12/13/17

BEIPC Coeur d'Alene Basin Calendar Year 2018 Work Plan

INTRODUCTION

This plan covers proposed environmental cleanup and improvement activities in the Coeur d'Alene Basin scheduled for CY 2018 by the Basin Environmental Improvement Project Commission (BEIPC) and coordinating agencies in accordance with their responsibilities as stated in the Memorandum of Agreement (dated August 2002). Actions noted in the plan are intended to implement the goals and objectives of the BEIPC's 2018-2022 Five Year Work Plan. This plan has been prepared by the Executive Director working with the coordinating agencies with review, input and approval by the Technical Leadership Group (TLG) and review and input from the Citizen Coordinating Council (CCC). The work plan is organized as follows:

> Part 1 – Environmental cleanup work performed through the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) by the Environmental Protection Agency (EPA) and State of Idaho through the Idaho Department of Environmental Quality (IDEQ) or work performed by the Coeur d' Alene Work Trust (Trust) and Potentially Responsible Parties (PRP).
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> Part 2 - Other Activities and Responsibilities

Part 1 includes work to implement the Record of Decision (ROD) for Operable Unit 3 (OU-3) and the Upper Basin ROD Amendment (RODA) for OU-2 and 3.

Part 2 includes work and responsibilities concerning management of Coeur d'Alene Lake by the CDA Tribe and State of Idaho, restoration of natural resources by the Natural Resource Trustees and work the BEIPC has assumed based on recommendations from the National Academy of Sciences (NAS) Study and requests from citizens and communities of the Basin.

The five-year plan outlines activities and work proposed to be implemented over the next five years; however, it does not sequence these activities. This one-year plan establishes and maintains the sequencing of activities that will be needed to complete the activities and work approved in the five-year plan. It may not address all work items noted in the five-year plan because some will not be initiated until later years.

PART 1 – ENVIRONMENTAL CLEANUP WORK

For Part 1, the scope of the proposed work corresponds to the source and level of funding anticipated for CY 2018 and work anticipated to be performed by the responsible parties. The proposal includes the following work:

- Human Health Issues including Residential and Community Property and Private Water Supply Remediation, Basin Property Remediation Program (BPRP); Paved Road Remediation Program; Remedy Protection Program; Blood Lead Screening in Children; Recreation Use Activities; and Fish Tissue Sampling and Reporting.
- Repository Development and Management
- Remedial actions in the Upper Basin including source control actions, water treatment, and related human health activities provided for in the Upper Basin RODA.

- Remedial actions and/or Pilot Projects in the Lower Basin.
- Basin Environmental Monitoring

1.1 HUMAN HEALTH ISSUES

Remediation of human health exposures is a remedial action priority as defined in the OU-3 ROD. It includes maintaining the Institutional Controls Program (ICP) managed by the Panhandle Health District (PHD) and conducting cleanup in residential, community and recreational areas in the Upper and Lower Basin and the Paved Road Remediation Program. The RODA addresses source control remedies, water treatment remedies, ecological cleanup projects, and related human health activities and the Remedy Protection Program.

1.1.1 Residential and Commercial Property Remediation

During 2017, IDEQ, EPA, and the Trust continued work to transition the Basin Property Remediation Program (BPRP), including the private drinking water source sampling and house dust sampling programs, to the Trust. In 2017, the Trust's BPRP work remediated about 50 properties. Sampling work in 2017 included residential, commercial, and recreational properties, rights-of way, private drinking water sources, and house dust.

The goal for 2018 is to complete approximately 800,000 square feet of remediation on about 40 properties. The program plans to sample 35 to 40 properties that qualify for the BPRP. In addition, the house dust sampling program will target Lower Basin residences in 2018.

In 2018, EPA will continue to direct and oversee the Trust's BRPR work. IDEQ will continue an oversight and coordination role initiated in 2015 and will continue to encourage property owner hold outs to have their properties sampled and remediated (if necessary) before the program winds down. This would allow completion of most properties before the BPRP goes into a "trickle" mode.

1.1.2 Paved Roadway Surface Remediation Program

The BEIPC, EPA and IDEQ developed a Roadway Surface Remediation Strategy in 2012 in recognition of some road damage caused by heavy truck traffic during remediation work and potential ongoing risk posed by deterioration of paved roads in remediated areas. The purpose of the program is to address the deterioration of paved road surfaces that are underlain by contamination. Work is intended to ensure road surfaces continue to serve as barriers that reduce or eliminate exposures. There were 593 segments to be remediated in the original strategy. The EPA/IDEQ Roads Board has added 13 segments that were found to meet the criteria for remediation under the program resulting in 606 segments on the current eligible list. The local road jurisdictions are responsible for implementing the program and continuing operations and maintenance of the paved road segments as barriers. Work under this program is being carried out by the local road jurisdictions with funding through IDEQ and the Coeur d'Alene Trust. Work for all jurisdictions includes 31 road segments planned for 2018 remediation. Projects will be conducted by Pinehurst, Shoshone County, Kellogg, Osburn, Wallace, and Mullan. The City of Kellogg continues to coordinate their paved roads projects with other utility work being funded through other state and federal programs. The City of Kellogg will carry two active construction contracts for utility and paved roads work into the 2018 construction season. The City of Wallace will also continue work on road segments that require coordination with utility work.

1.1.3 Remedy Protection Projects

Remedy Protection is a high priority in the Bunker Hill Superfund Cleanup Implementation Plan (SCIP). The objective of this work is to protect the installed human health related remedy from recontamination and scouring caused by heavy precipitation and tributary flooding. All Remedy Protection projects are now complete in the Box. In 2018, work on projects in the Upper Basin portion of OU-3 noted in the RODA will continue with construction work on Printers Creek in Wallace, Blackcloud Creek at Ninemile Creek Road 2.5 miles north of Wallace, Rosebud Creek in Osburn, and the Star Parking Area adjacent to Canyon Creek Road. 2018 work will also include a continuation of design work on the Star Parking Area and on the Tiger Creek project in Mullan above Drager Field.

Preparation of an Explanation of Significant Differences (ESD) or other decision document will be completed and signed by EPA in 2018, finalizing the remedy selection decision for the Star Parking Area adjacent to Canyon Creek Road.

1.1.4 Blood Lead Screening in Children

The Panhandle Health District (PHD) has been screening children for elevated blood lead levels in the CDA Basin since 1996 as a public health service through the Lead Health Intervention Program (LHIP). The purpose of the screening is to identify children with elevated blood lead levels and provide follow-up from a public health professional to identify ways to reduce lead exposures. The screening program also provides data to assess the effectiveness of the Basin cleanup efforts. The cleanup action decisions are not based on annual blood lead testing results. Rather, the goal is to prevent lead exposures that could result in elevated blood lead levels.

In 2012 the Centers for Disease Control (CDC) established a new threshold value for blood lead levels in young children. According to CDC's fact sheet, "This new level is based on the population of children aged 1-5 years in the U.S. who are in the top 2.5% of children when tested for lead in their blood. Currently, that is 5 micrograms per deciliter of lead in blood. Previously, CDC's blood lead level of concern was 10 micrograms per deciliter. In response to this change the PHD has used the 5 micrograms per deciliter as the trigger for follow up since 2012.

Currently, LHIP tests children and prenatal women living within the Basin on a year round basis. Children living outside the BHSS boundaries who recreate in the CDA Basin are also eligible for free screening by scheduling an appointment with the Kellogg PHD office. The annual summer screening will be conducted again in 2018 and will offer a $30 incentive for each qualifying child between the ages of 6 months to 6 years of age. Screening in 2017 was conducted at the Shoshone Medical Center (SMC). The PHD screened 112 individuals residing in the Basin during the annual campaign, with 106 of those being between the ages of 6 months to 6 years, 6 over 6 years of age. In addition, PHD screened 127 children between 6 months and 6 years, 20 individuals over 6 years of age, and 1 prenatal woman in the Box portion of the site.

1.1.5 Recreation Use Activities

In 2016, a Recreation Sites Program was created to address and manage human health risks from exposure to lead and other metals that can occur during recreation activities throughout the Upper and Lower Coeur d'Alene Basin. A strategy document was developed to lay out goals, ways to inventory recreation areas, possible ways to manage risks to people, and current outreach activities. This strategy

was issued for public and stakeholder comments and suggestions. The strategy and response to community input are available at: www.deq.idaho.gov/playclean.

Addressing contamination at recreation sites is different than other cleanup activities. Many places are recontaminated with each high water event or flood making it difficult to just remove contaminated soil and replace it with clean soil. Other recreation areas are remote, hard to access, and spread out, like hiking trails or ATV areas, making cleanup of the entire area difficult. Overall, different approaches are needed for the wide spread of types and locations of recreation sites. In addition, community outreach and education are important ways to help people manage health risks while recreating. An outreach and education program has been in place for years and will continue to be implemented and expanded.

During 2018, the Recreation Sites Program, which includes EPA, IDEQ, PHD, CDA Trust, and CDA Tribe, will develop an Implementation Plan for actions at recreation sites. The group meets quarterly to evaluate and discuss priorities. Examples of ideas that can be included in the Implementation Plan are updating and creating new signage, evaluating installation of wash stations, and other pilot projects. The overall goal is to address and manage human health risks from exposure to lead and other metals while maintaining the benefits of recreation for people's health and the local economy.

1.1.6 Fish Tissue Sampling

The selected remedy in the OU-3 ROD includes educational resources and health advisories to manage the potential for metals exposure through consumption of fish. During the spring and summer of 2016, fish tissue samples were collected basin-wide from the South Fork Coeur d'Alene River, Coeur d'Alene River and Chain Lakes, Coeur d'Alene Lake, and Spokane River in Idaho in accordance with the Idaho Fish Consumption Advisory Project (IFCAP) protocol. Sample collection was performed by Idaho Department of Fish and Game, IDEQ, and the Coeur d'Alene Tribe. Fish species collected were selected based on fish present in each water body, fish harvested for consumption, and fish life histories. During 2017, laboratory sample analysis continued and all analyses were completed by the end of July 2017. Data verification and validation was completed by mid-September 2017. Preparation of a report is underway.

During 2018, IFCAP will prepare a Health Consultation Report in coordination with the CDA Tribe. Health advisories for fish consumption are issued by the Idaho Department of Health and Welfare through IFCAP and the Tribe. The current fish consumption guidelines published for Coeur d'Alene Lake and statewide for bass will be modified or expanded as needed. The goal of IFCAP and the Tribe is to protect the public from adverse health risks associated with consuming contaminated fish.

For more information visit:
http://healthandwelfare.idaho.gov/Health/EnvironmentalHealth/FishAdvisories/tabid/180/default.aspx

1.2 REPOSITORY DEVELOPMENT AND MANAGEMENT

Background

There are currently three operational repositories within the OU-3 area, Big Creek Repository (BCR), East Mission Flats Repository (EMFR) and Lower Burke Canyon Repository (LBCR). The Page Repository provides for disposal of remedial and ICP wastes in the Box. In 2015, disposal of relatively inert asphalt concrete and road base in the repositories was minimized by developing two Limited Use

Repositories (LURs) in East Osburn and Government Gulch. The LUR in East Osburn was filled to capacity in the fall of 2015 and a clean gravel barrier was installed over the waste area. In 2016, two additional LURs were developed for disposal of asphalt concrete and road base material. The two LURs developed in 2016 are the East Zanetti Yard in Osburn and the Shoshone County Transfer Station east of Kellogg. The Transfer Station LUR will operate through the 2018 season and the Zanetti LUR will stay open through the 2019 season. In addition, a community fill project (CFP) was developed adjacent to the Government Gulch LUR to accommodate ICP wastes generated by the City of Kellogg's infrastructure projects that are being constructed coincidental to its Paved Roads Program. The Government Gulch LUR and CFP will continue to be operational in 2018.

The siting, development and use of LURs will continue to be a major task for the agencies and the Trust while the Basin Paved Roads Program generates over 50,000 cubic yards (cy) of asphalt concrete and base materials every year for the next one to two years.

Repository development and management is an ongoing process that must meet the demand for disposal of historic mining related contamination for the Basin environmental and human health related cleanup program. This includes the BPRP, Remedy Protection, Paved Roads Program, and other cleanup actions performed by IDEQ, EPA, and the Trust. It also includes waste generated by private parties and local government agencies under the ICP.

BCR is located at the mouth of Big Creek Canyon and primarily serves the Upper Basin. The BCR has received waste since 2002. The total designed waste disposal capacity is approximately 600,000 cy. The BCR was estimated to reach the total design capacity in 2017 but did not. Additional capacity adjacent to the original BCR was identified several years ago just southwest of the original site on the west side of Big Creek. This location is identified as the Big Creek Repository Annex (BCRA). During 2014 the development of the BCRA included the development of the repository design, relocation of utilities at the site and construction of an access road bridge over Big Creek. The work was completed in the spring of 2015 and BCRA has been receiving waste. The BCRA uses the existing BCR access, decontamination, and ICP staging facilities. The initial design waste capacity of the BCRA is approximately 200,000 cy.

EMFR is located north of Interstate 90 off Exit 39, near Cataldo and primarily serves the Lower Basin. The EMFR has been receiving waste since 2009. The designed waste capacity is approximately 410,000 cy. At the current and estimated future waste disposal rates the EMFR is estimated to reach the design capacity in approximately 30 years. Over 10,000 cubic yards of waste were delivered to EMFR in 2017.

LBCR is located in Burke Canyon on the Star Tailings Impoundment near the community of Woodland Park. Design activities by the Trust for LBCR began in late 2012 and continued through 2014. The total design waste capacity is more than one million cubic yards. Construction of the first phase of the repository by the Trust including site access roads, ICP disposal area, decontamination facilities, and employee facilities were completed in the fall 2014. Over 15,000 cy of wastes were received at LBCR in 2017.

The Page Repository, which has been operating for almost 20 years, is located just west of Smelterville. Having reached its previous design capacity in 2010, Page was expanded to dispose an additional 700,000 cy of waste. Because of policy change to use LURs to dispose of relatively inert asphalt concrete and road base from the Box Paved Roads Program, the service life of the Page West Expansion was likely extended by 10 years, for a total life expectancy of about 45 years.

Objectives

The Repository Work Plan focuses on the following objectives:

(1) Box repository operations

(2) Continued development of Box repository capacity to support remedial action projects in the near term and sustain ICP support in-perpetuity

(3) Facilitate the disposal of inert road wastes in LURs

(4) Operating BCR, BCRA, EMFR, and LBCR

(5) Beginning Final closure of BCR

(6) Increasing repository volume in the Upper Basin

(7) Managing the Waste Management Strategy (WMS) including considerations for waste reduction or consolidation.

Specific tasks to achieve these objectives are summarized below:

Box Repository Operations

The estimated annual waste disposal capacity needed at the Page Repository and Government Gulch LUR through 2020 is approximately 50,000 cy which includes Paved Roads, ICP, and Box GWCS wastes. Page Repository and Government Gulch LUR operations will include but are not limited to the following tasks:

- Receipt and placement of Paved Roads, ICP, and Box GWCS wastes
- Segregation and appropriate re-use or disposal of non-soil waste such as wood and root wads, concrete, asphalt, large (greater than 6 inch) rock fragments and miscellaneous demolition debris
- Equipment decontamination, site stabilization, erosion and sediment control installation
- Surface and ground water monitoring and associated reporting.
- Waste stream management to minimize disposal and maximize re-use of high volume waste materials.

Increasing Box Repository Capacity

To accommodate the anticipated waste volume, Expansion Cell(s) #1 and #2 at Page have been founded and are accepting ICP wastes. Furthermore, the 6.5 acre area in Government Gulch has been developed to accommodate road wastes generated in the Box. The Government Gulch LUR was developed complete with a ground water interception system to prevent groundwater from contacting historic wastes from the Phosphoric Acid Plant and the Zinc Plant, and it was developed with a permanent storm water management system to service the 6.5 acres fill site.

Page expansion requires careful planning and coordination to limit construction costs while maintaining sufficient capacity. Although construction of the foundation for expansion cell #3 will not be necessary for at least 10 years, repository expansion will occur in two to three acre phases. Each phase will be initiated by constructing a foundation layer consisting of a “starter berm” from two to four foot concrete

blocks, filled behind by a "mattress" layer of 1 inch plus to 12 inch minus materials. The starter berms and mattress materials have been designed to exceed geotechnical criteria for structural stability and to platform placed wastes above the 50 year flood conditions that may be realized in the West Page Swamp. Cost effective construction of the foundation layer depends on segregation of waste generated during remedial actions and re-use of appropriate material during mattress construction. 2018 Work will include placement of concrete debris removed from road surfaces through the paved roads program to construct starter berms and foundation mattress in the Page expansion cells.

Basin Repository Operations

In 2018, Basin repositories and LURs will be operated to accept waste from the BPRP, Paved Roads, and Remedy Protection programs as well as ICP waste. There is significant uncertainty in waste volume projections for infrastructure (ICP) waste. However, Basin repositories are estimated to potentially receive as much as 60,000 cy from all projects in the Basin. Anticipating those needs, the Basin repository and LUR operations include but are not limited to the following tasks:

- Receipt and placement of BPRP, Remedy Protection, Paved Roads and ICP wastes
- Segregation and appropriate re-use or disposal of non-soil waste such as wood and root wads, concrete, asphalt, large (greater than 6 inch) rock fragments and miscellaneous demolition debris
- Equipment decontamination, site stabilization, erosion and sediment control installation
- Surface and ground water monitoring and associated reporting.
- Placing waste to consume all remaining capacity at BCR
- A transition of operations from BCR to the LBCR and the BCRA

Increasing Upper Basin Repository Capacity

Increasing Basin long-term repository capacity will be needed to dispose of the waste material generated by the cleanups identified in the OU-3 ROD and the Upper Basin RODA. The Upper Basin RODA adopted a two-part approach to waste management that utilizes both the Waste Consolidation Areas (WCA) and repositories. Waste generated by remedial actions in the East Fork of Ninemile Creek is being disposed of in the WCA in upper Ninemile drainage developed by the Trust. In order to address the waste disposal needs for other cleanup actions, a repository siting process driven by public input identified two new repository sites to support cleanup activities in the Upper Basin. One repository is the LBCR which began receiving waste materials in 2015. Baseline site characterization data was collected at Osburn Tailings Impoundment (OTI) and a 30% design was completed in 2011. Based on remedial project planning as described in the RODA and close coordination with Hecla Mining Company, activities at the Star Mine Complex in Burke and the OTI design were put on hold to focus on the more immediate needs for repository capacity in Canyon Creek. During 2015 the Trust began evaluating and collecting data towards the possibility of improving and rebuilding the old Silver Valley Natural Resource Trustee (SVNRT) Repository in Canyon Creek now called the Canyon Complex Repository. In 2017, public comment was sought on the 30% design for rebuilding of the SVNRT repository. Work to develop the Canyon Complex Repository will continue in 2018. This area in combination with the existing LBCR will likely be able to handle all waste generated in Canyon Creek.

The repository design program is a dynamic process driven by many factors, including waste stream volume estimates, priority cleanup site locations, funding availability and active mine site activities. As cleanup implementation plans are finalized and waste stream volume generation schedules are developed, repository designs, technical evaluations, and property acquisition will proceed at the

repository sites currently identified through the public planning process or new sites best located to serve the cleanup program in a10-year planning period.

Waste Management Strategy Update

The WMS is a key document that guides repository siting and waste disposal or re-use. It contains the most current estimates of future waste volumes and implementation schedule forecasts within geographic areas. The WMS will be updated as appropriate to incorporate additional information regarding the projected waste volumes generated by OU-2 and OU-3 remedial activity and remaining repository capacities. The revised WMS is being developed jointly by IDEQ and EPA and in coordination with the Trust, PHD and the TLG and/or Repository Project Focus Team (PFT), when appropriate.

1.3 ENVIRONMENTAL REMEDIATION ACTIONS

Environmental remediation actions include work in the Upper Basin described in the RODA and work in the Lower Basin described in the OU-3 ROD.

1.3.1 Upper Basin Remedies

This work includes remediation identified for the Upper Basin which includes the South Fork Coeur d'Alene River (SFCDAR) and its tributaries above its confluence with the North Fork.

The Upper Basin RODA identified $635 million of work in the Upper Basin including potential work at 125 mine and mill sites. The EPA SCIP identifies the priority setting process and outlook for sequencing the work over the next 10 years and the list of mine and mill sites to be addressed has been reduced to 95 through assessments activities. This document is updated on an annual basis as part of the adaptive management process to incorporate lessons learned as the work moves forward. Additional information about the RODA and prioritization of cleanup actions including technical memos, meeting presentations, and community involvement documents are located at the following web site: **http://yosemite.epa.gov/R10/CLEANUP.NSF/sites/bh+rod+amendment**

The goals of the RODA include:

- Prioritizing Upper Basin/Box source areas for cleanup to improve water quality and address risks to human health and the environment,
- Moving forward on the OU-2 Phase 2 cleanup to improve water quality in the SFCDAR
- Addressing changes in water treatment to accommodate additional contaminated water,
- Focusing on source control actions that address particulate lead which poses a risk to human health and ecological receptors, and
- Protecting remedies in community areas from tributary flooding and heavy precipitation events.

The prioritized cleanups under the RODA are expected to provide significant improvement to surface water quality and will reduce the contribution of contaminated groundwater to surface water. There will also be reduced particulate lead in the CDA River and downstream areas as a result of this work. These actions in turn are expected to reduce the recontamination potential in the Lower Basin and other downstream areas and reduce risks to humans and wildlife from exposure to contaminated mine waste.

This BEIPC 2018 work plan focuses on those cleanup actions that have either already started or been planned for the coming year. The following is expected to be the focus of the work in 2018:

1. The Trust began cleanup of the Success Site and associated riparian areas in 2016. It is expected that this work will take four years to complete.

2. In 2018, the Trust will continue characterization work in the East Fork Ninemile Creek watershed, focusing on the Interstate Mill Site and Tamarack area.

3. In 2017, the Trust completed the 30% design for the renamed Canyon Creek Complex Repository (formerly SVNRT). Additional fieldwork was necessary and the 60% design is expected early 2018. In the interim, to prevent exposure, the area has been fenced to eliminate the current unauthorized use by pedestrians and ATV's.

4. The Corps of Engineers awarded the Design/Build/Operate Contract to AMEC/Foster Wheeler (AMEC) on December 15, 2016 and issued the Notice to Proceed on February 2, 2017 for the Central Treatment Plant (CTP) upgrades. AMEC is responsible for the continued operation of the existing CTP and the design and construction of upgrades to the CTP along with the new Groundwater Collection System (GCS). The Corps of Engineers is responsible for administration and management of this contract. Since issuance of the Notice to Proceed AMEC has been busy finalizing design packages and work plans, investigating site conditions and surveying the construction areas. Contractors will be constructing drill pads and installing the control wells for the GCS and performing pilot tests of CTP filter systems in the fall of 2017. Concurrently the last of the design packages and work plans will be finalized and submitted to the Corps of Engineers. During the 2018 construction season, AMEC will be installing all CTP upgrades including a new sludge disposal pond, GCS extraction wells and associated piping, power, ventilation and control systems.

The CTP upgrades are necessary to treat additional influent flow from the GCS, improve system reliability, meet current, more stringent discharge requirements, and operate in High-Density Sludge (HDS) mode. These upgrades have been necessary for some time to provide dependable and more efficient water treatment of the Bunker Hill Mine water and the groundwater to be collected from the GCS near the Central Impoundment Area (CIA). The Bunker Hill Mine water has been and continues to be treated at the CTP. The upgraded CTP will be designed to treat influent flows at rates that nearly triple the current rate of base flows from the Bunker Hill Mine. Excess flow from the Bunker Hill Mine will be diverted to in-mine storage. The plant is currently not capable of meeting discharge standards when being operated in HDS mode, the upgraded plant when operating in HDS mode will result in much less sludge production, more efficient operating conditions, and the need for fewer sludge ponds being constructed over time. Following treatment, the effluent (combined mine water and extracted groundwater) discharged from the CTP to the SFCDAR will be required to be in compliance with current water quality standards. On an average basis, the GCS is expected to result in significant removal of dissolved metals, the most notable of which is zinc that is currently being discharged to the SFCDAR from groundwater interaction, as discussed in the following paragraph.

The design includes an approximate 8,000-linear feet cutoff wall between the CIA and Interstate 90 (I-90), a series of extraction wells, and a conveyance pipeline to the CTP that extends along the north side and over the top of the CIA. Groundwater flow and strength (concentration of metals) predicted by the mathematical model represents the range from base flow/strength (late summer/winter) through maximum flow/strength (spring runoff). By considering seasonal and annual variability and groundwater monitoring well data from south of I-90, the estimated dissolved zinc loading to the gaining

reach of the SFCDAR ranges from 150 to 450 pounds per day (lbs/day). A significant unknown is the potential source of metals in tailings under and north of I-90 that will not be captured by the groundwater collection system. However, the optimistic target is to capture up to 90% of the predicted load to this gaining reach from south of I-90.

1.3.2 Lower Basin Remedies

Work described in the OU-3 Interim ROD for the Lower Basin includes actions for wetlands and lateral lakes, river banks, splay areas and river bed dredging. Objectives of remediation in the Lower Basin focus on improving water quality and reducing particulate lead and other heavy metals in the Basin ecosystem.

The high-flow spring runoff in March of 2017 provided a rare opportunity to collect important data from the Lower Coeur d'Alene River. Previous monitoring has demonstrated that most contaminated sediment is transported during these high flow events. During the flood event, EPA measured high volumes of suspended sediment and metals moving through the system in the Dudley reach; this location is between the bridge-based monitoring that had previously shown high lead in suspended sediment occurring between Cataldo and the Bull Run Bridge. After the flood, deposited sediment samples were collected from the banks and other off-channel areas impacted by the flood. Measurements of sediment transport in the river and deposition rates off-channel are important for testing the sediment transport model and updating the conceptual site model (CSM) working hypothesis.

Several documents were completed in 2017 that summarized and analyzed the results of riverbed coring and characterization; sediment and lead transport; and floodplain investigations. The sediment transport model was calibrated and validated and test runs to support potential pilot projects are scheduled for early 2018. These significant data gathering efforts and analyses, along with model completion, culminate a multi-year effort focused on filling critical data gaps and computational model development to better understand and predict contaminated sediment transport in the Lower Basin. Modeling and data collection will continue to further enhance the CSM for targeting contaminated sediment locations and will support the selection of pilot projects, future cleanup decision making, project prioritization, and future decision documents, if necessary. The model development report will be completed in 2018. The results of these data gathering efforts continue to be shared with the subgroups of the BEIPC (e.g. Lower Basin PFT, TLG and CCC), interested stakeholders, and citizen groups after they are compiled and synthesized.

In late 2015, EPA initiated a treatability study in Lane Marsh to study the efficacy of using an incremental thin-layer capping approach for reducing exposure to waterfowl in sensitive wetland environments. This study continues and includes collaboration with EPA's Office of Research and Development to bench-test the use of soil amendments to reduce bioavailability of toxic metals in contaminated soils and sediments. In 2017, two data stations were installed in Lane Marsh and samples collected in support of the soil amendments study. EPA monitored a second year of Incremental Thin Layer Capping (ITLC) and added an expanded test area to evaluate application of native alluvial material. EPA will continue to monitor wetland vegetation response and the effect of the ITLC on reducing toxic lead concentrations in sediment.

While continuing studies and collaborations at specific wetlands such as Lane Marsh, EPA is reaching out to agency partners and the broader community to seek input regarding key values and objectives for prioritizing work to protect waterfowl in the wetlands and control the source of contaminated sediment from the channel. EPA received feedback from agency partners on a strategic plan that will further

build on the work that has been produced or is already underway related to the Lower Basin. The plan identifies high level goals and working objectives for actions in the Lower Basin and links to a decision and stakeholder engagement process for identifying work to be initiated over the next 3-5 years and further out (20-30 years). EPA is working with the Restoration Partnership and will continue to seek input from the broader community to ensure that community values are incorporated into the plan. EPA is not selecting new remedies for the Lower Basin through the strategic planning process, but prioritizing, evaluating, and implementing actions that have been previously selected in the decision document and pilot projects as part of its remedial investigation/feasibility study process. The 2002 ROD provides a large degree of flexibility in how EPA chooses to approach development and implementation of remedies in the Lower Basin. However, EPA may select supplemental actions, which are not explicitly identified by the ROD, and which may require additional ROD amendments or Explanations of Significant Differences. EPA anticipates the strategic planning development process to be finalized during 2018.

Additional investigation in the channel and the floodplains will be used to inform the conceptual design and feasibility of specific pilot projects that are being considered for implementation over the next two to five years. Pilot projects in the Lower Basin that are being considered include beach augmentation/modifications, targeted river bed source control projects, wetland water level management, and floodplain soil capping and amendments. Long-term projects such as agricultural to wetland projects were also considered for planning in 2018.

The Lower Basin PFT will continue to assist the TLG and provide updates on new technologies, pilot projects for consideration, and project ideas in order to implement the ROD for OU-3 where remedial actions are identified and where the potential for recontamination is low. This will be accomplished while continued cleanup priorities focus on human health and addressing source stabilization in the Upper Basin. The Upper Basin cleanup is expected to complement cleanup activities in the Lower Basin by reducing the loading of contaminated materials to the watershed and reducing the potential for recontamination from the Upper Basin to the Lower Basin.

As discussed above, property acquisition by partner agencies may provide additional opportunities to provide clean waterfowl feeding habitat. Idaho Department of Fish and Game recently purchased the Black Lake Ranch property and is in the early stages of site management. The Robinson Creek parcel that was purchased several years ago by IDF&G and converted to a clean wetland established though a multi-agency effort is flourishing and has added much needed clean waterfowl feeding habitat to the Lower Basin inventory.

1.4 BASIN ENVIRONMENTAL MONITORING

EPA has been working over the last several years to optimize the current sampling program by reducing the overall effort while continuing to update data quality objectives to better meet both remedial action effectiveness and long term monitoring needs of the cleanup. For over ten years, EPA has implemented the Basin Environmental Monitoring Program (BEMP) to meet the following objectives:

- Assess long-term status and trends of surface water, sediment, groundwater and biological resource conditions in the Basin.
- Evaluate progress toward meeting remedial action objectives (RAOs), applicable or relevant and appropriate requirements (ARARs), and preliminary remediation goals (PRGs).

- Improve the understanding of Basin environmental processes and variability to improve the effectiveness and efficiency of remedial actions.
- Provide data for CERCLA required Five-Year Reviews of remedy performance.

Extensive data from the site has been collected, analyzed and presented in the 2015 Five Year Review. EPA has been working with an optimization team from EPA headquarters and monitoring agencies to evaluate the BEMP data and explore changes to the program that reduce redundant or outdated monitoring from phase 1 remediation work.

In 2016, EPA began implementing recommended changes from the optimization review. The recommendations will help streamline and focus monitoring efforts in the Basin. Below are the overarching recommendations from the optimization effort:

- Distinguish monitoring required to assess Remedial Action performance and efficacy versus long-term progress toward remedial goals.
- Develop monitoring objectives for all monitoring based on information needed for site management decisions and regulatory requirements.
- Define baseline datasets for each monitoring program and medium.
- Articulate assumptions and expectations about chemical quality and ecological responses to remedial efforts.
- Describe how data will be managed and analyzed.
- Identify management actions potentially resulting from the outcome of data analyses.

At the end of 2015, EPA issued a new site wide Program Quality Management Plan for the Bunker Hill Superfund Site Environmental Monitoring Program and is currently developing a new Site-wide Data Management Plan. Both of these documents incorporate the optimization team recommendations. EPA is also developing a new Bunker Hill Superfund Site-wide Environmental Monitoring Program Management Plan and plans to have the document completed in 2018. EPA completed development of a Remedial Action (RA) Effectiveness Monitoring Plan Framework for cleanup efforts in East Fork Ninemile Creek in 2017 and is currently developing one for the Groundwater Collection System currently in design for the area near the Central Impoundment Area in Kellogg. EPA continues to make available the analytical results from site surface water, sediment, groundwater and biological resource sampling through WQX, EPA's Water Quality Exchange; human health-related data will not be included in this database. EPA no longer has regional support to make environmental monitoring data available through a web page. Site environmental monitoring data are accessible via WQX (http://www.epa.gov/storet/) and EPA Headquarters can assist interested stake holders in accessing the information. Stakeholders can call 800-424-9067 for support. Given the lack of regional support for data management, EPA is working with EPA Headquarters to transition to Scribe, a new data management system for the site and is currently working with data management agencies on this transition.

PART 2 – OTHER ACTIVITIES AND RESPONSIBILITIES

For Part 2, the scope of this work plan recognizes a number of work items that the BEIPC will be involved in and items of work needed to accommodate some of the recommendations of the NAS study;

it also includes implementation of the Lake Management Plan by the State of Idaho and CDA Tribe and coordination with activities of the Natural Resource Trustees (Restoration Partnership).

The plan includes the following work:

- Lake Management Activities
- Flood Control, and Infrastructure Revitalization
- Communications and Public Involvement
- Coordination with the Restoration Partnership

2.1 LAKE MANAGEMENT ACTIVITIES

The OU-3 Interim ROD did not include CDA Lake in the Selected Remedy nor is there a remedy identified in the Upper Basin RODA. The OU-3 Interim ROD anticipated that the State, Tribe, federal agencies, and local governments would implement a Lake Management Plan (LMP) outside the CERCLA (Superfund) process using separate regulatory authorities. The updated LMP was approved in 2009 and implementation has been underway. The goal of the LMP is "to protect and improve lake water quality by limiting basin-wide nutrient inputs that impair lake water quality conditions, which in turn influence the solubility of mining-related metals contamination contained in lake sediments." Implementation of the LMP is an adaptive management process and adjustments may be necessary as monitoring and other data are obtained and analyzed.

As referenced in Subsection 4.5.1 of the 2009 LMP, many of the agencies, governments, and other stakeholders that address water quality in CDA Lake are represented on the BEIPC, TLG or CCC. As such, these various BEIPC forums represent unique opportunities for LMP coordination and implementation which IDEQ and the Tribe intend to fully utilize. In addition, LMP staff will continue to coordinate with county representatives and Watershed Advisory Groups, as appropriate.

Below are the objectives outlined in Section 3 of the LMP. These objectives are listed in the order they appear in the LMP, which does not necessarily reflect any prioritization.

1. Improve Scientific Understanding of Lake Conditions through Monitoring, Modeling, and Special Studies. This objective is needed to ensure management actions are effective and efficient, providing a data-driven adaptive management approach.
2. Establish and Strengthen Partnerships to Maximize Benefits of Actions under Existing Regulatory Frameworks.
3. Develop and Implement a Nutrient Reduction Action Plan. This plan will utilize existing data and ongoing monitoring to identify and prioritize nutrient reduction actions.
4. Increase Public Awareness of Lake Conditions and Influences on Water Quality. Only through awareness and understanding can nutrient management and reductions be achieved. Buy-in is critical to action.
5. Establish Funding Mechanisms to Support the LMP Goal, Objectives, and Strategies.

Below are activities envisioned for implementation of the LMP in 2018. These activities are organized under objectives 1, 3, and 4, as outlined in the LMP. Objectives 2 and 5 are intertwined throughout all objectives, and there are also crossovers between objectives. As stated above, the focus of lake water

quality protection is nutrient management from sources basin-wide. In 2018, LMP staff focus will shift from developing the nutrient source inventory to working with stakeholders throughout the basin to develop a nutrient reduction action plan in response to inventory information, with the ultimate goal of on-the-ground improvements.

Increase Scientific Understanding (LMP Objective 1):

1. IDEQ and the Tribe will continue joint water quality monitoring throughout Coeur d'Alene Lake for metals, nutrients, and physical parameters. **Supports Objective 5*
2. The Tribe and IDEQ will continue utilizing the AEM3D and LOADEST models. These models are utilizing real-time data that is collected from Coeur d'Alene Lake and four meteorological stations. *Supports Objective 3*
3. LMP staff will share plans for core LMP monitoring with the TLG and CCC once a preliminary schedule is developed by IDEQ and the Tribe.
4. A draft update to the trends report that includes 2016 data will be provided to the TLG for feedback prior to distribution to the BEIPC. **Supports Objective 2*
5. Staff will continue to evaluate water year variability and relationships among measured parameters in order to help inform stakeholders on possible causative factors for observed trends.
6. Both the Tribe and IDEQ continue to collaborate with the University of Idaho EPSCoR "Managing Idaho Landscapes for Ecosystem Services (MILES)" project, which continues through 2018. The project supports joint outreach activities and special studies and will be used to leverage support for additional research. **Supports Objectives 2, 4, and 5*
7. IDEQ and the Tribe will continue to partner with area research universities to support research that will strengthen the predictive ability of AEM3D. **Supports Objectives 2, 3, 4, and 5*

Nutrient Reduction and Implementation (LMP Objective 3)

1. The final GIS-based basin-wide estimate of nutrient loading will be distributed to the BEIPC, TLG and CCC in early 2018. The nutrient inventory will be used to develop a nutrient reduction action plan in collaboration with stakeholders. **Supports Objectives 1, 2, and 5*
2. LMP staff will continue to work with County representatives, Watershed Advisory Groups, and other potential partners for nutrient reduction project identification and implementation. **Supports Objectives 2 and 5*
3. The LMP team will continue to identify critical data gaps both spatially and temporally to identify potential sites for additional monitoring of nutrient loading, e.g. tributaries to CDA Lake. **Supports Objectives 1, 2, and 5*
4. In support of the Nutrient Source Inventory, IDEQ is established a monitoring site in Wolf Lodge Creek (as of fall 2017). Nutrient monitoring will be conducted throughout 2018 at this site. **Supports Objectives 1 and 5*
5. LMP staff will work with County representatives (such as a request for proposals) to explore ways to increase interest in pilot project implementation.
6. The Tribe and IDEQ will continue to monitor pilot implementation projects in Windy Bay and on Wolf Lodge Creek to ensure success in plant establishment, and to assist in maintenance needs. These projects will be used as demonstration sites to encourage future implementation projects. **Supports Objectives 2 & 4*
7. LMP work plans and activities will be presented to the CCC for input in early 2018. **Supports Objective 2*

8. The report of the LMP Management Action Tables (MATs) audit will be presented to the BEIPC and others in 2018.**Supports Objective 2*
9. Stabilization projects along eroding banks will continue to be evaluated, prioritized, and implemented in collaboration with Avista Corporation, the Natural Resource Conservation Service (NRCS), the Soil & Water Conservation Districts, the Counties, and landowners. **Supports Objective 2*
10. The Tribe will continue to implement and evaluate the invasive Aquatic Plant Survey and Treatment Program in the southern lake, and IDEQ will continue implementing aquatic plant surveys within northern pool bays. **Supports Objectives 1 & 2*
11. The LMP Coordinators will continue to be involved in the Lower Basin PFT and the TLG and support implementing projects identified in the 2002 OU-3 Interim ROD. **Supports Objective 2*
12. LMP staff will identify potential opportunities to align nutrient reduction and remedial efforts in the Lower Basin. **Supports Objective 2*
13. LMP staff will coordinate with the Restoration Partnership on water quality improvement implementation. ** Supports Objective 2 & 5*
14. The LMP team will collaborate with area Conservation Districts, NRCS, and Washington Department of Ecology on outreach and monitoring as part of the Resource Conservation Partnership Program (RCPP), an NRCS-funded initiative in the Coeur d'Alene/Spokane River drainage that will increase the availability of funding for Farm Bill conservation programs. **Supports Objective 2*

Increase Public Awareness (LMP Objective 4)

1. The LMP Education/Outreach Program, Lake*A*Syst (a home owner's guide to environmental stewardship within the Coeur d'Alene Basin), developed in 2013, will be reprinted for distribution. A revised electronic version will be posted on the Our Gem website. **Supports Objectives 1 & 2*
2. LMP staff will continue providing support for development of an outdoor classroom adjacent to the UI Harbor Center in Coeur d'Alene and will be collaborating closely with the City of Coeur d'Alene and other partners to select storm water and Low Impact Development (LID) elements that will be incorporated into the site.**Supports Objectives 2 & 3*
3. LMP staff will partner with Spokane River Forum, CDA Vision 2030, and other agencies and stakeholders to plan a 2019 "Our Gem Symposium" to share information and get feedback from the basin-wide community. **Supports Objectives 2 and 3*
4. LMP staff will continue to partner with University of Idaho to support Basin high schools by providing workshops and guidance to teachers and students involved in field-based watershed science. **Supports Objective 2*
5. LMP staff will continue to partner with University of Idaho/Community Water Resource Center to develop and support the Baywatchers program, to provide land management information and resources to lakeshore residents. ** Supports Objective 2.*
6. LMP staff will continue to partner with UI, area high schools, and area environmental organizations to host the annual Youth Water Summit, featuring secondary education watershed research projects. **Supports Objective 2.*
7. LMP staff will participate in other joint educational and outreach opportunities as time allows. *Supports Objective 2*
8. The Local Gems program for local businesses will continue through 2018. This program recognizes businesses and organization that are taking action to protect basin water quality. **Supports Objectives 2 & 3*

9. LMP activity updates will continue to be provided to various groups throughout the year. **Supports Objective 2*

Continued coordination with BEIPC forums will maximize opportunities for information exchange and advice for all the parties that participate in the BEIPC activities. Future coordination with the BEIPC recognizes that IDEQ and the Tribe retain their respective decision making authorities under CERCLA and the Clean Water Act (CWA) with regards to implementation.

2.2 FLOOD CONTROL AND INFRASTRUCTURE REVITALIZATION

The BEIPC through the office of the Executive Director continues to pursue support and funding for an analysis of flood control needs and the existing levee system in the South Fork CDA River and Pine Creek. During 2017 a Flood Control Group was formed consisting of local and state government officials and the Executive Director, BEIPC. Through this group the Executive Director will continue to develop and implement an approach to dealing with potential flooding problems and levee management in the Upper Basin. The BEIPC will continue to assist Upper Basin communities and utilities in pursuing funding to implement the remaining projects in the Upper Basin Drainage Control and Infrastructure Revitalization Plan (DCIRP).

2.3 COMMUNICATIONS AND PUBLIC INVOLVEMENT

During 2018, the BEIPC Assistant to the Executive Director and agency Community Involvement Coordinators (CICs) will work together to carry out public involvement, communication, and education related to BEIPC and agency activities. Agency CICs may include staff from EPA, IDEQ, and the Panhandle Health District.

The Office of the BEIPC Executive Director, the Citizen Coordinating Council (CCC) and agency CICs continue to be the focus organizations to facilitate the public involvement process in the Basin. The BEIPC Executive Director and/or Assistant, Project Focus Team Chairpersons, and CCC Chairperson may request CIC support for public outreach regarding BEIPC activities. The CICs may in turn request BEIPC support for their agencies' public involvement activities.

Following is a partial list of community engagement activities and coordination opportunities for 2018.

- As required by legislation, the BEIPC will hold quarterly meetings open to the public. The CCC will hold meetings open to members and the public as issues or opportunities arise or discussions are warranted.

- The BEIPC will coordinate its annual tour in August of the Basin cleanup with publicity support from the CICs and technical support from agency project managers. The tour is open to everyone.

- The BEIPC/CCC and agency CICs will continue to sponsor activities such as open houses, workshops, training, or public meetings. The BEIPC Assistant and CICs may assist each other to coordinate public education and outreach associated with these events.

- The BEIPC/CCC will lead the development, production and distribution of BEIPC related items and the agency CICs will lead the development, production and distribution of agency items. The BEIPC/CCC and agency CICs will create and process flyers, public notices, newspaper ads,

and posting to their websites of their meetings and other information. The BEIPC/CCC will also create, process, and distribute their meeting announcements, agendas, and their meeting summary notes and other information by e-mail to CCC members and interested parties. The BEIPC Assistant will update and maintain the BEIPC website.

- CICs will continue to support the CCC meetings, support BEIPC communications, and explore ways to maximize the CCC's value to interested local people. Upon request, CIC's may support BEIPC with suggestions for publicizing BEIPC events and meetings, participate in distributing meeting announcements, posting to social media, or by proposing and/or helping to implement communications strategies.

- Upon request, the BEIPC Executive Director will make presentations to public groups and participate in educational forums such as school district Science, Technology, Engineering and Math (STEM) fairs, etc. Assistance from agency CICs may be requested for these efforts. The Director will participate in quarterly press availability sessions, as scheduled by EPA.

- The BEIPC and agency CICs will help organize and participate in a joint booth for public outreach/education at the North Idaho Fair.

- The EPA will publish BEIPC/CCC information upon request in its triannual Basin Bulletin and on the CDA Basin Facebook page.

- CICs work directly with EPA, IDEQ, PHD, and BEIPC project managers as needed to tailor communications outreach and/or education for specific projects under the programs listed in this work plan. Outreach activities are often reported and discussed at CCC meetings.

2.4 RESTORATION PARTNERSHIP (Partnership)

The Restoration Partnership (Partnership) is composed of the Coeur d'Alene Basin Natural Resource Trustees: the United States (represented by the U.S. Forest Service, U.S. Fish and Wildlife Service and U.S. Bureau of Land Management), the Coeur d'Alene Tribe, and the State of Idaho (represented by the Idaho Department of Fish and Game and Idaho Department of Environmental Quality). For more information, refer to **www.restorationpartnership.org.**

In the coming year, objectives of the Partnership are to:

- Continue to engage in restoration projects completed under the 2007 Interim Restoration Plan

    - *Schlepp Agriculture to Wetland Conversion Project:* The major restoration work on the Schlepp project is complete and the project is in the long-term operations and maintenance phase. A 10-year Restoration and Management Plan for the project will be finalized in 2018. Habitat management, waterfowl banding, and monitoring will continue.

    - *Robinson Creek Wetlands Restoration Project:* Wetland restoration work is complete however there will be ongoing noxious weed management and native plantings will be monitored with some potential re-vegetation. Water level management will be static for the next few years until vegetation is well established, dynamic, and productive.

- Ongoing coordination with EPA with remedy and restoration activities and participation in BEIPC and associated groups and committees.

- Publish the Record of Decision with the Final Programmatic Environmental Impact Statement and adopt the Restoration Plan.

- Develop a work plan.

- Engage in project solicitation process.

- Commence implementation of the Restoration Plan.

This list reflects the objectives of the Partnership; however, the timing of these activities is tentative and likely to change given the scale of the restoration plan and scope of the program.