General Mitigation Monitoring and Student Restoration Overview

Mitigation Monitoring Overview

General/Construction Activities:

A. Existing Wetland Review

- Review the existing wetland delineation report and visit the wetland site to examine wetland impact areas, proposed wetland mitigation areas, and the riparian corridor.
- B. Post-Construction and Planting Review and Report
 - Review site conditions after construction is completed to examine wetland mitigations areas, flagged boundaries, and as-built drawings.
 - Review the site with school district staff after planting is completed to examine approved wetland planting areas.
 - Submit Post-Construction Report to DSL to satisfy the requirements for the report specified in the approved permit.

C. Monitoring Plan

- Prepare a monitoring plan that:
 - Complies with the standards set forth in the DSL "Removal-Fill Guidelines" for Compensatory Mitigation for Wetlands.
 - Addresses the ecological goals and objectives specific to the CWM project.
 - o Provides measurable performance standards for the CWM project.
 - Documents the success criteria required by the DSL permit including native species cover, invasive species cover, bare substrate cover, woody vegetation density, species diversity, wetland vegetation prevalence, and hydrology.
 - A timeline for achieving each performance standard.

D. Wetland Curriculum

 Develop overview and lessons for K-5, place-based wetland curriculum to be serve as a resource for teachers throughout the District. Include site restoration plan that identifies tasks and activities connected to on-site restoration, monitoring requirements and learning opportunities for students.

Annual Monitoring Activities:

Field Data Collection

A. Vegetation

- Perform vegetation sample plot monitoring in April/May.
- Perform non-native invasive species monitoring in April/May and again in October/November.
- Determine species density and the wetland vegetation prevalence index.
- Perform vegetation monitoring following the guidelines set forth in the DSL "Routine Monitoring Guidelines for Vegetation".
- Install a permanent marker with identification at each plot location.

B. Hydrology

- Collect wetland hydrology data from soil test pits in April/May.
- Install a permanent marker with identification at each soil test pit location.

C. Photo Documentation

- Provide photo documentation of vegetation sample plots and soil test pits.
- Install a permanent marker with identification at each photo point location.
- Take period photos to show change over time from permanent location.

Annual Monitoring Report

A. Report Site Maps

 Prepare site maps showing locations of vegetation sample plots and soil test pits.

B. Maintenance Plan

 Prepare a maintenance plan for the annual monitoring report that provides recommended actions to satisfy performance standards set forth in the DSL permit for native species, non-native invasive vegetation, hydrology, and erosion control.

C. Annual Monitoring Report

- Submit the annual monitoring report that satisfies the compensatory mitigation monitoring (CWM) requirements specified in the approved permit to the Oregon Department of State Land (DSL) by December 1 of the year.
- The monitoring report shall include the completed monitoring report cover sheet, the narrative, monitoring data, compliance with performance criteria, recommended maintenance items, the maintenance plan, a wetland map showing existing and compensatory wetland mitigation (CWM) boundaries, a

monitoring map showing locations of vegetation sample plots, soil test pits, and photo points.

Year Specific Monitoring Activities

A. Delineation "Lite" (Year 3 and 4)

- A delineation "Lite" is needed with the third and fourth annual report. The delineation "Lite" method provides minimal standards for defining acreage of wetland achieved on a wetland mitigation site. It is treated as an amendment to the formal delineation prepared for the pre-project CWM site.
- Address and characterize any potential "problematic hydric soil" conditions.
- Include a map(s) with the taxlot lines, study area boundary, as-built topography, and pre-and post CWM wetland boundaries for each habitat type. Map and label buffers, target habitat types, and/or treatment type areas (restoration, creation, enhancement), sample points, and photo points. Wetland boundaries and plot location mapping precision should be one meter (3.3 feet) for most sites. Vegetation monitoring transects & data points should be on a separate map of the same scale.

B. Functional Assessment (Year 5)

- Conduct functional assessment using protocol defined by ORWAP assessment, as used in pre-CMA site functional assessment. Includes both office and field data collection.
- Include final functions and values of wetland mitigation areas as compared to initial predictions and initial ORWAP conducted by Winzler & Kelly and included with permit application.

Student Restoration Overview

Site Description

Student restoration opportunities exist within the schoolyard of Trillium Creek Primary School. The Trillium Creek wetland, totaling almost 4 acres in size, has formed over the years from subsurface water seepage and surface runoff from adjacent impervious surfaces and development projects. The headwaters of Trillium Creek, a tributary of the Willamette River, form on the southwestern portion of the school site with subsurface and seasonal flows. The headwaters form a creek channel at the northeastern side of the property before it travels off-site and down through the Hidden Springs neighborhood. The plant community includes the following trees, shrubs and herbs: Oregon ash, red alder, red osier dogwood, Oregon white oak, Himalayan blackberry, wild rose, creeping buttercup, Dewey sedge, water parsley, false hellebore and English ivy.

Restoration goals for the creek corridor include reducing high percentages of invasive plants, increasing areas for wildlife habitats and shaded portions of the exposed creek, and adding large stones and rocks in the waterway and along the banks to reduce the erosion of the creek channel and raise the water table. Students will be involved in the planning and execution of these projects, as well as the reporting upon completion to the school community.

Community Connections

A student restoration plan supports connections between teachers, students and staff and the surrounding school community. The support of student restoration supports the District's vision and mission to engage students in out of the classroom learning and establishing community connections.

Additionally, procuring grant funds to support volunteer work days and workshop will engage teachers, staff and parents of the Trillium Creek Primary School community, as well as individuals from the large District community. Volunteer work days will connect the learning from the workshops to real world settings at the headwaters of Trillium Creek. Workshop topics could include, place-based education in primary schools, volunteer management, wetland and creek restoration plans and activities, erosion control and bank stabilization measures, water quality monitoring with kids and effective native plantings. These workshops intend to engage the community in these issues and bring awareness to environmental education and effective restoration practices.

Place-Based Education

Students, teachers and staff will have the opportunity to engage in wetland and riparian area studies. Teachers will be able to utilize the support of CREST and a K-5 wetland studies resource to formulate place-based education studies that have strong curricular connections within Trillium Creek Primary School. Learning outcomes, portfolios and pre and post assessments will help track the effectiveness of the program and inform changes that all teachers across the District can utilize. Portions of the studies could include long-term monitoring of the soil, vegetation and water quality to provide meaningful field experiences to classroom lessons. This data collection will be based on similar monitoring activities conducted annually for the DSL mitigation requirements. In addition, students will use the mitigation areas, established during the construction of the school, as models for invasive removal, native replanting and creek bank stabilization. The school will have the opportunity to engage with these professional contractors involved with the mitigation areas to advise students and community members about these types of wetland enhancement and monitoring activities as part of the community connections related to this student restoration project.

General Timeline

Spring, 2011: Compile resources related to student restoration projects and approaches,

wetland and creek corridor curriculum, and place-based education. Host work parties with volunteer crews focused on invasive removal.

Fall, 2011: Generate ideas for student projects, project costs associated with materials needed for projects and begin to develop timeline for restoration activities to share with planning and future school principals. Apply to applicable grants and on-going master plan development for site with support of community partners.

Winter and Spring, 2011-2012: On-going work on place-based curriculum resource development related to wetland studies, restoration and connections to other grade level subject areas. On-going master plan development, grant writing and planning around professional development for teachers at TCPS and throughout the District.

Summer, 2012: Expected completion of school construction. Work with community partners and future staff around notions of place-based education and restoration.

Fall, 2012-Future: Work with students, teachers, parents and staff at newly opened Trillium Creek Primary School. On-going invasive removal, grubbing and chipping on-site of larger woody debris by professional contractors. Student will become involved in trail planning and building, language for signage, focused areas for invasive control adjacent to mitigation area, planning for replanting, identifying and marking commonly found plants and other improvement projects. School staff have the opportunity to integrate lessons into curriculum and studies that target wetland ecology, healthy watersheds and commonly found wetland plants and animals. Work to continue the on-going development of connections with community partner organizations.

For additional information or questions contact: Nell Achtmeyer, WLWV Capital Bond Program achtmeyn@wlwv.k12.or.us 503.673.7365x6347