**BONNEVILLE, THE DALLES, AND JOHN DAY FOREBAY TEMPERATURE MONITORING PROJECT**

1. **PROJECT INFORMATION**

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| **P2 Identifier** | 465995 |
| **Project Manager (PM)** | James Adams (NWP, 503-808-4742) |
| **Technical Lead (TL)** | Tina Lundell (NWP, 503-808-4878) |

1. **PURPOSE**

The purpose of this project is to conduct an investigation into the temperature stratification of the forebays of the LCR dams during the summer months. This project will purchase and deploy manually downloaded temperature monitoring strings suspended from ball buoys at a minimum of two appropriate locations in the forebays of Bonneville, The Dalles, and John Day dams. Water temperature data shall be monitored at 1 ft, 5 ft, 10, ft, 20 ft, 40 ft, 60 ft, and 80 ft from surface on an hourly time interval.  Thermistor strings shall be deployed for two seasons. The first deployment will occur in late June 2018 and retrieved in early September 2018.  The second deployment will occur in late June 2019 and retrieved in early September 2019. Following retrieval, the collected temperature data shall downloaded and be e-mailed to the Fish Passage Center for upload onto their publically accessible website. Data will also be provided to the Portland District water quality staff for upload onto the Corps’ Water Temperature String Reports website.  All field notes and meta data such as site location, site name and latitude/longitude shall also be included in excel spreadsheets as well.

All necessary equipment required for this data collection effort - including boats, trailers and deployment materials (stainless steel cables, cable clamps, buoys, etc…) - shall be purchased or provided by the Corps of Engineers. All thermistor deployment, retrieval and the downloading of data shall be performed by Corps of Engineers staff.  All visits to reservoirs and thermistor deployment locations shall be coordinated with the respective project staff.  All safety training and requirements shall be completed prior to deployment of equipment.

**BACKGROUND**

There has been a resurgence in tracking forebay water temperatures, especially as they relate to potential water temperature problems within the fish ladders at the FCRPS dams. With respect to the Lower Columbia River (LCR), there is regional interest in more rigorous monitoring of water temperatures in the forebays and within the fish ladders of LCR Dams: John Day, The Dalles and Bonneville. This stems from concerns regarding fish ladder water temperature differentials and subsequent delayed migration of adult salmonids.

Should it be determined that a significant temperature stratification occurs in the forebays of these projects, modifications to the inflow into the fish ladders will be discussed with the FCRPS BiOp Fish Passage Operations and Maintenance (FPOM) team for potential implementation.

1. **STATUS & ISSUES**

* All thermistor equipment has been purchased and is ready for deployment.
* Project team will coordinate with regional fish managers to develop an appropriate monitoring plan (i.e. appropriate locations to deploy thermistors).
* Programming of the thermistor hobos will be completed by NWP Water Quality staff. Deployment and retrieval of the thermistor hobos will be completed with the assistance of NWW Water Quality staff.

1. **SCHEDULE & COST**

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| **YEAR** | **COST** | **MAJOR ACTIVITIES** |
| **FY18 Work Plan** | $100,000 | Phase 1 Investigation (June 2018 – September 2018); Deploy thermistor strings at a minimum of two locations in the forebays of BON, TDA, and JDA in late June. Retrieve the thermistor strings in early September. Download thermistor data and upload into the Corps water quality database. Provide the data to the Fish Passage Center for uploading onto their publically accessible website. |
| **FY19**  **PBUD** | $100,000 | Phase 2 Investigation (June 2019 – September 2019); Deploy thermistor strings at a minimum of two locations in the forebays of BON, TDA, and JDA in late June. Retrieve the thermistor strings in early September. Download thermistor data and upload into the Corps water quality database. Provide the data to the Fish Passage Center for uploading onto their publically accessible website. |
| **FY20** | $20,000 | Evaluate thermistor data and prepare a report. |

1. **PHOTOS & DRAWINGS**