

Project Monitoring

Monitoring of performance and project outcomes are vital components of the China Camp Creek (C3P) and Winter Lake Restoration (WLRP) projects in order to document system operation, biological response/outcomes, habitat changes, and water quality variances. The Beaver Slough Drainage District (District) has the responsibility to operate the system infrastructure and regulate activities within the District for the benefit of all landowners within the parameters of relevant local, state, and federal law, permits conditions, and oversight by funding entities.

The District Water Management Plan (DWMP) will be the basis for operating the system infrastructure during the different periods of the year (summer, fall-winter, and spring). The DWMP has provisions for landowner and stakeholder input as well as the ability to be amended in order to adapt, over time, to changing conditions on the ground.

The District currently has eleven InSitu Rugged Troll 100 water loggers installed in the area collecting water level and temperature data. Data collection began in March of 2011 collecting information from the Coquille River, canals, China Camp Creek, Beaver Creek, and interior locations measuring dry season ground water levels.

This situation presents a unique opportunity in that, with the exception of major flood events, all ingress and egress to the winter lake area floodplain will be through the concrete box culvert/tide gate infrastructure connecting the Coquille River to management Units 1, 2, & 3. All stakeholders will be able to gather and evaluate data from the entire winter lake area, but also so from different management scenarios. Good data will provide a basis to make good decisions.

The District is working with Nehalem Marine Mfg., and Watch Technologies to develop a side hinged tide gate assembly, mounted on a vertical slide frame, controlled with muted tidal regulator technology. A controller/base station will be located near the culvert/tide gate infrastructure to monitor and control tide gate operations in real time. Collected data can be transmitted to offsite data storage where it can be monitored and accessed by a variety of stakeholders. The controller/base station will have sufficient capacity in its hardware and SCADA/HMI (Supervisory Control and Data Acquisition/Human Machine Interface) systems to collect additional data on a “plug and play” basis. Additional data can be retrieved from other Remote Terminal Units (RTU’s) located within the winter lake area.

The following outline identifies the data collection structure and possible components to be included.

BSDD – Control & Data Monitoring Components:

General:

- Controller System
 - Wireless data collection from RTU's
 - Hard wired data collection from structure area
 - Hard wired control circuits
 - Plug and play capability

- Power back up
- Wireless data transmission
- Data Center
 - Data Storage
 - Website
 - Data analysis
 - Cost – Set up & Operation

Culvert / Tide Gate Structure:

- Operational
 - Water levels
 - River
 - Inside Units 1, 2, 3
 - Velocity, incoming, outgoing
 - Position_angle open
 - Duration
- Data Collection
 - Temperature
 - D/O_Dissolved Oxygen
 - Turbidity
 - Conductivity/Salinity
 - Fish Movement_Pit tag array
 - In water video
- Climate
 - Barometric Pressure
 - Air Temperature
 - Wind Speed
 - Rain Fall

Remote Terminal Units (RTU) within the District:

- Data Collection
 - Water level
 - Velocity
 - Temperature
 - D/O_Dissolved Oxygen
 - Turbidity
 - Conductivity/Salinity

Additional Monitoring occurring on the project site not directly associated with this grant application:

Since the intent of the project is to document improved fish passage and use of the project area by anadromous species, especially Oregon Coast Coho salmon as well as other species. ODFW has been conducting a mark and capture program now entering its third year to document current juvenile Oregon Coast Coho salmon use and determine pre-project juvenile Oregon Coast Coho numbers. Additional fish species captured are documented as well. This will continue post project to determine changes in Oregon Coast Coho salmon use.

Additionally, ODFW has conducted regularly scheduled bird counts for over two years to document changes in bird use as the project matures, including neo-tropical birds, waterfowl, shorebirds and raptors. Pre-project surveys have also been conducted for amphibians and reptiles.

Pre-project vegetation sampling has been conducted by the local SWCD which will be repeated periodically in the future to note changes in plant species, distribution and cover. Part of the project is to plant approximately 240 acres of the project area with wetland trees to mimic the forested wetland historically on the site. As part of that planting program, sampling protocols will be conducted annual to determine survival and species composition with a target density of 300 trees per acre.

In addition, water chemistry samples will be collected once per year for 5 years to document changes in water chemistry.

Other items that warrant additional consideration to document the effects of the projects are economic impact studies, agricultural production effects, and changes in recreational usage of the area, as well as any information particularly useful to the CIT.

End project monitoring section