

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: Klapp Property Habitat Restoration

Project Manager: Wm. Laird O'Rollins

River/River Mile/Bank: Mackey Creek, RM 0 Date: March 17, 2015

Check one or both:

Project includes placement of large wood elements

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

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.

Mackey Creek is a very small tributary of Bear Creek. Neither Mackey nor Bear Creek are used for instream recreation as they are too small and shallow to support boat or inner tube use. Both are used by salmonids for spawning and rearing and they and watershed recovery plans (WRIA 8 Chinook Salmon Recovery Plan, Bear Creek Basin Plan) consistently recommend restoration of habitat characteristics for these streams.

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 goal of this project is to increase the ecological and habitat functions of the property, which was acquired by King County in 2013. These goals are consistent with watershed planning documents (WRIA 8 Chinook Salmon Recovery Plan, Bear Creek Basin Plan) and the objectives of the property's purchase and management plan.

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 property containing the stream reaches proposed for enhancement was, until recently, used for a combination residence and dog kennel. All structures have been removed from the property. However, the channel of Mackey Creek is narrow and incised and its banks are lined with concrete blocks. The instream habitat is very simple and includes no pools of note. This reach of Mackey Creek is used by Chinook, coho and sockeye salmon and steelhead trout, as well as native cutthroat and rainbow trout. The site is also at the confluence with Bear Creek (though no work is planned in the channel of Bear Creek). Proximity to this confluence makes juvenile salmonid rearing habitat in Mackey Creek even more valuable.

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?

Adjacent land uses range from single-family residential to open space. The property is owned and managed by King County Parks and is open for passive recreation. The property is surrounded on two sides by the Little Bit Therapeutic Riding Center, an equestrian center dedicated to therapy of differently-abled children. Representatives of the Little Bit organization have been advised about the project and KC is working with them to facilitate access to the stream confluence as part of their programs. However, there is no known instream recreational use of either Mackey or Bear Creeks due to their small sizes and shallow depths.

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.

Approximately 15 pieces of large wood will be anchored within the channel of Mackey Creek to provide channel roughness and habitat diversity. The logs will be anchored using chain and mechanical "duckbill-type" anchors driven into the streambed or buried into the streambank. They will be positioned to interact with the low-flow channel.

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?

Large wood placed in Mackey Creek will help to form pools and break up flows to create greater habitat diversity. Roughening the channel will help to consolidate flows and prevent sheetflows that are too shallow for fish to use.

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.

Mackey Creek is highly unlikely to migrate or to recruit additional large wood. There is no significant source of large wood upstream between Bear Creek and the culvert beneath NE 106th Street that could become entrained on the site. While there are several trees immediately adjacent to the confluence of Mackey and Bear Creeks, Mackey Creek likely does not have the erosive capacity to erode their roots.

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;

There is no known instream recreational use of either Mackey Creek or Bear Creek.

- b. Wood location, positioning, and anchoring techniques;

Placed large wood will be securely anchored using mechanical anchors or by burying it into the streambanks to ensure that it isn't transported to reaches or positions where it could be hazardous.

- c. Maximizing achievement of project goals and objectives while minimizing potential public safety risks;

There is virtually no hazard presented to the public by placement of large wood in Mackey Creek.

- d. Use of established and recognized engineering, geological, and ecological expertise.

This project design has been designed and reviewed by two Professional Engineers, a licensed Engineering Geologist and two professional ecologists.

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?

This project design has been designed and reviewed by two Professional Engineers, a licensed Engineering Geologist and two professional ecologists. Will Mansfield, P.E and Supervising Engineer, will stamp the final plans when they have been completed.

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)?

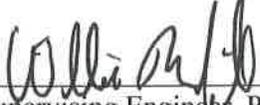
This project has been managed and designed by two professional ecologists (Wm. Laird O'Rollins and Laura Hartema). The project has completed the 30-40% design phase and will complete the 60% design phase in March or April, 2015.



Project Manager

3/18/15

Date



Supervising Engineer, Project Supervisor or Unit Manager

3/18/15

Date