of the project. The locations are along the wetland adjacent to River Mobile Estates (aka River Mobile Home Park) and between the rock barbs proposed along Brannan Park. At the first location (River Mobile Estates), eight engineered log jams (ELJs) are proposed along the setback levee toe. The ELJs will provide edge roughening to a proposed rock revetted levee face adjacent to an existing wetland. The wetland is an old river channel that was cut off with the construction of the existing levee in the 1960s. With the removal of the existing levee the river will likely migrate to eventually reoccupy this historic channel. The eight ELJs will be built with 224 logs, including 104 key members, and will be oriented perpendicular to the levee face. The logs will be lashed together and anchored with boulders. The ELJs are designed to be overtopped frequently (at least once a year). The large wood was added to meet National Marine Fisheries Service (NMFS) guideline of 80 large wood pieces per mile for a "properly functioning" stream.

   At the second location (levee bordering Brannan Park), 12 smaller ELJs and 14 log clusters are proposed. The 12 smaller ELJs will be located between, and hydraulically sheltered by, rock barbs. The 12 ELJs will be made up of 54 key log pieces (106 logs total). The logs in each ELJ will be lashed together and anchored with boulders.

   The 14 log clusters are groups of four logs, each independently ballasted with boulders. The log clusters are located immediately downstream and adjacent to the rock barbs or between the barbs. The logs are not attached to each other. The boulder ballast is sized to weigh down the logs and prevent them from moving downstream when river flows contacts the logs. These log clusters are also hydraulically sheltered by the rock barbs.

5. What is the intended 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 woody debris that may be floating in the river?

   The ELJs and other large wood installations are intended to provide irregularities and roughen the hydraulic condition along the proposed setback levee. This will provide hydraulic shelter and cover for fish. The placed wood may recruit or trap additional woody debris, but the placed wood will be held at low elevation with anchor rocks and chain. This will allow most flood-born debris to float by without being recruited, and may allow trapped woody debris to float away at higher flow events when the anchored wood is submerged.

6. Describe how public safety considerations have been incorporated into the project design [see section 1.B.2 of Ordinance 16581] and include a description of how the six (6) key steps provided in Public Rule LUD 12-1, Appendix A. (Rule) Section V.2.A. i)-vi) have been addressed.

   i) In designing the placement of wood in the project, the project team will gather available information and take into account the expected type, frequency and seasonality of recreational uses as an important element in its overall consideration of impacts to public safety of the proposed project. **Although the project area is not known to have extensive use by recreational boaters, the large wood placements are designed to be predictable, visible and avoidable.**

   ii) Consideration of public safety in the conceptual design will include but not be limited to the following factors: the location, orientation, elevation, and size of the wood placement, the method of anchoring or securing the wood placement, the degree of interaction between flowing water and the placed wood during projected flow regimes, including flows commonly experienced in the recreational seasons, and input received through the public outreach process. **All of the large wood installations will be placed in the shelter of rock spurs, gravel bars, or other flow obstructions. Some of this shelter, associated with the remains of the existing levee, is expected to erode over time. This may eventually expose the eight ELJs in the River Mobile Estates wetland to an increasing share of the river's flow energy. In that event, the ELJs are designed to rest on the river bed and to settle downward as relatively fine bed material in the RME wetland scours away.**

   iii) In designing the specific placement of large wood, the design team will seek to maximize achievement of stated project goals and objectives while minimizing potential public safety risks, including risks to recreational users, and will

seek to ensure that the procedures and design options affording the greatest safety for river users are of primary consideration in design concerns involving a balancing of important public purposes as it addresses safety issues. **The project design team is seeking to maximize achievement of stated project goals and objectives while minimizing potential public safety risks, including risks to recreational users. Safety is achieved in part by location of placed wood in the hydraulic shelter of flow obstructions such as rock spurs and gravel bars. Safety is further achieved by the use of ballasted wood, anchored at both ends, that will rest on the channel bed and will settle to a lower elevation when the bed is scoured.**

iv) Conceptual project designs will be informed by standard design practices with input from professional designers with expertise in fluvial geomorphology, ecology, river hydraulics and civil engineering with hydraulic analysis expertise. **The project design team is made of a broad team of county staff and consultants. The team includes ecologists and licensed engineers. Team expertise includes general civil engineering, geotechnical engineering, river hydraulics, fluvial geomorphology, and ecology.**

v) All projects that incorporate large wood in rivers and streams will undergo review and approval of engineering plans and analysis from a Licensed Professional Civil Engineer. **The project design plans and Basis of Design documentation are all being prepared, reviewed and approved by Professional Engineers in the civil branch.**

vi) All projects that incorporate large wood with the stated objective of providing ecological benefits will undergo review and approval from a professional ecologist (i.e., persons with an advanced degree in aquatic and/or biological sciences from an accredited university or equivalent level of experience). **The project design plans reflect design input by, and are being reviewed and approved by, professional ecologists.**

River user groups had opportunity to review and comment on potential in river project elements at public meetings held on June 27th, 2012. A project open house for area residents was held on Nov. 13th, 2012. The project web site was publicized at both of these meetings, as well as in the associated invitations and announcements, and has been kept up to date with the latest project plans and documents. The project team will continue to solicit input from participating river users as the design process proceeds.

7. What is the anticipated schedule for completing project milestones (30-40% design, final design, major construction/earthmoving) and for soliciting public input)?

    - SEPA comment period: August 24th – September 6th, 2012
    - Complete 60% design: November, 2012
    - Complete 100% design: February, 2013
    - Advertise for Construction Bids: March 2013
    - Construction: May - November 2013

Project Manager — Date: 6-3-2013

Supervising Engineer, Project Supervisor or Unit Manager — Date: 6.3.2013

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*

8. 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. **No**

9. The Rule requires project review and approval by a Licensed Professional Civil Engineer. The Engineer will ensure appropriate application of engineering studies and design standards. Describe the design review and approval process for the project, including review by the licensed professional engineer, as well as reviews by other licensed technical staff such as 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. Was the review and approval completed? **The County formally reviewed the project and large wood designs in particular with 30%, 60% and 90% design submittals by the consultant team. In addition, the consultant employed licensed professional engineers to design and internally review the large wood design. County staff participating in the design reviews included licensed professional engineers (Tom Bean, Erik Peters and Chris Brummer) and a licensed engineering geologist (Chris Brummer). The Engineer of Record for the large wood design was Vaughn Collins of NHC Inc.**

10. The Rule requires project review and approval 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. The Ecologist will 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? Please describe steps undertaken by the Ecologist. **The reviewing ecologist for the project was Sarah McCarthy and she completed the review and approval. Ms. McCarthy reviewed the design drawings and design memos with each design submittal, coordinated with project stakeholders including the Muckleshoot Indian Tribe, and led the County's permit acquisition efforts.**

11. 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. **SEPA, Hydraulic Project Approval (HPA), Clean Water Act Section 404 (Nationwide Permit 27) and Section 401 Water Quality Certification, National Historic Preservation Act Section 106, Endangered Species Act Section 7 consultation, NPDES Construction Stormwater permit, and City of Auburn's Grading, Shoreline Exemption, Floodplain Development and Public Facilities Extension permits.**

    The HPA included the following large wood placement conditions/requirements:

    Bank protection material shall consist of a setback levee, rock barbs, engineered log jams, and other large, coniferous, woody material; and shall be installed to withstand 100-year peak flows. Large woody materials shall be anchored with chain (not cable) and rock or piling anchoring systems, per the details shown in the approved plans constituting the minimum amount of such materials required to provide fish habitat.

    In addition, the Muckleshoot Indian Tribe (MIT) requested that a King County biologist and a MIT biologist be onsite during wood placement construction activities.

12. What specific actions or project elements were employed to consider public safety in the final, permit-approved design? **The wood placed between rock barbs was set back behind the rock barb tips to be in the lee of each barb for boater safety, manage unpredictable deformation of wood without piles for lateral support and minimize the potential for additional wood racking on placed wood increasing the buoyant and uplift forces and potential for placed LW transport downstream.**

13. Describe how the Public Outreach requirements in Rule Section V.3. have been addressed.? **Outreach efforts have included a project website, posting of the project on the County's Large Wood website, presentation at the June 27, 2012 large wood meeting and holding a public open house for area residents on Nov. 13, 2012. The project will be presented a second time at the annual large wood meetings, which are scheduled to occur on June 19, 2013.**

14. Describe the input received from the public and how, if appropriate, the project team has responded to this input. **Received limited questions/comments during the June 27, 2012 large wood meeting and Nov. 13, 2012 open house meeting for area residents. Questions were addressed at the meetings and no design changes resulted from the meetings.**

15. Describe any additional design modifications or mitigating actions that were or will be taken in response to the public comments. **None**

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. **A project website containing project information will be maintained throughout the life of the project. Mailings to adjacent residences containing construction updates are anticipated.**

Erik D. Peters 6-3-2013

Project Manager Date

Thomas Thom 6.3.2013

Supervising Engineer, Project Supervisor or Unit Manager Date

III. Post-Construction Actions or Project Modifications

17. 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.

18. In accordance with the requirements of Rule Section V.4.,describe post-construction monitoring and inspection activities planned for the project.

19. If post construction monitoring or inspections result in modifications to the project, please describe the action taken and the rationale (See Rule Section V.4.).

Project Manager Date

Supervising Engineer, Project Supervisor or Unit Manager Date