2019 ANNUAL REPORT





Basin Environmental Improvement Project Commission

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Cover Photo, Remediation of Interstate Mill Site, East Fork Ninemile Canyon					

Executive Summary

The Basin Environmental Improvement Project Commission (BEIPC) is responsible for coordinating environmental cleanup to address heavy metal contamination, natural resource restoration and water quality in the Coeur d'Alene Basin (Basin). The BEIPC also participates in guiding and coordinating infrastructure upgrades and improvements to protect the environmental cleanup remedy and enhance living conditions in the communities of the Basin. The Basin is defined as the watersheds of the Coeur d'Alene River (CDA River), Coeur d'Alene Lake and the Spokane River within the Idaho Counties of Shoshone, Kootenai, and Benewah, as well as the Coeur d'Alene Tribal Reservation within Idaho.

During Calendar Year 2019, the BEIPC coordinated and monitored accomplishments by various implementing entities for environmental cleanup and natural resource restoration work included in the BEIPC 2019 Annual Work Plan and the five-year operating plan. It also developed a 2020 Annual Work Plan and an updated five-year plan. The environmental cleanup work was performed through the federal Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA/Superfund) Program and the State of Idaho environmental cleanup programs, and actions under the direction of the Environmental Protection Agency (EPA) by the Coeur d'Alene Work Trust (Trust) formed under the ASARCO Bankruptcy settlement. Natural resource damage restoration work was performed by the Coeur d'Alene Basin Natural Resource Trustees (Restoration Partnership) including the Coeur d'Alene Tribe (CDA Tribe), State of Idaho Department of Environmental Quality (IDEQ) and Idaho Department of Fish and Game (IDFG), U.S. Department of Interior through the U.S. Fish and Wildlife Service (USFWS) and Bureau of Land Management (BLM) and U.S. Department of Agriculture through the U.S. Forest Service (USFS). The Panhandle Health District (PHD) continued to manage the Institutional Controls Program (ICP) to control the release and migration of contamination remaining in place after remediation.

BEIPC Overview

Authorization and Duties

The BEIPC was established by the Idaho State Legislature and implemented through a Memorandum of Agreement (MOA) among implementing parties.

The Basin is considered to be Operable Unit 3 (OU-3) of the Bunker Hill Mining and Metallurgical Complex Superfund Facility originally listed on the CERCLA National Priorities List in 1983. Operable Units 1 and 2 (OU-1&2) are the populated, industrial, and undeveloped areas in a 21 square mile area encompassing the communities of Pinehurst, Smelterville, Wardner, and Kellogg and outlying Shoshone County lands known as the "Bunker Hill Box" located within the Basin. OU-3 includes the remainder of the site outside the Box in the Basin where contamination has come to be present.

The BEIPC's primary purpose is to work with the EPA and IDEQ to implement the Record of Decision (ROD) for OU-3 throughout the Basin and implement the Upper Basin ROD Amendment (RODA) for portions of OU-3 and work in OU-2 included in the Amendment designed to advance the cleanup of heavy metals contamination in the Upper Basin (confluence of the North and South Forks of the CDA River to the head waters of the South Fork above Mullan).

In addition, the BEIPC is involved in:

- Assisting the EPA in developing and managing the Superfund Cleanup Implementation Plan (SCIP), a comprehensive cleanup plan for the Upper and Lower Basins based on remedies selected in the OU-3 ROD and Upper Basin RODA;
- Coeur d'Alene Lake management planning and implementation;
- Heavy metal contamination cleanup efforts at mining sites in the North Fork of the CDA River (NFCDR);
- Assisting the Resource Partnership in the implementation of their natural resource restoration program as provided for in the CDA Basin Restoration Plan; and
- Leading multi-agency coordination in addressing potential flooding in the South Fork CDA River (SFCDR) and Pine Creek drainages.

Legislation and the MOA creating the BEIPC authorized appointment of a seven-member board comprised of:

- Four members from Idaho, one representing the state, and one each representing the county commissions from Shoshone, Kootenai, and Benewah Counties, appointed by the Governor of Idaho;
- One representative of the state of Washington appointed by the Governor of Washington;
- One representative appointed by the Council of the Coeur d'Alene Tribe; and
- One federal representative of the United States appointed by the President.

The Executive Director of the Basin Commission is Terry Harwood.

BEIPC Membership as of December 2018:

Name	Title	Representing		
Jack Buell, Chair	Benewah County Commissioner	Benewah County		
Leslie Duncan	Kootenai County Commissioner	Kootenai County		
Mike Fitzgerald	Shoshone County Representative	Shoshone County		
Phillip Cernera	Lake Management Director	Coeur d'Alene Tribe		
Brook Beeler	Regional Director, Washington Dept. of Ecology	State of Washington		
John Tippets	Director, Idaho Department of Environmental Quality	State of Idaho		
Chris Hladick	Regional Administrator, EPA, Region 10	Federal Government		

Program Management

The BEIPC operates in accordance with the Idaho statute and the MOA among the governing entities. It is responsible for coordinating the activities of federal, tribal, state and local government agencies implementing the ROD for OU-3 and the Upper Basin RODA for human health and ecological cleanup activities. It is also involved in the efforts by the Restoration Partnership to restore natural resources in accordance with their CDA Basin Restoration Plan and to coordinate efforts to protect the cleanup remedies, human health, and the environment from the release and migration of contaminants through the implementation and management of Institutional Controls in the Basin.

The Executive Director (ED) works with the seven governmental entities and their agencies to establish annual work priorities and operating plans, manages the activities and programs of the BEIPC, and assists governments on various engineering and environmental issues at their request. To assist the Executive Director in program management, planning, and implementation, volunteer staff "on loan" to the BEIPC from the states of Idaho and Washington, the EPA, the Coeur d'Alene Tribe and the Counties coordinate with the Executive Director and provide routine intergovernmental input on technical and policy issues. Other support groups include the Technical Leadership Group (TLG) and the Citizen Coordinating Council (CCC).

Technical Leadership Group (TLG)

The TLG with its Project Focus Teams (PFTs) is the BEIPC primary technical advisory group. It is comprised of federal, state, local and tribal representatives as well as interested private citizens serving on the PFTs who provide expertise in science, engineering, logistics, regulatory aspects, and land management in the Basin. The TLG advises the BEIPC on work planning and implementation while striving toward consensus-based recommendations. In 2019, the Executive Director and TLG developed the 2020-2024 Five-Year and Calendar Year 2020 draft work plans and studied and developed project and program proposals to implement the remedy in OU-2 and 3. The TLG's Lower Basin PFT met in May to discuss and work on potential project proposals for implementation in the Lower Basin.

Public Outreach and Citizen Involvement

Community Involvement

During Calendar Year 2019, the BEIPC held meetings and deliberations open to the public and maintained an up-to-date Basin website at: <u>www.basincommission.com</u>. Meetings were held at various locations within the Basin with locations and dates announced on the website, in local newspapers, flyers posted throughout the community and at the BEIPC office in Kellogg, Idaho. EPA, IDEQ and the BEIPC held a number of community meetings to discuss proposed project work in the Basin and Box. The BEIPC also participated in public education/outreach efforts including the joint information booth at the North Idaho Fair.

Citizen Coordinating Council (CCC)

The CCC serves as an information conduit to and from the BEIPC on citizen, community, and special interest issues, and on environmental cleanup and restoration concerns. It is comprised of politically and

geographically diverse members and was established to provide local citizen review and input on Basin related work to the BEIPC.

CCC Meetings and Communication

The CCC facilitated communications to its members and the public on an as-needed basis by e-mail, flyers, newspaper ads and posting to the BEIPC website and EPA Facebook. CCC members were invited on the August tour of project work and issues in the Upper Basin.

At CCC meetings, members were updated on ongoing BEIPC and agency activities and asked to provide input on a variety of issues. The CCC informed the BEIPC of its activities by the CCC Chair making reports at BEIPC meetings. Throughout 2019, the CCC arranged for transmission of information to its members and the public regarding activities in the Basin.

Chronology of Selected CCC Activities and Input to the BEIPC in 2019

In addition to receiving various reports for review and comments, CCC members were involved in the following BEIPC activities in 2019:

February

The CCC Chairman reported on general citizen issues at the February BEIPC Meeting.

May

The CCC Chairman reported on general citizen issues at the May BEIPC Meeting and attended the TLG Lower Basin PFT meeting on May 14.

August

CCC members were invited to the BEIPC Site Tour on August 21, and a number attended along with TLG Members, federal, state, and local government officials, members of the public, press, and the Idaho Congressional Delegation.

October

The draft 2020 Annual Work Plan and 2020-2024 Five Year Work Plan were set out to the CCC members and other interested parties for comment prior to completing the final draft documents for consideration and approval by the BEIPC at the November meeting.

November

At the November BEIPC meeting, the CCC Chair reaffirmed that the CCC would continue concentrate on holding special meetings to discuss specific issues and keep the CCC members informed of activities through the use of the extensive mailing list maintained at the BEIPC office.

Additional Outreach Activities

In addition to the activities of the CCC, the various governmental entities represented by the BEIPC continue to support the TLG and CCC by being involved in the activities of those groups. The governmental entities have been involved in outreach activities including meeting with citizen groups, giving technical presentations, participating in Basin events, holding tours of Basin project areas, maintaining information posting throughout the Basin, and publishing various information documents to provide updates on Basin activities and to give answers to common environmental cleanup and improvement questions.

As part of the public outreach program, the Basin Commission ED continued to make numerous presentations to local business and community groups concerning activities of the BEIPC and planned cleanup actions and activities required to protect the remedy, human health, and the environment. The ED also hosted the tour of projects in August by interested parties.

BEIPC Communications and Public Involvement

In 2019, the BEIPC continued its efforts to strengthen public involvement in BEIPC activities and communication between the Basin community the BEIPC and agencies involved in the cleanup. The CCC continues to be the focus organization to help implement this process.

The following is a partial list of BEIPC community involvement activities throughout the year:

- Executive Director made a presentation on the Bunker Hill Site cleanup activities at the annual Idaho Society of Professional Engineers meeting in June.
- Executive Director met with Kootenai County TLG Representatives prior to each BEIPC quarterly meeting to update them on Basin issues.
- Executive Director met with Silver Valley Transportation Team on a quarterly basis to update them on Superfund activities in the Silver Valley.
- Executive Director met with Idaho Congressman Fulcher and his North Idaho Representative to discuss Superfund and Bunker Hill Site issues in February.
- Executive Director attended the Silver Valley Redevelopment meeting to update local folks on cleanup activities and planned work for 2019 construction season in May.
- Executive Director met with Idaho Governor's North Idaho Representative in August to brief him on CDA Basin cleanup activities.
- Executive Director held a field tour for Kootenai County Basin Commissioner and North Idaho Representative for Congressman Fulcher in August.
- BEIPC Staff Participated in public education/outreach efforts in a joint booth with IDEQ, EPA and PHD at the North Idaho Fair in August.
- Coordinated a field tour of sites in the Upper Basin for the Basin Commissioners, agency representatives, and citizens in August. Participants viewed the Central Treatment Plant and Ground Water Extraction project areas in Kellogg, paved road projects, a recreation site project in Ninemile Canyon, and mine and mill remediation sites in the East Fork of Ninemile Canyon.
- Provided assistance to BEIPC groups and staff on communications material including presentations, brochures, news articles, displays, banners, and advertising.

- Publicized BEIPC and CCC meetings by posting the dates and agendas to the BEIPC website, newspaper advertising, and through electronic media and distribution of informational flyers with assistance from EPA and IDEQ.
- Sent out reports and activities updates, CCC meetings and BEIPC meetings as well as BEIPC work plans to CCC members by email for review and comment.
- Shared BEIPC related information with the Community Involvement Coordinators (CICs) of EPA, IDEQ and the Lake Management Plan (LMP) staff for publication on their Facebook pages.
- Continued to populate the BEIPC website with new information about BEIPC related activities and other information as requested by various agencies and advisory groups. The website provides information to keep the public informed including how to become involved and participate in the process; and opportunities for the community to provide input. Updates, including agendas and summary minutes of quarterly meetings, are posted to the website at <u>www.basincommission.com</u>.
- Executive Director worked with BEIPC Consultant, Corps of Engineers (COE), FEMA and the local Flood Group concerning remapping of flood zones in the South Fork CDA River channel from Elizabeth Park to Pinehurst. BEICP funded the Consultant work.
- Executive Director served on the National Council on Environmental Policy and Technology assisting EPA's Washington Office and Region 10 on climate change problems in Alaska affecting Alaska Native Village communities. This work included two days in the EPA Washington Office in July.

EPA Community Involvement Activities

Coordinating with local communities and residents is a priority for EPA Region 10. The cleanup team wants to give people meaningful opportunities to be involved in and informed about the cleanup. Many of EPA's community involvement activities are done in partnership with others, including the IDEQ, BEIPC, and PHD. Highlights for the year include:

- The EPA continued to follow its Community Involvement Plan for the cleanup. The plan lays out how community members can get information and be involved, and summarizes local concerns and input. It also outlines how the EPA collaborates with its partners. Many local people helped develop this plan.
- Ideas from local community members helped shape a new report about the development of IDEQowned land parcels on the Bunker Hill Superfund Site. In spring 2019, EPA, IDEQ, and PHD held stakeholder meetings and a community forum to identify a range of future use options, described in the report "Reuse Framework: Bunker Hill Mining & Metallurgical Complex Superfund Site." The report is available at <u>www.epa.gov/superfund/bunker-hill</u>. It is a tool for IDEQ and local stakeholders to support redevelopment and revitalization, consistent with community goals and site considerations.

- In November, EPA's Office of Policy delivered a Building Blocks for Sustainable Communities Open House in Kellogg. The City of Kellogg applied for, and was awarded, the technical assistance through the Sustainable Communities Program. Local officials participated in the session. The focus was on Government Gulch development, potential solutions to parking issues, and building on the work accomplished at the Superfund Redevelopment Initiative sessions from April 2019.
- In 2019, EPA and its partners conducted four Remedy Protection Projects, completing the Remedy Protection Program. We worked closely with local jurisdictions, community members and property owners. These projects help protect completed cleanup work. Agency fact sheets, door-to-door communications, and other related outreach efforts have been ongoing. Local jurisdictions are also especially involved with public outreach.
- The agency, in coordination with its partners, conducted outreach on several projects this year including: Canyon Creek Basin Summer Fieldwork, Ninemile Basin Summer Fieldwork, trucks hauling waste to the Lower Burke Canyon Repository, and the Kellogg area Central Treatment Plant and Groundwater Collection System Project. Outreach was also conducted for lead health education; soil testing and property cleanups; recreation and health; repositories; habitat restoration; roads projects; and more.
- EPA began outreach for the fifth Five-Year Review for the Bunker Hill Superfund Site. Early products include a Basin Bulletin article, a public notice in the local newspapers, an email listserv message, and a web page update. We're asking the public for information and ideas that will assist us with the review. EPA is required to review Superfund cleanups at least every five years at sites where contaminants remain in place. We use the review to make sure cleanup actions are protecting human health and the environment.
- The **Coeur d'Alene Basin Facebook** page continues to provide site updates to the public. Find it at <u>www.facebook.com/CDAbasin</u>. The page offers site news, photos, and resource information. The EPA invites participation, suggestions, and postings.
- Publication of EPA's **Basin Bulletin** newsletter continues. Published three times per year, in March, July, and November, it provides news and updates about the Coeur d'Alene Basin Cleanup.
- The agency maintained its commitment to the BEIPC process throughout 2019. EPA provides staff support and regular participation at meetings of the BEIPC, CCC, TLG, and PFTs. EPA provided a tour guide handout for participants at BEIPC's annual Basin Cleanup Tour, and several EPA project managers presented their projects.
- EPA continues to maintain the website for the Basin Cleanup. It offers the public access to updates, site documents, and background information. This year we updated the website's photo library. Suggestions for improvements are always welcome. (Website URL: www.epa.gov/superfund/bunker-hill)
- EPA maintains document collections related to the cleanup at several area libraries and at the EPA Coeur d'Alene Field Office for public access.
- Project managers met several times with local officials, interest groups, and others to provide updates and answer questions in 2019. Additionally, EPA led site tours for interested parties including provided presentations to groups in the area, and staffed booth exhibits at local events. EPA also supported interagency exhibits about the cleanup at the Earth Day event, North Idaho Fair, and Shoshone Medical Center's Children's Health Fair.

• EPA regularly worked with the media in 2019, arranging a number of press availability sessions, fielding questions from reporters about the site, running newspaper display ads, and issuing press releases on high-interest activities.



BEIPC August Field Tour

IDEQ and PHD Community Involvement Activities

IDEQ, PHD and EPA conduct education, public engagement, and health awareness activities related to the CDA Basin Cleanup. Kellogg PHD is the primary partner for health messaging and outreach. The aim is to raise awareness about lead intervention and to support the continuation of healthy trends for children, families, and visitors to the area. The following are highlights of 2019 activities:

Education related activities

- Conducted a hand washing activity as part of Lead Health Prevention Education for K-3 students in Mullan, St. Maries, Kellogg, Cataldo, Harrison and Plummer.
- Presented Superfund site history to Wallace High School, Kellogg High School, Coeur d'Alene High School and Post Falls Middle School.
- Attended and helped judge scientific research projects at the Youth Water Summit held at North Idaho College.

- Hosted a handwashing event at Canyonside Apartments, located in Burke Canyon across from the Lower Burke Canyon Repository.
- Regularly gave tours to Kootenai Medical Center Residents.
- Assisted with a tour of the site as a part of the Confluence Project for Coeur d'Alene High School Environmental Science Students.
- Assisted with the creation of a Case Study based on challenges related to risk communication for University of Idaho's Environmental Science Students.
- Organized and partnered with University of Idaho to put on an Environmental Health and Science Fair for students and the community.
- Hosted a booth at Silver Hills Elementary Family Science Night.
- Hosted a booth at Pinehurst Elementary Year End Celebration/family night.
- Provided a site tour for Eastern Washington University students.
- Provided a site tour for Spokane Community College students.

Other community presentations and events

- Hosted a booth at the following events:
 - o Shoshone Medical Center's Children's Health Fair
 - Spokane River Forum
 - o Our GEM Symposium
 - North Idaho Fair
 - North Idaho College Safety Fest*
 - Veterans Career Fair hosted by Silver Valley Economic Development Council
 - Leadman Triathlon at Silver Mountain
 - The Great Idaho STEM Together Conference in Coeur d'Alene*
 - CoeurFest in McEuen Field, Coeur d'Alene
 - Earth Day Fair, Coeur d'Alene
 - *also presented
- Presentations:
 - o Society of Mining Exploration & Engineering, Coeur d'Alene Chapter
 - Community Library Network at the following Libraries; Pinehurst, Hayden, Post Falls, Spirit Lake and Sandpoint
 - Environment Day for Coeur d'Alene Leadership
 - Kootenai Environmental Alliance in Coeur d'Alene
 - o Matchwood Brewing: Summer Adventure & Safety Series in Sandpoint
 - Bunker Hill Task Force
 - Shoshone County Commissioners
 - o Silver Valley Economic Development Council
 - o Kootenai Electric
 - Historic Silver Valley Chamber of Commerce

- Panhandle Health District Board of Health
- Shoshone County Realtor's Association
- Community Forum for Superfund Redevelopment
- Kellogg School District
- o Kootenai Realtor's Association



North Idaho Fair Joint Booth Blue Ribbon Winner

Calendar Year 2019 Work Accomplishments

Part 1 -Work Performed Through Federal Superfund or Other Cleanup Programs:

Lead Health Intervention Program

Screening of children for elevated blood lead levels has been occurring annually in the CDA Basin since 1996. For children with elevated blood lead levels, follow-up consultations from a public health professional are available through the Lead Health Intervention Program to assist families with identifying ways to reduce lead exposures. The screening program also informs the Basin cleanup efforts although cleanup decisions are not based on annual blood lead testing results. The goal is to prevent lead exposures that could result in elevated blood lead levels.

The following table shows the Basin Blood Lead summary results from 2010 - 2019 for children residing in the Basin 6 months to 6 years of age.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of Children	108	75	83	92	77	94	70	105	88	84
Min (µg/dL)	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.0	1.4	1.9
Max (µg/dL)	20.0	12.0	8.0	16.0	11.0	13.0	9.0	20.0	9.0	14
Ave $(\mu g/dL)$	2.5	3.1	3.3	2.8	3.1	3.2	3.2	4.3	2.4	2.5
GeoMean (µg/dL)	2.1	2.6	3.1	2.5	2.9	2.8	2.9	3.5	2.0	1.9

In early 2012, the Centers for Disease Control & Prevention (CDC) changed its "level of concern" associated with childhood lead poisoning from a blood lead level of 10 micrograms per deciliter (μ g/dl) to a new "reference value" of 5 μ g/dl. The new lower value means that more children will be identified as having lead exposure allowing parents, doctors, public health officials, and communities to take action earlier to reduce the child's future exposure to lead.

When an individual is identified with an elevated blood lead, it is recommended their physician be notified and Panhandle Health District (PHD) will make an appointment for a home visit to identify potential sources of exposure in and around the home. These in-home consultations help PHD and individual families identify ways to reduce exposure risks. In addition, PHD can help identify potential exposure pathways that the cleanup project can address to prevent future lead exposures.

In addition to the 84 children between 6 months to 6 years of age screened in the Basin, 22 individuals over the age of 6 from the Basin also participated in the 2019 summer screening. In the Box, 169 children between 6 months to 6 years and 63 individuals over the age of 6 participated in the 2019 summer screening.

PHD will continue to offer free blood lead screening for residents living within the Bunker Hill Superfund Site boundaries year round. In addition, PHD will again be conducting its annual summer screening in 2020 with a \$30 incentive for children between ages 6 months to 6 years of age residing within the Basin.

During 2020, the Lead Health Intervention Program will continue to offer the additional services:

- Year-round blood lead screening and follow-ups
- In-home consultations for individuals with elevated blood lead
- HEPA vacuum loan program for cleaning residences
- Education, outreach, and awareness for parents, children, community members, recreationalists, and visitors
- Education classes in local school's grades K-12
- Annual Environmental Science and Health Fair
- Education and outreach at community events
- Sampling of soil, dust, paint, water, and other media as appropriate

Basin Property Remediation Program (BPRP)

Year	Number of Property Addresses	Area Remediated (Acres)	Waste From BPRP Disposed of in Repositories (Truckloads)
2007	373	60	9,240
2008	352	57	8,129
2009	547	149	18,780
2010	311	70	10,725
2011	243	64	9,795
2012	216	73	9,127
2013	128	44	3,500
2014	95	30	3,647
2015	82	37	3,069
2016	74	23	2,692
2017	48	20	1,062
2018	54	26	1449
2019	30	13	1,356

The CDA Trust BPRP Program collected a total of 103 soil samples from 4 residential and commercial properties throughout 2019. In addition, 15 private drinking water system samples were collected from 6 properties.

The CDA Trust BPRP Program completed remediation of 30 residential and commercial properties for a total of 12.9 acres in 2019. The construction season started on April 29th and finished on October 14th.

The CDA Trust continued to maintain 7 existing reverse osmosis under-sink water filtration systems treating drinking water from private sources in 2019.

At the conclusion of the 2019 field season, properties remaining to be sampled and/or cleaned up in the Upper and Lower Basin are those whose owners have refused access, or who have not responded to repeated contact attempts by the Trust and IDEQ.

IDEQ completed remediation at three properties in the Box whose owners changed from refusing access to allowing cleanup work to proceed. Eleven Box properties remain to be cleaned up, once owners grant access.

Remedy Protection Projects

Remedy Protection is a high priority in the Upper Basin RODA and the SCIP developed by EPA in the fall of 2012. 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. In 2012, planning, survey and design began on a number of projects in the urban areas of the Box and Upper Basin portion of OU-3 noted in the RODA. IDEQ completed Remedy Protection work in the Box in 2015.

In 2019, the CDA Work Trust completed design of the Tiger Creek project in Mullan and the Star Parking and Gem areas in the Canyon Creek drainage.

The CDA Trust worked on construction of several projects in 2019:

- Started and completed the Black Cloud Culvert replacement project in Ninemile Drainage,
- Started and completed the Star Parking Area project in Burke/Canyon Creek,
- Started and completed the Gem Area project in Canyon Creek,
- Completed the Tiger Creek (including Eight Street) project in Mullan. Construction on the Tiger Creek project started in 2018.

With the work noted above, the Remedy Protection Program is complete in the Box and Basin.



Lifting Large Manhole For Installation on Tiger Creek Project Mullan



Installation of Fish Passage Bottomless Structure on Black Cloud Creek Project Ninemile Road

Paved Roadway Surface Remediation Program

EPA and IDEQ implemented the roadway surface remediation program in 2013 to address the deterioration of contaminated paved road surfaces due to heavy traffic during site remediation activities to ensure road surfaces continue to serve as barriers that reduce or eliminate exposures to underlying contamination. The program includes 591 eligible road segments based on the original roadway inventory and subsequent reviews by the jurisdictions and Roads Board. Work completed in 2019 included paving projects by Shoshone County and the City of Kellogg. Shoshone County completed segments in Pine Creek, Nuchols Gulch, Woodland Park, and Nine Mile. The City of Kellogg completed work on McKinley Avenue, and also finished paving all of the streets associated with their sewer replacement project.

The local road jurisdictions have completed remediation of 541 roadway segments to date. Many of these projects were completed in coordination with remedy protection projects and major subsurface utility projects in Mullan, Wallace and Kellogg, which were funded by public utilities or through local bond elections and USDA Rural Development grants.

The Cities of Mullan, Wallace, Osburn, Pinehurst, Wardner, Smelterville, and the East Side Highway District have completed their Paved Roads Program. The City of Kellogg should finish their program in 2020 after completing Bunker Avenue, Wildcat Way and a portion of Hill Street. Shoshone County will complete their program in 2021 when they close out their Basin scope. A remedial action completion report will be produced in 2022 to wrap up this successful remedial action.



McKinley Ave. West Under Construction Kellogg



Completed Silver Valley Road Shoshone County

Contaminated Waste Disposal and Management

Introduction

Contaminated waste disposal and management is an ongoing process that must meet the demand for the disposal of historic mining related contamination for the entire Basin environmental and human health related cleanup program. The contaminated waste management program includes a four-part approach to dispose of waste material generated by the BPRP and other cleanup actions performed by EPA through the Trust or IDEQ; and waste generated by private parties and local government agencies under the ICP and Paved Roads Program. Without the expansion of existing disposal facilities or the construction of new facilities, continued cleanup and control of contamination could be compromised and potentially stopped.

Each of the four approaches to waste disposal are engineered and constructed to reliably contain waste materials, and prevent contaminants from being released to surface water, groundwater, or air in concentrations that will cause state and/or federal standards to be exceeded. The first approach includes Repositories that are large, centrally located areas within the Upper and Lower Basin where contaminated soil and material excavated during cleanup actions is transported to be managed and secured. The second approach uses Waste Consolidation Areas (WCAs) in the Upper Basin, located adjacent to or near the waste source areas, serving for consolidation or placement of wastes from specifically identified sources such as mine and mill site actions. The third approach involves the Community Fill Plan (CFP) developed in recognition that the ICP allows use of contaminated soils for fill material to create more developable ground in the Upper Basin, its use taking place under agreement between a generator and a property owner with space for fill approved by the PHD in compliance with the ICP and with the approval of EPA and IDEQ for any CFPs proposed to dispose of 5,000 cubic yards (cy) or greater. The fourth approach, use of a

Limited Use Repository (LUR), takes advantage of the relatively low volume of base materials excavated during the paved roads projects, and their inclusion with the relatively inert asphalt or Portland cement concrete which makes up 30 - 50% of the wastes generated when roads are torn up for remediation. The three primary goals for constructing LURs are: 1) the economy of disposing low toxicity wastes in places close to roads projects, 2) conserving repository space for more contaminated remediation waste, and 3) increasing the developable space inventory in the Upper Basin.

Five Repositories were operated to receive remedial action and ICP waste in the 2019 field season. Big Creek Repository (BCR) and Big Creek Repository Annex (BCRA) near the community of Big Creek and Lower Burke Canyon Repository (LBCR) serve the Upper Basin, and East Mission Flats Repository (EMFR) near Cataldo serves communities in the Lower Basin. The Page Repository, located near Smelterville receives the ICP and remedial action wastes generated by the cleanup activities conducted in the "Box." EMFR, BCR, BCRA and LBCR are operated by the Trust. Page is operated by IDEQ. Both IDEQ and the Trust directed waste to the repositories to minimize transportation distances and costs. In addition, the Page Repository continues to use recycled construction materials extracted from Basin and Box waste streams which helps to further reduce repository operating costs. A summary of activity at each site is described in the sections below.

Big Creek Repository

During 2019, BCR received waste from BPRP, ICP, Paved Roads Program, and Remedy Protection Projects. Most waste streams delivered to BCR were placed on the east slope of BCR with some waste placed on top of BCR to reach final grade elevation. Based on results of the soil test plots installed in 2017, the Trust completed the installation of the final vegetated cover system on the north, south, and west face of BCR. Installation included the placement of a 12-inch layer of topsoil (total of 12,700 cy), application of fertilizer, soil amendments, and a permanent seed mixture and stabilization of the final cover system using a bonded fiber matrix (BFM) and fiber rolls.

The water quality monitoring program at BCR found operations have not impacted adjacent surface or ground waters.

The year-end repository shutdown activities have been completed and include:

- All road surfaces were graded and sloped inward to collect runoff to capture runoff and prevent ponding.
- Additional storm water management controls including straw waddles and hydro-seeding with a native seed mix were installed on finished slopes to further protect against erosion of these surfaces.

In 2019 BCR received 325 truckloads from the BPRP, 221from the ICP, 8 from the Remedy Protection Program, and 982 from the Paved Roads Program for an estimated 15,000 cy of waste placed. At the end of the 2019 construction season, the BCR contained approximately 620,465 cy of waste soils. BCR currently has approximately 110,300 compacted cy of capacity left for disposal. The ICP area will be managed by the Trust's Operations Contractor during the winter closure period. Prior to spring runoff, all ICP waste will be transported and stockpiled on top of the repository for processing and future placement and compaction.

Big Creek Repository Annex

In 2019 BCRA received 21 truckloads from the BPRP, 133 from the ICP, and 322 from the Paved Roads Program for an estimated 4,950 cy of waste placed. Operation of the Annex capitalizes on the use of the existing infrastructure at BCR such as the main entrance and wash station.

Lower Burke Canyon Repository

During 2019, LBCR received 284 truckloads from BPRP, 383 truckloads from the ICP, 866 truckloads from the Remedy Protection Program, and 1,071 truckloads from the Paved Roads Program for a total waste placement of 25,252 cy. The year-end repository shutdown activities have been completed and include:

- Stabilize slopes by track walking.
- Create low area sump near decontamination pad to ensure that runoff from the asphalt area is contained on site.
- Construct drainage swale around south end of fill limits to collect any runoff during rain on snow events.
- Crown center of waste area to encourage drainage to runoff collection ditches.
- Install additional storm water management controls including straw waddles and silt fencing on steep slopes to further protect against erosion.

East Fork of Ninemile Creek Waste Consolidation Area (WCA)

During 2019 the East Fork WCA received 146,075 cy of waste from the Success Mine Complex Dump. Additional work conducted at the WCA included expansion for additional capacity and continued generation of soils for future capping and repairs. To date, the East Fork WCA site has generated approximately 170,000 cubic yards of rock and 250,000 cubic yards of soil for East Fork Ninemile Creek Remedial Actions. This has saved the project approximately \$8.4 million and significantly minimized traffic through local communities.



Placing Cover Material Over Final Liner on WCA in EFNM Canyon

Canyon Creek Repository Waste Consolidation Area (WCA)

Construction began in 2020 on the Canyon Creek Repository Waste Consolidation Area which is located southeast of the Lower Burke Canyon Repository. This WCA is being developed in order to receive waste from source cleanup sites and other mine remediation areas. It will also accept the full volume of the existing Silver Valley Natural Resources Trustees repository, approximately 610,000 cy, constructed in 1995 to reduce contaminate loading to the South Fork of the Coeur d'Alene River. Access to the WCA is being developed to avoid heavy truck traffic around the Canyon Creek residential areas.



Canyon Complex WCA Location Across Canyon Creek



Canyon Complex WCA Beginning Construction

East Mission Flats Repository

In 2019, the EMFR repository received 586 truckloads from the BPRP and 412 truckloads from the ICP. Final in-place, compacted volume calculated from the truck load count was about 9,691 cy. The ICP disposal area will be available at the east end of EMFR to receive ICP waste during the winter closure period and managed by the Trust's Operations Contractor. Prior to spring runoff, all ICP waste will be transported and stockpiled on top of the repository for processing and future placement and compaction.

Semiannual groundwater monitoring was conducted at six monitoring wells located on or near EMFR. Groundwater and surface water monitoring results indicate that disposal activities have not impacted water quality near the site. Two new monitoring wells were installed to replace two wells that were not as productive as existing wells in the past.

Page Repository

Page Repository received 3,131 truckloads of waste from Box Remedial Action projects including the Central Treatment Plant (CTP) upgrades, groundwater collection system, and Paved Roads Program. ICP waste delivered to Page in 2019 totaled 1,873 truckloads. Much of the ICP and remedial action waste delivered to Page consisted of concrete debris and other coarse materials utilized to construct a foundation mattress for repository expansion. The total estimated volume of material placed at Page in 2019 based on the truck counts was 37,500 cubic yards.

Shoshone County Transfer Station LUR

Closed in 2018

East Zanetti Yard LUR

Closed in 2018

Government Gulch LUR

The Government Gulch LUR received 929 truckloads for an estimated 8,300 cy of waste generated by the Paved Roads Program in 2019 completing the second cell of the LUR. Following final compaction of the waste, clean topsoil was imported and seeded for the final cover on the LUR.

Government Gulch CFP

This CFP is located directly adjacent to the Government Gulch LUR. Waste placement was completed at the CFP in 2018, and work completed in 2019 included placing the final cover soil and seeding.

Additional Disposal Locations

In addition to the operational repositories, two separate areas for future disposal and permanent storage of mining related contamination are currently in some stage of consideration and/or planning. The repository site selection process initiated in 2008 culminated in the identification of two new repository sites in the Upper Basin; the Osburn Tailings Impoundment (OTI) near Osburn and the LBCR. LBCR is currently accepting waste and the Osburn Tailings Impoundments will be considered for use in the future depending of disposal needs.

A second location currently under development is the Canyon Complex Repository (CCR). The location of the CCR is the former Silver Valley Natural Resource Trustee Repository (SVNRT) location near the LBCR. Based on waste projections, additional disposal capacity was required in Canyon Creek basin and the SVNRT site ranked high using the site selection criteria from 2008. Use of the CCR site will prevent transporting waste through downstream communities.

Mullan ICP Disposal Area

The Mullan ICP Disposal Area served as the local repository for activities conducted in the City of Mullan. However, because the disposal area is now effectively full, it is being closed though a transfer station will remain on site. The transfer station ensures that future local ICP wastes get disposed of in an engineered facility (e.g. BCRA or Lower Burke Canyon Repository), and local ICP users can continue to use the facility as they are currently accustomed. The Disposal Area was capped and left for the City to maintain. Following construction, the transfer station will only accept ICP waste from Mullan residents. The Trust will operate the transfer station for the foreseeable future. 150 cy of waste from the Mullan ICP site was removed for disposal in 2019. The waste material was hauled to LBCR for disposal.

Upper Basin Remedies

Cleanup Actions in East Fork Nine Mile Creek (EFNM) and Canyon Creek

In 2019, investigations/remedies in the EFNM Creek Basin consisted of the following:

- Operations and maintenance (O&M) of the Interstate Callahan Mine Rock Dumps and Rex Mine No. 2.
- Construction of the fourth and final year of the Success Mine Complex Remedial Action (RA) project.
- Construction of the first of two years of remedial action remedial action for the Interstate Mill Site RA project.
- Operation of the EFNM WCA.
- Continued surface water monitoring in EFNM Basin.
- Conducting additional characterization and sampling activities to assist in determining the remaining remedial actions needed in the Nine Mile Creek Basin including Dayrock Mine and Lower East Fork Ninemile,
- Completion of the design alternatives memorandum and 30% design for the EFNM Tamarack Complex to support future design activities.

In 2019, investigations/remedies in the Canyon Creek Basin

- Conducting additional characterization and sampling activities at the Hecla Star Complex and Tamarack #7 Complex.
- Construction of the first of four years of remedial action and WCA development for the SVNRT/CCR RA project.

The following summarizes the 2019 construction activities conducted in the EFNM Basin:

- Approximately 63,066 cy of contaminated waste rock and mine tailings were hauled from the Success Complex and placed and compacted at the EFNM WCA.
- Approximately 38,042 cy of contaminated waste rock and mine tailings were hauled from the Interstate Mill Site and placed and compacted at the EFNM WCA.
- Approximately 2,115 feet of Stream Channel was constructed at the Success Complex.
- In 2019 a total of approximately 91,181 cy of compacted material was placed at the WCA. The total volume of material placed in the WCA is approximately 508,137 cy.
- In 2019 the first section of final cover liner and cover material was placed at the WCA along with temporary cover materials over contaminated waste rock and mine tailings at WCA prior to winter shutdown.

Central Treatment Plant (CTP) and Groundwater Collection System (GCS)

- The Corps of Engineers awarded the Design/Build/Operate Contract to AMEC/Foster Wheeler (AMEC) in 2016 and issued the Notice to Proceed on Feb 2, 2017. Prior to commencement of work AMEC was acquired by Wood. Wood assumed the responsibility for the continued operation of the existing Central Treatment Plant (CTP) and will continue to operate it until one year after the completion of the upgrades to the plant and construction of the Groundwater Collection System (GCS). Wood responsibilities also include design and construction of the CTP upgrades, new GCS and new lined Sludge Impoundment on top of the Central Impoundment Area (CIA). The Corps of Engineers (COE) is charged with administration and management of the contract.
- During the 2019 construction season, Wood completed construction of the GCS, new lined Sludge Impoundments and CTP upgrades. Tasks at the CTP included: constructing buildings and installing CTP upgrade components (New 30' concrete reactor tanks, new filter building and filter vessels, new thickener tank, new supplemental back-up generator and all accompanying HVAC, Electrical, and Instrumentation and Controls). Construction Acceptance Testing and System Testing was initiated in December 2019 at the CTP and continues. The final installation of the new liner system for the sludge impoundment area resumed in the spring and was completed, as were the installation of the pipes and connections. Wood installed extraction wells, piping, power, controllers, backup generators, and cleanout vaults at the GCS. There are openings in the cut-off wall that will be closed after the collection system undergoes testing in spring 2020. After the wall is closed, the GCS will undergo further testing as part of the integrated testing of the facility. After completion of testing activities on the CTP/GCS and Sludge Impoundments the system will be operated by Wood for one year under the current contract. Operations will then transfer to IDEQ.
- In February 2019, EPA was notified of an approximately six-inch subsidence in the road surface on Interstate 90 north of the GCS cut-off wall and adjacent to visible sediment plumes that were discovered in the SFCDA River. The sediment plumes were first observed in mid-December in the vicinity where historic seeps have been observed and monitored previously. Subsidence in this vicinity had been observed and addressed by ITD in the past; however EPA increased efforts to investigate the plumes and provide interim mitigation if necessary. EPA and IDEQ continued to monitor water quality in and around the plumes as well as groundwater levels to further understand the phenomenon and how it may be related to the cut-off wall that had been recently installed. The turbidity plumes ceased in late September, but EPA will continue to monitor surface water and groundwater closely through start-up and optimization of the GCS. ITD continues to monitor the settlement on Interstate 90.

- 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 CIA. The Bunker Hill Mine water has been and continues to be treated at the CTP. The upgraded CTP is intended 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 discharged from the CTP to the SFCDA River 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 SFCDA River from groundwater interaction, as discussed in the following paragraph.
- The project includes approximately 8,000-linear feet of 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 concentration of metals predicted by the mathematical model represents the range from base flow/strength through maximum flow/strength. Base flow/strength typically occurs in late summer or early fall and maximum flow/strength typically occurs during 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 SFCDA River 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.



Overview of CTP Nearing Completion

Lower Basin Remedies

The cleanup described in the 2002 OU-3 ROD for the Lower Basin includes actions for the wetlands and lateral lakes, the river banks, splay areas and river bed. These remedial actions, envisioned primarily as pilot studies, are being evaluated for implementation under the 2002 OU-3 ROD. The objectives of remediation in the Lower Basin are focused on reducing risks to human health and wildlife by reducing exposure to particulate lead and improving habitat quality in the CDA River system. Remedies that address human health or ecological exposure, coupled with continued evolution of our understanding of sediment transport and recontamination in the Lower Basin, are interconnected with natural resource restoration actions.

Using the framework and site principles developed in the Lower Basin Strategic Plan (EPA 2018), EPA began drafting an Adaptive Management Plan (AMP) in 2019 for planning, implementing and monitoring pilot projects and remedial actions in the Lower Basin within three identified focus areas: human health, habitat remediation, and source control. This Lower Basin AMP is being developed as part of a nation-wide pilot study to demonstrate how adaptive management can be implemented at a large complex mining site.

In October 2018, EPA culminated a year-long prioritization process which resulted in a list of projects for inclusion in the 10-year Basin plan and the CDA Trust's 2019 implementation plan. The EPA reached out to agency partners, the Restoration Partnership and members of the CCC to help identify key values, projects and objectives that should be considered in the selection process. A workgroup of agency staff with experience and specific expertise working in the Lower Basin used a Multi-Objective Decision Analysis (MODA) technique to illuminate the trade-offs among a set of potential remediation projects for implementation. In May 2019, EPA presented the results of the evaluation to the Lower Basin PFT and outlined next steps for project work within each of the three focus areas. Going forward, the Lower Basin PFT will continue to assist the Lower Basin Project Selection Process by providing updates on new technologies, pilot projects for consideration, key technical input, and project ideas. Under the AMP, the prioritization process will be iterative, and conducted periodically as needed based on funding, knowledge, opportunities, and experience gained from implementation and subsequent monitoring.

Habitat restoration projects scored high in the prioritization process and EPA selected the Idaho Fish and Game's (IDFG) Gray's Meadow property (formerly Black Lake Ranch) to remediate and restore approximately 700 acres of publicly owned contaminated agricultural land to clean, diverse, productive wetlands and riparian waterfowl/wildlife habitat. The project will be completed as a collaborative effort between the EPA, the CDA Trust and the Restoration Partnership. In 2019, EPA convened a Gray's Meadow design team, performed additional characterization, and evaluated design concepts for the project. EPA expects to complete the 60 percent design in 2020 with a goal to start construction as early as fall of 2021. In 2019 EPA also assisted the Restoration Partnership in achieving a conservation easement in Canyon Marsh and expects to support several other conservation easements on private wetland properties in 2020.

At Lane Marsh, EPA continued two pilot projects to evaluate wetland mitigation options. Incremental Thin Layer Capping (ITLC) is one method considered promising for sensitive wetlands to cost-effectively reduce ecosystem impacts from contamination while limiting the hydraulic effects of remedial actions. In 2019, EPA continued to monitor and evaluate the application of native alluvial material on wetland vegetation response. EPA also began the bench-scale treatability phase to explore the efficacy of biochar amendments on Lane Marsh wetland sediment as compared to a control (no amendments), lime, and activated charcoal to reduce soil lead bioavailability under environmental conditions realistic for wetlands.

To address source control in the river channel, pilot testing is planned for the Dudley Reach, downstream of the grade break near River Mile 160, near the site of a former dredging operation. In 2019, EPA continued efforts to evaluate and refine options for pilot testing several technologies within this reach. The riverbed consists of over 1,200 acres and contains approximately 5-10 million cubic yards of contaminated sediment. The hydraulic and sediment transport model is being used to simulate the impacts of typical and extreme floods as well as changes to the system over a five-year and 30-year period. This informs a management plan that targets areas for active remediation, evaluates the effects of remedial technologies, and identifies areas for natural recovery. EPA has developed several alternatives for testing in the Dudley Reach, including capping, dredging and riverbed weirs.

Data collection efforts continued in 2019 with the installation of erosion pins in the river bed at key locations. Select riverbed cores were obtained during the effort to supplement the existing data sets given the heterogeneous nature of the river bed and the complex nature of the Coeur d'Alene River. Riverbank erosion pins installed by the Kootenai-Shoshone Soil and Water Conservation district in the previous decade were also recovered and measured to the extent they were still undisturbed. Crews were poised to collect runoff boat-based sediment samples but flows remained low during spring runoff therefore resources were not expended.

Health Intervention Program projects lead by IDEQ and PHD continue to be relevant and meaningful Basin-wide. Projects aim to lower human exposure rates to heavy metals through educational outreach. With help from partnering agencies, a number of efforts were undertaken in 2019 including airing radio announcements, staffing informational booths, and providing educational presentations to school students and installation of new information signing in use areas. This purpose of these activities was to provide health tips to recreationists. Long-term planning for addressing Human Health Risks as a result of recreational activities at dispersed recreation sites in both the Lower and Upper Basin is described in the Recreation Sites Section of this Report.

State of Washington Projects

A complete survey of each of the remediated beach sites along the Spokane River in Washington was conducted in 2018 with the results from XRF analyses and the associated observations summarized in a technical report dated June 2019. Using the information from the report, a periodic review evaluating the overall status of the beach sites is due for early 2020. In general, it was observed that the beach sites closest to the Washington-Idaho border have accumulated sediment from upstream sources that contain heavy metals. Current concentrations at the upstream beach sites, however, have not reached the action levels that were used when conducting the cleanups. Overall, the cleanup at each of the beach sites is in good condition.

Recreational Sites

Work on Recreation Areas in 2019 included sampling, remediation, and public education/outreach activities for areas in both the Box and Basin. New health information signs were developed and installed, with several unique types of signs intended to inform users at different types of sites and provide consistent health messaging. Five new signs were installed at Lower Basin locations and 23 new signs were installed at Upper Basin locations. New signage in the Lower Basin focused on replacing health messaging signs at public river access points. New signage in the Upper Basin focused on health messaging signs at mine and mill sites where recreational activity has been observed. Upper Basin signs were installed as initial actions until the sites can be remediated. The new signs include historic photos, maps, and other information in addition to health messaging.

Recreation site work in the Box focused on the SFCDA River between Mountainview Park in Kellogg and the Pine Creek trailhead in Pinehurst. IDEQ received data for sampling and XRF screening of areas along the river currently being utilized for recreation activities at Mountainview Park, Theater Bridge River Access, Airport River Walk, Smelterville Flats, and the Pinehurst Trailhead. Follow up samples were collected in 2019 and work began to develop remedial action alternatives which are expected to be implemented in 2020.

2019 cleanup work in the Basin focused on the following recreation sites: Nine Mile Fishing Pond, Larson Fishing Pond, Grays Bridge (at intersection with Burke Road), and CDA River pull-outs. Approximately 44,000 square feet were remediated with clean barriers installed during cleanup work in 2019. The CDA Trust continued to identify and evaluate other recreational areas in the Lower Basin for future cleanup work, in addition to the Cataldo Boat Launch planning. The CDA Trust also continued a program to provide seasonal hand washing stations at formal recreation sites. Temporary hand washing stations were provided during the summer months at Cataldo, Rainy Hill, Rose Lake, and Medimont. The sites selected included public boat launches and picnic areas that do not have running water.



Recreation Site Signing and Wash Station

Basin Environmental Monitoring

The Draft CDA Basin Environmental Monitoring Plan (BEMP) was completed in 2019 and is under final review. The CDA BEMP will provide the framework for ongoing remedy effectiveness and long-term monitoring associated with actions in the Upper, Middle and Lower Basin. The goal of the updated and optimized CDA BEMP is to design efficient data collection plans to support site-wide management decisions. Specific monitoring goals include:

- Assessing long-term status and trends of contaminants in Site media;
- Evaluating the performance and effectiveness of pilot projects, interim and final remedial actions;
- Providing data for CERCLA-required five-year reviews of the progress on remedy implementation;
- Evaluating progress toward Remedial Action Objectives (RAOs); and
- Improving understanding of Basin processes and variability to optimize subsequent remedial action implementation.

The CDA BEMP incorporates adaptive management principles and is anticipated to evolve during the remedy implementation timeframe. The over-arching plan includes the Site-wide Quality Management Plan (completed in 2015) and media-specific Quality Assurance Project Plans (QAPPs). A programmatic Data Management Plan for the Bunker Hill Site is currently under development that provides guidance and data requirements for all entities collecting environmental data at the Site. Human health-related data will not be included in this database. The database platform selected for this site is Scribe and the repository is the EPA Region 10 subscription to Scribe.net. EPA has been working with each entity that collects data for the Bunker Hill Site to migrate their data to the new Scribe platform. Until this task is completed, stakeholders can make specific data requests to the EPA Remedial Project Manager

The CDA BEMP is structured into three geographically based tiers: Site-specific Remedial Action (RA) effectiveness and performance monitoring; Area-wide monitoring; and Basin-wide long-term monitoring. A Site-specific RA Effectiveness Plan for East Fork Ninemile Creek was completed in 2017. A Draft Area-wide RA Effectiveness Monitoring Plan for Ninemile Basin is currently under review that identifies monitoring procedures at greater spatial and temporal scales. This tier is effective for evaluating changes in concentrations of contaminants of concern (COCs) in environmental media and indicator species response following RA implementation of many source sites cumulatively within Ninemile Basin.

In 2018, EPA completed a RA Effectiveness Monitoring Plan for the Groundwater Collection System (GCS) under construction along with upgrades to the Central Treatment Plant (CTP) in OU-2. Baseline conditions for groundwater and surface water were established prior to installing the GCS, which initiated in 2018. Remedy performance monitoring will be conducted throughout the startup and testing of the GCS. RA effectiveness monitoring will begin following optimization of the GCS.

During 2019, United States Geological Survey (USGS), IDEQ, USFWS and EPA continued BEMP sampling. Specific activities are outlined below.

Surface Water

In calendar year 2019, USGS collected 68 stream discharge measurements and water-quality samples from 16 OU-3 and 4 OU-2 surface water stations during a range of hydrographic events. Samples were collected during the first flush in April, during peak spring snowmelt runoff in May, during the hydrograph recession

in July, and during baseflow conditions in September. Each site was sampled between two and four times during the year. Samples were analyzed for nutrients, selected trace metals and major ions, and suspended sediment.

Twelve of the 16 OU-3 stations are collecting continuous streamflow data and are telemetered with realtime streamflow access. Information can be viewed at <u>http://waterdata.usgs.gov/id/nwis/rt</u>

There were no significant winter flow events, so winter sampling targeting the first flush associated with spring snowmelt runoff in early April. Spring snowmelt runoff was variable across the basin, with multiple peaks in April and May in most locations. Peak spring snowmelt runoff sampling occurred in mid-May; this peak was the largest peak at some sites, but others peaked during the April sampling event. Recessional samples were collected in July. Fall samples were collected in September 2019 and captured baseflow conditions.

The USGS completed a seepage study in September 2017 to evaluate groundwater loading of dissolved cadmium and zinc to the SFCDA River between Kellogg and Smelterville prior to installing the GCS and performing upgrades to the CTP. The analysis and final report on this study was published in 2019 and is available online at: <u>https://doi.org/10.3133/sir20195113</u>.

All gaging station stream discharge and water-quality records for the BEMP gages for Water Year (WY) 2019 were worked up, approved, and will be included in the 2019 USGS annual data report for Idaho. The annual data summaries will be completed and delivered to EPA during the first quarter of calendar year 2020.

Groundwater

Groundwater monitoring in 2019 focused on the GCS which completed construction in December 2019. BEMP sampling in 2019 was associated with monitoring water quality during construction and understanding the current or baseline conditions prior to full implementation of the GCS. IDEQ sampled groundwater from six monitoring wells during May high flow conditions. In late September/October during baseflow, IDEQ sampled groundwater from 56 monitoring wells and two drive point piezometers located in the SFCDR. In addition to measurement of water levels and typical field parameters, samples were analyzed for selected trace metals and major ions, nutrients, total dissolved solids and total suspended solids.

BEMP monitoring under the RA Effectiveness Plan for the GCS will resume after startup, testing and optimization of the system. Startup and testing of the GCS will begin after the upgraded CTP is ready to receive groundwater, starting in February 2020.

Biological Resources

USFWS conducted waterfowl surveys from early February to late April 2019 in lower Basin floodplain wetlands recording observations of waterfowl use and tundra swan mortalities. In 2019, temperatures remained below normal until the third week of March when ice began to recede. All of the survey wetlands remained frozen during this time with the exception of some open water at the mouth of the Coeur d'Alene River at Harrison Slough and in the middle of Cave Lake, which provided access to resting areas within deep water in mid-March. As a result, peak migration occurred on March 28th and two weeks later began to decline for the remainder of the survey period. However, waterfowl numbers were very low and abbreviated throughout the entire survey compared to other years.

The highest waterfowl use was observed at Cave Lake, Schlepp's East Field, Canyon Marsh, Killarney Lake, and Swan Lake. The highest swan use was observed at Lane Marsh, Strobl Marsh, and Swan Lake. High numbers of swans (estimated over 5,000) were also deterred from Harrison Slough, but these efforts occurred at dawn before the surveys were conducted and only 825 swans were observed at Harrison Slough during the survey periods. The swan maximum high daily count was 3,610 and over 500 swans were observed in the lower Basin for five weeks during 2019.

Large numbers of swans staging and feeding at Harrison Slough resulted in 145 mortalities observed in 2019, and another 14 mortalities were observed incidentally during deterrent efforts. Prolonged cold weather conditions likely contributed to the high number of mortalities, which kept most of the lower Basin wetlands frozen while open water at Harrison Slough attracted large numbers of swans where they remained until the end of March. These high concentrations of swans at Harrison Slough for several weeks likely contributed to increased exposure and high mortality. However, daily deterrent methods (3/16 through 3/28) likely reduced the number of mortalities that would have occurred if these efforts were not undertaken.

EPA is currently reviewing a draft 2018-2019 Waterfowl Survey Report. This document will be finalized in 2020. The CDA Basin Biological Monitoring Report - Riparian Habitat (2013-2015) for OU-2 has been finalized and will be available in February 2020.

Sediment

Sediment data for WY 2019 (October 1, 2018 to September 30, 2019) are summarized below. In 2014 the threshold criteria for sampling of suspended sediment was raised from 20,000 cfs flow to 25,000 cfs at Cataldo. In the past during these events, EPA's contractors have collected high-volume isokinetic sediment samples at bridge locations. Since the bridges are relatively few and widely spaced, the data provide a "snapshot" of conditions but not the spatial and temporal variability of flow and sediment dynamics throughout the flood. Discharge conditions in 2019 did not trigger the threshold criteria for sampling of suspended sediment in the channel.

Due to low spring runoff in 2019, depositional sediment samples were collected at only eleven near-channel locations with expected measurable deposition. River flows in WY 2019 were relatively low; flows did not exceed the over-bank threshold of approximately 20,000 cfs (Cataldo station). Only five in-channel locations had measurable deposition for analysis (Pinehurst, Enaville, Cataldo, Rose Lake, and Spokane River near the Stateline). Bulk lead concentrations ranged from 104 mg/kg at Enaville to 3,570 mg/kg at Rose Lake. Bulk zinc concentrations ranged from 175 mg/kg at Enaville to 3,870 mg/kg at Rose Lake. The BEMP Sediment Sampling Data Summary for 2018 is now available for download from the EPA Superfund Website at: https://semspub.epa.gov/src/collection/10/SC39274.

Part 2 – Other BEIPC Activities and Responsibilities:

Lake Management Activities

The Lake Management Plan (LMP), developed by the Coeur d'Alene Tribe (Tribe) and Idaho Department of Environmental Quality (IDEQ), was finalized in 2009. Since then the Tribe and IDEQ have been implementing core aspects of the LMP such as water quality monitoring, modeling, nutrient source inventory, and education/outreach.

As of the summer of 2018, the Coeur d'Alene Tribe determined that the LMP is inadequate, in itself, as an effective tool to protecting water quality in the Lake and the Tribe has been in discussions with IDEQ and EPA to determine what additional mechanisms/actions are needed to manage the hazardous materials in the lake bed sediments. Therefore, although various aspects outlined in the LMP and listed below are essential to continue, additional approaches to augment work conducted under the auspices of the LMP are being contemplated. These discussions will continue during 2020.

Lake management accomplishments in 2019 consisted of the following staff activities:

Science Core Program

- Routine lake monitoring by the Tribe and IDEQ staff continued through 2019.
- Curly leaf pondweed was identified at the Coeur d'Alene Third St. boat launch and Boardwalk Marina late summer 2018. Avista Corporation and Idaho State Department of Agriculture (ISDA) staff coordinated treatment activities in spring and fall 2019.
- IDEQ completed visual rooted aquatic plant surveys along shoreline areas of Coeur d'Alene Lake categorized as low priority in a previous habitat suitability assessment. These areas are surveyed every five years. Surveys were also conducted in higher priority areas, including Bell, Wolf Lodge, and Mica Bays, as well as the Silver Beach and Eleventh Street Marinas. Two known patches in Wolf Lodge Bay were confirmed in 2019. Treatment was coordinated by Avista and ISDA staff. Annual reports of plant surveys are forwarded to Avista. IDEQ is a cooperative partner under Avista's aquatic plant management program.
- The CDA Tribe continued its milfoil control program in southern waters during 2019, including bottom barrier and mechanical harvester treatments. The CDA Tribe is continuing its monitoring of treatment efficacies and native plant communities. The tribe is focusing control efforts at high use public areas such as boat launches, swim areas, and boating lanes. Mechanical harvesting has worked well in opening up these areas to recreational activities. Mechanical harvesting also helps remove the oversupply of nutrients in nearshore areas. The tribe removed approximately 187,000 lbs (wet weight) of aquatic vegetation last summer, which translates to ~74 lbs (dry weight) of phosphorus and ~371 lbs (dry weight) of nitrogen.

IDEQ staff partnered with University of Idaho to advise a graduate student in completion of her thesis report. The project involved monitoring attached algae growth and nutrient levels in northern bays to inform future studies that may help improve understanding of nutrient loading dynamics.

Education & Outreach Core Program

- Tribe and IDEQ staff participated in the Coeur d'Alene Chamber of Commerce "Coeur Fest," a oneday event at McEuen Park that targeted area residents and highlighted natural resources. There were several hundred visitors to the booth, which featured an interactive zooplankton display and resource handouts.
- Throughout 2019, Tribe and IDEQ staff provided updates on lake management activities to a variety of community groups and made various presentations to the public.
- Tribe and IDEQ staff participated in several K-12 educational programs, including The Confluence Project (TCP) for high school students; water science days at Ramsey and Hayden Meadows Elementary; Women in Science Fair at North Idaho College (NIC); and the 3rd annual Coeur d'Alene Water Festival, which hosted over 300 fifth-graders from area schools.
- Tribe and IDEQ worked with partners including Kootenai Environmental Alliance, University of Idaho Community Water Resource Center (CWRC), and area high schools to obtain funding for TCP from the Coeur d'Alene Tribe, allowing the purchase of much-needed equipment for hands-on learning field trips.
- TCP partners hosted the third Youth Water Summit at North Idaho College, hosting more than 400 North Idaho high school students in presenting water science-related research, judged by more than 100 agency and business representatives.
- IDEQ staff continued involvement with the Panhandle Stormwater and Erosion Education Program (SEEP) in partnership with the UI CWRC.
- Tribe and IDEQ staff participated for the 4th year in a training that provides information related to water quality and land use regulation for realtors, reaching 40 realtors. Evaluations indicate its continued popularity.
- Tribe and IDEQ staff continued to work with the Coeur d'Alene Chamber of Commerce Natural Resource Committee to implement the "Local Gems" program.
- IDEQ and CDA Tribe staff continued to collaborate with the UI CWRC and agency partners to conduct Baywatchers workshops for Coeur d'Alene Lake bay community volunteers/liaisons.
- Tribe and IDEQ staff organized the fourth Coeur d'Alene Lake "Our Gem" symposium in Coeur d'Alene in November, with help from the Spokane River Forum. There was good community participation (approximately 200 attendees) and dialogue that has resulted in continued momentum in stakeholder interest and activities.

Nutrient Inventory & Nutrient Reduction Core Program

• A draft basin-wide nutrient inventory report was distributed to the Technical Leadership Group in the fall of 2019, and comments were accepted through the end of the year. The final report will be available in early 2020. This report highlights areas of high nutrient loading as well as areas where more data is needed to determine relative loads.

- A monitoring station placed in lower Wolf Lodge Creek continues to monitor water quality. This will help capture more nutrient loading data and document baseline water quality information prior to upper watershed restoration activities. Additional monitoring on several tributaries to CDA Lake was initiated in 2019 to help fill data gaps identified in the draft nutrient inventory report.
- IDEQ staff continues to be involved in the Coeur d'Alene Tributaries Watershed Advisory Group (WAG). Planning efforts in the Wolf Lodge drainage are ongoing to implement restoration activities in areas identified as priority segments in a channel assessment report developed by the River Design Group. IDEQ staff installed riparian plantings along the banks of Wolf Lodge Creek lower in the watershed in fall of 2019, and planning for streambank stabilization at this site is ongoing.
- IDEQ staff worked with Avista Corporation, NRCS, the Benewah Soil and Water Conservation District, the Idaho Soil and Water Conservation Commission, and private landowners to complete stabilization of eroding banks along the St. Joe River on private recreational lots as well as a larger project on Avista property.

Partnerships with Other Entities

- IDEQ and Tribal staff continued to be involved in the North Fork Coeur d'Alene River, CDA Lake Tributaries, and the St. Joe/St. Maries Rivers WAGs.
- Tribe and IDEQ staff worked with the BEIPC Executive Director to provide Lake management activity updates to the TLG, CCC, and BEIPC during quarterly meetings and for written reports.
- Tribe and IDEQ staff continued coordination with County staff, the CDA 2030 Project, and have continued participation in the Coeur d'Alene Chamber's Natural Resources Committee.

This continued level of coordination with BEIPC forums maximizes opportunities for information exchange and advice, while recognizing that IDEQ and the CDA Tribe retain their respective decision-making authorities.

Flood Control and Infrastructure Revitalization

Working through the MOA developed and implemented in 2018 for flood control, the BEIPC and the Silver Valley Flood Control Group continued to investigate opportunities to deal with flooding and its impacts on the communities and the Superfund remedies. The formal partnership continued to work with the U.S. Army Corps of Engineers (COE) to complete the analysis for the SFCDA River from Elizabeth Park to Pinehurst by funding the needed surveys of River cross sections by the BEIPC and City of Kellogg's Consultant. The COE and BEIPC Consultant are currently working on preparation of a Flood Map Revision request to FEMA for that reach of the River.

The BEIPC continued to assist Upper Basin communities and utilities in pursuing funding to implement the Upper Basin Drainage Control and Infrastructure Revitalization Plan (DCIRP). As in previous years, a large number of the priority drainage control projects and roads needs in the DCIRP continued to be implemented as Remedy Protection and Paved Roadway Surface Remediation projects included in CERCLA/Superfund cleanup activities. A number of the local utility jurisdictions continued to replace potable water lines and sanitary sewers ahead of road and street actions under the Paved Roadway Program and the remedy protection work was coordinated with the utility work to enhance the accomplishments being made with the funds available.

Restoration Partnership

The Restoration Partnership (Partnership) is a collaborative effort comprising the Coeur d'Alene Basin Natural Resource Trustees which are the U.S. Department of the Interior, represented by the U.S. Fish and Wildlife Service (USFWS) and Bureau of Land Management (BLM); the Coeur d'Alene Tribe (Tribe); the U.S. Department of Agriculture, represented by the U.S. Forest Service (USFS); and the State of Idaho, represented by the Idaho Department of Fish and Game (IDFG) and Idaho Department of Environmental Quality (DEQ). The Partnership's primary mission is to recover the natural resources that were injured by releases of mine waste contamination, and compensate for lost human use services of those resources by developing and implementing projects under the framework of a Restoration Plan for the Coeur d'Alene Basin.

The following Partnership activities occurred throughout 2019:

- The Partnership solicited Restoration Project Ideas from the Trustees and the public in the Spring/Summer of 2019 and received 44 Project Ideas. The Trustees utilized the Project Selection Criteria Matrix for ranking the Project Ideas to determine eligibility and determined that 16 Ideas would advance to Full Application. The Trustees worked with those applicants to develop the full applications of which would be ranked and decisions would be made in 2020.
- Ongoing operations and maintenance continued for wetlands at the Schlepp Agriculture to Wetlands Conversion Project. The construction and implementation of this restoration project has been completed. For more information visit: http://restorationpartnership.org/wetland_restoration_project.html.

Implementation of the following natural resource restoration projects was underway in 2019:

- Conservation Easements along the Coeur d'Alene River corridor by the USFWS.
- Wetland and stream enhancement at Cougar Bay on Coeur d'Alene Lake by BLM and USFWS.
- Development of a native willow plant nursery adjacent to Hepton Lake on the St. Joe River by the Tribe.
- Wetlands enhancement at Hepton Lake on the St. Joe River by the Tribe.
- Projects for the replacement of injured/lost tribal cultural services (fish and culturally significant plants) in the Hangman Creek Watershed by the Tribe.
- o Coeur d'Alene Lake monitoring, modeling, and outreach by the Tribe.
- Wetlands restoration planning at Grey's Meadow along the Lower Coeur d'Alene River by IDFG.
- Water Control Structure installation at Black Rock Slough Phase I by IDFG.
- Gene Day Pond Public Access Improvements with the Shoshone County Sportsman Association and sponsored by IDFG.

- Wolf Lodge Creek Stream Restoration and Habitat Enhancement by the Kootenai-Shoshone Soil and Water Conservation District and sponsored by IDEQ.
- o LiDAR Acquisition in Priority Restoration Areas by the USFS.

For more information on the Partnership, the Plan or the projects, please visit our website at: <u>www.restorationpartnership.org</u>.

Challenges Ahead

As in past years a great deal of work was accomplished across the Basin in 2019. The cleanup and restoration effort was focused on a mix of items; remediation of human health risks resulting from contaminated residential and commercial properties and public roads; extensive work by the CDA Trust in the EFNM Creek and Canyon Creek drainages on ecological remedies and related human health issues; and EPA directed work to address the contaminated ground water problems and mine discharges in OU-2 noted in the Upper Basin RODA. Human health related projects continue to be a priority, but cleanup work in fish and wildlife habitat areas, and surface and ground water is moving forward with EPA working with the BEIPC, IDEQ, the CDA Trust, other cooperating agencies and stakeholders. The Restoration Partnership is also moving forward with implementation of natural resource restoration actions in the Basin.

Besides the RODA for the Upper Basin, the involved governments and agencies continue to develop project proposals to address Lower Basin human health and ecological issues. Because the CDA River system contains millions of tons of contaminated sediments, a portion of which is moving downstream every year, recontamination from annual flooding is a major concern for any project planned in the Lower Basin. A major question is, should we perform remedial actions on sites in the Lower Basin that have the potential of being recontaminated during spring runoff or high flows due to rain on snow events before we remove or stabilize the contaminated sediments in the beds and banks of the River?

Other major challenges include: management of the ICP by PHD; development of any needed additional waste repositories for disposal of remedial action and ICP wastes; continued implementation of the RODA for the Upper Basin and OU-3 ROD for the Lower Basin; development of a solution to major flooding issues in Lower Pine Creek, SFCDR and Main Stem of the CDA River; and continued coordination with the CDA Tribe and State's efforts to address CDA Lake management issues and the Restoration Partnership to implement natural resource restoration actions throughout the Basin.

As in the past, the ASARCO bankruptcy settlement and the Hecla settlement continue to be the major sources of funding for the environmental remediation and natural resource restoration actions. Careful action through the implementation of the Upper Basin RODA and Lower Basin OU-3 ROD, any additional needed amendments plus diligent work on the part of the Restoration Partnership is necessary to ensure that the available funds are expended in a judicious manner. Current funding projections indicate that the funds from the Hecla settlement for remedial actions will be exhausted soon. Some other source of funding will be needed to carryon remedial actions in the Box because funds from the ASARCO settlement cannot be used in the Box. Assuring sustainable funding intended to advance cleanup as planned in the RODs and amendments, along with operation and maintenance of the implemented remedies, restoration of injured natural resources, and management of CDA Lake continue to represent a significant challenge into the future.