# AVISTA CORPORATION

## 2015 TO 2019
## WATER QUALITY IMPROVEMENT AND EROSION CONTROL PLAN

IDAHO 401 WATER QUALITY CERTIFICATION,

APPENDIX A, SECTION III

Post Falls Hydroelectric Development
Spokane River Hydroelectric Project
FERC Project No. 2545

Prepared By:
Avista Corporation

*July 30, 2014*

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# 1.0 INTRODUCTION

## 1.1 Background

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a new License for Avista Corporation's Spokane River Project, FERC Project No. 2545-091 for a 50-year license term. The License became effective on June 1, 2009 and includes operation of the Post Falls Hydroelectric Development (HED) in Idaho. Ordering Paragraph D of the License incorporated the Idaho Department of Environmental Quality's (IDEQ) Section 401 Water Quality Certification (Idaho WQC) for the Post Falls Hydroelectric Development. The conditions of the Idaho WQC can be found in Appendix A of the License.

Section III of the Idaho WQC required Avista to complete the initial, five year, *2010 To 2014 Water Quality Improvement and Erosion Control Plan*, (2010 - 2014 Plan) which identified and prioritized actions to protect and improve water quality associated with the Post HED. Upon FERC's October 13, 2010 Order (Order), Modifying and Approving Water Quality Improvement and Erosion Control Plan for the Post Falls Development (Appendix A), Avista began implementing the 2010 - 2014 Plan.

In accordance with the Order, Avista is required to submit a new five year plan to IDEQ, Idaho Department of Fish and Game (IDFG) and U.S. Fish and Wildlife Service (FWS) for review and comment by June 1. Following IDEQ's approval, the new five year plan is then to be filed with FERC by August 1, starting 2014, and then every five years thereafter. This *2015 To 2019 Water Quality Improvement and Erosion Control Plan* (Plan), includes the activities to be conducted during the next five-year timeframe, 2015 to 2019, and is based upon consultation and collaboration with IDEQ, IDFG, and FWS.

## 1.2 Post Falls HED

The Post Falls HED includes three dams located on the Spokane River approximately nine miles downstream from the outlet of Coeur d'Alene Lake. Coeur d'Alene Lake is a natural lake created by a natural channel restriction, with the outlet serving as the headwaters of the Spokane River. The Post Falls HED's Project boundary encompasses the Spokane River upstream of the Post Falls Dams, Coeur d'Alene Lake, and the lower 30 miles of the Coeur d'Alene and St. Joe Rivers and 9 miles of the lower St. Maries River (Figure 1) at the normal full pool water elevation of 2,128 feet.

The Post Falls HED influences water levels in Coeur d'Alene Lake and the lower reaches of lake's tributaries from early summer through late fall. The summer lake level is held at the 2,128 foot elevation. During the winter and through most of the spring run-off season the water elevations are controlled by Coeur d'Alene Lake's natural channel restriction, not by the HED.

## 2.0 FUNDING

In accordance with Section III.D. of the Idaho WQC, Avista shall make $75,000 available on an annual basis to implement the approved Plan. Implementation of this Plan and expenditure of funds for specific projects are governed by Section VIII.A. of the Idaho WQC. Sections III and VIII of the Idaho WQC are included as Appendix B.

## 3.0 LIABILITY

The Bunker Hill Mining and Metallurgical Complex Superfund (Facility) includes mining-contaminated areas with lead being the primary contaminant of concern and additional contaminates of concern including arsenic, cadmium, and zinc. Sediments are the primary contaminated material in the Lower Basin, and as a result, through the implementation of Section III of the Idaho WQC, it is likely Avista will become involved in efforts to reduce erosion along the lower Coeur d'Alene River streambanks, especially in areas with elevated lead concentrations. At these sites, Avista will limit its activities as necessary to avoid incurring liability for the contamination. For example, Avista will not manage, direct, or conduct any operations related to hazardous substances. Avista will work out the details of its involvement in each project on a site-by-site basis and in coordination with the Basin Environmental Improvement Project Commission (BEIPC), including its technical arm, the Technical Leadership Group and other appropriate committees with regard to erosion control efforts in the Coeur d'Alene River. Although Avista may limit its activities to avoid liability, it will meet its obligations under Section III of the Idaho WQC.

## 4.0 EROSION CONTROL GOALS

Erosion control activities will be implemented to protect and improve water quality associated with the Post Falls HED with the goal of reducing sedimentation and nutrient loading in order to improve and protect water quality and beneficial uses. Site-specific erosion control actions are to be identified and prioritized in consultation with IDEQ, IDFG, and FWS. These include riverbank stabilization projects, as well as upland land use projects such as pasture and recreation management activities designed to reduce erosion.

## 5.0 EROSION CONTROL STUDIES

The following studies are either on-going or have occurred since the approval of the 2010 - 2014 Plan and are associated with erosion control evaluations and/or mitigation measures in the Spokane River upstream of the Post Falls Dams, Coeur d'Alene Lake, and the lower reaches of the Coeur d'Alene, St. Joe, and St. Maries Rivers.

## 5.1 Avista, 4(e) Condition No. 4: Coeur d'Alene Reservation Erosion Inventory and Assessment

Avista and the Tribe conducted the Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control Inventory and Assessment (December 2011) during 2009 and 2010 which included an erosion inventory and assessment of all shoreline erosion occurring on lands within the Coeur d'Alene Indian Reservation (Reservation), including shorelines located along the St. Joe River downstream of the City of St. Maries, along the lower portion of Coeur d'Alene Lake, and the pertinent lateral lake shorelines. The Erosion Inventory and Assessment was completed as a requirement of 4(e) Condition No. 4, (Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control), within Appendix D of the License.

The total length inventoried along the St. Joe River, within the Post Falls Project area and the Reservation was 169,850 linear feet, of which the Inventory and Assessment classified 124,067 linear feet as eroding. Of this, Avista is responsible for 50% of the total linear feet of all erosion sites on the St. Joe River, which totals 63,130 feet.

Following the development of detailed erosion control designs for six initial sites located on the lower St. Joe River levees, the Coeur d'Alene Tribal Council issued a resolution to implement erosion control, or purchase similar lands, elsewhere within the Reservation.

## 5.2 Lake Management Plan, 3-Year Nutrient Source Inventory, St. Joe and St. Maries Rivers

As one of the objectives identified to meet the goal of the Coeur d'Alene Lake Management Plan (March 2009), the Coeur d'Alene Tribe (Tribe) and IDEQ initiated a 3-Year Nutrient Source Inventory Water Quality Sampling Work Plan and Quality Assurance Plan ("Plan") for the St. Joe and St. Maries Rivers in March of 2010. The Plan included a short-term water sampling program at six selected locations within the St. Joe and St. Maries Rivers. The goal of the program was to determine whether sources of suspended sediment concentrations, and associated levels of total phosphorus measured at the mouth of the St. Joe River, may be traced to active riverbank erosion and sloughing occurring along the lower to mid portions of the St. Joe River and possibly sections of the St. Maries River.

The water sampling program was implemented as a coordinated effort between IDEQ and the Tribe; it began in March of 2010, and was completed over a three year timeframe. The nutrient inventory also included a collection and summary of historical and current nutrient data collected in the watershed. Results of the monitoring identified two subwatersheds in the St. Maries drainage that are the highest contributors of nutrients to the system. Tribal and IDEQ staff are looking at existing documents and interviewing stakeholders to identify likely sources so they can prioritize potential future improvement projects.

## 5.3 IDEQ St. Joe Riverbank Erosion Potential Inventory

Starting in 2010, IDEQ conducted a riverbank erosion inventory along approximately 16 miles (32 miles of bank) of the St. Joe River, from the confluence of the St. Maries River to St. Joe City following the Bank Erosion Hazard Index (BEHI) method (IDEQ 2011). Several variables for classifying riverbanks (i.e. bank height, bankfull height, root depth, root density, bank angle, etc.) are measured as part of the inventory to determine riverbank erosion potential and its severity. Riverbank erosion classification types include very low, low, moderate, high, very high, and extreme.

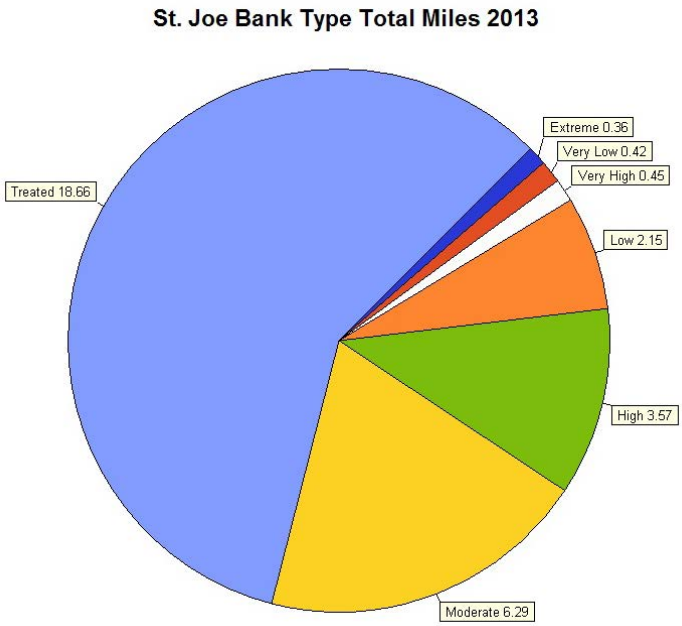
As part of IDEQ's 2010 effort, bank pins were driven horizontally into the riverbank to determine the lateral recession rate (bank erosion) of each bank type. IDEQ revisits the bank pins in the summer, following the spring runoff, and again in the fall, on an annual basis to measure the erosion rates associated with summer water level erosion. During each visit, the length of the pin exposed is measured and the pin is driven back into the bank. Although the lateral recession rate data is not statistically robust, it helps to validate the bank type classification. The primary objective of the inventory is to classify the erosion potential to help direct future bank stabilization efforts.

As shown in Table 1 below, and in Figure 2, IDEQ has provided the following results to date which indicate the following:

- Most of the recent bank stabilization effort has occurred on the high erosion classification potential.
- Fifty-eight percent of the riverbank has received a treatment for stabilization.
- Eight percent has been classified as very low or low erosion potential.
- Thirty-three percent has been classified as moderate to extreme erosion potential.

**Table 1: Results of IDEQ's St. Joe Riverbank Erosion Potential Inventory (further illustrated in the pie chart below Table).**

| IDEQ Erosion Potential Classification (current up to 2014) | Riverbank (miles) | Percent of total (whole numbers) |
|---|---|---|
| Treated | 18.66 | 58 |
| Very low | 0.42 | 1 |
| Low | 2.15 | 7 |
| Moderate | 6.29 | 20 |
| High | 3.57 | 11 |
| Very High | 0.45 | 1 |
| Extreme | 0.36 | 1 |




As part of the inventory process, IDEQ will, where appropriate, consider characterizing sediments for nutrient content of erosive bank material in conjunction with erosive condition.

Additionally, IDEQ will begin assessing the feasibility of conducting a similar bank erosion evaluation along the banks of the St. Maries River. Accessibility will determine the methods used to identify and prioritize potential sites for bank stabilization projects in the future.

## 6.0 PRIORITIZED PROJECTS AND ACTIONS

### 6.1 Selection Priorities and Evaluation Criteria

The prioritization and evaluation criteria, shown in Table 2, was developed in the 2010 - 2014 Plan and revised in the 2015 – 2019 Plan, and will be utilized for all projects and/or activities that will be implemented through this Plan.

**Table 2: Prioritization and Evaluation Criteria for Erosion Control Sites.**

| Low | | | | High | Prioritization and Evaluation Criteria |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | |
| | | | | ✓ | Projects that have a high degree of erosion control urgency |
| | | | | ✓ | Projects that are consistent with existing plans and are identified as having significant potential for water quality improvement, such as reducing nutrients and temperature, and improving habitat, vegetation, natural channel design and floodplain function. |

| | | | | | |
|---|---|---|---|---|---|
| | | | ✓ | | Filling in gaps between areas where riverbank stabilization has already taken place and has shown effective. |
| | | | | ✓ | Projects with multiple partners and/or projects providing significant non-Avista funds (regardless of whether the land is privately or publically owned). |
| | | | ✓ | | Projects that are publically owned and/or where public access is secured |
| | | ✓ | | | Projects with intact cultural artifacts |
| | | | ✓ | | Projects that can be funded within a five-year budget cycle. |

## 6.2 Collaborative Parties & Project Identification

Avista and IDEQ will coordinate efforts to work with other entities to identify cost share potentials for erosion control projects. The entities include, but are not limited to, IDFG, the Kootenai Shoshone Soil and Water Conservation District (KSSWCD), the Benewah Soil and Water Conservation District (BSWCD), Natural Resources Conservation Service (NRCS), U.S. Forest Service (USFS), FWS, Idaho Soil and Water Conservation Commission, Benewah County, Shoshone County, Kootenai County, the Coeur d'Alene Tribe, and the Coeur d'Alene Basin Restoration Partnership.

This Plan focuses on erosion sites located on the St. Maries, St. Joe, and the Coeur d'Alene Rivers. The following provides the mechanism for which the erosion sites and potential cost share opportunities will be further identified.

*Project Identification: St. Maries & St. Joe Rivers*

There are projects in various stages of planning where landowners are seeking to cost share with USDA Farm Bill, or other similar programs, along the lower St. Maries and the St. Joe Rivers (from the town of St. Maries upstream to St. Joe City). IDEQ and others, will consult with staff of the BSWCD and the NRCS Plummer field office to explore three-way cost shares which could leverage funds from a landowner, the Farm Bill, and Avista. In addition, the TMDL Watershed Advisory Group (WAG) for the St. Joe and St. Maries basin may also provide assistance to solicit landowners of eroding riverbank property to participate via the BSWCD.

*Project Identification: Coeur d'Alene River*

Avista will work with IDEQ to facilitate coordination between KSSWCD, NRCS, and IDFG on the approximately 60% of riverbanks owned by IDFG for the lower Coeur d'Alene River. Cost share opportunities could be leveraged with the Clean Water Action Section 319 grants (§319 grant), with 60% of the funds from EPA and 40% from Avista. The KSSWCD could be the sponsor of §319 grant applications on the lower Coeur d'Alene River. Proposed projects on the lower Coeur d'Alene River would involve consultation with EPA staff to ensure that these riverbank stabilization projects would not fall under the purview of current or future Superfund

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedies.

Potential projects and measures may be identified by Avista, IDEQ and any of the entities previously identified. They will be evaluated through a collaborative process with these entities and then prioritized and selected according to the prioritization and evaluation criteria identified in Table 2. Summaries of previous work activities and other pertinent information will be used to help determine project effectiveness. Potential erosion control information may include, but not be limited to: the project name; size; location; ownership; current and estimated future extent of erosion; cultural resources and vegetation present; soil type and drainage; and effectiveness of desired erosion control measures. Other relevant information includes the known presence of contaminated sediments, participating partners, planning and management objectives.

It is essential that adequate funding and project oversight to complete any action is available prior to and during implementation.

## 7.0 EROSION CONTROL IMPLEMENTATION STANDARD METHODS/PRACTICES

### 7.1 General Site Approach

Sites selected for projects that have acceptable access and/or cooperative management agreements will be mapped and a basic engineering/soil assessment will be conducted to provide site specific characterization for engineering design, permitting, bid, and monitoring documents. However, it should be noted not all sites will need these characterizations as some may already have this type of information documented or it may be deemed unnecessary for the type of work to be conducted. Appropriate riverbank site characterization (including site-specific channel features), mapping, or survey work will be determined by the project designer/engineer.

### 7.2 Standard Design Methods

Standard and modified NRCS methods that will be utilized to guide the design of the erosion controls for each project, as appropriate, and may include the following:

- NRCS National Engineering Manual (NEM).
- NRCS National Engineering Handbook (NEH).
  - Part 650, Engineering Field Handbook (Chapters 14, 16, and 18)
  - Part 653, Stream Corridor Restoration Handbook
- NRCS Cultural Resources Handbook.
- NRCS National Environmental Compliance Handbook.

The NRCS, teamed with the local conservation districts (KSSWCD and BSWCD), have completed 12 years of review, design, and construction of over 14 miles of bank erosion control projects along the St Joe and Coeur d'Alene Rivers. Their standard design typically includes a rock wedge with live stake plantings which provides both hard armor and vegetation to address

the combined influence of boat waves, flood erosion, and the altered vegetation line. Their standard design will most likely be utilized as a basis for proposed projects. Additional consideration will be given to incorporation of bioengineering techniques and other hard engineering practices in addition to riprap armoring that may alleviate system-wide impacts of bank stabilization projects. Consideration will be given to potential increases in downstream erosive forces resulting from potential stabilization projects. Additional NRCS guidance's, specific to Idaho that may be utilized to guide the design of stream bank and shoreline erosion controls include:

- NRCS Idaho Field Office Technical Guide (eFOTG), Section IV, Conservation Practice Standard – Streambank and Shoreline Protection, 580 and Idaho Construction Specifications.
- NRCS Idaho Operation and Maintenance Worksheet, Streambank and Shoreline Protection.
- NRCS Idaho Documentation Check List, Streambank and Shoreline Protection.
- Idaho Plant Materials Technical Note No. 32 Users Guide to Description, Propagation and Establishment of Native Shrubs and Trees for Riparian Areas.
- Idaho Plant Materials Technical Note No. 38 Users Guide to Description, Propagation and Establishment of Wetland Plant Species and Grasses for Riparian Areas.
- NRCS Idaho, The Practical Streambank Bioengineering Guide.
- NRCS-Idaho, Engineering Technical Note 13, "Design of Rock Weirs".
- NRCS-Idaho, Engineering Technical Note 6, "Design of Dumped Rock Riprap Stream Channel Stabilization".
- NRCS-Idaho, Engineering Technical Note 12, "Design of Stream Barbs".
- NRCS-Idaho, Engineering Technical Note 15, "Incorporation of Large Wood into Engineering Structures".

Design teams, consisting of various partners listed previously, may be utilized in development of alternative approaches. Typically the NRCS standard design for the St. Joe and Coeur d'Alene Rivers does not incorporate large woody debris or large riprap. As such, Avista does not anticipate utilizing these materials as erosion control measures. However, if these materials, or other alternative methods, are determined to be the preferred erosion control method on a specific site, Avista shall consult with the FWS prior to the implementation of those methods. Documentation of the consultation with the appropriate resource agencies on the use of large woody debris or large riprap will be included in the subsequent five year summary report.

## 8.0 SITE SPECIFIC EROSION CONTROL ACTIONS

Avista evaluated high priority sites based on existing knowledge of shoreline erosion occurring within the Coeur d'Alene Lake Basin inside the Project boundary, in addition to consultations with IDEQ, IDFG, FWS, USFS, NRCS, KSSWCD, BSWCD and the Idaho Soil and Water Conservation Commission. As such, Avista will focus erosion control mitigation measures for areas located along the Coeur d'Alene, St. Joe and St. Maries Rivers. These mitigation measures will be conducted in cooperation with the other parties' plans to implement erosion control

measures over the second five-year work cycle of the License (2015 through 2019). Table 3 outlines the upcoming site specific erosion control actions and is followed by a description of each of these actions identified for implementation during the 2015 through 2019 timeframe.

**Table 3: 2015-2019 Site Specific Erosion Control Actions**

| Activity Year(s) | Site Specific Erosion Control Actions Description |
|---|---|
| 2015 - 2016 | St. Joe River, Bank Pin No. 9 Site |
| 2016 - 2018 | St. Joe River, Shadowy St. Joe Log Landing Site |
| 2015 - 2019 | St. Joe River, Shadowy St. Joe Stabilization Monitoring |
| 2015 - 2019 | Education/Outreach |
| 2015 - 2019 | Additional Sites as appropriate and agreed upon by the consultation agencies[1] |

Notes: (1) = Additional sites may be identified as new information becomes available.

## 8.1 St. Joe River, Bank Pin No. 9 Site

This site is located along the St. Joe River in Section 14, T46N R1W, approximately 10 miles upstream of the city of St. Maries, along the inside of a sharp bend in the river (Figure 3). It has been identified by IDEQ as having an "Extreme" eroding riverbank type. This site is marked with a bank pin (No. 9), and is therefore referred to as St. Joe River, Bank Pin No. 9 Site. Photos showing the erosion at this site follow.

The site consists of approximately five privately owned parcels and would include approximately 350 feet of erosion control using the standard NRCS design as a basis for the proposed project. This standard NRCS design consists of both hard armor and vegetation to address the combined influence of boat waves, flood erosion, and the altered vegetation line and would include installing a rock wedge of graded angular stone from approximately two feet above to two feet below the summer lake level, targeting erosion of the upper riverbank caused by boat and wave action.

While not a publically owned site, the site receives a high prioritization for the following reasons:

- The project has significant potential for water quality improvement.
- This site was classified by IDEQ as having an "Extreme" eroding riverbank type in their annual St. Joe Riverbank Erosion Potential Inventory.
- Potential cost share opportunity with the landowners.

Avista's cost share portion of the erosion control implementation costs will be funded through the Avista funds established by Section III.D. for erosion control. Table 4 outlines the anticipated tasks and timeframe to implement an erosion control measure at this site.

**Photographs taken from IDEQ's St. Joe Riverbank Erosion Potential Inventory (IDEQ 2011) showing extreme erosion potential, based upon the BEHI bank score, at the Bank Pin No. 9 Site.**

**Table 4: Estimated Tasks and Timeframe to Implement Erosion Control at the IDEQ Bank Pin No. 9 Site.**

| Year | Task No. | Task Description |
|---|---|---|
| 2015 | 1 | Avista and IDEQ will work with the NRCS and the BSWCD regarding cost-share opportunities with the current landowners as well as to further identify a site specific characterization and an analysis of the erosion control measure including a combination of hard armor and vegetation plantings. |
| | 2 | Obtain design drawings and specifications. |
| | 3 | Prepare and obtain permit documents. |
| 2016 | 4 | Contractor implements the selected erosion control measures. |

There are several additional sites classified by IDEQ's St. Joe Riverbank Erosion Potential Inventory as having an "Extreme" eroding riverbank. In the event this particular site does not come to fruition, based upon landowner approval, permit complications, etc., Avista and the cooperating parties will select and implement a different project, preferably at a site with an erosion potential classification of "high" or greater, or with adjacent land practices that may cause erosion.

### 8.2 St. Joe River, Shadowy St. Joe Log Landing Site

The Shadowy St. Joe Log Landing, a demonstration site for future erosion control projects, is located on Avista-owned property in Section 24, T46N R1W, about 11 miles upstream of the city of St. Maries. The project is located within the southeastern corner of the Shadowy St. Joe Site and consists of an approximate 500 foot long timber crib, which was historically used as a log landing (Figure 4). While the gradient of the river at this location is fairly gentle, the depth of the river at the base of the timber crib appears fairly deep. Photos showing this site follow.

**Photographs of the timber crib at the Shadowy St. Joe Log Landing Site.**

While it does not appear the timber crib will erode in the immediate future, it is located adjacent to approximately 6,004 feet of recently stabilized shoreline. If it were to have a catastrophic failure it would most likely deposit a large amount of nutrient rich fine sediment into the St. Joe River. Given one of the goals of the Coeur d'Alene Lake Management Plan is to reduce the current amount of total phosphorus loading into the southern portion of Coeur d'Alene Lake, this site is an excellent opportunity to prevent a potentially large sediment load into the St. Joe River, and ultimately the southern portion of Coeur d'Alene Lake.

This site has a high priority ranking based upon the following factors:

- At the March 17, 2014 annual erosion meeting, Avista and the agency partners discussed utilizing this site as a demonstration site using a bioengineered design instead of the standard NRCS design. If implemented, this project would allow for a side-to-side comparison of two different erosion control measures implemented on the Shadowy St. Joe site. Additionally, the site is immediately adjacent to the recently restored Shadowy St. Joe Wetland Complex located on Avista and IDFG property.
- The project is consistent with existing plans and has significant potential for water quality improvement.
- The project would have multiple partners, namely IDEQ, IDFG, NRCS, and the USFS, which could potentially provide non-Avista funds by means of engineering designs and implementation labor.
- The project is located on an Avista-owned parcel, is situated between public land,and will continue to provide public access.

Avista and the USFS are planning to cost-share this project with the USFS potentially providing design and implementation labor, whereas Avista will provide funding established by Section III.D. of the Idaho WQC for erosion control. Table 5 outlines the anticipated tasks and timeframe to implement erosion control measures at this site.

**Table 5: Anticipated Tasks and Timeframe to Implement Erosion Control at the Shadowy St. Joe Log Landing Site.**

| Year | Task No. | Task Description |
|---|---|---|
| 2016 - 2017 | 1 | Work with agency partners to further identify a site specific characterization and an analysis of the erosion control measure focusing on a bioengineered design. |
| | 2 | Obtain design drawings and specifications. |
| | 3 | Prepare and obtain permit documents. |
| 2018 | 4 | Contractor/Agencies implement the selected erosion control measures. |

## 8.3 Shadowy St. Joe Site On-Going Monitoring

In November and December 2013, approximately 6,004 feet of riverbank stabilization was completed on the Avista and IDFG, Shadowy St. Joe site. This site is located just downstream of the Shadowy St. Joe Log Landing site. Avista, IDEQ, IDFG, and the Idaho Soil and Water Conservation Commission will continue to monitor the vegetation success at the Shadowy St. Joe site, by means of annual or biannual comparisons at established photo-monitoring locations. IDEQ will also monitor the treated bank, when they complete their fall and summer St. Joe Riverbank Erosion Potential Inventory.

As part of the riverbank stabilization and wetland restoration work (conducted under Sections III and IV of the Idaho WQC, respectively), Avista and IDFG may plant additional upland vegetation, above the Ordinary High Water Mark (OHWM), to further enhance the riparian plant community at this site. IDFG will coordinate the upland vegetation planting with both the riverbank stabilization and wetland restoration projects.

## 8.4 Education and Awareness

Avista will participate in education and awareness programs which are led and coordinated by Agencies with regard to determining the best method(s) to increase public awareness of how to reduce bank erosion with minimal impact to downstream properties and maintain or improve fish habitat. This may include vegetation management combined with other appropriate methods. The targeted audience would consist of waterfront property owners, realtors, and other interested persons or groups.

These efforts will be coordinated by IDEQ, within the broader goals of one of the LMP Objectives, to increase public awareness of lake conditions and influences on water quality. Avista will provide financial support with erosion funds established by Section III.D of the ID WQC, to IDEQ as appropriate, for the implementation of the LMP's education and awareness efforts.

To date, Avista, IDEQ and the BSWCD have developed a brochure which described the Shadowy St. Joe River wetland restoration and bank stabilization projects and distributed the brochure at the Benewah County Fair. At IDEQ's discretion, this brochure may also be distributed by IDEQ at the local fairs and workshops in which they attend through the LMP outreach efforts.

Education and awareness efforts may also include holding an agency coordinated tour of the Shadowy St. Joe site to educate local landowners, and interested members of the public, of the erosion control efforts to date, and discuss potential cost-share opportunities with private landowners.

## 8.5 Additional Efforts

It should be noted due to the ongoing development of multiple erosion inventories and analyses currently being conducted in the Coeur d'Alene Basin, Avista and/or the cooperating agencies may become aware of an erosion control site with a high degree of erosion control urgency. As such, additional sites may be identified as new information becomes available, including results from the following studies/sources.

- IDEQ's LMP, St. Joe Riverbank Erosion and Prioritization Survey.
- IDEQ's identification of cost share opportunities with private landowners, USDA Farm Bill Programs, and Avista for project sites along the lower St. Maries River and the St. Joe River from St. Maries upstream to St. Joe City.
- IDEQ's identification of §319 grant cost share opportunities between KSSWCD, NRCS, IDFG, and Avista on project sites owned by IDFG and located along the banks of the Coeur d'Alene river.
- Additional studies which have not been proposed or identified to date.

## 9.0 REFERENCES

Avista and Coeur d'Alene Tribe. 2011. Coeur d'Alene Reservation Lake and Tributary Erosion Control Inventory and Assessment. December 14.

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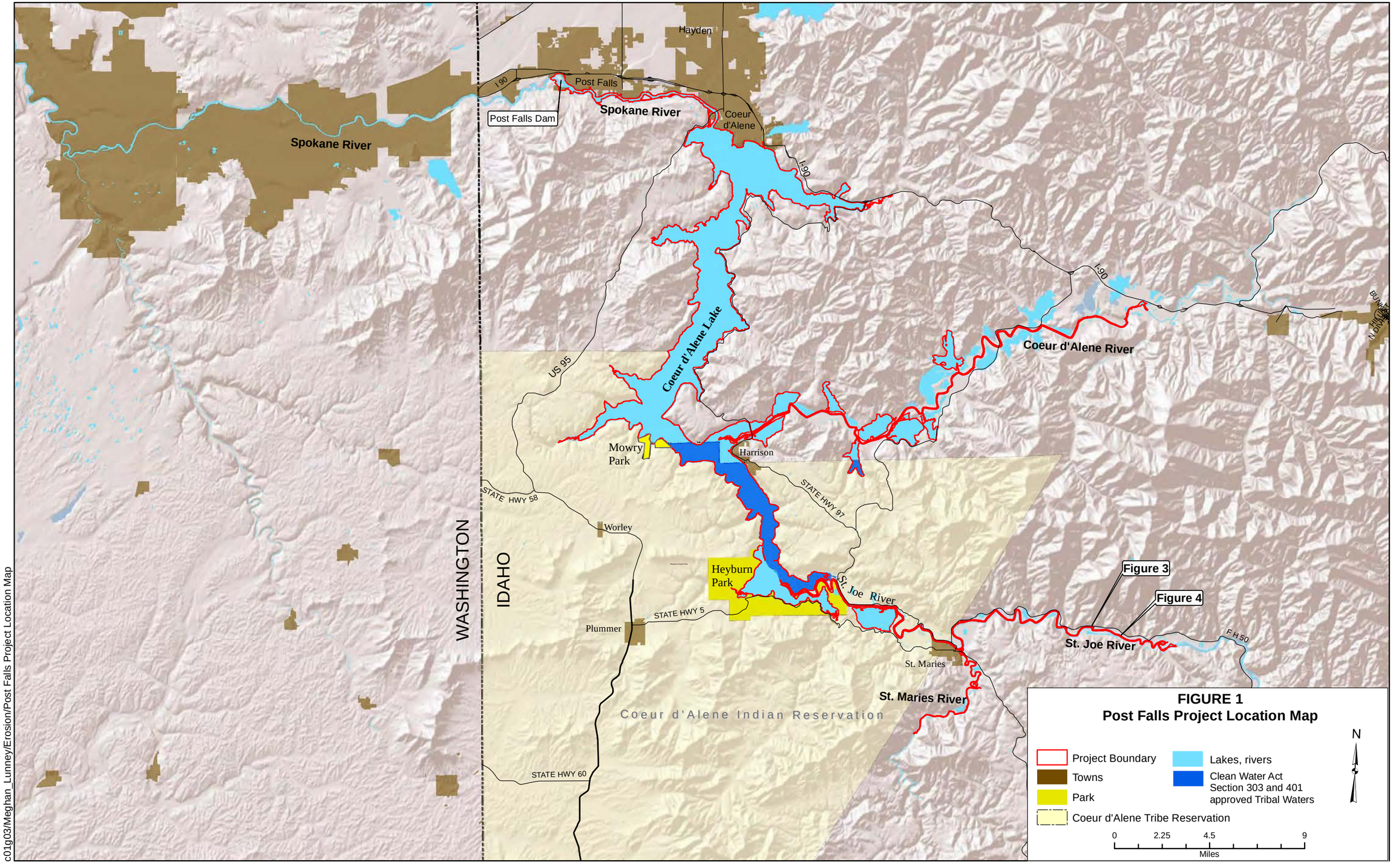
**FIGURES**




c01g03/Meghan_Lunney/Erosion/Post Falls Project Location Map

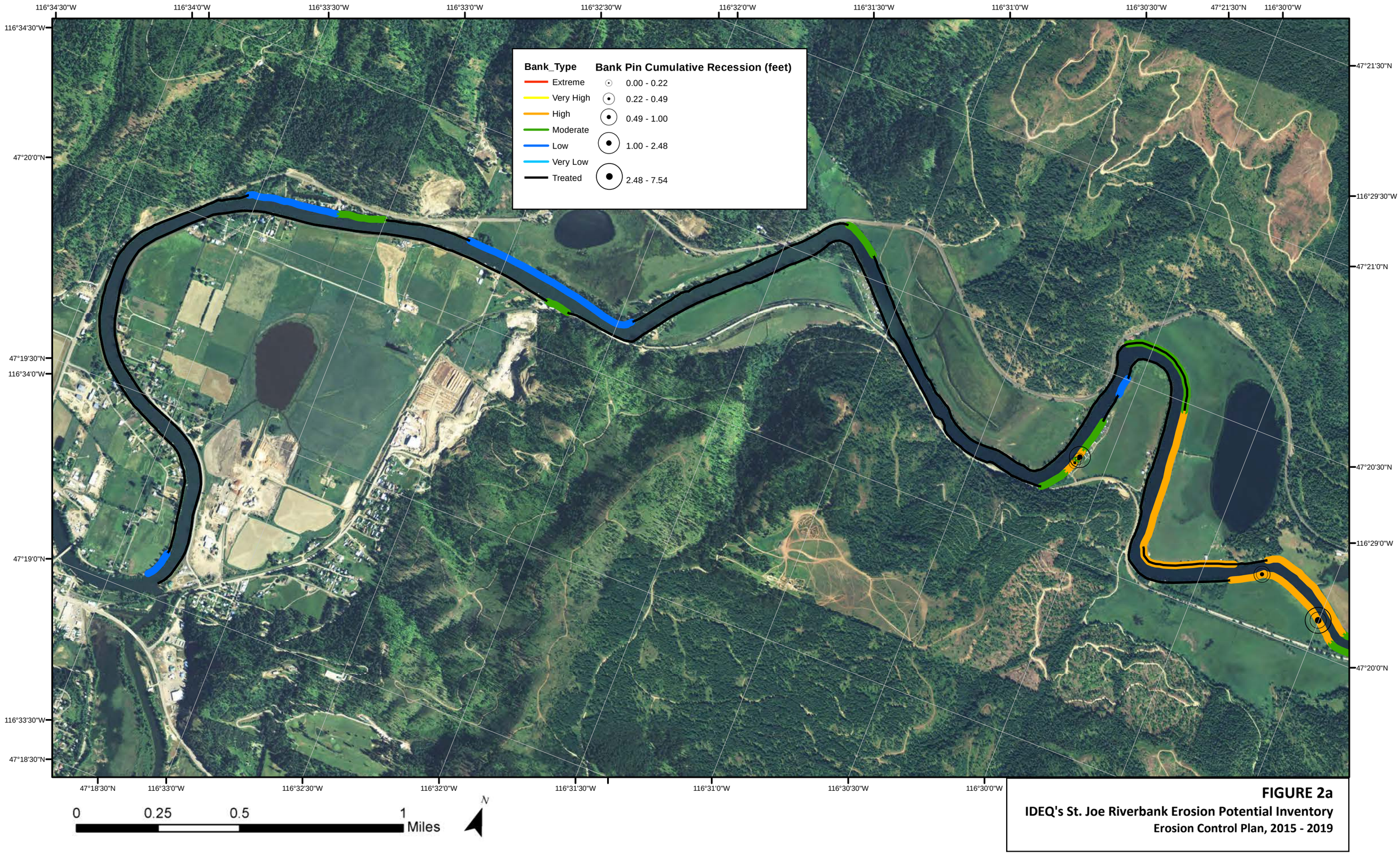



**FIGURE 2a**

**IDEQ's St. Joe Riverbank Erosion Potential Inventory**

**Erosion Control Plan, 2015 - 2019**

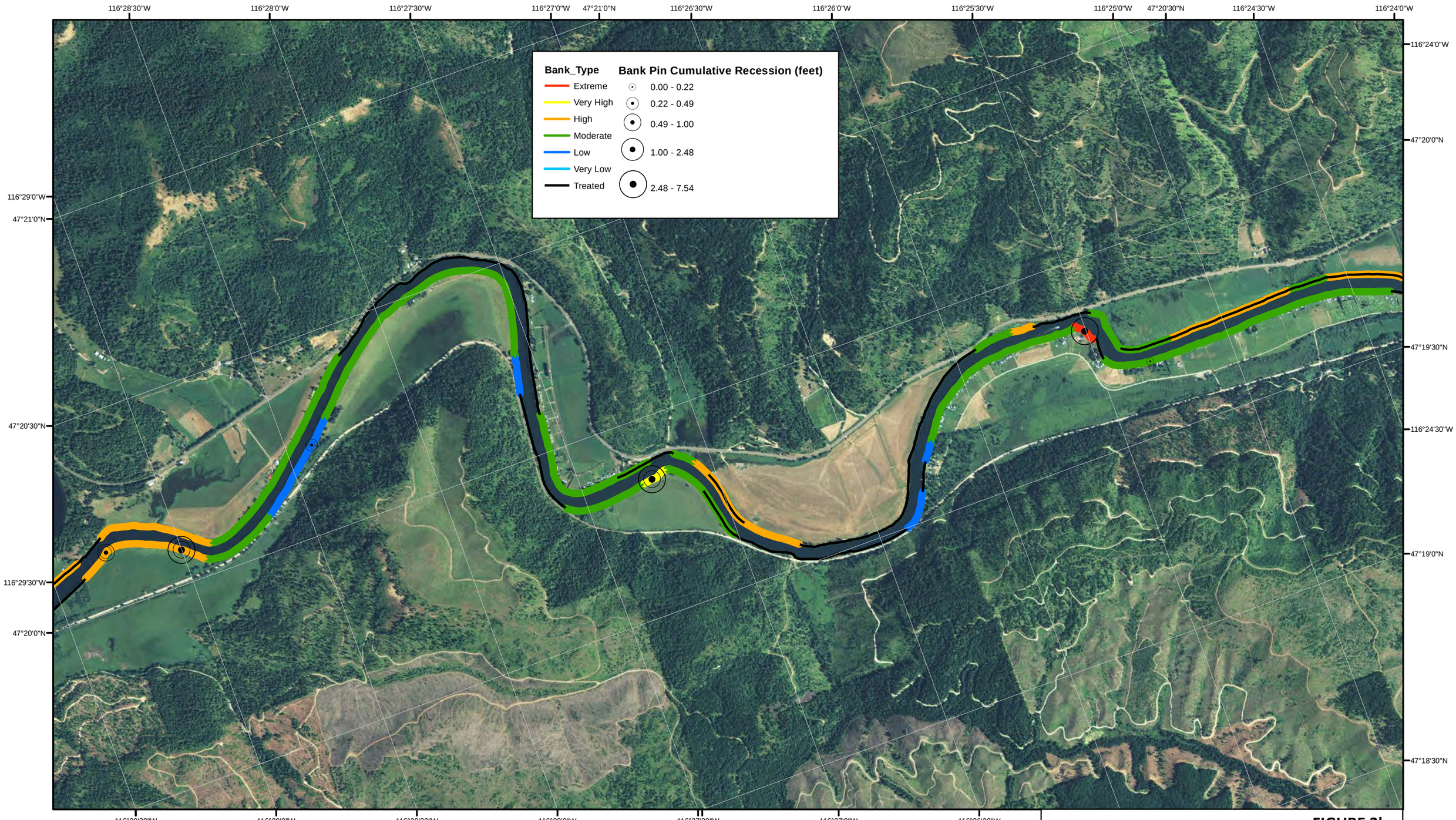



**FIGURE 2b**

**IDEQ's St. Joe Riverbank Erosion Potential Inventory**

**Erosion Control Plan, 2015 - 2019**

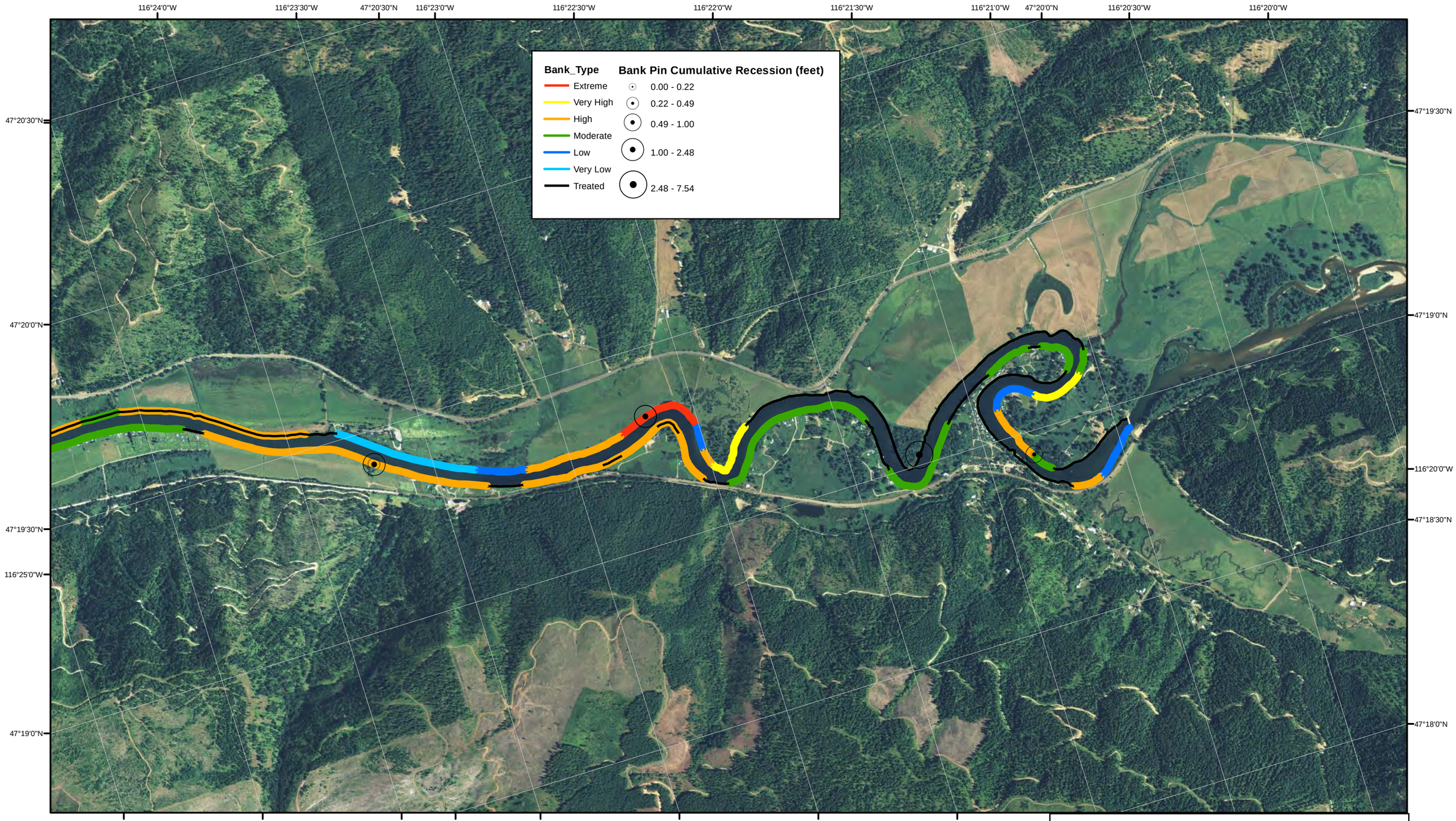
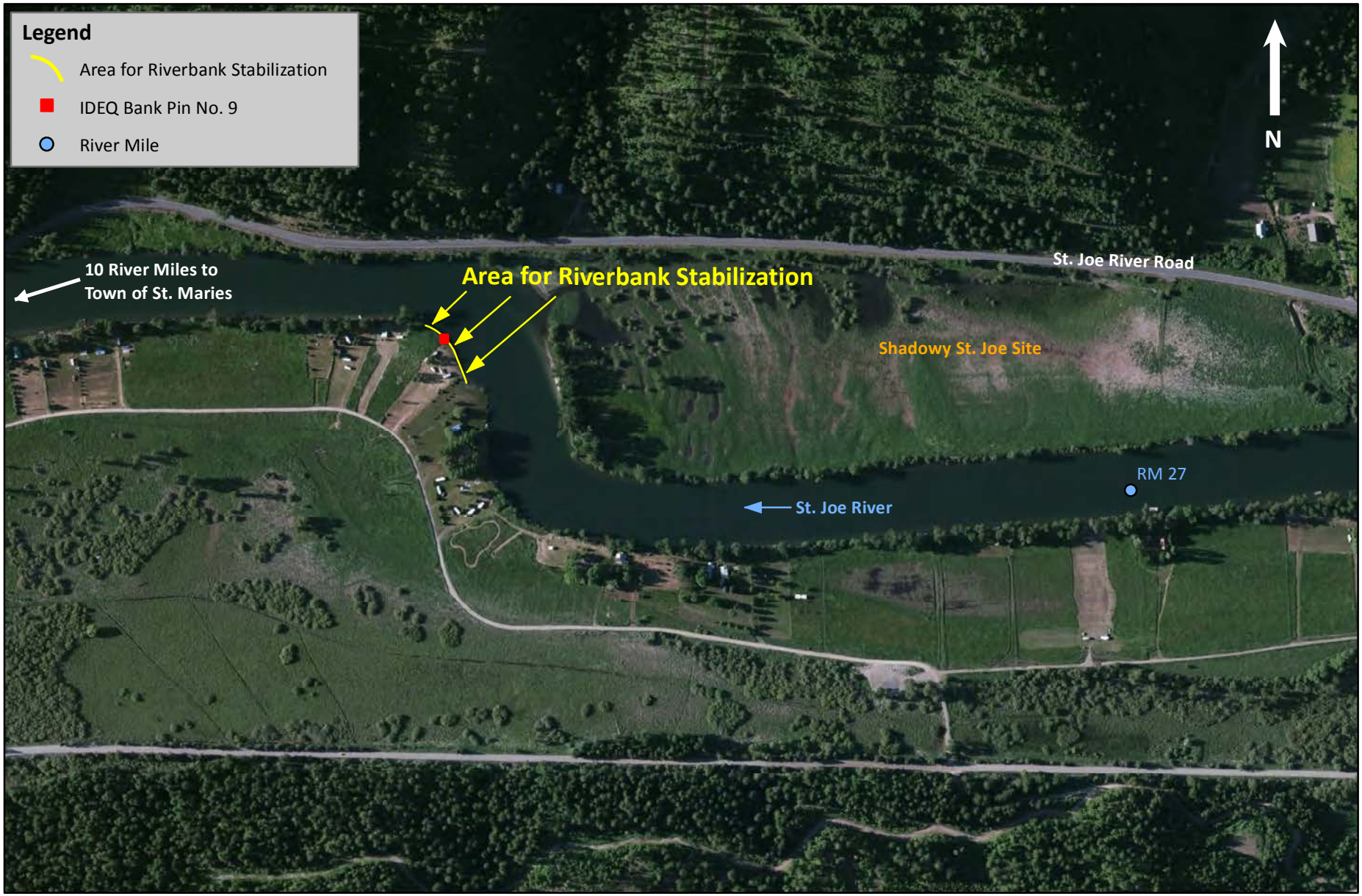



**FIGURE 2c**

**IDEQ's St. Joe Riverbank Erosion Potential Inventory**

**Erosion Control Plan, 2015 - 2019**

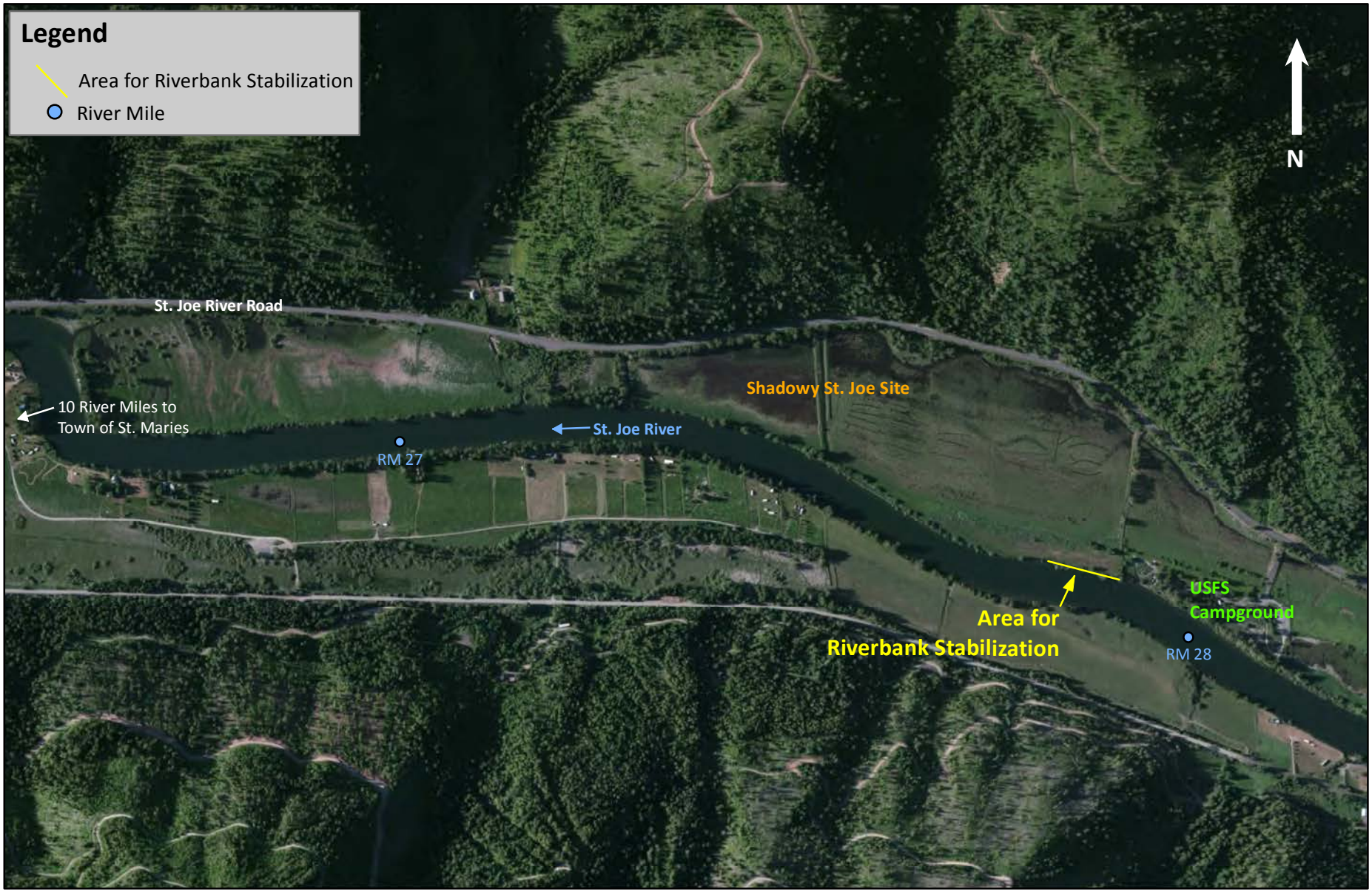



**Approximate Scale:**

0 250 500 1,000 Feet

**1 inch = 500 feet**

**FIGURE 3**
**IDEQ Bank Pin No. 9 Site Location, St. Joe River**
**2015 - 2019 Erosion Control Plan**




**Approximate Scale:**

0 450 900 1,800 Feet

**1 inch = 900 feet**

**FIGURE 4**
**Shadowy St. Joe Log Landing Site Location**
**2015 - 2019 Erosion Control Plan**

**APPENDIX A**

FERC October 13, 2010 Order Modifying and Approving Water Quality Improvement and Erosion Control Plan for the Post Falls Development

133 FERC ¶ 62,043
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Avista Corporation Project No. 2545-128

# ORDER MODIFYING AND APPROVING WATER QUALITY IMPROVEMENT AND EROSION CONTROL PLAN FOR THE POST FALLS DEVELOPMENT – ARTICLE 401

(Issued October 13, 2010)

1. On June 11, 2010, Avista Corporation (licensee) filed its Water Quality Improvement and Erosion Control Plan for the Post Falls Development of the Spokane River Hydroelectric Project (FERC Project No. 2545). The licensee filed its plan pursuant to Article 401 of the project license,[1] and condition III of Idaho Department of Environmental Quality's (IDEQ) 401 water quality certificate (WQC) issued for the project.[2] The Spokane River Hydroelectric Project is located on the Spokane River in Spokane, Lincoln, and Stevens Counties, Washington, and in Kootenai and Benewah Counties, Idaho.

## LICENSE REQUIREMENTS

2. The project license and WQC, issued by the IDEQ, require the licensee to develop a Water Quality Improvement and Erosion Control Plan. The plan shall identify and prioritize actions to protect and improve water quality associated with the Post Falls Development. The plan shall include site-specific erosion control actions that could be implemented to reduce sedimentation, reduce nutrient loading, or improve water quality and protect beneficial uses.

3. The plan shall identify and describe measures to be implemented during the first five years following license issuance. Every five years after the new license becomes effective, and continuing for the term of the license, the licensee shall update and revise the plan to describe those measures to be implemented within the following five years.

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[1] *See* Order Issuing New License and Approving Annual Charges for Use of Reservation Lands 127 FERC ¶ 61,265 (issued June 18, 2009).

[2] Issued on June 5, 2008, and attached as Appendix A to the project license.

The five year plans shall be submitted to IDEQ for approval. The licensee shall consult annually with IDEQ regarding those measures to be carried out within the year.

4. Every five years, the licensee shall prepare and submit to IDEQ a summary report documenting implementation of the measures described in the plan. The report shall be submitted to IDEQ, within six months of the end of each reporting period. The report shall summarize: the activities conducted under the plan during the preceding five years and the results achieved; the overall results achieved to date; and the general nature of the activities that will be implemented during the next five year period.

5. In addition to preparing the Water Quality Improvement and Erosion Control Plan in consultation with IDEQ, Article 401 requires the licensee to prepare the plan in consultation with Idaho Department of Fish and Game (IDFG) and the U.S. Fish and Wildlife Service (FWS). The licensee shall file the plan, for Commission approval, within one year of license issuance. The filing should include documentation of consultation with the IDEQ, IDFG, and FWS. If the licensee does not adopt an agency recommendation, the filing should include the licensee's reasons, based on project-specific information.

LICENSEE'S PLAN

6. The licensee's plan includes a description of the criteria that will be used to prioritize potential erosion control projects to be implemented under the plan. In addition, the plan identifies past, current, and future erosion control studies, which will be used to identify and select erosion control projects to be implemented. The licensee also describes the process and identifies parties to collaborate with during the implementation of the plan.

7. The plan describes a general approach to site characterization, which will be performed at sites selected for erosion control projects. In addition, the licensee lists many standard methods, which will be used to guide the design of the erosion control measures to be implemented at the chosen sites. Many of the potential erosion control methods are from the Natural Resources Conservation Service (NRCS) and include: rock weirs; bioengineering; dumped rock riprap; stream barbs; and incorporation of large wood into engineered structures. The licensee states that the NRCS has completed a large amount of erosion control projects along the St. Joe and Coeur d'Alene Rivers and that the NRCS's method of rock wedge with live stake plantings will most likely be utilized as the standard approach for erosion control projects under the plan.

8. The proposed plan includes a description of the activities which will be carried out during each of the first five years (2009-2014). Generally, the following activities will continue throughout the five year period on an ongoing basis: identification and prioritization of erosion control project sites; continuation of erosion control surveys and studies; and implementation of specific erosion control projects.

9. Generally, the first two years of the plan would include continuing surveys and studies to identify sites. In the third year the licensee, in cooperation with resource agencies, would implement erosion control measures at the Shadowy St. Joe project. The Shadowy St. Joe is a wetland restoration project on the St. Joe River which has been identified by the licensee and the resource agencies as a very high priority site for erosion control activities. In the fourth and fifth years, the licensee and collaborating parties would continue to identify, prioritize, and implement erosion control projects. Also, in the fifth year the licensee would revise the plan to include those measures to be implemented in the next five year cycle (2014-2019).

10. The licensee's plan includes preparing a summary report every five years, as required by the project license. The licensee states that the reports will be submitted to IDEQ and the Commission by December 1, 2014 (six months after the end of the first five year cycle). In addition, the licensee proposes to update the plan every five years as required by the project license. The next plan would be submitted to IDEQ by June 1, 2014, for review and approval and then the final plan would be filed for Commission approval. The licensee states that it will consult annually with IDEQ regarding implementation of the plan.

COMMENTS AND CONSULTATION

11. The licensee's plan includes documentation of consultation with IDEQ, IDFG, and FWS. One of IDEQ's comments regarding the plan is that it does not support including projects from the Wetland and Riparian Protection and Habitat Enhancement Plan in the Water Quality Improvement and Erosion Control Plan. Although IDEQ supports the inclusion of the Shadowy St. Joe project, it feels that there are sufficient other erosion control projects such that the licensee does not need to use any other projects from the Wetland and Riparian Protection Plan. The licensee responds by stating that it agrees that there will most likely be no shortage of erosion control projects available, but states that sites in the Wetland and Riparian Protection Plan (along with all identified sites) will be evaluated and prioritized as potential erosion control projects.

12. In addition, IDEQ expressed concerns regarding the roles of IDEQ, the licensee, and all the different agencies and entities that are currently involved in erosion control and stream bank stabilization on the project river systems. The licensee addressed IDEQ's concern in section 5.2 of the plan which lists many of the entities and includes the licensee's commitment to work with those entities in the implementation of the plan.

13. In its comments on the plan, FWS states that it agrees with the licensee's use of NRCS's rock wedge and live plantings method for erosion control projects under the plan. The FWS also states that it discourages the use of large woody debris and large riprap as erosion control measures because they may provide habitat and cover for non-native piscivorous fish that prey on native salmonids. The licensee responds by stating

that it "will incorporate the FWS's opposition into all erosion control work completed under the plan."

DISCUSSION

14. The licensee's response to the FWS's concern is vague and does not clarify whether large woody debris and large riprap may be used as erosion control measures under the plan. The licensee does not identify under what circumstances, if any, it may consider the use of these materials, nor does it commit to avoiding their use. However, the plan does state that rock wedge and live plantings would likely be the standard erosion control method used under the plan. In order to address the FWS's concern, if the licensee (in consultation with appropriate entities) identifies large woody debris or large riprap as the preferred erosion control method at any site under the plan, the licensee should consult with the FWS prior to implementation of those methods. The licensee should include documentation of the consultation in the five year reports.

15. The IDEQ raised concerns regarding the inclusion of the same sites in both the erosion control and wetland protection plans. The IDEQ also raised concerns regarding the coordination of erosion control efforts between the licensee, IDEQ, and the many other agencies that are also involved in erosion control efforts in the project area.

16. In order to ensure that IDEQ, IDFG, FWS, and other relevant entities are included in ongoing discussions and decisions regarding site selection and implementation of the plan, Commission staff considered requiring the licensee to submit annual implementation reports which would document ongoing consultation and implementation of the plan. However, Commission staff also does not want to burden the implementation process with additional reporting requirements if they are not necessary. In its plan, the licensee makes a commitment to consult and work collaboratively with numerous agencies and entities, including IDEQ, IDFG and FWS, during the implementation of the plan. In addition, the five year summary reports and new five year plans should include documentation of consultation and will provide the resource agencies the opportunity to comment and make suggestions to improve the consultation process if it is needed.

17. The licensee proposes to submit new five year plans to IDEQ by June 1 (every five years starting in 2014) for review and approval, and then file the plans for Commission approval. In addition, the licensee proposes to submit five year reports to IDEQ and the Commission by December 1 (every five years starting in 2014). The licensee's proposal does not include submitting the five year reports and plans to IDFG or FWS. In addition, under the proposed schedule, the resource agencies and the Commission would not have reviewed the five year report when reviewing or acting on the new five year plan. In order to allow IDFG and FWS the opportunity to review and comment on the five year summary reports and five year plans, the licensee should submit five year summary reports and plans to these agencies as well as IDEQ. In addition, in order to take into account the history of plan implementation during the

previous five years, it would be useful for the resource agencies and the Commission to review the five year report prior to, or during, their review of the next five year plan.

18. Because implementation of the plan will occur on a continuous basis over the five year period, and the licensee will be consulting regularly with the resource agencies and other appropriate entities, the licensee should be able to compile the five year reports and submit them to the resource agencies at the end of the five year period (by June 1). At the same time, the licensee should also submit the new five year plan for IDEQ approval and for IDFG and FWS review and comment. By email communication with Commission staff, the licensee and IDEQ agree that a simultaneous filing of the five year reports and new five year plans (by June 1 every five years) would better facilitate the planning and review process.

19. The agencies should be allowed a minimum of 30 days to review and comment prior to the licensee filing the final reports and plans with the Commission by August 1. The final reports and plans should include copies of any comments received from the agencies and the licensee's response to those comments. If the licensee does not adopt an agency recommendation, the filing should include the licensee's reasons, based on project specific information. In addition, the Commission should reserve the right to modify the Water Quality Improvement and Erosion Control Plan in order to meet the objectives of the plan and ensure compliance with license requirements.

20. The licensee's Water Quality Improvement and Erosion Control Plan, as modified, meets the requirements of Article 401 and Condition III of IDEQ's water quality certificate for the project, and should be approved.

The Director orders:

(A) Avista Corporation's (licensee) Water Quality Improvement and Erosion Control Plan for the Post Falls Development, filed June 11, 2010, under Article 401 of the license and Condition III of Idaho's water quality certificate for the Spokane River Hydroelectric Project (FERC No. 2545), as modified by paragraphs (B) through (D), is approved.

(B) If the licensee (in consultation with appropriate entities) identifies large woody debris or large riprap as the preferred erosion control method at any site under the plan, the licensee shall consult with the U.S. Fish and Wildlife Service prior to the implementation of those methods. The licensee shall include documentation of the consultation with the resource agencies on the use of large woody debris or large riprap in the five year reports.

(C) The licensee shall submit five year reports to the Idaho Department of Environmental Quality (IDEQ), Idaho Department of Fish and Game (IDFG), and U.S. Fish and Wildlife Service (FWS) by June 1 starting in 2014 and then every five years

thereafter. At the same time, the licensee shall also submit the new five year plan to IDEQ for approval and to IDFG and FWS for review and comment prior to filing the five year plans for Commission approval. The agencies shall be allowed a minimum of 30 days to review the final reports and plans. The final reports and plans shall be filed with the Commission by August 1 starting in 2014 and every five years thereafter. The final reports and plans shall include copies of any comments received from the agencies and the licensee's response to those comments. If the licensee does not adopt an agency recommendation, the filing shall include the licensee's reasons, based on project specific information.

(D) The Commission reserves the right to modify the Water Quality Improvement and Erosion Control Plan in order to meet the objectives of the plan and ensure compliance with license requirements.

(E) The licensee shall file any document required by this order with the Secretary of the Commission. Filings may be submitted electronically via the Internet, see 18 CFR 385.2001 (a)(1)(iii) and the instructions on the Commission's web site under the "e-filing" link. The Commission strongly encourages electronic filings. In lieu of electronic filing, an original and eight copies of all documents may be mailed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, Mail Code: DHAC, PJ-12.3, 888 First Street, N.E., Washington, D.C. 20426.

(F) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 CFR § 385.713.

Steve Hocking
Chief, Biological Resources Branch
Division of Hydropower Administration
and Compliance

**APPENDIX B**

Idaho WQC Sections III and VIII

B. Avista shall make available $50,000 annually for the term of the New License to implement the water quality monitoring described in Section II.A. of this certification. The $50,000 shall be made available on or before July 1 of the first year of the New License, and on or before July 1 every year thereafter for the term of the New License. The funding provided by Avista shall be used to pay for work performed IDEQ or any agreed-upon contractor to the state of Idaho, for the planning, implementing, or reporting components of this condition. Any funds not expended within one (1) year shall carry over and can be used in following years consistent with Section VIII.A. of the certification. Any funds carried over shall be in addition to the annual $50,000 provided by Avista. The fact that funds have not been expended in one (1) year are carried over and does not diminish Avista's responsibility for providing $50,000 annually for the life of the New License. Provided, however, funds which are carried over and not expended within five (5) years will no longer be available in accordance with section VIII.A. of the certification. The $50,000 annual payment shall be adjusted in accordance with Section VIII.B. of this certification.

Avista's internal administrative costs to implement this condition shall be part of Avista's overall costs for license implementation and compliance. The funds described in this Section II.B. shall not be used to support Avista's internal administrative costs to implement this condition.

## III. WATER QUALITY IMPROVEMENT AND EROSION CONTROL

A. Avista shall develop and implement a Water Quality Improvement and Erosion Control Plan ("Plan"). The Plan shall include the following components:

1. **Water Quality Improvement and Erosion Control Plan**. Avista shall develop a Water Quality Improvement and Erosion Control Plan that identifies and prioritizes actions to protect and improve water quality associated with the Post Falls Project and protect beneficial uses. Avista shall include in the Water Quality Improvement and Erosion Control Plan site-specific erosion control actions. Consultation with stakeholders through the alternative licensing process ("ALP") has provided guidance regarding potential locations and types of erosion control actions that may be included in the Plan. (Stoker, 2004). The current Coeur d'Alene Lake Management Plan, or any revisions to the Lake Management Plan, may also provide Avista with a set of potential actions that could be implemented to reduce sedimentation, reduce nutrient loading, or improve water quality and protect beneficial uses.

2. **Five (5) Year Plan**: The Plan shall describe prioritized measures to be implemented in the first five-year period following the issuance of the New License.

B. Within the first year after the New License becomes effective, Avista shall develop and submit to IDEQ for approval the Water Quality Improvement and Erosion Control Plan. Upon approval by IDEQ, Avista shall implement the Plan. Every five (5) years after the New License becomes effective and continuing for the term of the license, Avista shall update and revise the Plan to describe those measures to be implemented within the following five (5) years. The updated Plan shall be submitted to IDEQ for approval, and upon approval by IDEQ, shall be implemented by Avista. Avista shall consult with IDEQ annually regarding those measures to be carried out within the year. Implementation of the Plan and expenditure of funds for specific projects will be governed by Section VIII.A. of this certification.

C. Avista will prepare and submit to IDEQ a summary report every five (5) years documenting implementation of the measures described in the Water Quality Improvement and Erosion Control Plan. The report shall be submitted to IDEQ, within six (6) months of the end of each reporting period. The report will summarize the activities conducted under this condition during the preceding five (5) years and the results achieved, the overall results achieved to date (subsequent to first 5-year period), and the general nature of the activities that will be implemented during the next 5-year period.

D. By July 1st after the effective date of the New License, and every July 1st thereafter for the term of the New License, Avista shall make available $75,000 to implement this condition. Any funds not expended within one (1) year shall carry over and can be used in the following year consistent with Section VIII.A. of this certification. Any funds carried over shall be in addition to the annual $75,000 provided by Avista. The fact that funds have not been expended in one (1) year and are carried over does not diminish Avista's responsibility for providing $75,000 annually for the term of the New License. Provided, however, that funds which are carried over and not expended within five (5) years shall no longer be available in accordance with Section VIII.A. of the certification. The funding provided by Avista shall be used to pay for work by Avista, IDEQ or their contractors for planning, implementing, or reporting components of this measure. The $75,000 annual payment shall be adjusted in accordance with section VIII.B. of this certification.

Avista's internal administrative costs to implement this measure shall be part of Avista's internal costs for license implementation and compliance. The funds described in this Section III.B. shall not be used to support Avista's internal administrative costs to implement this condition.

## VII. FISHERY PROTECTION AND ENHANCEMENT

A. Avista shall develop and implement a Fishery Protection and Enhancement Plan in accordance with Exhibit 1 of this certification.

## VIII. FUNDING

A. Except as otherwise provided in this Section VIII., all funds to be provided by Avista described in this certification will be subject to the cost caps set forth in the certification and will remain in Avista's control until individual measures or activities required by this certification are implemented. Avista will fund individual measures and activities as they are implemented, in accordance with the plans required by this certification, and in coordination with IDEQ and, when applicable, IDFG. All funds required by this certification to carry out measures or activities include the costs of permitting such measures and undertaking any necessary studies and monitoring. If funds are made available for measures or activities conducted IDEQ or IDFG, IDEQ or IDFG shall provide an accounting/invoice to Avista quarterly. Within 30 days of receipt, Avista shall reimburse IDEQ or IDFG for the costs set forth in the accounting/invoice, up to the cost caps set forth in this certification. Funds not expended in a given year will remain available during the subsequent five (5) years and will not bear interest or be further escalated pursuant to Section VIII.B. below. Any funds provided by Avista pursuant to this certification or any funds carried over may be used to carry out and fund any measures set forth in Sections II, III, IV and VII of this certification. Funds carried over and not spent within five (5) years will no longer be available to implement the conditions of the certification.

B. Unless otherwise indicated, all costs or payment amounts specified in dollars shall be deemed to be stated as of the year the New License is issued. Annual funding required by this certification will be adjusted according to a formula agreed to by IDEQ, IDFG, and Avista.

C. In the event conditions in the New License require actions on the part of Avista that duplicate or overlap with the requirements of this certification, IDEQ and Avista shall cooperate to avoid duplication of effort and cost. IDEQ and Avista may agree that actions required by FERC in the New License also fulfill, in whole or in part, certain funding and other obligations required under this certification. In the event IDEQ agrees that there is such overlap or duplication, Avista's obligations under this certification will be proportionately reduced and accounted for in the reports and plans required in this certification.

**APPENDIX C**

Agency Comments and Avista Responses

May 30, 2014

Mr. Dan Redline, Regional Administrator
Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

**Subject: Spokane River Hydroelectric Project, FERC Project No. 2545**
**2015 To 2019 Water Quality Improvement and Erosion Control Plan and 2010 To 2014 Erosion Summary Report, as Required by the Spokane River License, Appendix A, Section III**

Dear Mr. Redline:

On June 18, 2009 the Federal Energy Regulatory Commission (FERC) issued a new license for the Spokane River Hydroelectric Project, FERC Project No. 2545 (License). Ordering Paragraph D of the License incorporated the Idaho Department of Environmental Quality's (IDEQ) Section 401 Water Quality Certification (Idaho WQC) for the Post Falls Hydroelectric Development. The conditions of the Idaho WQC can be found in Appendix A of the License.

Section III of the Idaho WQC required Avista to complete the *2010 To 2014 Water Quality Improvement and Erosion Control Plan* (Plan) which was modified and approved by FERC in its October 13, 2010 Order (Order), Modifying and Approving Water Quality Improvement and Erosion Control Plan for the Post Falls Development. The Order also required Avista to prepare the *2010 To 2014 Erosion Summary Report* (Report) which summarizes the work accomplished under the Plan and to provide copies of it to IDEQ, Idaho Department of Fish and Game (IDFG) and U.S. Fish and Wildlife Service (FWS). As such, we have enclosed a copy of the Report for your reference.

Additionally and in accordance with FERC's Order, Avista is required to submit a new five year plan to IDEQ, IDFG and FWS for review and comment by June 1, 2014 and following IDEQ's approval of the new five year plan, Avista will file it with FERC by August 1, 2014.

Avista has enclosed the *2015 To 2019 Water Quality Improvement and Erosion Control Plan* for your review and comment. Please provide your comments and recommendations on the Plan, if you have any, by **June 30, 2014**. Following consultation, we are required to submit an IDEQ approved plan to FERC for final approval by August 1, 2014.

If you have any questions regarding the Report or Plan, please feel free to call me at (509) 495-4643.

Sincerely,

Meghan Lunney
Aquatic Resource Specialist

Enclosures (2)

c: Jamie Brunner, IDEQ
Jim Teare, IDFG
Miles Benker, IDFG
Bryon Holt, FWS

1411 East Mission Avenue
PO Box 3727 MSC-25
Spokane, Washington 99220-3727

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www.avistautilities.com

## Lunney, Meghan

**From:** Jamie.Brunner@deq.idaho.gov
**Sent:** Monday, June 30, 2014 3:42 PM
**To:** Lunney, Meghan
**Cc:** Thomas.Herron@deq.idaho.gov; Daniel.Redline@deq.idaho.gov
**Subject:** IDEQ Comments on 2015-2019
**Attachments:** DRAFT_2015-2019 WQ Improvement Erosion Control Plan_5-30-14 DEQ Comments.pdf

**Follow Up Flag:** Follow up
**Flag Status:** Flagged

Good afternoon,
Attached is a copy of the draft erosion control plan with track changes reflecting comments on behalf of IDEQ – Coeur d'Alene Regional Office. I am happy to discuss if you have questions or need clarification on any of these comments.
Regards,
Jamie Brunner
Coeur d'Alene Lake Management Plan Coordinator
Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, Idaho 83814
Direct Dial (208) 666-4623
Fax (208) 769-1404

# AVISTA CORPORATION

## 2015 TO 2019
## WATER QUALITY IMPROVEMENT AND EROSION CONTROL PLAN

IDAHO 401 WATER QUALITY CERTIFICATION,

APPENDIX A, SECTION III

Post Falls Hydroelectric Development
Spokane River Hydroelectric Project
FERC Project No. 2545

Prepared By:
Avista Corporation

*May 30, 2014*

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**TABLES**

**FIGURES**



**APPENDICES**

# 1.0 INTRODUCTION

## 1.1 Background

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a new License for Avista Corporation's Spokane River Project, FERC Project No. 2545-091 for a 50-year license term. The License became effective on June 1, 2009 and includes operation of the Post Falls Hydroelectric Development (HED) in Idaho. Ordering Paragraph D of the License incorporated the Idaho Department of Environmental Quality's (IDEQ) Section 401 Water Quality Certification (Idaho WQC) for the Post Falls Hydroelectric Development. The conditions of the Idaho WQC can be found in Appendix A of the License.

Section III of the Idaho WQC required Avista to complete the initial, five year, *2010 To 2014 Water Quality Improvement and Erosion Control Plan*, (2010 - 2014 Plan) which identified and prioritized actions to protect and improve water quality associated with the Post HED. Upon FERC's October 13, 2010 Order (Order), Modifying and Approving Water Quality Improvement and Erosion Control Plan for the Post Falls Development (Appendix A), Avista began implementing the 2010 - 2014 Plan.

In accordance with the Order, Avista is required to submit a new five year plan to IDEQ, Idaho Department of Fish and Game (IDFG) and U.S. Fish and Wildlife Service (FWS) for review and comment by June 1. Following IDEQ's approval, the new five year plan is then to be filed with FERC by August 1, starting 2014, and then every five years thereafter. This *2015 To 2019 Water Quality Improvement and Erosion Control Plan* (Plan), includes the activities to be conducted during the next five-year timeframe, 2015 to 2019, and is based upon consultation and collaboration with IDEQ, IDFG, and FWS.

## 1.2 Post Falls HED

The Post Falls HED includes three dams located on the Spokane River approximately nine miles downstream from the outlet of Coeur d'Alene Lake. Coeur d'Alene Lake is a natural lake created by a natural channel restriction, with the outlet serving as the headwaters of the Spokane River. The Post Falls HED's Project boundary encompasses the Spokane River upstream of the Post Falls Dams, Coeur d'Alene Lake, and the lower 30 miles of the Coeur d'Alene and St. Joe Rivers and 9 miles of the lower St. Maries River (Figure 1) at the normal full pool water elevation of 2,128 feet.

The Post Falls HED influences water levels in Coeur d'Alene Lake and the lower reaches of lake's tributaries from early summer through late fall. The summer lake level is held at the 2,128 foot elevation. During the winter and through most of the spring run-off season the water elevations are controlled by Coeur d'Alene Lake's natural channel restriction, not by the HED.

## 2.0 FUNDING

In accordance with Section III.D. of the Idaho WQC, Avista shall make $75,000 available on an annual basis to implement the approved Plan. Implementation of this Plan and expenditure of funds for specific projects are governed by Section VIII.A. of the Idaho WQC. Sections III and VIII of the Idaho WQC are included as Appendix B.

## 3.0 LIABILITY

The Bunker Hill Mining and Metallurgical Complex Superfund (Facility) includes mining-contaminated areas with lead being the primary contaminant of concern and additional contaminates of concern including arsenic, cadmium, and zinc. Sediments are the primary contaminated material in the Lower Basin, and as a result, through the implementation of Section III of the Idaho WQC, it is likely Avista will become involved in efforts to reduce erosion along the lower Coeur d'Alene River streambanks, especially in areas with elevated lead concentrations. At these sites, Avista will limit its activities as necessary to avoid incurring liability for the contamination. For example, Avista will not manage, direct, or conduct any operations related to hazardous substances. Avista will work out the details of its involvement in each project on a site-by-site basis and in coordination with the Basin Environmental Improvement Project Commission (BEIPC), including its technical arm, the Technical Leadership Group and other appropriate committees with regard to erosion control efforts in the Coeur d'Alene River. Although Avista may limit its activities to avoid liability, it will meet its obligations under Section III of the Idaho WQC.

## 4.0 EROSION CONTROL GOALS

Erosion control activities will be implemented to protect and improve water quality associated with the Post Falls HED with the goal of reducing sedimentation and nutrient loading in order to improve and protect water quality and beneficial uses. Site-specific erosion control actions are to be identified and prioritized in consultation with IDEQ, IDFG, and FWS.

**Comment [JB1]:** Erosion control is a component of other efforts (LMP, NRDA, CERCLA, TMDL) and ties in to many other beneficial uses. Consider weaving in related efforts.

**Comment [JB2]:** Where and when possible, consider incorporating vegetation, habitat, natural channel design, and floodplain function into projects.

## 5.0 EROSION CONTROL STUDIES

The following studies are either on-going or have occurred since the approval of the 2010 - 2014 Plan and are associated with erosion control evaluations and/or mitigation measures in the Spokane River upstream of the Post Falls Dams, Coeur d'Alene Lake, and the lower reaches of the Coeur d'Alene, St. Joe, and St. Maries Rivers.

## 5.1 Avista, 4(e) Condition No. 4: Coeur d'Alene Reservation Erosion Inventory and Assessment

Avista and the Tribe conducted the Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control Inventory and Assessment (December 2011) during 2009 and 2010 which included an erosion inventory and assessment of all shoreline erosion occurring on lands within the Coeur d'Alene Indian Reservation (Reservation), including shorelines located along the St. Joe River downstream of the City of St. Maries, along the lower portion of Coeur d'Alene Lake, and the pertinent lateral lake shorelines. The Erosion Inventory and Assessment was completed as a requirement of 4(e) Condition No. 4, (Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control), within Appendix D of the License.

The total length inventoried along the St. Joe River, within the Post Falls Project area and the Reservation was 169,850 linear feet, of which the Inventory and Assessment classified 124,067 linear feet as eroding. Of this, Avista is responsible for 50% of the total linear feet of all erosion sites on the St. Joe River, which totals 63,130 feet.

Following the development of detailed erosion control designs for six initial sites located on the lower St. Joe River levees, the Coeur d'Alene Tribal Council issued a resolution to implement erosion control, or purchase similar lands, elsewhere within the Reservation.

## 5.2 Lake Management Plan, 3-Year Nutrient Source Inventory, St. Joe and St. Maries Rivers

As one of the objectives identified to meet the goal of the Coeur d'Alene Lake Management Plan (March 2009), the Coeur d'Alene Tribe (Tribe) and IDEQ initiated a 3-Year Nutrient Source Inventory Water Quality Sampling Work Plan and Quality Assurance Plan ("Plan") for the St. Joe and St. Maries Rivers in March of 2010. The Plan included a short-term water sampling program at six selected locations within the St. Joe and St. Maries Rivers. The goal of the program was to determine whether sources of suspended sediment concentrations, and associated levels of total phosphorus measured at the mouth of the St. Joe River, may be traced to active riverbank erosion and sloughing occurring along the lower to mid portions of the St. Joe River and possibly sections of the St. Maries River.

The water sampling program was implemented as a coordinated effort between IDEQ and the Tribe; it began in March of 2010, and was completed over a three year timeframe. The nutrient inventory also included a collection and summary of historical and current nutrient data collected in the watershed. Results of the monitoring identified two subwatersheds in the St. Maries drainage that are the highest contributors of nutrients to the system. Tribal and IDEQ staff are looking at existing documents and interviewing stakeholders to identify likely sources so they can prioritize potential future improvement projects. There was also a nutrient increase noted between Santa and the town of St. Maries on the St. Maries River, however the source has not yet been identified.

## 5.3 IDEQ St. Joe Riverbank Erosion Potential Inventory

Starting in 2010, IDEQ conducted a riverbank erosion inventory along approximately 16 miles (32 miles of bank) of the St. Joe River, from the confluence of the St. Maries River to St. Joe City following the Bank Erosion Hazard Index (BEHI) method (IDEQ 2011). Several variables for classifying riverbanks (i.e. bank height, bankfull height, root depth, root density, bank angle, etc.) are measured as part of the inventory to determine riverbank erosion potential and its severity. Riverbank erosion classification types include very low, low, moderate, high, very high, and extreme.

As part of IDEQ's 2010 effort, bank pins were driven horizontally into the riverbank to determine the lateral recession rate (bank erosion) of each bank type. IDEQ revisits the bank pins in the summer, following the spring runoff, and again in the fall, on an annual basis to measure the erosion rates associated with summer water level erosion. During each visit, the length of the pin exposed is measured and the pin is driven back into the bank. Although the lateral recession rate data is not statistically robust, it helps to validate the bank type classification. The primary objective of the inventory is to classify the erosion potential to help direct future bank stabilization efforts.

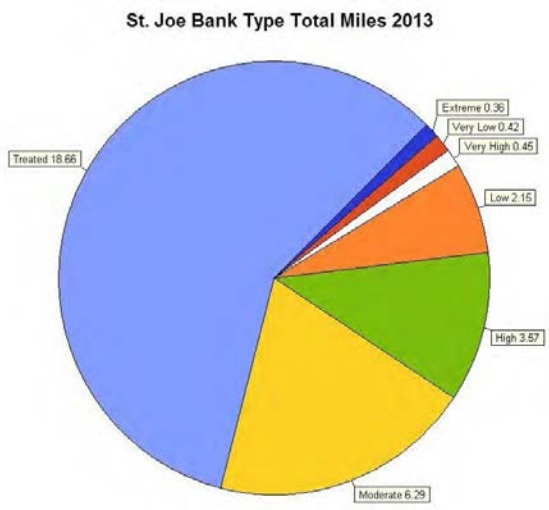
As shown in Table 1 below, and in Figure 2, IDEQ has provided the following results to date which indicate the following:

- Most of the recent bank stabilization effort has occurred on the high erosion classification potential.
- Fifty-eight percent of the riverbank has received a treatment for stabilization.
- Eight percent has been classified as very low or low erosion potential.
- Thirty-three percent has been classified as moderate to extreme erosion potential.

**Comment [JB3]:** Consider nutrient content of erosive bank material in conjunction with erosive condition.

**Table 1: Results of IDEQ's St. Joe Riverbank Erosion Potential Inventory (further illustrated in the pie chart below Table).**

| IDEQ Erosion Potential Classification (current up to 2014) | Riverbank (miles) | Percent of total (whole numbers) |
|---|---|---|
| Treated | 18.66 | 58 |
| Very low | 0.42 | 1 |
| Low | 2.15 | 7 |
| Moderate | 6.29 | 20 |
| High | 3.57 | 11 |
| Very High | 0.45 | 1 |
| Extreme | 0.36 | 1 |




IDEQ will begin assessing the feasibility of conducting a similar bank erosion evaluation along the banks of the St. Maries River. Accessibility will determine the methods used to identify and prioritize potential sites for bank stabilization projects in the future.

## 6.0 PRIORITIZED PROJECTS AND ACTIONS

### 6.1 Selection Priorities and Evaluation Criteria

The prioritization and evaluation criteria, shown in Table 2, was developed in the 2010 - 2014 Plan by IDEQ, IDFG, and Avista (Parties) and will be utilized for all projects and/or activities that will be implemented through this Plan.

**Table 2: Prioritization and Evaluation Criteria for Erosion Control Sites.**

| Low 1 | 2 | 3 | 4 | High 5 | Prioritization and Evaluation Criteria |
|---|---|---|---|---|---|
| | | | | ✓ | Projects that have a high degree of erosion control urgency |
| | | | | ✓ | Projects that are consistent with existing plans and are identified as having significant potential for water quality improvement |
| | | | | ✓ | Projects with multiple partners and/or projects providing significant non-Avista funds (regardless of whether the land is privately or publically owned). |
| | | | ✓ | | Projects that are publically owned and/or where public access is secured |
| | | ✓ | | | Projects with intact cultural artifacts |

**Comment [JB4]:** It may be good to revisit prioritization criteria, now that we've been through a full 5-year cycle.

**Comment [JB5]:** Overall project cost, and availability of funds, when projects exceed $75,000.

**Comment [JB6]:** Filling in gaps in areas where bank stabilization has already taken place and is shown effective.

**Comment [JB7]:** Including nutrients, temperature, and habitat.

**Comment [JB8]:** Incorporate CdA River metals contamination work outside CERCLA.

### 6.2 Collaborative Parties & Project Identification

Avista and IDEQ will coordinate efforts to work with other entities to identify cost share potentials for riverbank stabilization projects. The entities include, but are not limited to, IDFG, the Kootenai Shoshone Soil and Water Conservation District (KSSWCD), the Benewah Soil and Water Conservation District (BSWCD), Natural Resources Conservation Service (NRCS), U.S. Forest Service (USFS), FWS, Idaho Soil and Water Conservation Commission, Benewah County, Shoshone County, Kootenai County, and the Coeur d'Alene Tribe.

**Comment [JB9]:** Include NRDA/Restoration Partnership.

This Plan focuses on erosion sites located on the St. Maries, St. Joe, and the Coeur d'Alene Rivers. The following provides the mechanism for which the erosion sites and potential cost share opportunities will be further identified.

**Comment [JB10]:** Expand riverbank stabilization to include pasture management and other upland activities to stabilize banks/address contributors to erosion.

*Project Identification: St. Maries & St. Joe Rivers*

There are projects in various stages of planning where landowners are seeking to cost share with USDA Farm Bill, or other similar programs, along the lower St. Maries and the St. Joe Rivers (from the town of St. Maries upstream to St. Joe City). IDEQ and others, will consult with staff of the BSWCD and the NRCS Plummer field office to explore three-way cost shares which could leverage funds from a landowner, the Farm Bill, and Avista. In addition, the TMDL Watershed Advisory Group (WAG) for the St. Joe and St. Maries basin may also provide assistance to solicit landowners of eroding riverbank property to participate via the BSWCD.

*Project Identification: Coeur d'Alene River*

Avista will work with IDEQ to facilitate coordination between KSSWCD, NRCS, and IDFG on the approximately 60% of riverbanks owned by IDFG for the lower Coeur d'Alene River. Cost share opportunities could be leveraged with the Clean Water Action Section 319 grants (§319 grant), with 60% of the funds from EPA and 40% from Avista. The KSSWCD could be the sponsor of §319 grant applications on the lower Coeur d'Alene River. Any proposed project on the lower Coeur d'Alene River would involve consultation with EPA staff to ensure that these riverbank stabilization projects would not fall under the purview of current or future Superfund Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedies.

**Comment [JB11]:** Add NRDA/Restoration Partnership.

**Comment [JB12]:** EPA may not have awareness of private landowner efforts. How does EPA coordination take into account individual actions that EPA may not be aware of. When projects are done without federal dollars or involvement, would there have been consultation? Is this a commitment from Avista to coordinate with EPA, a requirement, or otherwise? May just need to clarify.

Potential projects and measures may be identified by Avista, IDEQ and any of the entities previously identified. They will be evaluated through a collaborative process with these entities and then prioritized and selected according to the prioritization and evaluation criteria identified in Table 2. Summaries of previous work activities and other pertinent information will be used to help determine project effectiveness. Potential erosion control information may include, but not be limited to: the project name; size; location; ownership; current and estimated future extent of erosion; cultural resources and vegetation present; soil type and drainage; and effectiveness of

**Comment [JB13]:** Land management enhancements can also reduce erosion; pasture and recreation management, for example, are contributors, in combination with the boat wake-induced notch on riverbanks.

desired erosion control measures. Other relevant information includes the known presence of contaminated sediments, participating partners, planning and management objectives.

**Comment [JB14]:** Permitting approval and readiness should be considered.

It is essential that adequate funding and project oversight to complete any action is available prior to and during implementation.

## 7.0 EROSION CONTROL IMPLEMENTATION STANDARD METHODS/PRACTICES

### 7.1 General Site Approach

Sites selected for projects that have acceptable access and/or cooperative management agreements will be mapped and a basic engineering geology assessment will be conducted to provide site specific characterization for engineering design, permitting, bid, and monitoring documents. However, it should be noted not all sites will need these characterizations as some may already have this type of information documented or it may be deemed unnecessary for the type of work to be conducted. Necessary site characterization, mapping, or survey work will be determined by the project designer/engineer.

**Comment [JB15]:** Soil analysis for total N and P? Use data to validate nutrient reduction related to stabilization practices.

**Comment [JB16]:** Consider evaluating depositional features in the channel to help guide design expectations for individual sites. This may help capture coarse sediment concerns in addition to the focus on fine sediment.

### 7.2 Standard Design Methods

Standard NRCS methods that will be utilized to guide the design of the erosion controls for each project, as appropriate, and may include the following:

- NRCS National Engineering Manual (NEM).
- NRCS National Engineering Handbook (NEH).
  - Part 650, Engineering Field Handbook (Chapters 14, 16, and 18)
  - Part 653, Stream Corridor Restoration Handbook
- NRCS Cultural Resources Handbook.
- NRCS National Environmental Compliance Handbook.

**Comment [JB17]:** Consider blending engineering solutions with natural channel characteristics, including thermal refuge, overhead cover, and rock substrate for multi-level channel characteristics.

The NRCS, teamed with the local conservation districts (KSSWCD and BSWCD), have completed 12 years of review, design, and construction of over 14 miles of bank erosion control projects along the St Joe and Coeur d'Alene Rivers. Their standard design typically includes a rock wedge with live stake plantings which provides both hard armor and vegetation to address the combined influence of boat waves, flood erosion, and the altered vegetation line. Their standard design will most likely be utilized as a basis for proposed projects. Additional consideration will be given to incorporation of bioengineering techniques and other hard engineering practices in addition to riprap armoring that may alleviate system-wide impacts of bank stabilization projects. Consideration will be given to potential increases in downstream erosive forces resulting from potential stabilization projects. Additional NRCS guidance's, specific to Idaho that may be utilized to guide the design of stream bank and shoreline erosion controls include:

- NRCS Idaho Field Office Technical Guide (eFOTG), Section IV, Conservation Practice Standard – Streambank and Shoreline Protection, 580 and Idaho Construction Specifications.
- NRCS Idaho Operation and Maintenance Worksheet, Streambank and Shoreline Protection.
- NRCS Idaho Documentation Check List, Streambank and Shoreline Protection.
- Idaho Plant Materials Technical Note No. 32 Users Guide to Description, Propagation and Establishment of Native Shrubs and Trees for Riparian Areas.
- Idaho Plant Materials Technical Note No. 38 Users Guide to Description, Propagation and Establishment of Wetland Plant Species and Grasses for Riparian Areas.
- NRCS Idaho, The Practical Streambank Bioengineering Guide.
- NRCS-Idaho, Engineering Technical Note 13, "Design of Rock Weirs".
- NRCS-Idaho, Engineering Technical Note 6, "Design of Dumped Rock Riprap Stream Channel Stabilization".
- NRCS-Idaho, Engineering Technical Note 12, "Design of Stream Barbs".
- NRCS-Idaho, Engineering Technical Note 15, "Incorporation of Large Wood into Engineering Structures".

Design teams, consisting of various partners listed previously, may be utilized in development of alternative approaches. Typically the NRCS standard design for the St. Joe and Coeur d'Alene Rivers does not incorporate large woody debris or large riprap. As such, Avista does not anticipate utilizing these materials as erosion control measures. However, if these materials, or other alternative methods, are determined to be the preferred erosion control method on a specific site, Avista shall consult with the FWS prior to the implementation of those methods. Documentation of the consultation with the appropriate resource agencies on the use of large woody debris or large riprap will be included in the subsequent five year summary report.

## 8.0 SITE SPECIFIC EROSION CONTROL ACTIONS

Avista evaluated high priority sites based on existing knowledge of shoreline erosion occurring within the Coeur d'Alene Lake Basin inside the Project boundary, in addition to consultations with IDEQ, IDFG, FWS, USFS, NRCS, KSSWCD, BSWCD and the Idaho Soil and Water Conservation Commission. As such, Avista will focus erosion control mitigation measures for areas located along the Coeur d'Alene, St. Joe and St. Maries Rivers. These mitigation measures will be conducted in cooperation with the other parties' plans to implement erosion control measures over the second five-year work cycle of the License (2015 through 2019). Table 3 outlines the upcoming site specific erosion control actions and is followed by a description of each of these actions identified for implementation during the 2015 through 2019 timeframe.

**Table 3: 2015-2019 Site Specific Erosion Control Actions**

| Activity Year(s) | Site Specific Erosion Control Actions Description |
|---|---|
| 2015 - 2016 | St. Joe River, Bank Pin No. 9 Site |
| 2016 - 2018 | St. Joe River, Shadowy St. Joe Log Landing Site |
| 2015 - 2019 | St. Joe River, Shadowy St. Joe Stabilization Monitoring |
| 2015 - 2019 | Education/Outreach |
| 2015 - 2019 | Additional Sites as appropriate and agreed upon by the consultation agencies[1] |

Notes: (1) = Additional sites may be identified as new information becomes available.

### 8.1 St. Joe River, Bank Pin No. 9 Site

This site is located along the St. Joe River in Section 14, T46N R1W, approximately 10 miles upstream of the city of St. Maries, along the inside of a sharp bend in the river (Figure 3). It has been identified by IDEQ as having an "Extreme" eroding riverbank type. This site is marked with a bank pin (No. 9), and is therefore referred to as St. Joe River, Bank Pin No. 9 Site. Photos showing the erosion at this site follow.

The site consists of approximately five privately owned parcels and would include approximately 350 feet of erosion control using the standard NRCS design as a basis for the proposed project. This standard NRCS design consists of both hard armor and vegetation to address the combined influence of boat waves, flood erosion, and the altered vegetation line and would include installing a rock wedge of graded angular stone from approximately two feet above to two feet below the summer lake level, targeting erosion of the upper riverbank caused by boat and wave action.

While not a publically owned site, the site receives a high prioritization for the following reasons:

- The project has significant potential for water quality improvement.
- This site was classified by IDEQ as having an "Extreme" eroding riverbank type in their annual St. Joe Riverbank Erosion Potential Inventory.
- Potential cost share opportunity with the landowners.

**Comment [JB18]:** Does this report need to identify how much Avista funding could be used for this project on private land?

Avista's cost share portion of the erosion control implementation costs will be funded through the Avista funds established by Section III.D. for erosion control. Table 4 outlines the anticipated tasks, timeframe, and estimated cost to implement an erosion control measure at this site.

Photographs taken from IDEQ's St. Joe Riverbank Erosion Potential Inventory (IDEQ 2011) showing extreme erosion potential, based upon the BEill bank score, at the Bank Pin No.9 Site.

**Table 4: Estimated Tasks, Timeframe and Estimated Cost to Implement Erosion Control at the IDEQ Bank Pin No. 9 Site.**

| Year | Task No. | Task Description | Estimated Cost |
|---|---|---|---|
| 2015 | 1 | Avista and IDEQ will work with the NRCS and the BSWCD regarding cost-share opportunities with the current landowners as well as to further identify a site specific characterization and an analysis of the erosion control measure including a combination of hard armor and vegetation plantings. | $0 |
| | 2 | Obtain design drawings and specifications. | $5,000[1] |
| | 3 | Prepare and obtain permit documents. | $10,000[2] |
| 2016 | 4 | Contractor implements the selected erosion control measures. | $15,000[3] |
| | | **Total Estimated Cost[4]** | **$30,000** |

**Notes:**
(1) = Cost to obtain design drawings and specifications will vary depending upon who completes the design (ex. NRCS/Idaho Soil and Water Conservation Commission vs. private contractor).
(2) = Includes cost to complete a biological assessment and a cultural survey, if required.
(3) = Cost based upon NRCS standard design range of $40 to $42/linear foot of erosion control. This cost will vary dependent upon site-specific rates if work is completed by barge or by land.
(4) = The estimated cost is subject to change dependent upon the planning, permitting, design, and implementation activities. Actual costs may be higher or lower than those estimated.

There are several additional sites classified by IDEQ's St. Joe Riverbank Erosion Potential Inventory as having an "Extreme" eroding riverbank. In the event this particular site does not come to fruition, based upon landowner approval, permit complications, etc., Avista and the cooperating parties will select and implement a different project.

**Comment [JB19]:** At a site with an erosion potential classification of "high" or greater, or with adjacent land practices that contribute to likelihood of erosion.

### 8.2 Shadowy St. Joe Log Landing Site

The Shadowy St. Joe Log Landing is located on Avista-owned property in Section 24, T46N R1W, about 11 miles upstream of the city of St. Maries. The project is located within the southeastern corner of the Shadowy St. Joe Site and consists of an approximate 500 foot long timber crib, which was historically used as a log landing (Figure 4). While the gradient of the river at this location is fairly gentle, the depth of the river at the base of the timber crib appears fairly deep. Photos showing this site follow.

**Photographs of the timber crib at the Shadowy St. Joe Log Landing Site.**

While it does not appear the timber crib will erode in the immediate future, it is located adjacent to approximately 6,004 feet of recently stabilized shoreline. If it were to have a catastrophic failure it would most likely deposit a large amount of nutrient rich fine sediment into the St. Joe River. Given one of the goals of the Coeur d'Alene Lake Management Plan is to reduce the current amount of total phosphorus loading into the southern portion of Coeur d'Alene Lake, this site is an excellent opportunity to prevent a potentially large sediment load into the St. Joe River, and ultimately the southern portion of Coeur d'Alene Lake.

At the March 17, 2014 annual erosion meeting, Avista and the agency partners discussed utilizing this site to develop more of a bioengineered design instead of utilizing the standard NRCS design. If implemented, this project would allow for a side-to-side comparison of two different erosion control measures implemented on the Shadowy St. Joe site. This site has a high priority ranking based upon the following factors:

- The project is consistent with existing plans and has significant potential for water quality improvement.
- The project would have multiple partners, namely IDEQ, IDFG, NRCS, and the USFS, which could potentially provide non-Avista funds by means of engineering designs and implementation labor.
- The project is located on an Avista-owned parcel.

The erosion control implementation costs will be funded through the Avista funds established by Section III.D. for erosion control. Table 5 outlines the anticipated tasks, timeframe, and estimated cost to implement erosion control measures at this site.

**Table 5: Anticipated Tasks, Timeframe and Estimated Cost to Implement Erosion Control at the Shadowy St. Joe Log Landing Site.**

| Year | Task No. | Task Description | Estimated Cost |
|---|---|---|---|
| 2016 - 2017 | 1 | Work with agency partners to further identify a site specific characterization and an analysis of the erosion control measure focusing on a bioengineered design. | $0 |
| | 2 | Obtain design drawings and specifications. | $6,000[1] |
| | 3 | Prepare and obtain permit documents. | $10,000[2] |
| 2018 | 4 | Contractor/Agencies implement the selected erosion control measures. | $150,000[3] |
| | | **Total Estimated Cost[4]** | **$166,000** |

**Notes:**
(1) = Cost to obtain design drawings and specifications. Will vary depending upon who completes the design (ex. USFS vs. private contractor).
(2) = Includes cost to complete a biological assessment and a cultural survey, if required.
(3) = This cost will vary dependent upon site-specific rates and whether the work is completed by a contractor, agencies, volunteers, and/or a combination of all three.
(4) = This estimated cost is subject to change dependent upon the planning, permitting, design, and implementation activities. Actual costs may be higher or lower than those estimated.

**Comment [JB20]:** May need to beef up justification on this, as the bank erosion inventory shows it as "treated."

**Comment [JB21]:** How does this tie in to prioritization criteria (Table 2)?

**Comment [JB22]:** Will these funds be used for the entire cost of the project, or will there be cost-share?

**Comment [JB23]:** How does this fit in with the overall budget? Tie in with prioritization? See comment on Table 2 re: available funding.

### 8.3 Shadowy St. Joe Site On-Going Monitoring

In November and December 2013, approximately 6,004 feet of riverbank stabilization was completed on the Avista and IDFG, Shadowy St. Joe site. This site is located just downstream of the Shadowy St. Joe Log Landing site. Avista, IDEQ, IDFG, and the Idaho Soil and Water Conservation Commission will continue to monitor the vegetation success at the Shadowy St. Joe site, by means of annual or biannual comparisons at established photo-monitoring locations. IDEQ will also monitor the treated bank, when they complete their fall and summer St. Joe Riverbank Erosion Potential Inventory.

As part of the riverbank stabilization and wetland restoration work (conducted under Sections III and IV of the Idaho WQC, respectively), Avista and IDFG may plant additional upland vegetation, above the Ordinary High Water Mark (OHWM), to further enhance the riparian plant community at this site. IDFG will coordinate the upland vegetation planting with both the riverbank stabilization and wetland restoration projects.

### 8.4 Education and Awareness

Avista will participate in education and awareness programs which are led and coordinated by Agencies with regard to determining the best method(s) to increase public awareness of how to reduce bank erosion with minimal impact to downstream properties and maintain or improve fish habitat. This may include vegetation management combined with other appropriate methods. The targeted audience would consist of waterfront property owners, realtors, and other interested persons or groups.

These efforts will be coordinated by IDEQ, within the broader goals of one of the LMP Objectives, to increase public awareness of lake conditions and influences on water quality. Avista will provide financial support with erosion funds established by Section III.D of the ID WQC, to IDEQ as appropriate, for the implementation of the LMP's education and awareness efforts.

To date, Avista, IDEQ and the BSWCD have developed a brochure which described the Shadowy St. Joe River wetland restoration and bank stabilization projects and distributed the brochure at the Benewah County Fair. At IDEQ's discretion, this brochure may also be distributed by IDEQ at the local fairs and workshops in which they attend through the LMP outreach efforts.

Education and awareness efforts may also include holding an agency coordinated tour of the Shadowy St. Joe site to educate local landowners, and interested members of the public, of the erosion control efforts to date, and discuss potential cost-share opportunities with private landowners.

### 8.5 Additional Efforts

It should be noted due to the ongoing development of multiple erosion inventories and analyses currently being conducted in the Coeur d'Alene Basin, Avista and/or the cooperating agencies may become aware of an erosion control site with a high degree of erosion control urgency. As such, additional sites may be identified as new information becomes available, including results from the following studies/sources.

- IDEQ's LMP, St. Joe Riverbank Erosion and Prioritization Survey.
- IDEQ's identification of cost share opportunities with private landowners, USDA Farm Bill Programs, and Avista for project sites along the lower St. Maries River and the St. Joe River from St. Maries upstream to St. Joe City.
- IDEQ's identification of §319 grant cost share opportunities between KSSWCD, NRCS, IDFG, and Avista on project sites owned by IDFG and located along the banks of the Coeur d'Alene river.
- Additional studies which have not been proposed or identified to date.

## 9.0 REFERENCES

Avista and Coeur d'Alene Tribe. 2011. Coeur d'Alene Reservation Lake and Tributary Erosion Control Inventory and Assessment. December 14.

FERC. 2010. Order Modifying and Approving Water Quality Improvement and Erosion Control Plan for the Post Falls Development – Article 401. Project No. 2545-128. October 13.

FERC. 2009. Order Issuing New License and Approving Annual Charges For Use of Reservation Lands. Project Nos. 2545-091 and 12606-000. June 18.

IDEQ. 2011. St. Joe Riverbank Erosion Potential Inventory.

IDEQ. 2008. Idaho Department of Environmental Quality Certification Under Section 401 of the Federal Clean Water Act. June 5.

IDEQ and the Coeur d'Alene Tribe. 2009. Coeur d'Alene Lake Management Plan. March.

NRCS. 2010. Conservation Engineering (CED). NRCS Web Site: http://www.nrcs.usda.gov/technical/ENG/

## Lunney, Meghan

**From:** Jamie.Brunner@deq.idaho.gov
**Sent:** Thursday, July 03, 2014 9:07 AM
**To:** Lunney, Meghan
**Subject:** Correction to the Erosion Control Plan

Hi Meghan,
I have a correction to a statement I provided in your plan related to the St. Maries/St. Joe nutrient source inventory. Please remove the last sentence under 5.2 that begins with, "There was also a nutrient increase noted between Santa…"

Sorry for the last minute change. Have a nice weekend!
Cheers,
Jamie Brunner
Coeur d'Alene Lake Management Plan Coordinator
Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, Idaho 83814
Direct Dial (208) 666-4623
Fax (208) 769-1404

**IDEQ Comments and Avista Responses**

**IDEQ Comment:**

IDEQ's comments were provided in a June 30th and July 3rd e-mail to Meghan Lunney and during a July 11th meeting.

**Avista Response:**

Avista met with IDEQ on July 11th to review and discuss their June 30th and July 3rd comments, and how Avista should address them in the Plan. These revisions have been incorporated into the Plan and are included in the attached red-lined document.

# AVISTA CORPORATION

## 2015 TO 2019
## WATER QUALITY IMPROVEMENT AND EROSION CONTROL PLAN

IDAHO 401 WATER QUALITY CERTIFICATION,

APPENDIX A, SECTION III

Post Falls Hydroelectric Development
Spokane River Hydroelectric Project
FERC Project No. 2545

Prepared By:
Avista Corporation

*July 14, 2014*

Deleted: *May 30*

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**FIGURES**



**APPENDICES**

# 1.0 INTRODUCTION

## 1.1 Background

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a new License for Avista Corporation's Spokane River Project, FERC Project No. 2545-091 for a 50-year license term. The License became effective on June 1, 2009 and includes operation of the Post Falls Hydroelectric Development (HED) in Idaho. Ordering Paragraph D of the License incorporated the Idaho Department of Environmental Quality's (IDEQ) Section 401 Water Quality Certification (Idaho WQC) for the Post Falls Hydroelectric Development. The conditions of the Idaho WQC can be found in Appendix A of the License.

Section III of the Idaho WQC required Avista to complete the initial, five year, *2010 To 2014 Water Quality Improvement and Erosion Control Plan*, (2010 - 2014 Plan) which identified and prioritized actions to protect and improve water quality associated with the Post HED. Upon FERC's October 13, 2010 Order (Order), Modifying and Approving Water Quality Improvement and Erosion Control Plan for the Post Falls Development (Appendix A), Avista began implementing the 2010 - 2014 Plan.

In accordance with the Order, Avista is required to submit a new five year plan to IDEQ, Idaho Department of Fish and Game (IDFG) and U.S. Fish and Wildlife Service (FWS) for review and comment by June 1. Following IDEQ's approval, the new five year plan is then to be filed with FERC by August 1, starting 2014, and then every five years thereafter. This *2015 To 2019 Water Quality Improvement and Erosion Control Plan* (Plan), includes the activities to be conducted during the next five-year timeframe, 2015 to 2019, and is based upon consultation and collaboration with IDEQ, IDFG, and FWS.

## 1.2 Post Falls HED

The Post Falls HED includes three dams located on the Spokane River approximately nine miles downstream from the outlet of Coeur d'Alene Lake. Coeur d'Alene Lake is a natural lake created by a natural channel restriction, with the outlet serving as the headwaters of the Spokane River. The Post Falls HED's Project boundary encompasses the Spokane River upstream of the Post Falls Dams, Coeur d'Alene Lake, and the lower 30 miles of the Coeur d'Alene and St. Joe Rivers and 9 miles of the lower St. Maries River (Figure 1) at the normal full pool water elevation of 2,128 feet.

The Post Falls HED influences water levels in Coeur d'Alene Lake and the lower reaches of lake's tributaries from early summer through late fall. The summer lake level is held at the 2,128 foot elevation. During the winter and through most of the spring run-off season the water elevations are controlled by Coeur d'Alene Lake's natural channel restriction, not by the HED.

## 2.0 FUNDING

In accordance with Section III.D. of the Idaho WQC, Avista shall make $75,000 available on an annual basis to implement the approved Plan. Implementation of this Plan and expenditure of funds for specific projects are governed by Section VIII.A. of the Idaho WQC. Sections III and VIII of the Idaho WQC are included as Appendix B.

## 3.0 LIABILITY

The Bunker Hill Mining and Metallurgical Complex Superfund (Facility) includes mining-contaminated areas with lead being the primary contaminant of concern and additional contaminates of concern including arsenic, cadmium, and zinc. Sediments are the primary contaminated material in the Lower Basin, and as a result, through the implementation of Section III of the Idaho WQC, it is likely Avista will become involved in efforts to reduce erosion along the lower Coeur d'Alene River streambanks, especially in areas with elevated lead concentrations. At these sites, Avista will limit its activities as necessary to avoid incurring liability for the contamination. For example, Avista will not manage, direct, or conduct any operations related to hazardous substances. Avista will work out the details of its involvement in each project on a site-by-site basis and in coordination with the Basin Environmental Improvement Project Commission (BEIPC), including its technical arm, the Technical Leadership Group and other appropriate committees with regard to erosion control efforts in the Coeur d'Alene River. Although Avista may limit its activities to avoid liability, it will meet its obligations under Section III of the Idaho WQC.

## 4.0 EROSION CONTROL GOALS

Erosion control activities will be implemented to protect and improve water quality associated with the Post Falls HED with the goal of reducing sedimentation and nutrient loading in order to improve and protect water quality and beneficial uses. Site-specific erosion control actions are to be identified and prioritized in consultation with IDEQ, IDFG, and FWS. These include riverbank stabilization projects, as well as upland land use projects such as pasture and recreation management activities designed to reduce erosion.

## 5.0 EROSION CONTROL STUDIES

The following studies are either on-going or have occurred since the approval of the 2010 - 2014 Plan and are associated with erosion control evaluations and/or mitigation measures in the Spokane River upstream of the Post Falls Dams, Coeur d'Alene Lake, and the lower reaches of the Coeur d'Alene, St. Joe, and St. Maries Rivers.

## 5.1 Avista, 4(e) Condition No. 4: Coeur d'Alene Reservation Erosion Inventory and Assessment

Avista and the Tribe conducted the Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control Inventory and Assessment (December 2011) during 2009 and 2010 which included an erosion inventory and assessment of all shoreline erosion occurring on lands within the Coeur d'Alene Indian Reservation (Reservation), including shorelines located along the St. Joe River downstream of the City of St. Maries, along the lower portion of Coeur d'Alene Lake, and the pertinent lateral lake shorelines. The Erosion Inventory and Assessment was completed as a requirement of 4(e) Condition No. 4, (Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control), within Appendix D of the License.

The total length inventoried along the St. Joe River, within the Post Falls Project area and the Reservation was 169,850 linear feet, of which the Inventory and Assessment classified 124,067 linear feet as eroding. Of this, Avista is responsible for 50% of the total linear feet of all erosion sites on the St. Joe River, which totals 63,130 feet.

Following the development of detailed erosion control designs for six initial sites located on the lower St. Joe River levees, the Coeur d'Alene Tribal Council issued a resolution to implement erosion control, or purchase similar lands, elsewhere within the Reservation.

## 5.2 Lake Management Plan, 3-Year Nutrient Source Inventory, St. Joe and St. Maries Rivers

As one of the objectives identified to meet the goal of the Coeur d'Alene Lake Management Plan (March 2009), the Coeur d'Alene Tribe (Tribe) and IDEQ initiated a 3-Year Nutrient Source Inventory Water Quality Sampling Work Plan and Quality Assurance Plan ("Plan") for the St. Joe and St. Maries Rivers in March of 2010. The Plan included a short-term water sampling program at six selected locations within the St. Joe and St. Maries Rivers. The goal of the program was to determine whether sources of suspended sediment concentrations, and associated levels of total phosphorus measured at the mouth of the St. Joe River, may be traced to active riverbank erosion and sloughing occurring along the lower to mid portions of the St. Joe River and possibly sections of the St. Maries River.

The water sampling program was implemented as a coordinated effort between IDEQ and the Tribe; it began in March of 2010, and was completed over a three year timeframe. The nutrient inventory also included a collection and summary of historical and current nutrient data collected in the watershed. Results of the monitoring identified two subwatersheds in the St. Maries drainage that are the highest contributors of nutrients to the system. Tribal and IDEQ staff are looking at existing documents and interviewing stakeholders to identify likely sources so they can prioritize potential future improvement projects.

**Deleted:** There was also a nutrient increase noted between Santa and the town of St. Maries on the St. Maries River, however the source has not yet been identified.

## 5.3 IDEQ St. Joe Riverbank Erosion Potential Inventory

Starting in 2010, IDEQ conducted a riverbank erosion inventory along approximately 16 miles (32 miles of bank) of the St. Joe River, from the confluence of the St. Maries River to St. Joe City following the Bank Erosion Hazard Index (BEHI) method (IDEQ 2011). Several variables for classifying riverbanks (i.e. bank height, bankfull height, root depth, root density, bank angle, etc.) are measured as part of the inventory to determine riverbank erosion potential and its severity. Riverbank erosion classification types include very low, low, moderate, high, very high, and extreme.

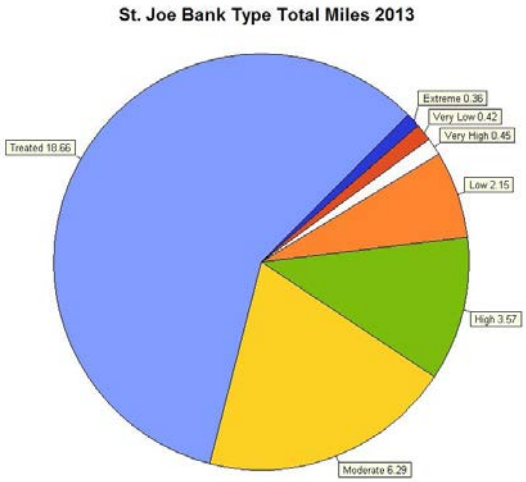
As part of IDEQ's 2010 effort, bank pins were driven horizontally into the riverbank to determine the lateral recession rate (bank erosion) of each bank type. IDEQ revisits the bank pins in the summer, following the spring runoff, and again in the fall, on an annual basis to measure the erosion rates associated with summer water level erosion. During each visit, the length of the pin exposed is measured and the pin is driven back into the bank. Although the lateral recession rate data is not statistically robust, it helps to validate the bank type classification. The primary objective of the inventory is to classify the erosion potential to help direct future bank stabilization efforts.

As shown in Table 1 below, and in Figure 2, IDEQ has provided the following results to date which indicate the following:

- Most of the recent bank stabilization effort has occurred on the high erosion classification potential.
- Fifty-eight percent of the riverbank has received a treatment for stabilization.
- Eight percent has been classified as very low or low erosion potential.
- Thirty-three percent has been classified as moderate to extreme erosion potential.

**Table 1: Results of IDEQ's St. Joe Riverbank Erosion Potential Inventory (further illustrated in the pie chart below Table).**

| IDEQ Erosion Potential Classification (current up to 2014) | Riverbank (miles) | Percent of total (whole numbers) |
|---|---|---|
| Treated | 18.66 | 58 |
| Very low | 0.42 | 1 |
| Low | 2.15 | 7 |
| Moderate | 6.29 | 20 |
| High | 3.57 | 11 |
| Very High | 0.45 | 1 |
| Extreme | 0.36 | 1 |




As part of the inventory process, IDEQ will, where appropriate, consider characterizing sediments for nutrient content of erosive bank material in conjunction with erosive condition.

Additionally, IDEQ will begin assessing the feasibility of conducting a similar bank erosion evaluation along the banks of the St. Maries River. Accessibility will determine the methods used to identify and prioritize potential sites for bank stabilization projects in the future.

## 6.0 PRIORITIZED PROJECTS AND ACTIONS

### 6.1 Selection Priorities and Evaluation Criteria

The prioritization and evaluation criteria, shown in Table 2, was developed in the 2010 - 2014 Plan and revised in the 2015 – 2019 Plan, and will be utilized for all projects and/or activities that will be implemented through this Plan.

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**Table 2: Prioritization and Evaluation Criteria for Erosion Control Sites.**

| Low 1 | 2 | 3 | 4 | High 5 | Prioritization and Evaluation Criteria |
|---|---|---|---|---|---|
| | | | | ✓ | Projects that have a high degree of erosion control urgency |
| | | | | ✓ | Projects that are consistent with existing plans and are identified as having significant potential for water quality improvement, such as reducing nutrients and temperature, and improving habitat, vegetation, natural channel design and floodplain function. |

| | | | | | |
|---|---|---|---|---|---|
| | | | ✓ | | Filling in gaps between areas where riverbank stabilization has already taken place and has shown effective. |
| | | | | ✓ | Projects with multiple partners and/or projects providing significant non-Avista funds (regardless of whether the land is privately or publically owned). |
| | | | ✓ | | Projects that are publically owned and/or where public access is secured |
| | | ✓ | | | Projects with intact cultural artifacts |
| | | | ✓ | | Projects that can be funded within a five-year budget cycle. |

### 6.2 Collaborative Parties & Project Identification

Avista and IDEQ will coordinate efforts to work with other entities to identify cost share potentials for riverbank stabilization projects. The entities include, but are not limited to, IDFG, the Kootenai Shoshone Soil and Water Conservation District (KSSWCD), the Benewah Soil and Water Conservation District (BSWCD), Natural Resources Conservation Service (NRCS), U.S. Forest Service (USFS), FWS, Idaho Soil and Water Conservation Commission, Benewah County, Shoshone County, Kootenai County, the Coeur d'Alene Tribe, and the Coeur d'Alene River Restoration Partnership.

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This Plan focuses on erosion sites located on the St. Maries, St. Joe, and the Coeur d'Alene Rivers. The following provides the mechanism for which the erosion sites and potential cost share opportunities will be further identified.

*Project Identification: St. Maries & St. Joe Rivers*

There are projects in various stages of planning where landowners are seeking to cost share with USDA Farm Bill, or other similar programs, along the lower St. Maries and the St. Joe Rivers (from the town of St. Maries upstream to St. Joe City). IDEQ and others, will consult with staff of the BSWCD and the NRCS Plummer field office to explore three-way cost shares which could leverage funds from a landowner, the Farm Bill, and Avista. In addition, the TMDL Watershed Advisory Group (WAG) for the St. Joe and St. Maries basin may also provide assistance to solicit landowners of eroding riverbank property to participate via the BSWCD.

*Project Identification: Coeur d'Alene River*

Avista will work with IDEQ to facilitate coordination between KSSWCD, NRCS, and IDFG on the approximately 60% of riverbanks owned by IDFG for the lower Coeur d'Alene River. Cost share opportunities could be leveraged with the Clean Water Action Section 319 grants (§319 grant), with 60% of the funds from EPA and 40% from Avista. The KSSWCD could be the sponsor of §319 grant applications on the lower Coeur d'Alene River. Proposed projects on the lower Coeur d'Alene River would involve consultation with EPA staff to ensure that these riverbank stabilization projects would not fall under the purview of current or future Superfund

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Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedies.

Potential projects and measures may be identified by Avista, IDEQ and any of the entities previously identified. They will be evaluated through a collaborative process with these entities and then prioritized and selected according to the prioritization and evaluation criteria identified in Table 2. Summaries of previous work activities and other pertinent information will be used to help determine project effectiveness. Potential erosion control information may include, but not be limited to: the project name; size; location; ownership; current and estimated future extent of erosion; cultural resources and vegetation present; soil type and drainage; and effectiveness of desired erosion control measures. Other relevant information includes the known presence of contaminated sediments, participating partners, planning and management objectives.

It is essential that adequate funding and project oversight to complete any action is available prior to and during implementation.

## 7.0 EROSION CONTROL IMPLEMENTATION STANDARD METHODS/PRACTICES

### 7.1 General Site Approach

Sites selected for projects that have acceptable access and/or cooperative management agreements will be mapped and a basic engineering/soil assessment will be conducted to provide site specific characterization for engineering design, permitting, bid, and monitoring documents. However, it should be noted not all sites will need these characterizations as some may already have this type of information documented or it may be deemed unnecessary for the type of work to be conducted. Appropriate riverbank site characterization (including site-specific channel features), mapping, or survey work will be determined by the project designer/engineer.

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### 7.2 Standard Design Methods

Standard and modified NRCS methods that will be utilized to guide the design of the erosion controls for each project, as appropriate, and may include the following:

- NRCS National Engineering Manual (NEM).
- NRCS National Engineering Handbook (NEH).
  - Part 650, Engineering Field Handbook (Chapters 14, 16, and 18)
  - Part 653, Stream Corridor Restoration Handbook
- NRCS Cultural Resources Handbook.
- NRCS National Environmental Compliance Handbook.

The NRCS, teamed with the local conservation districts (KSSWCD and BSWCD), have completed 12 years of review, design, and construction of over 14 miles of bank erosion control projects along the St Joe and Coeur d'Alene Rivers. Their standard design typically includes a rock wedge with live stake plantings which provides both hard armor and vegetation to address

the combined influence of boat waves, flood erosion, and the altered vegetation line. Their standard design will most likely be utilized as a basis for proposed projects. Additional consideration will be given to incorporation of bioengineering techniques and other hard engineering practices in addition to riprap armoring that may alleviate system-wide impacts of bank stabilization projects. Consideration will be given to potential increases in downstream erosive forces resulting from potential stabilization projects. Additional NRCS guidance's, specific to Idaho that may be utilized to guide the design of stream bank and shoreline erosion controls include:

- NRCS Idaho Field Office Technical Guide (eFOTG), Section IV, Conservation Practice Standard – Streambank and Shoreline Protection, 580 and Idaho Construction Specifications.
- NRCS Idaho Operation and Maintenance Worksheet, Streambank and Shoreline Protection.
- NRCS Idaho Documentation Check List, Streambank and Shoreline Protection.
- Idaho Plant Materials Technical Note No. 32 Users Guide to Description, Propagation and Establishment of Native Shrubs and Trees for Riparian Areas.
- Idaho Plant Materials Technical Note No. 38 Users Guide to Description, Propagation and Establishment of Wetland Plant Species and Grasses for Riparian Areas.
- NRCS Idaho, The Practical Streambank Bioengineering Guide.
- NRCS-Idaho, Engineering Technical Note 13, "Design of Rock Weirs".
- NRCS-Idaho, Engineering Technical Note 6, "Design of Dumped Rock Riprap Stream Channel Stabilization".
- NRCS-Idaho, Engineering Technical Note 12, "Design of Stream Barbs".
- NRCS-Idaho, Engineering Technical Note 15, "Incorporation of Large Wood into Engineering Structures".

Design teams, consisting of various partners listed previously, may be utilized in development of alternative approaches. Typically the NRCS standard design for the St. Joe and Coeur d'Alene Rivers does not incorporate large woody debris or large riprap. As such, Avista does not anticipate utilizing these materials as erosion control measures. However, if these materials, or other alternative methods, are determined to be the preferred erosion control method on a specific site, Avista shall consult with the FWS prior to the implementation of those methods. Documentation of the consultation with the appropriate resource agencies on the use of large woody debris or large riprap will be included in the subsequent five year summary report.

## 8.0 SITE SPECIFIC EROSION CONTROL ACTIONS

Avista evaluated high priority sites based on existing knowledge of shoreline erosion occurring within the Coeur d'Alene Lake Basin inside the Project boundary, in addition to consultations with IDEQ, IDFG, FWS, USFS, NRCS, KSSWCD, BSWCD and the Idaho Soil and Water Conservation Commission. As such, Avista will focus erosion control mitigation measures for areas located along the Coeur d'Alene, St. Joe and St. Maries Rivers. These mitigation measures will be conducted in cooperation with the other parties' plans to implement erosion control

measures over the second five-year work cycle of the License (2015 through 2019). Table 3 outlines the upcoming site specific erosion control actions and is followed by a description of each of these actions identified for implementation during the 2015 through 2019 timeframe.

**Table 3: 2015-2019 Site Specific Erosion Control Actions**

| Activity Year(s) | Site Specific Erosion Control Actions Description |
|---|---|
| 2015 - 2016 | St. Joe River, Bank Pin No. 9 Site |
| 2016 - 2018 | St. Joe River, Shadowy St. Joe Log Landing Site |
| 2015 - 2019 | St. Joe River, Shadowy St. Joe Stabilization Monitoring |
| 2015 - 2019 | Education/Outreach |
| 2015 - 2019 | Additional Sites as appropriate and agreed upon by the consultation agencies[1] |

Notes: (1) = Additional sites may be identified as new information becomes available.

### 8.1 St. Joe River, Bank Pin No. 9 Site

This site is located along the St. Joe River in Section 14, T46N R1W, approximately 10 miles upstream of the city of St. Maries, along the inside of a sharp bend in the river (Figure 3). It has been identified by IDEQ as having an "Extreme" eroding riverbank type. This site is marked with a bank pin (No. 9), and is therefore referred to as St. Joe River, Bank Pin No. 9 Site. Photos showing the erosion at this site follow.

The site consists of approximately five privately owned parcels and would include approximately 350 feet of erosion control using the standard NRCS design as a basis for the proposed project. This standard NRCS design consists of both hard armor and vegetation to address the combined influence of boat waves, flood erosion, and the altered vegetation line and would include installing a rock wedge of graded angular stone from approximately two feet above to two feet below the summer lake level, targeting erosion of the upper riverbank caused by boat and wave action.

While not a publically owned site, the site receives a high prioritization for the following reasons:

- The project has significant potential for water quality improvement.
- This site was classified by IDEQ as having an "Extreme" eroding riverbank type in their annual St. Joe Riverbank Erosion Potential Inventory.
- Potential cost share opportunity with the landowners.

Avista's cost share portion of the erosion control implementation costs will be funded through the Avista funds established by Section III.D. for erosion control. Table 4 outlines the anticipated tasks and timeframe to implement an erosion control measure at this site.

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**Photographs taken from IDEQ's St. Joe Riverbank Erosion Potential Inventory (IDEQ 2011) showing extreme erosion potential, based upon the BEHI bank score, at the Bank Pin No. 9 Site.**

**Table 4: Estimated Tasks and Timeframe to Implement Erosion Control at the IDEQ Bank Pin No. 9 Site.**

| Year | Task No. | Task Description |
|---|---|---|
| 2015 | 1 | Avista and IDEQ will work with the NRCS and the BSWCD regarding cost-share opportunities with the current landowners as well as to further identify a site specific characterization and an analysis of the erosion control measure including a combination of hard armor and vegetation plantings. |
| | 2 | Obtain design drawings and specifications. |
| | 3 | Prepare and obtain permit documents. |
| 2016 | 4 | Contractor implements the selected erosion control measures. |

There are several additional sites classified by IDEQ's St. Joe Riverbank Erosion Potential Inventory as having an "Extreme" eroding riverbank. In the event this particular site does not come to fruition, based upon landowner approval, permit complications, etc., Avista and the cooperating parties will select and implement a different project, preferably at a site with an erosion potential classification of "high" or greater, or with adjacent land practices that may cause erosion.

### 8.2 St. Joe River, Shadowy St. Joe Log Landing Site

The Shadowy St. Joe Log Landing, a demonstration site for future erosion control projects, is located on Avista-owned property in Section 24, T46N R1W, about 11 miles upstream of the city of St. Maries. The project is located within the southeastern corner of the Shadowy St. Joe Site and consists of an approximate 500 foot long timber crib, which was historically used as a log landing (Figure 4). While the gradient of the river at this location is fairly gentle, the depth of the river at the base of the timber crib appears fairly deep. Photos showing this site follow.

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**Photographs of the timber crib at the Shadowy St. Joe Log Landing Site.**

While it does not appear the timber crib will erode in the immediate future, it is located adjacent to approximately 6,004 feet of recently stabilized shoreline. If it were to have a catastrophic failure it would most likely deposit a large amount of nutrient rich fine sediment into the St. Joe River. Given one of the goals of the Coeur d'Alene Lake Management Plan is to reduce the current amount of total phosphorus loading into the southern portion of Coeur d'Alene Lake, this site is an excellent opportunity to prevent a potentially large sediment load into the St. Joe River, and ultimately the southern portion of Coeur d'Alene Lake.

This site has a high priority ranking based upon the following factors:

- At the March 17, 2014 annual erosion meeting, Avista and the agency partners discussed utilizing this site as a demonstration site using a bioengineered design instead of the standard NRCS design. If implemented, this project would allow for a side-to-side comparison of two different erosion control measures implemented on the Shadowy St. Joe site. Additionally, the site is immediately adjacent to the recently restored Shadowy St. Joe Wetland Complex located on Avista and IDFG property.
- The project is consistent with existing plans and has significant potential for water quality improvement.
- The project would have multiple partners, namely IDEQ, IDFG, NRCS, and the USFS, which could potentially provide non-Avista funds by means of engineering designs and implementation labor.
- The project is located on an Avista-owned parcel, is situated between public land,and will continue to provide public access.

Avista and the USFS are planning to cost-share this project,with the USFS potentially providing design and implementation labor, whereas Avista will provide funding established by Section III.D. of the Idaho WQC for erosion control. Table 5 outlines the anticipated tasks and timeframe to implement erosion control measures at this site.

**Table 5: Anticipated Tasks and Timeframe to Implement Erosion Control at the Shadowy St. Joe Log Landing Site.**

| Year | Task No. | Task Description |
|---|---|---|
| 2016 - 2017 | 1 | Work with agency partners to further identify a site specific characterization and an analysis of the erosion control measure focusing on a bioengineered design. |
| | 2 | Obtain design drawings and specifications. |
| | 3 | Prepare and obtain permit documents. |
| 2018 | 4 | Contractor/Agencies implement the selected erosion control measures. |

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### 8.3 Shadowy St. Joe Site On-Going Monitoring

In November and December 2013, approximately 6,004 feet of riverbank stabilization was completed on the Avista and IDFG, Shadowy St. Joe site. This site is located just downstream of the Shadowy St. Joe Log Landing site. Avista, IDEQ, IDFG, and the Idaho Soil and Water Conservation Commission will continue to monitor the vegetation success at the Shadowy St. Joe site, by means of annual or biannual comparisons at established photo-monitoring locations. IDEQ will also monitor the treated bank, when they complete their fall and summer St. Joe Riverbank Erosion Potential Inventory.

As part of the riverbank stabilization and wetland restoration work (conducted under Sections III and IV of the Idaho WQC, respectively), Avista and IDFG may plant additional upland vegetation, above the Ordinary High Water Mark (OHWM), to further enhance the riparian plant community at this site. IDFG will coordinate the upland vegetation planting with both the riverbank stabilization and wetland restoration projects.

### 8.4 Education and Awareness

Avista will participate in education and awareness programs which are led and coordinated by Agencies with regard to determining the best method(s) to increase public awareness of how to reduce bank erosion with minimal impact to downstream properties and maintain or improve fish habitat. This may include vegetation management combined with other appropriate methods. The targeted audience would consist of waterfront property owners, realtors, and other interested persons or groups.

These efforts will be coordinated by IDEQ, within the broader goals of one of the LMP Objectives, to increase public awareness of lake conditions and influences on water quality. Avista will provide financial support with erosion funds established by Section III.D of the ID WQC, to IDEQ as appropriate, for the implementation of the LMP's education and awareness efforts.

To date, Avista, IDEQ and the BSWCD have developed a brochure which described the Shadowy St. Joe River wetland restoration and bank stabilization projects and distributed the brochure at the Benewah County Fair. At IDEQ's discretion, this brochure may also be distributed by IDEQ at the local fairs and workshops in which they attend through the LMP outreach efforts.

Education and awareness efforts may also include holding an agency coordinated tour of the Shadowy St. Joe site to educate local landowners, and interested members of the public, of the erosion control efforts to date, and discuss potential cost-share opportunities with private landowners.

### 8.5 Additional Efforts

It should be noted due to the ongoing development of multiple erosion inventories and analyses currently being conducted in the Coeur d'Alene Basin, Avista and/or the cooperating agencies may become aware of an erosion control site with a high degree of erosion control urgency. As such, additional sites may be identified as new information becomes available, including results from the following studies/sources.

- IDEQ's LMP, St. Joe Riverbank Erosion and Prioritization Survey.
- IDEQ's identification of cost share opportunities with private landowners, USDA Farm Bill Programs, and Avista for project sites along the lower St. Maries River and the St. Joe River from St. Maries upstream to St. Joe City.
- IDEQ's identification of §319 grant cost share opportunities between KSSWCD, NRCS, IDFG, and Avista on project sites owned by IDFG and located along the banks of the Coeur d'Alene river.
- Additional studies which have not been proposed or identified to date.

## 9.0 REFERENCES

Avista and Coeur d'Alene Tribe. 2011. Coeur d'Alene Reservation Lake and Tributary Erosion Control Inventory and Assessment. December 14.

FERC. 2010. Order Modifying and Approving Water Quality Improvement and Erosion Control Plan for the Post Falls Development – Article 401. Project No. 2545-128. October 13.

FERC. 2009. Order Issuing New License and Approving Annual Charges For Use of Reservation Lands. Project Nos. 2545-091 and 12606-000. June 18.

IDEQ. 2011. St. Joe Riverbank Erosion Potential Inventory.

IDEQ. 2008. Idaho Department of Environmental Quality Certification Under Section 401 of the Federal Clean Water Act. June 5.

IDEQ and the Coeur d'Alene Tribe. 2009. Coeur d'Alene Lake Management Plan. March.

NRCS. 2010. Conservation Engineering (CED). NRCS Web Site: http://www.nrcs.usda.gov/technical/ENG/

**From:** Lunney, Meghan
**Sent:** Tuesday, July 15, 2014 2:37 PM
**To:** Daniel Redline (Daniel.Redline@deq.idaho.gov)
**Cc:** 'Jamie.Brunner@deq.idaho.gov'; Thomas.Herron@deq.idaho.gov; Fitzhugh, Speed (Elvin)
**Subject:** Revised 2015 to 2019 Water Quality Improvement and Erosion Control Plan
**Importance:** High

Dan,

I've attached the Revised 2015 to 2019 Water Quality Improvement and Erosion Control Plan (Plan), which includes the edits we discussed during our meeting on Friday, July 11th. These edits incorporate the comments that IDEQ provided via e-mail on June 30th and July 3rd as well as those discussed during our meeting. I've also attached a red-lined version of the Plan so that you can see the track-changes. Please note IDEQ's June 30th and July 3rd e-mails, IDEQ's comments, and our responses, are included in Appendix C of the Plan. Also included in Appendix C are e-mails from the Idaho Department of Fish and Game and the U.S. Fish and Wildlife Service, along with our responses to those e-mails.

With this, please review the Plan for final approval so that we can submit an IDEQ-approved Plan to FERC by August 1, 2014. If you have any questions regarding the Plan please feel free to call me at 509-495-4643.

Thanks!
Meghan.

**Meghan Lunney**
Aquatic Resource Specialist

AVISTA

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**Fitzhugh, Speed (Elvin)**

**From:** Daniel.Redline@deq.idaho.gov
**Sent:** Wednesday, July 30, 2014 8:18 AM
**To:** Lunney, Meghan
**Cc:** Jamie.Brunner@deq.idaho.gov; Thomas.Herron@deq.idaho.gov; Fitzhugh, Speed (Elvin)
**Subject:** RE: Revised 2015 to 2019 Water Quality Improvement and Erosion Control Plan -- Approved

Meghan and Speed,

We have reviewed the revised 2015 to 2019 Water Quality Improvement and Erosion Control Plan. The revised five year plan incorporates the changes that we discussed during our meeting on Friday, July 11th. The only additional comments that we have on the revised plan were communicated to Speed in a phone conversation on Monday, July 28th. Those comments are summarized as follows;

> Pg 6. Section 6.2. first paragraph. Change riverbank stabilization to erosion control. Change Coeur d'Alene River Restoration Partnership to Coeur d'Alene Basin Restoration Partnership.

With these minor changes incorporated, we approve the 2015 to 2019 Water Quality Improvement and Erosion Control Plan. We appreciate the opportunity to work with Avista on updating the Water Quality Improvement and Erosion Control Plan for the next five year period and we look forward to working with you and the other members of the Avista team on implementing the plan.

Dan Redline
Regional Administrator, Coeur d'Alene Office
Idaho Department of Environmental Quality
Office Phone: 208-769-1422
Direct Line: 208-666-4621
Daniel.redline@deq.idaho.gov

**IDEQ Comments and Avista Responses**

**IDEQ Comment:**

We have reviewed the revised 2015 to 2019 Water Quality Improvement and Erosion Control Plan. The revised five year plan incorporates the changes that we discussed during our meeting on Friday, July 11th. The only additional comments that we have on the revised plan were communicated to Speed in a phone conversation on Monday, July 28th. Those comments are summarized as follows;

Pg 6. Section 6.2. first paragraph. Change riverbank stabilization to erosion control. Change Coeur d'Alene River Restoration Partnership to Coeur d'Alene Basin Restoration Partnership.

With these minor changes incorporated, we approve the 2015 to 2019 Water Quality Improvement and Erosion Control Plan. We appreciate the opportunity to work with Avista on updating the Water Quality Improvement and Erosion Control Plan for the next five year period and we look forward to working with you and the other members of the Avista team on implementing the plan.

**Avista Response:**

Avista incorporated the IDEQ's recommended changes to Page 6 Section 6.2, per their request, and appreciates their approval of the Plan.

May 30, 2014

Mr. Jim Teare
Idaho Department of Fish and Game
2885 W. Kathleen Ave.
Coeur d'Alene, ID 83815

**Subject: Spokane River Hydroelectric Project, FERC Project No. 2545**
**2015 To 2019 Water Quality Improvement and Erosion Control Plan and 2010 To 2014 Erosion Summary Report, as Required by the Spokane River License, Appendix A, Section III**

Dear Mr. Teare:

On June 18, 2009 the Federal Energy Regulatory Commission (FERC) issued a new license for the Spokane River Hydroelectric Project, FERC Project No. 2545 (License). Ordering Paragraph D of the License incorporated the Idaho Department of Environmental Quality's (IDEQ) Section 401 Water Quality Certification (Idaho WQC) for the Post Falls Hydroelectric Development. The conditions of the Idaho WQC can be found in Appendix A of the License.

Section III of the Idaho WQC required Avista to complete the *2010 To 2014 Water Quality Improvement and Erosion Control Plan* (Plan) which was modified and approved by FERC in its October 13, 2010 Order (Order), Modifying and Approving Water Quality Improvement and Erosion Control Plan for the Post Falls Development. The Order also required Avista to prepare the *2010 To 2014 Erosion Summary Report* (Report) which summarizes the work accomplished under the Plan and to provide copies of it to IDEQ, Idaho Department of Fish and Game (IDFG) and U.S. Fish and Wildlife Service (FWS). As such, we have enclosed a copy of the Report for your reference.

Additionally and in accordance with FERC's Order, Avista is required to submit a new five year plan to IDEQ, IDFG and FWS for review and comment by June 1, 2014 and following IDEQ's approval of the new five year plan, Avista will file it with FERC by August 1, 2014.

Avista has enclosed the *2015 To 2019 Water Quality Improvement and Erosion Control Plan* for your review and comment. Please provide your comments and recommendations on the Plan, if you have any, by **June 30, 2014**. Following consultation, we are required to submit an IDEQ approved plan to FERC for final approval by August 1, 2014.

If you have any questions regarding the Report or Plan, please feel free to call me at (509) 495-4643.

Sincerely,

Meghan Lunney
Aquatic Resource Specialist

Enclosures (2)

c: Miles Benker, IDFG
Dan Redline, IDEQ
Jamie Brunner, IDEQ
Bryon Holt, FWS

1411 East Mission Avenue
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## Lunney, Meghan

**From:** Benker,Miles [miles.benker@idfg.idaho.gov]
**Sent:** Monday, June 16, 2014 3:16 PM
**To:** Lunney, Meghan
**Subject:** FW: Comments on Avista Corporation's 2015 To 2019 Water Quality Improvement and Erosion Control Plan
**Attachments:** Comments on Avista Corporation 2015 to 2019 WQ and Erosion Control Plan.docx

Meghan,
Here is my comments for the Plan. JJ reviewed these comments also. Will this be sufficient or do we need a formal letter?

Miles Benker
Regional Wildlife Biologist
Idaho Fish and Game
2885 W. Kathleen Ave.
Coeur d' Alene, ID. 83815
Office (208) 769-1414
Cell (208) 790-3181
miles.benker@idfg.idaho.gov

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**From:** Benker,Miles
**Sent:** Monday, June 16, 2014 2:46 PM
**To:** Teare,Jim
**Subject:** Comments on Avista Corporation's 2015 To 2019 Water Quality Improvement and Erosion Control Plan

JJ
Comments attached

Miles Benker
Regional Wildlife Biologist
Idaho Fish and Game
2885 W. Kathleen Ave.
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Comments on Avista Corporation's 2015 To 2019 Water Quality Improvement and Erosion Control Plan

Submitted by : Miles Benker June 16, 2014

The Department has reviewed the Avista Corporation's 2015 To 2019 Water Quality Improvement and Erosion Control Plan (Plan). We appreciate the opportunity to provide comments that will assist in meeting the goal of reducing sedimentation and nutrient loading in order to improve and protect water quality and beneficial uses.

The Department has been actively involved in identifying site specific erosion control actions and prioritization of actions identified for implementation during the 2015 through 2019 timeframe. We agree with the order of site specific erosion control actions identified in Table 3 of the Plan.

The St. Joe River, Bank Pin No. 9 site and Shadowy St. Joe Log Landing site are good candidate sites, as they are adjacent to the recently completed Shadowy St. Joe Stabilization project on the Avista and IDFG properties. As discussed in the March 2014 annual erosion control meeting, different streambank stabilization design standards would need to be developed for the Shadowy St. Joe site, instead of utilizing the standard NRCS design. Due to the high vertical wall, a combination of several bio-engineering techniques may need to be developed to successfully stabilize this site.

Feel free to contact us as you move toward implementing future projects.

**IDFG Comments and Avista Responses**

**IDFG Comment:**

The Department has reviewed the Avista Corporation's 2015 To 2019 Water Quality Improvement and Erosion Control Plan (Plan). We appreciate the opportunity to provide comments that will assist in meeting the goal of reducing sedimentation and nutrient loading in order to improve and protect water quality and beneficial uses.

The Department has been actively involved in identifying site specific erosion control actions and prioritization of actions identified for implementation during the 2015 through 2019 timeframe. We agree with the order of site specific erosion control actions identified in Table 3 of the Plan.

The St. Joe River, Bank Pin No. 9 site and Shadowy St. Joe Log Landing site are good candidate sites, as they are adjacent to the recently completed Shadowy St. Joe Stabilization project on the Avista and IDFG properties. As discussed in the March 2014 annual erosion control meeting, different streambank stabilization design standards would need to be developed for the Shadowy St. Joe site, instead of utilizing the standard NRCS design. Due to the high vertical wall, a combination of several bio-engineering techniques may need to be developed to successfully stabilize this site.

Feel free to contact us as you move toward implementing future projects.

**Avista Response:**

Avista appreciates IDFG's cooperation and concurrence with the order of the site specific erosion control actions identified in Table 3 of the Plan. Avista also acknowledges the need to use different streambank stabilization design standards for the Shadowy St. Joe Log Landing Site as indicated in the Plan.

May 30, 2014

Mr. Bryon Holt
U.S. Fish and Wildlife Service
11103 E. Montgomery Drive
Spokane Valley, WA 99206

**Subject: Spokane River Hydroelectric Project, FERC Project No. 2545**
**2015 To 2019 Water Quality Improvement and Erosion Control Plan and 2010 To 2014 Erosion Summary Report, as Required by the Spokane River License, Appendix A, Section III**

Dear Mr. Holt:

On June 18, 2009 the Federal Energy Regulatory Commission (FERC) issued a new license for the Spokane River Hydroelectric Project, FERC Project No. 2545 (License). Ordering Paragraph D of the License incorporated the Idaho Department of Environmental Quality's (IDEQ) Section 401 Water Quality Certification (Idaho WQC) for the Post Falls Hydroelectric Development. The conditions of the Idaho WQC can be found in Appendix A of the License.

Section III of the Idaho WQC required Avista to complete the *2010 To 2014 Water Quality Improvement and Erosion Control Plan* (Plan) which was modified and approved by FERC in its October 13, 2010 Order (Order), Modifying and Approving Water Quality Improvement and Erosion Control Plan for the Post Falls Development. The Order also required Avista to prepare the *2010 To 2014 Erosion Summary Report* (Report) which summarizes the work accomplished under the Plan and to provide copies of it to IDEQ, Idaho Department of Fish and Game (IDFG) and U.S. Fish and Wildlife Service (FWS). As such, we have enclosed a copy of the Report for your reference.

Additionally and in accordance with FERC's Order, Avista is required to submit a new five year plan to IDEQ, IDFG and FWS for review and comment by June 1, 2014 and following IDEQ's approval of the new five year plan, Avista will file it with FERC by August 1, 2014.

Avista has enclosed the *2015 To 2019 Water Quality Improvement and Erosion Control Plan* for your review and comment. Please provide your comments and recommendations on the Plan, if you have any, by **June 30, 2014**. Following consultation, we are required to submit an IDEQ approved plan to FERC for final approval by August 1, 2014.

If you have any questions regarding the Report or Plan, please feel free to call me at (509) 495-4643.

Sincerely,

Meghan Lunney
Aquatic Resource Specialist

Enclosures (2)

c: Dan Redline, IDEQ
Jamie Brunner, IDEQ
Jim Teare, IDFG
Miles Benker, IDFG

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## Lunney, Meghan

**From:** Conard, Ben [ben_conard@fws.gov]
**Sent:** Monday, July 07, 2014 3:28 PM
**To:** Lunney, Meghan
**Cc:** Jason Flory
**Subject:** FW: 2010 To 2014 Erosion Summary Report and 2015 To 2019 Water Quality Improvement and Erosion Control Plan

Meghan,

Thank you for the opportunity to review the 2015-2019 Water Quality Improvement and Erosion Control Plan. Jason Flory of our staff was assigned and reviewed the document. The USFWS has no substantive comments on the report. If you need further assistance, you may contact Jason Flory at 509-893-8003. Jason will generally have the lead role on hydro projects for the foreseeable future; with the advise and assistance of other staff, depending on the issues. Thanks again.

--
Ben Conard, Field Supervisor
U.S. Fish and Wildlife Service
Northern Idaho Field Office
11103 E. Montgomery Drive
Spokane Valley, WA 99206
Phone: (509) 893-8030
Fax: (509) 891-6748

**USFWS Comments and Avista Responses**

**USFS Comment:**

Thank you for the opportunity to review the 2015-2019 Water Quality Improvement and Erosion Control Plan. Jason Flory of our staff was assigned and reviewed the document. The USFWS has no substantive comments on the report. If you need further assistance, you may contact Jason Flory at 509-893-8003. Jason will generally have the lead role on hydro projects for the foreseeable future; with the advise and assistance of other staff, depending on the issues. Thanks again.

**Avista Response:**

Avista appreciates USFWS's review and response.