

2010 ANNUAL REPORT



Basin Environmental Improvement Project Commission

February 2011

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Executive Summary

The Basin Environmental Improvement Project Commission (BEIPC) is a locally based organization responsible for overseeing 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, Coeur d'Alene Lake and the Spokane River within the Counties of Shoshone, Kootenai, and Benewah, as well as the Coeur d'Alene Tribal Reservation within Idaho.

During Calendar Year 2010, the BEIPC coordinated and monitored accomplishments by various implementing entities for environmental cleanup and restoration work included in the BEIPC 2010 Annual Work Plan and the five-year operating plan. It also developed a 2011 Annual Work Plan and an updated five-year plan. The environmental cleanup work was performed through the Federal Superfund Program and State of Idaho environmental cleanup programs. Natural resource restoration work was performed by the designated Natural Resource Trustees. The BEIPC completed Clean Water Act (CWA) grant requirements for research and demonstration projects through grants made by the U.S. Environmental Protection Agency (EPA) to the Idaho Department of Environmental Quality (IDEQ) acting as the BEIPC fiscal agent. The BEIPC began work on developing a consolidated approach to flood control and levee management in the South Fork CDA River and Pine Creek.

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 to direct, and/or coordinate environmental remediation, natural resource restoration, and related measures to address water quality and heavy metal contamination in the Basin.

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 National Priorities List in 1983. Operable Units 1 and 2 (OU-1&2) are the populated, industrial, and undeveloped areas in what is known as the "Bunker Hill Box." The EPA and IDEQ are the implementing agencies for OU-1&2.

The BEIPC's primary purpose is to work with the EPA and IDEQ to implement the Record of Decision (ROD) for OU-3 designed to advance the cleanup of heavy metals contamination throughout the Basin. In addition, the BEIPC is involved in:

- Evaluating OU-2 and Upper Basin OU-3 human health and ecological cleanup activities to develop a comprehensive cleanup plan for the Upper Basin to be included in an Upper Basin ROD Amendment;
- Coeur d'Alene Lake management planning and implementation;
- Heavy metal contamination cleanup efforts at mining sites in the North Fork of the Coeur d'Alene River; and

- Leading multi-agency coordination in addressing potential flooding in the South Fork CDA River and Pine Creek drainages.

Legislation 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 tribal council member of the Coeur d’Alene Tribe appointed by the council of the Coeur d’Alene Tribe; and
- One federal representative of the United States appointed by the President.

Implementing language directed the BEIPC to appoint an Executive Director to manage the activities of the BEIPC. The Executive Director is Terry Harwood.

Current BEIPC Membership

Name	Title	Representing
Jon Cantamessa, Chair	Shoshone County Commissioner	Shoshone County
Jack Buell	Benewah County Commissioner	Benewah County
Rick Currie, Vice Chair	Kootenai County Commissioner	Kootenai County
Chief Allan	Chairman, Tribal Council	Coeur d’Alene Tribe
Grant Pfeifer	Regional Director, Washington Department of Ecology	State of Washington
Toni Hardesty	Director, Idaho Department of Environmental Quality	State of Idaho
Dennis McLerran	Regional Administrator, R-10 EPA	Federal Government

Program Management

The BEIPC operates in accordance with the Idaho statute and the MOA between the governing entities. It is responsible for coordinating the activities of federal, tribal, state and local government agencies implementing the Record of Decision (ROD) for Operable Unit 3 (OU-3) and evaluating OU-2 and Upper Basin OU-3 ecological cleanup activities to develop a comprehensive cleanup plan for the Upper Basin to be included in an Upper Basin ROD Amendment. It is also involved in the coordination of efforts to protect the cleanup remedies, human health, and the environment from the release and migration of contaminants through the implementation of Institutional Controls in the Basin, implementation of a Drainage Control and Infrastructure

Revitalization Plan for the Upper Basin communities, and development of a coordinated effort for flood control and levee management in the South Fork CDA River and Pine Creek.

The BEIPC works with the seven governmental entities and their agencies to establish annual work priorities and operating plans and provides project oversight and fiscal management for Clean Water Act (CWA) research and demonstration projects through the office of its Executive Director and his staff. The Executive Director is also involved in implementation of a consolidated infrastructure revitalization plan for the Upper Basin communities and development of a coordinated flood control and levee management program for the South Fork CDA River and Pine Creek drainages. 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, and the Coeur d’Alene Tribe 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 Citizens 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 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 2010, the PFTs and TLG developed the 2011-2015 Five-Year and Calendar Year 2011 draft work plans and studied and developed project and program proposals to implement the remedy in OU-2 and 3. The TLG is currently composed of representatives from 21 governmental entities.

Public Outreach and Citizen Involvement

Community Involvement

- During Calendar Year 2010, the BEIPC held meetings and deliberations open to the public and maintained an up-to-date Basin website at: www.basincommission.com. Meetings were held at various locations within the Basin with locations and dates posted in local newspapers and at the BEIPC office in Kellogg, Idaho. In August, the BEIPC held a field tour to discuss potential flooding issues and review levee conditions and provided public transportation to various sites in the South Fork CDA River and Pine Creek drainages. EPA, IDEQ and the BEIPC held a number of community open houses to discuss the development of repositories and the ROD Amendment for the Upper Basin, and EPA held a field tour in October to review various sites in the Upper Basin to discuss cleanup needs and accomplishments in advance of the Upper Basin ROD Amendment. General public comment opportunities are scheduled at each meeting. The BEIPC also participated in public education/outreach efforts at the North Idaho Fair in a joint booth with other agencies and Basin related groups.

Citizens 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

CCC meetings were held in January, April, July, and October 2010 in different locations around the Coeur d'Alene Basin. In addition to these regular quarterly meetings, the CCC also sponsored an Open House on repository siting in the Upper Basin in March 2010. All meetings were open to the public.

At the regular quarterly CCC meetings, members were updated on ongoing BEIPC and TLG activities and asked to provide input on a variety of issues such as repository siting, the Upper Basin ROD Amendment and BEIPC work plans. The CCC informed the BEIPC of its activities by providing meeting minutes and comments to Commissioners prior to BEIPC meetings and by making presentations at BEIPC meetings.

Approximately once a month, CCC members were provided with email and/or U.S. mail updates on relevant activities in the Basin.

In April 2010, the CCC elected a new Vice-Chair, Vera Williams. Jerry Boyd continued his term as CCC Chair.

Chronology of Selected CCC Activities and Input to the BEIPC in 2010

In addition to receiving updates approximately once a month via email or regular mail about current BEIPC activities, CCC members were involved in the following activities in 2010.

January

- The CCC held a regular quarterly meeting on January 27 in Kellogg, Idaho. Topics included updates on the Basin Property Remediation Program (BPRP) and repository issues by IDEQ; EPA updates on the ASARCO settlement, Upper Basin project priority setting, Upper Basin ROD Amendment, and the Lower Basin Enhanced Conceptual Site model; as well as a discussion on CCC member attendance and interests.

February

- The CCC Chair, Jerry Boyd, presented the results of the January 27 CCC meeting at the February 17 BEIPC board meeting.

March

- The CCC sponsored a public Open House on the two proposed Upper Basin repository sites, Osburn and Hecla Star tailings pond areas.

April

- The CCC held a regular quarterly meeting on April 21 in Kellogg, Idaho. Topics included the ASARCO settlement, repositories, and the ROD amendment. In addition, the CCC voted in a new Vice Chair. Beginning with this meeting, public comment was first invited at the beginning of the meeting, rather than just at the end of the meeting.

- The Communications PFT began work on a survey for the CCC related to increasing participation and addressing topics of interest.

May

- The CCC Chair presented the results of the April 21 CCC meeting at the May 19 BEIPC board meeting.

June

- CCC members were invited to attend a workshop sponsored by EPA, IDEQ, and the Panhandle Health District on increasing participation in the blood lead testing program.

July

- The CCC held a regular quarterly meeting on July 21 in Coeur d'Alene, Idaho. Topics included an update on the workshop on blood lead testing and information on repository issues.

August

- The Vice Chair presented the results of the July 21 CCC meeting at the August 18 BEIPC board meeting.
- Some CCC members attended the Upper Basin Cleanup Plan Open Houses.

September-October

- Some CCC members attended the Open Houses on the EPA Upper Basin Cleanup plan and attended the field trip.
- The CCC held a regular quarterly meeting on October 27 in Kellogg, Idaho. Topics included the draft five-year and one-year BEIPC work plans, Upper Basin ROD amendment and cleanup plan, repositories, and a mini-workshop on how to provide effective public comment.
- CCC members reviewed and provided comments on the draft 2011-2015 BEIPC Five-Year Plan and the draft 2011 BEIPC Work Plan.

November-December

- The CCC Chair presented the results of the October 27 CCC meeting at the November 17 BEIPC board meeting.



Flood Control and Levee Tour along the South Fork CDA River

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 repositories 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 BEIPC Executive Director 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 Executive Director also hosted a number of field reviews by the media and other interested parties, and was interviewed numerous times by the media for news and television stories.

Calendar Year 2010 Work Accomplishments

Work Performed Through Federal Superfund or Other Cleanup Programs:

Blood Lead Screening in Children

Blood lead testing of children living in the Basin was conducted in July 2010 as part of the Panhandle Health District's Health Intervention Program. The testing program held annually, at fixed locations throughout the Basin, provides testing of children 6 years old and younger in an effort to locate children with elevated blood-lead levels; and to offer information to families of those children with elevated blood-lead levels on how to help reduce their children's exposures to lead. The information gathered from this testing program also provides feedback on the effectiveness of the Superfund cleanup work in the Basin. The current program provides a cash incentive of \$20 per child to test children living in the Basin.

One hundred eight (108) children residing in the Basin were tested as part of the program in 2010. Excluding 2009, this represents the highest participation rate in the Basin testing program since 2001. In 2009, one hundred seventy-five (175) children were tested when a \$40 per child incentive was offered.

Parents of children testing high will be notified of the results and offered an in-home health consultation to identify ways to reduce exposures to lead. Blood-lead levels equal to or greater than 10 micrograms per deciliter is the level of concern identified by the Centers for Disease Control, and this level is used by the Panhandle Health District (PHD) to determine the need to offer in-home health consultations. At the time of publication of this report, the laboratory results of the testing effort were not available. Results of the 2010 blood lead testing program will be presented to the BEIPC at the February 2011 meeting.

In addition to conducting annual blood-lead testing in the Basin, a workshop to discuss the blood-lead testing program conducted by the Panhandle Health District (PHD) at the Bunker Hill Superfund Site (BHSS) was held at the Silver Mountain Resort on June 29, 2010. The objective of the workshop was to identify potential options for increasing blood lead testing of children at the BHSS. The workshop was hosted by EPA, the Idaho Department of Environmental Quality, the PHD and the BEIPC, and attended by members of the general public, elected officials, representatives of public health agencies, members of environmental advocacy groups and the media.

The workshop included presentations and discussion of the reasons why attendees think there is low participation in the current testing program and ideas to investigate that could potentially increase participation. The suggested approaches for improving participation in the blood lead testing program were recorded and EPA, IDEQ and PHD are currently evaluating them to determine which approaches would be good candidates to investigate further.

Basin Property Remediation Program (BPRP)

IDEQ remediated a total of 311 property addresses during the 2010 BPRP. 130 of this year's properties were remediated through a cooperative agreement funded by the EPA and the State of Idaho. The additional 181 properties were remediated through funding that was provided from the American Recovery and Reinvestment Act (ARRA). In 2009, the State of Idaho received \$16,800,000 in additional funding through the ARRA to be

used over a 2 to 3 year period for the BPRP. The addition of Stimulus funding to the project enabled the program to remediate additional properties including a number of larger properties that were not included in previous years due to funding constraints. Wellman Baseball and Sather Football Fields in Silverton were completed during the 2009 construction season along with a number of large commercial and residential properties in the Ninemile and Osburn areas. The final remaining ARRA funding was used during the 2010 BPRP.

During 2009, nearly 6.5 million square feet of property was remediated and the contaminated material disposed of in the Big Creek and the East Mission Flats Repositories. As a point of reference, the 2006, 2007 and 2008 BPRP programs remediated approximately 2.5 million square feet of property each year. The 2010 BPRP was back down to more of an average size program with a total of just over 3.0 million square feet remediated.

The 2009 and 2010 programs were able to perform a large amount of cut and fill operations within individual properties that are protective of human health and the environment. The table below shows that this activity resulted in an overall reduction in number of loads hauled to the repositories. The combined 2007/2008 average loads per acre remediated was 148. During the 2009 remediation program, an average of 126 loads per acre remediated was hauled to the repositories. During the 2010 remediation program, an average of 153 loads per acre remediated was hauled to the repositories. The use of cut and fill within the property results in an overall reduction of hauled material that would have otherwise been placed in the repositories.

Year	Number Property Addresses	Area Remediated (Acres)	Waste From BPRP Disposed of to Repositories (Loads)	Loads Per Acre
2007	373	60	9,240	154
2008	352	57	8,129	143
2009	547	149	18,780	126
2010	311	70	10,725	153

Twenty two (22) of the 2010 remediated sites were considered high risk properties where the exposure risk was elevated because of the presence of small children and/or pregnant women. The total cost of the 2010 program was approximately \$16 million. Each year, IDEQ consultants collect soil samples and send them in for analysis to determine which properties will require remediation in the future. This sampling is the basis for the following year BPRP remediation program.

Historically, property remediation progress has been reported in terms of "property equivalents." A property equivalent is a calculated number based on a property address and area measured (as acres or square feet) intended to provide a measure of productivity which accounts for the variable sizes of properties. In recent years, measuring progress has shifted from property equivalents to property addresses and total area remediated. This has been found to be a better measure of work completed and allows for meaningful comparison of work progress from year to year. For purposes of contrasting progress in 2010 with previous years where property equivalents have been used to measure work completed, 612 property equivalents were remediated as part of the 2010 BPRP. This compares to 1270, 524 and 543 equivalents in 2009, 2008 and 2007, respectively. Future accomplishment reports will report progress in terms of property addresses and total area.



Completed Property Remediation in Wallace



Remediation in Progress at Commercial Business, Big Creek Canyon

Repository Development and Management

Introduction

Two repositories were open to receive remedial action and Institutional Controls Program (ICP) waste in the 2010 field season. Big Creek Repository (BCR) near the community of Big Creek serves the Upper Basin, and East Mission Flats Repository (EMFR) near Cataldo serves communities in the Lower Basin. A summary of activity at each site is described in the following sections.

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) and the Star Tailings Impoundment (STI). The next steps in transforming former tailings impoundments into repositories are described in this section.

Big Creek Repository

During 2010, the Big Creek Repository (BCR) received 8,026 truck loads from the BPRP, 662 truck loads from the ICP, and 274 truck loads from the Railroads' Wallace Yard cleanup project. Final in-place, compacted volume calculated from the truck load count was about 58,000 cubic yards (cy). This material was placed and compacted in accordance with the fill plan outlined in the annual BCR Operations Plan. IDEQ's site management contractor oversaw these activities including operation of the decontamination facility. In 2010, the water quality monitoring program at the site found that BCR operations had not impacted adjacent surface or ground waters, some of which were previously impacted by historic mining activities.

The design team continued evaluation of adding material to the north side of BCR. Work performed in 2010 enabled the proposed north side expansion idea to advance from the concept stage to final design. A draft final design report for the proposed expansion was submitted in October to the EPA, U.S. Army Corps of Engineers and IDEQ for review and comment. The final design report due in December will incorporate responses to the agency comments.

The draft final design report indicates an additional 130,000 cy of capacity can be safely added to the existing structure. The report evaluated factors such as truck access, geotechnical engineering, slope stability, wetlands, cultural resources, storm water management, hydrology and floodplains. Adding waste to the existing repository will allow the use of existing repository infrastructure such as access roads, utilities, decontamination facilities and the monitoring well network. This will result in added capacity at a very low cost per cubic yard.

The expansion will occur on property already owned by the State of Idaho. Fill placement will be contiguous with the north end of the existing waste fill slopes. Setbacks incorporated in the design will accommodate access to Avista power lines and the preservation of a vegetated buffer along the Trail of the Coeur d'Alenes.

The final design report will be completed in December 2010. Site clearing and preparation is scheduled for Spring 2011. The expansion area will be ready to receive waste during the 2011 field season.

At the end of the 2010 field season the BCR contained approximately 455,000 of the anticipated 505,000 cy capacity. This leaves room for approximately one year of disposal from the BPRP and ICP. Adding 130,000 cy to the repository capacity will enable BCR to receive waste for an additional three to five years. This estimate assumes the BPRP crews will split their activity between the Upper and Lower Basins. Extending the capacity

at BCR will ensure the Upper Basin has adequate repository capacity while a new repository is brought on line.

East Mission Flats Repository

The East Mission Flats Repository (EMFR) achieved fully operational status during 2010. Construction work was finalized including installation of the decontamination well, construction of the decontamination wash pad and sump, paving the Dredge Road approach, and installation of associated piping and electrical service. All hauling of remedial action waste is now using the Dredge Road access instead of the east-side ICP entrance. This routing plan significantly decreases truck traffic on Canyon Road and Dredge Road.

The EMFR repository received 2,699 truck loads from the BPRP and 205 truck loads from the ICP and 1,268 truck loads from the Wallace Yard Removal Action. Final in-place, compacted volume calculated from the truck load count was about 21,500 cy. This material was placed and compacted in accordance with the fill plan outlined in the annual Operations Plan. The new fill material was compacted and graded to an elevation of 2,140 feet. This elevation is slightly above the anticipated 10-year flood elevation, so if a 10-year flood occurs in 2011 during the construction season, work can continue on top of the dry fill.

Exterior side slopes were graded to a 3-foot horizontal to 1-foot vertical configuration and covered with clean soil. After grading was complete the exterior slopes were hydroseeded with a native vegetation seed mix. The clean soil on the exterior surfaces is part of the protective cap. The cap soil will form a barrier between the waste material and surface water should a high-water event occur.

The ICP entrance will be open on the east end of EMFR to receive ICP waste during the winter closure period. The ICP area will be observed by the IDEQ Project Manager and Operations Contractor at intervals during the winter closure period. All ICP waste deposited at EMFR will be transported to the west end of the repository for stockpiling and future placement and compaction. The waste material will be placed on the decontamination pad area above the 100-year flood level at an elevation of 2,150 feet.

Groundwater monitoring was conducted on a network of six wells on or near the EMFR property. Groundwater monitoring program results indicate that disposal activities have not impacted groundwater beneath the site. One well located approximately 1,700 feet west and upgradient of the site exceeded the EPA drinking water standard for arsenic in one of three sampling events in 2010. The arsenic concentrations reported from this well are not related to activity at EMFR because the well is located upgradient of the EMFR site and tests from this well indicated high arsenic prior to disposal of any contaminated soils under the cleanup activity at EMFR.

One new monitoring well was constructed at the site in response to a recommendation by the EPA Office of Inspector General made in their June 2009 report. The well is designated as MW-C Deep and is located adjacent to MW-C at the southwest corner of the repository property. The well is screened at the base of the first water bearing zone, from 75 to 95 feet below ground surface. Like all the wells on EMFR property, water from this well meets EPA primary and secondary drinking water standards.

New Repositories

Two new repositories were identified as a result of the site selection process. Both proposed repository sites are located on reclaimed mine tailings impoundments. One site is located at the Osburn Tailings Impoundment (OTI) northeast of Osburn and the second site is located at the Star Tailings Impoundment (STI) up Canyon

Creek northeast of Woodland Park. Negotiations for site acquisition have been initiated with the property owners.

Work is currently underway to characterize the two sites for repository design purposes. The site characterization process will include evaluation of geotechnical engineering properties, slope stability, wetlands, cultural resources, storm water management, hydrology, floodplain extent, and truck access alternatives.

Design work will proceed sequentially on the two sites. The OTI site will be designed first, to be followed by the STI site design. A draft 30% Design Report will be prepared for OTI in summer 2011. The public will have an opportunity to review and comment on the draft report. Any revisions that occur as a result of public comments will be incorporated in the 90% Design Report. Production of the 90% Design Report has not been scheduled as yet.



EMF Repository Operations



Completed EMF ICP Disposal Facility

Recreational Use Activities

The work of the Recreation Area PFT was moved as a subcommittee under the Lower Basin PFT. This transfer came about since most of the existing and future potential recreation areas are within the Lower Basin. Work on Upper Basin sites will still be accomplished within this revised framework.

Throughout 2010, efforts continued to look into potential restoration at the Gene Day Pond area in Osburn, Idaho. During the year there were some changes in staff representing the participating agencies resulting in not a lot of forward motion. If a project were to proceed, it could include the development of an urban fishery which would be managed by the Idaho Department of Fish and Game. The U.S. Army Corps of Engineers (USACE) conducted field sampling for metals in and around the Pond in 2009 and in September 2009, representatives of local government and federal and state agencies met for a site tour and an initial project scoping meeting. In November, the USACE Real Estate Office completed one of the action items that resulted from this meeting; identification and delineation of property ownership surrounding the Pond. The next step is to develop a preliminary design and budget for the project.

Upper Basin Remedies

During 2010, EPA, IDEQ and others worked on changes to the cleanup plans for the Upper Basin. The Upper Basin includes the South Fork of the Coeur d'Alene River and its tributaries downstream to where they combine with the North Fork. Also included is the 21-square mile Bunker Hill "Box" where EPA began its cleanup in the 1980s. These changes will result in an updated cleanup plan for the Upper Basin to protect public health and the environment. These changes and updated cleanup plan will be documented in a ROD (Record of Decision) Amendment. The purpose of this effort is to set out a comprehensive cleanup approach across the Upper Basin to protect the environment, particularly water quality, and ensure that the human health remedy is protected for the long-term. EPA is doing this work to reflect improved knowledge of local conditions, as well as to address the recommendations of the National Academy of Sciences (NAS).

In addition, EPA completed a Draft Final Focused Feasibility Study (FFS) and released a Proposed Plan for the cleanup in the Upper Basin. The Proposed Plan presents the recommended approach for the cleanup from all the alternatives evaluated in the FFS. The Proposed Plan was released on June 12, 2010 with an initial 45 day comment period. Based on a number of requests for an extension of the comment period it was extended until November 23, 2010. During the comment period, EPA conducted a number of meetings, open houses, and a site tour to help inform the community on the Proposed Plan.

There were many meetings in 2010 regarding the cleanup plan. Technical meetings were held with the Upper Basin PFT to share the results of groundwater modeling, discuss cleanup alternatives and priorities, and gather input on development of the updated cleanup plan. The Upper Basin PFT includes TLG and community representatives. Updates were also provided at all TLG, CCC and Basin Commission meetings. Meetings to share information and gather input were held with mayors and other officials in the Upper Basin. Information about the cleanup plan changes was also shared at various community group meetings.

2010 ROD Amendment efforts include the following:

Setting Cleanup Priorities:

The Proposed Cleanup Plan includes actions at a large number of mine and mill sites in the Upper Basin, impacted streams, and areas within the Bunker Hill "Box" (Operable Unit 2) to remove or cap contaminants, or collect groundwater for treatment. In parallel with the ROD Amendment process, EPA has been prioritizing the 350+ sites identified for cleanup in the Upper Basin. This process is being used to help identify those sites where actions should be taken first based on a variety of factors. These factors include such things as the volume of mining waste at a site, the potential to release metals, stream conditions, and other factors such as human health impacts. The tools and process used for the priority setting process have been documented in a Draft Adaptive Management Plan. To date, the sites that have been identified as the highest priority are typically the larger sites, high in the drainage, which contribute a significant amount of metals to surface water and groundwater that degrade stream water quality.

As this process proceeds, priority sites within close proximity to each other will be grouped into "buckets" for cleanup. This will provide for greater efficiency during the cleanup process. Wherever possible, wastes will be consolidated on-site within a given "bucket" of sites. In some cases on-site disposal may not be practicable or appropriate and wastes would then be transported to a local or regional repository. EPA is working through this priority setting process with input from the Upper Basin PFT. During 2010, at least 4 meetings have been held to get input on the tools and process used to prioritize sites and on several "straw man" implementation plans

that are based on a certain funding level. Additional work will be needed during 2011 in order to finalize the implementation plan that reflects work identified in the ROD Amendment. This group is also working closely with the repository siting team to ensure that these cleanups are in sync with the locations and sizes of future repositories.

Waste Disposal Alternative Evaluation:

In addition to property cleanups, the upcoming ROD Amendment work and future work performed under the ICP are also driving the need for additional waste disposal capacity. Contaminated soils from old mine sites for example, as well as other cleanups under the ROD Amendment, will need to be securely contained and managed. This will prevent contaminants from being released to surface water, groundwater, or air in levels above state and/or federal standards. Without accepted disposal options, the cleanup cannot move forward.

Large, centrally-located regional repositories are one option for storing ROD Amendment waste. However, for mine and mill site (“source area”) cleanups, EPA's first step will be to look for opportunities to safely consolidate and cap waste on-site or in the immediate vicinity of mine and mill sites in side canyon areas. EPA has done this successfully on many occasions, such as the Golconda, Rex and Constitution mine site cleanups. As a result, we have been able to reduce the volume of soils hauled to repositories. In general, we can reduce the size and number of repositories needed for cleanup by taking full advantage of the number of sites where we can safely consolidate contaminated soils. If waste cannot safely be contained on-site, it will be taken to a regional repository. Two new regional repository sites to serve the Upper Basin have been identified as described in the New Repositories Section. Design work and technical evaluation on the new repository at OTI is currently underway. A preliminary volume estimate for this facility is 1.6 million cubic yards. Since the majority of the BPRP in the Upper Basin is approaching completion, most of this volume will be available to store waste generated from the remedial actions identified in the ROD Amendment and future disposal for projects performed under the ICP.

Protection of Existing Remedies:

EPA's top cleanup priority is to address human health risks. Among other things, this means keeping clean soil barriers in place and clean areas clean. As part of the ROD Amendment, EPA has been working with IDEQ in the Upper Basin to better understand where barriers that protect people's health may be at risk of recontamination. One main way recontamination can occur is by uncontrolled water flow from flooding and rain storms. Remedy protection planning has built on work already done by the BEIPC, local representatives and the agencies in developing the Upper Basin *Drainage Control Infrastructure Revitalization Plan* (DCIRP) which includes the Box *Infrastructure & Revitalization Plan* (IRP).

Tributary and precipitation flooding has been modeled in the populated areas of the Upper Basin, including the Box. Areas of expected scouring and recontamination have been mapped. Upper Basin Mayors, Shoshone County Commissioners, and their Public Works and Streets Supervisors have provided input to the technical analysis. They have also given feedback on the resulting impact maps based on their on-the-ground experiences. In the Proposed Cleanup Plan, EPA has proposed projects to address tributary and precipitation flooding in localized areas to prevent damage to clean barriers. These projects include:

- Re-routing local drainages;
- Hardening roadside ditches with rip rap and asphalt;
- Installing/upgrading culverts; and
- Upgrading existing inlet structures.

The Proposed Cleanup Plan also allows for the selection of similar remedy protection projects in the less populated Upper Basin drainages (“side gulches”) following completion of tributary and precipitation modeling work. Modeling work in the side gulches began in fall 2010 and is expected to be completed in early 2011. EPA and IDEQ will be looking for ways to work with the entities that have jurisdiction to ensure appropriate long-term maintenance of the installed remedy protection structures occurs.

Upcoming in 2011:

In 2011, there will be additional technical meeting updates to the TLG, CCC and Basin Commission, and other community meetings to share information about the response to comments on the Proposed Plan and development of the ROD Amendment. The ROD Amendment is expected to be issued in spring 2011.

Learn More about the ROD Amendment: To learn more about the ROD Amendment, additional details are online. Technical memos, a map, materials from past meetings, and community involvement documents may be found at <http://yosemite.epa.gov/R10/CLEANUP.NSF/sites/bh+rod+amendment>.

Lower Basin Remedies

The cleanup described in the OU-3 ROD for the Lower Basin includes actions for the wetlands and lateral lakes, the river banks, splay areas and river bed. The objectives of remediation in the Lower Basin focus on reducing human health risks, improving wildlife habitat and reducing particulate lead in the Coeur d’Alene River system.

In April 2006, EPA used Coeur d’Alene Basin Superfund settlement monies to purchase a 396-acre conservation easement with a willing private property owner. The agreement was established to help meet OU-3 ROD goals in establishing safe waterfowl feeding habitat in the Lower Basin as they pertain to metals of concern. Other parties participating in agreement negotiations included the U.S. Fish and Wildlife Service (USFWS) and Ducks Unlimited. Remedial action construction in ~300 acres of the easement started in September 2006 and was completed in 2007 using ASARCO Environmental Trust Fund monies. The remedial action was essentially completed in 2010. The Coeur d’Alene Basin Natural Resource Trustees have begun wetland restoration within the easement. USFWS and Ducks Unlimited are conducting restoration activities, and USFWS is coordinating operation and maintenance of the site over the long-term under the Trustees’ 2007 Coeur d’Alene Basin Final Interim Restoration Plan. Restoration activities are being funded by Natural Resource Damage Assessment (NRDA) settlement funds. Basin Environmental Monitoring Program (BEMP) data is already demonstrating remedial and restoration success; in contrast to unremediated Basin wetlands, mean blood lead concentrations from waterfowl sampled within the easement are below the suggested acute toxicity threshold, and have been shown to increase once individuals move from the remediated area to unremediated areas. Waterfowl use within the easement since restoration began also included some of the highest densities of ducks in any Basin wetland monitored under the BEMP and significant increases in ducks and swans as restoration progressed. Through the Superfund remedial action and NRDA restoration activities, contamination is successfully being addressed and this contaminated area is being converted into perpetually protected, high quality feeding habitat for both migratory and resident swans, ducks, and other wetland species. This pilot project represents an important step in addressing the Basin’s widespread ecological contamination issues.

There are a significant number of data gaps and uncertainties with respect to the fate and transport of contaminants in the Lower Basin which must be addressed prior to commencement of remedial actions in this

area. Additional data and sediment transport modeling is needed to better understand the system and make decisions about cleanup actions. During 2010, efforts have been underway by EPA to address some of these uncertainties as discussed below. In addition, past Clean Water Act (CWA) subgrants approved by the BEIPC will help provide site-specific information for remedial decisions. All of the BEIPC studies and demonstration projects are now completed.

EPA began developing an Enhanced Conceptual Site Model (ECSM) for the Lower Basin in 2009 and published it in August 2010 after vetting and receiving comments from the TLG, Lower Basin PFT, and the CCC. In August 2010, EPA published the ECSM and provided it to the BEIPC board and meeting attendees at the August BEIPC meeting. Subsequently, the ECSM was provided to the TLG, Lower Basin PFT and CCC and other interested parties on request. The ECSM refines the current working hypothesis of the Lower Basin with respect to river flows and sediment transport. The ECSM Synopsis is available on the BEIPC website at: www.basincommission.com on the Lower Basin PFT page. The ECSM is comprised of disciplinary Technical Memoranda (TM) as follows:

- ECSM Synopsis
- ECSM Executive Summary
- TM-A Overview
- TM-C Hydrology
- TM-D Hydraulics and Sediment Transport
- TM-E Fluvial Geomorphology
- TM-F Geochemistry
- TM-G Contaminant Sources
- TM-H Simulation Modeling
- TM-I Geospatial Data Management
- TM-J Data Gaps and Other Uncertainties

The list of memoranda originally listed TM-B and TM-K, which were initially conceptualized for this ECSM effort. However, after subsequent consideration various aspects of those memoranda were woven into other technical memoranda and/or deferred until future points where they will be more germane.

While the ECSM provides a valuable synthesis of the information that exists on the topics important in river behavior and sediment transport, it also identifies significant data gaps that need to be filled to more fully understand the lower basin system. Key data gathering will be essential to support both hydraulic and sediment transport modeling and will be relied upon in conjunction with modeling by EPA to evaluate and select cleanup actions to address contaminated sediment transport and deposition in the lower basin. As appropriate, cleanup actions will continue to be identified that have a low likelihood of recontamination and/or those that will assist future decision making.

In 2010, the Lower Basin PFT held two meetings, in March and September. The following are some items that were discussed/presented: 1) Review of Enhanced Conceptual Site Model (ECSM) Executive Summary and Synopsis and discussion on future activities; 2) Lower Basin bank stabilization update on 2009-2010 projects; 3) Recreation PFT/ Communications PFT update; 4) Post flood coordination at Lower Basin recreation sites; 5) Discussion on annexation application by developer adjacent to the City of Harrison; 6) Update on agricultural to wetland conversion project along the Coeur d'Alene River; 7) Headwaters, Floating Islands presentation; and 8) Enhanced Conceptual Site Model (ECSM) discussion on various aspects of work planning and the path forward.

Despite the large extent of mining-related contamination resulting in ecological and human health risks previously documented and work described in the 2002 ROD for OU-3, no additional remedial action Superfund money is currently designated for Lower Basin ecological remedies at this time. Some settlement monies received from the recent ASARCO bankruptcy settlement will be used to implement future cleanup projects in the Lower Basin after additional work planning has been conducted and contaminated sediment transport is better understood. In order to fully implement a comprehensive remedy in the Lower Basin, funding from the EPA Superfund program, ASARCO settlement monies, and other sources will be needed. The BEIPC will support EPA Region 10 in an effort to secure Superfund funding from EPA Headquarters.



Lower Basin Wetland



Coeur d'Alene River Stream Bank Erosion of Contaminated Soils

Basin Environmental Monitoring

Basin Environmental Monitoring Plan (BEMP)

The Bunker Hill Superfund Site/Coeur d'Alene (CDA) Basin has had three primary monitoring plans which govern the long-term status and trends, and remedial action effectiveness monitoring as required under the respective OU-2/OU-3 Record of Decision (RODs). Currently, there are three CDA Basin environmental monitoring programs/plans: OU-3 BEMP (2004); OU-2 EMP (2006); and OU-3 RA Effectiveness Monitoring Program (2007). During 2010, EPA has been working with the Monitoring PFT and other interested parties to integrate the existing plans into a consolidated CDA Basin environmental monitoring plan to: 1) optimize the current monitoring under the various programs; and 2) enhance the overall program operation/effectiveness with respect to changes/adaptive management, laboratory coordination, field sampling, data management, and reporting efforts. This process has utilized existing quantitative and qualitative tools to evaluate and optimize the current program. In addition, the approach includes the opportunity for input and coordination with stakeholders on the approach, data, locations, and evaluation process. This overall effort is also consistent with the efforts underway to develop a Comprehensive Ecological Cleanup Plan. As in the current BEMP, the monitoring will include surface water, sediment, groundwater, and biological resources monitoring at key locations in the Basin.

The major goal of the current and revised BEMP is to monitor and evaluate the progress of the remedy in terms of improving ecosystem conditions. Consistent with that goal, the BEMP will provide data relative to the following Basin-wide monitoring 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.

During 2010, continued efforts were underway to revise the BEMP into a comprehensive monitoring document through several meetings and sharing of work products. The long-term status and trends was conducted during this time under the existing OU-3 BEMP. In addition, sampling under the existing OU-2 EMP and OU-3 RA effectiveness monitoring continued under the existing plans. In late 2010, EPA began steps to finalize the comprehensive BEMP through the TLG for implementation in 2011. While this will become a final document, the overall goal of the BEMP will be continued revision of QAPPs/FSPs that reflect the focus for the ongoing and upcoming cleanup work. This basically means focusing OU-2 and RA effectiveness monitoring on key areas where work is either planned or has been conducted.

EPA will continue to make analytical results from site surface water, sediment, and groundwater sampling available on a web-accessible data management system; human health-related data will not be included in this database. For the last several years, EPA has made site environmental monitoring data available through a web page. Nationally the STORET system is transitioning to the new WQX data management system and the site environmental monitoring data will be accessible at a new website: www.bunkerhilldata.org. The biological monitoring data and annual monitoring reports are also accessible at EPA's web page under Technical Documents at: <http://yosemite.epa.gov/R10/CLEANUP.NSF/sites/cda>. If needed, EPA will assist interested stake holders in accessing the information.

Work Performed Through CWA Grants:

Funding from the appropriations for Federal Fiscal Years (FY) 2002, 2003, and 2004 under the Clean Water Act (CWA) Section 104(b) (3) was made available for BEIPC project work. Under the CWA, these funds were to be used to demonstrate how *"federal, state, and local agencies can cooperatively conduct and promote the coordination and acceleration of research, investigation, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of pollution."*

All work for CWA Grants is complete and closed as of June 30, 2010. A listing of completed project final reports along with a short summary of project purpose and conclusions and findings is posted on the BEIPC website. Copies of the final reports can be obtained at the office of the Executive Director. Following is a summary of work accomplished on the 2004 projects:

FY 2004 Grant Projects

Mica Bay Nutrient Reduction Project - Phase 2

Purpose of Work - The original work planned was intended to be a demonstration and training project for use by wetland delta landowners. It was intended to encourage them to consider altering management of unusable lands for the purpose of providing public benefits by lowering nutrient delivery to near shore areas of CDA Lake. The feasibility study resulting from the first phase of this project indicated that more land and additional funding was needed than originally anticipated to implement a meaningful project. IDEQ and the U.S. Fish and Wildlife Service (USFWS) were unsuccessful in their attempts to secure cooperation from enough landowners to implement the project as originally planned.

In August 2006, a willing landowner upstream from the Mica Creek Delta on the lower North Fork Mica Creek contacted the USFWS and IDEQ indicating interest in a streambank and bed stabilization project to control sediment and nutrient impacts to the Mica Creek Delta. Field investigation confirmed that there was significant and active streambank mass failure and erosion on sections of the North Fork Mica Creek located on the landowner's property. IDEQ confirmed that a meaningful stream stabilization project could be completed with the funds available. IDEQ drafted an amended project proposal for Mica Creek that was presented to the BEIPC on November 29, 2006. The BEIPC approved the amended Mica Creek project. As amended, this project will serve as demonstration and training to acreage property owners within the CDA Lake Basin who have streams on their property, on the costs and effectiveness of various streambank and streambed rehabilitation methods to reduce fine sediment/nutrient erosion and export into CDA Lake.

Status of Project - All work complete.

Conclusions - The BEIPC and a group of cooperating agencies with a willing land owner have successfully completed a demonstration project to reduce sediment and nutrient loading to Mica Bay on CDA Lake. The project had two purposes, to stabilize erosion damage on Mica Creek for the recovery of beneficial uses and to be a demonstration and training project to be used to work with landowners around the Lake and along streams feeding the Lake. It is intended to encourage landowners to consider land management activities to enhance their property while providing public benefits by lowering sediment and nutrient delivery to streams feeding the Lake and near shore areas.

Working with the landowners, the agencies implemented a stream bank and bed stabilization project on a number of areas along the creek to control sediment and nutrient impacts to the Mica Creek Delta. The various applications used were evaluated as to cost and effectiveness.

As part of the education and training portion of the project, a tour of the completed project was advertised and conducted. The tour was given by the involved agencies and the cooperating landowner. Tour components included: discussion on the impact of sediment and associated nutrients to streams and CDA Lake; photo display of pre-project conditions as compared to post-project conditions; costs per linear foot of the various methods used; discussion on the effectiveness of the various methods used; and discussion of the various cost-share programs available through the agencies involved in the project. Those agencies in addition to the Basin Commission and EPA included the Idaho Department of Environmental Quality, Kootenai/Shoshone Soil and Water Conservation District, Natural Resources Conservation Service, and the Idaho Soil Conservation Commission.

As an educational tool for a wider audience than local farmers and ranchers attending the tour and to serve as a long-term tool, a 10-minute DVD production of the project was produced utilizing filming segments conducted from start to finish. Copies of the DVD can be obtained from the Conservation District: ksswcd@icehouse.net.

Plummer Wastewater Treatment Pilot

Purpose of Project - The objective of this project is to show the viability of a wastewater infiltration treatment wetland in Plummer. A successful wetland would benefit water quality in Chatcolet Lake and CDA Lake by reducing nutrients that now flow into Plummer Creek from the Plummer Wastewater Treatment Facility.

Status of Project - All work complete.

Conclusions - At the onset of this project, the design flow rate was set at 3,000 gpm; however, it became apparent in December 2005 that this was unattainable. The flow rate was then set at 1,000 gpm and has remained constant since that time; the one exception being the time period January 6 and February 10, 2006 when flow had to be halted due to extraordinary high rainfall.

The pilot wetland sample data shows over the course of the study that it is, for the most part, effective at treating the influent levels of phosphorus and nitrate. However, due to the projected flows that will be involved in the full build-out, the 200 acres of land needed makes this a less than ideal treatment alternative for the City of Plummer.

Plummer Creek Watershed Nutrient Load Assessment, Modeling and Management Plan Development

Purpose of Project - The purpose of this project is to develop a Watershed Nutrient Management Plan which will include appropriate and specific point nutrient source control efforts for the Plummer Creek watershed. To accomplish the project purpose, the specific objectives of the proposed project are:

- To characterize nutrient (nitrogen and phosphorus) and sediment concentrations and transport throughout the Plummer Creek watershed and into Chatcolet Lake through a two-year monitoring effort.
- To use the Generalized Watershed Loading Function (GWLF) or similar model to establish nutrient loadings from sources and land uses throughout the watershed.
- To review previously developed nutrient control project options and develop an updated set of recommended projects.
- To prepare a Watershed Nutrient Management Plan for use by the Tribe, the City of Plummer, Benewah County and other environmental resource agencies.

Status of Project - All work is complete.

Conclusions - The project was conceived and funded to characterize nutrient concentrations and transport through the watershed and into Chatcolet Lake, and thus, into CDA Lake. The project was designed to update the current understanding of nutrient loading sources within the watershed and to delineate appropriate nutrient loading controls in the form of a Watershed Nutrient Management Plan. The results are to serve as the basis for developing nutrient and water quality management efforts within the context of a CDA Lake Management Plan, as well as other potential Tribal, State or Federal water quality regulatory actions.

This project began with two years of water monitoring at eight sites spread along Plummer Creek and Little Plummer Creek. This monitoring included flow measurements, field physical/ chemical testing and sample collection for laboratory analysis of nutrient and sediment constituents. This monitoring revealed wide variations between sites and dates during this period, similar to other less intensive monitoring efforts conducted previously.

Modeling work for this project was conducted by TerraGraphics Environmental Engineering, Inc. under contract with the Tribe. The model used is collectively referred to as the Automated Geospatial Watershed Assessment Tool (AGWA) and includes the Kinematic Runoff and Erosion Model (KINEROS2) and the Soil and Water Assessment Tool (SWAT). These were developed by the USDA Agriculture Research Service and the USEPA Office of Research and Development Landscape Ecology Branch. Model inputs included land cover and land use classifications and local weather data. Nutrient and sediment runoff from three conditions were modeled: pre-European settlement, current and potential future. The 2005-2007 water quality data collected for this project was used for model calibration.

The monitoring and modeling results were used to support the development of a watershed nutrient management plan through the characterization of existing nutrient source loads and evaluation of general management alternatives. The management plan also described nutrient and sediment load reduction targets which were based on the analysis of potential future conditions. Once the watershed loading was characterized with the model, the results were presented to stakeholders at two public meetings in an attempt to identify areas and opportunities for future management options. In spite of difficulties calibrating the model with the limited and often inconsistent data, the Management Plan did identify areas of the watershed (sub-watersheds and stream reaches) which were considered high priority for implementation of conservation practices and stream channel stabilization measures. Best Management Practices (BMPs) applicable to forestry, agricultural and developing/developed areas were also presented in the management plan.

Pinehurst Flood Impact Study

Purpose of Project - Develop hydrologic models for Pine Creek and Little Pine Creek to predict flood impacts to Pinehurst, including contamination of remediated properties. Construct selected drainage infrastructure improvements to a portion of Little Pine Creek to allow calibration of the models.

Status of Project - All work complete.

Conclusions - The completed pilot projects in the Little Pine Creek drainage improved both water quality and channel stability. As a secondary benefit, flood control measures were incorporated where possible in all the projects. In addition to construction projects on LPC, hydraulic modeling of Pine Creek was commenced to help with future project development and further the project objectives for the Pine Creek watershed. The Pine Creek hydraulic model as currently developed reflects the existing condition. Additional data should be gathered and analyzed prior to the model's use in future applications and design. Specifically, a detailed study of the hydrology for the Pine Creek watershed should be conducted and the model should be more fully calibrated. This study has determined that the hydrologic information used by FEMA for the Flood Insurance Study in Pinehurst is outdated.

Thorough investigation of additional data that have become available since the 1975 study may improve the peak flow estimates. In addition, model calibration using known data from high flow events would help improve the accuracy of the model.

When the project started there was hope that model correlation between Little Pine Creek and Pine Creek could be made in an effort to help confirm if predicted modeled results actually occurred after construction projects. Although a direct comparison can not be made between these two models, it is reasonable to conclude that modeling predictions accurately reflect actual conditions measured before and after construction on Little Pine Creek. Therefore, it is reasonable to assume that similar results can be obtained with the Pine Creek model.

The lessons learned from the LPC projects can be noted and used when further projects occur in the Pine Creek basin. Although the hydraulic conditions on the various streams in the watershed are significantly different, several similarities exist such as construction methods, design methods, and modeling accuracy.

Overall, the Clean Water Act Pine Creek project was viewed as a success and a significant jumpstart in providing hydraulic information in the Pine Creek basin. Future design projects, modeling, and city developments will be able to use these lessons learned, design methods, and hydraulic models in the Pine Creek watershed.

Silver Crescent Complex Habitat Restoration

Purpose of Project - This project is a demonstration project to study the feasibility and economics of watershed restoration in areas where the original stream type has been severely altered by mining and environmental cleanup activities. Innovative high-gradient stream restoration techniques were further adapted for the unique circumstances in the East Fork Moon Creek. Work that was implemented and studied includes actions converting stream types from unstable to more stable types while accounting for site features such as a large mine waste repository located in the floodplain. Various revegetation approaches on and adjacent to the waste repository as well as the re-establishment of wildlife and fish habitat through the use of constructed or installed structures will be applied.

Status of Project - All work complete.

Conclusions - Pre- and post-restoration monitoring efforts suggest that the stream channel improvements following restoration work met all of the set objectives. Substantial improvements were observed in fish habitat conditions, stream channel function, fish abundance and biodiversity, aquatic insect biodiversity, and plant biodiversity. Furthermore, these improvements were noted in the first three years following completion of the stream restoration work. In summary, our monitoring efforts suggest that post reclamation stream restoration work such as the East Fork Moon Creek is an important component in mine reclamation projects and should be considered in future mine reclamation plans in the CDA River Basin.

Canyon Creek Treatability Study

Purpose of Project - Develop an alkaline precipitation design as a low cost method of achieving a substantial improvement toward ROD goals and determine if the proposed water treatment technology is implementable in the South Fork of the CDA River.

Status of Project - All work complete.

Conclusions - A lime lagoon treatment system is a viable alternative for zinc removal at Canyon Creek. Similar systems have shown that lime lagoon technology can be successful and cost effective. Construction of a lime lagoon treatment system is estimated to cost approximately 52% of the \$8.8 million estimate in the OU-3 ROD. Annual operation of a lime lagoon system is estimated to cost approximately 55% of the \$600,000 estimate in the OU-3 ROD. A full scale treatment system would occupy about 25 acres in the Woodland Park floodplain.

To complete a detailed final design, a number of data needs such as detailed topography, detailed geotechnical soils characteristics, and detailed regulatory discharge standards will need to be obtained. The project created three documents:

- 1) 100% Conceptual Design for the Canyon Creek Pilot-Scale Lime Lagoon Treatment System;
- 2) Pilot-Scale Lime Lagoon Treatment System Operation, Maintenance, and Monitoring Plan; and
- 3) Conceptual Design for the Canyon Creek Full-Scale Lime Lagoon Treatment System.

South Fork Sewer District Toxicity Reduction

Purpose of Project - A Toxicity Reduction Evaluation (TRE) is a stepwise process or plan by which a wastewater treatment plant (WWTP) investigates and identifies agents of toxicity in its effluent, and evaluates the effectiveness of toxicity control options. The South Fork Sewer District (SFSD) Page WWTP has failed previous Whole Effluent Toxicity (WET) testing. The effluent characteristics of the Page WWTP are similar to effluents from other treatment plants with the exception of the high metals concentrations. As a result, it is believed that the metals in the influent stream are directly responsible for the effluent toxicity which impairs receiving water quality. As an example, *daphnia magna sp.* exhibits chronic effects from 0.15 µg/l of cadmium based on data from EPA's Quality Criteria for Water 1986 (EPA 440/5-86-001), while the Page WWTP has historically discharged 2.6 µg/l. Currently, limited data exist presenting the concentrations of metals, especially in combination, that are likely to cause chronic effects in *ceriodaphnia dubia sp.* This problem also impacts other discharges in the Basin including the active mining companies and inactive mining claims that will also have difficulty meeting the new limits. Understanding the impact of metals on chronic toxicity is of keen interest to all of the dischargers in the Upper Basin.

Status of Project - All work complete.

Conclusions - The average day design flow for the plant is 4.3 mgd and the peak observed flow is approximately 13.0 mgd, which is due to excessive infiltration and inflow (I/I) entering the collection system. Based on a review of current treatment levels and effluent quality at the facility, the following constituents are potential sources of toxicity:

- Ammonia
- Heavy metals (e.g., cadmium, zinc, lead, copper)

A total of six WET tests were completed during the study. Based on the criterion in the NPDES Permit, the two tests completed in 2006 were both failing tests, with chronic toxicity units (TUc) greater than the permit level of 3.4. Sufficient toxicity was observed in the April 2007 to warrant a Toxicity Identification Evaluation (TIE). A Phase I TIE and a Phase III TIE were initiated. This analytical work showed that removal of zinc from the

effluent samples using a chelating agent reduced toxicity. These results indicate zinc appears to be the primary toxicant in the effluent during the sampling period.

Options for reducing zinc and other heavy metals from the effluent include:

- **I/I Reduction:** The Mullan CWA demonstration project showed groundwater contained elevated levels of heavy metals, and infiltrating groundwater resulted in significantly higher metals levels. Removing this I/I resulted in lower concentrations for some metals, lower loads to the WWTP, improved efficiency, and less variability in flows which results in lower capital and operations costs for treatment options.
- **Chemical Precipitation:** The Facility Plan evaluated several options recognized by EPA for removing heavy metals and concluded that chemical precipitation with sulfide at a pH of 8.3 to 8.7 in a covered reactor-clarifier, followed by polishing using multi-media filters could attain a probable effluent of 20 to 1,200 mg/L of zinc. The effluent is currently in this range; therefore this approach is not a practical solution for heavy metals removal.
- **Filtration:** A pilot study completed at the WWTP documented the performance of filtration technologies to remove heavy metals to the levels targeted in the NPDES permit. The implementation costs were very high due to the wide variations in plant flows resulting from I/I.
- **Land Application:** Land applying the effluent would eliminate effluent discharge and consequently potential toxicity to the receiving stream. Land application would be limited to the growing season of a selected crop, which would require effluent storage from late September through April or May and considerable land for applying treated wastewater. The topography near the WWTP and in the Upper Basin is characterized by narrow valleys, mountains, and streams collecting into the South Fork of the CDA River. Consequently, land application of the wastewater, with complete elimination of effluent discharge, is not a feasible solution.
- **Constructed Wetlands:** Constructed wetlands are commonly used for metals treatment of mine waste. Based on literature searches of similar effluents, this appears to be a viable alternative to reduce effluent metals toxicity. The wetland would be operated year round with the highest performance expected in the summer months and the lowest performance during the spring and fall. Because of the very low metals permit limits and unpredictability of the effluent, constructed wetlands should be piloted for one to two years to verify performance. If successful, 90 percent of current effluent could be treated in a 10- to 20-acre area. Inadequate land exists adjacent to the WWTP to permit all flows to be treated, so I/I reduction is critical to the success of this option.

Based on this analysis, I/I reduction appears to be the lowest cost/highest benefit option with constructed wetlands as the least cost treatment option once peak flows have been reduced. The TRE identified zinc as the primary toxicant. A complete TRE process, however, involves Toxicity Source Evaluation (TSE) and Toxicity Control Evaluation (TCE). It is therefore recommended that the owner utilize the conclusions of this study and consider the following:

- Continue systematic I/I identification and rehabilitation projects to reduce extraneous flows from the collection system and ultimately the WWTP.
- Monitor metals levels in the influent and effluent and compare yearly trends with collection system upgrades to identify potential reductions in heavy metals levels.
- In the event further WET tests evidence toxicity, it is recommended that the owner pursue EDTA manipulation to determine if zinc remains the primary toxicant.

- Work with EPA to develop a relationship between zinc levels and toxicity as a surrogate for WET testing.
- If additional metals removal is required once I/I is reduced, consider developing a pilot-constructed wetlands to verify metals removal capabilities.

Depending on the results of these steps and subsequent toxicity in the WWTP effluent, filtration or an alternate treatment method may be required to reduce toxicity further or comply with the final permit limits for heavy metals.

Simulation Model to Evaluate CDA Lake Response to Watershed Remediation - Phase 2

Purpose of Project - Provide the entities responsible for management of CDA Lake with a sophisticated computer modeling system with which to simulate the lake's long-term responses to a wide range of remediation strategies to be implemented under the ROD and the Lake Management Plan.

Status of Project - All work complete.

Conclusions - Using the validated lake models, the processes controlling zinc fate and transport within CDA Lake were explored. Algae play a large role in zinc cycling throughout the lake. Roughly the same amount of dissolved zinc that is released from lakebed sediments into the overlying water column is incorporated into algal biomass in the euphotic zone (the sunlit zone above the summer thermocline), which is then redeposited on the lake bed as the algae dies and sinks to the lake bottom.

The validated models also were used to examine the response of the Lake to a range of long-term scenarios to provide insights into the effects of remedial actions. The models are called ELCOM/CAEDYM and the following describes each model: 1) ELCOM is a 3-dimensional hydrodynamics model that is used to predict Lake water temperature in space and time; and 2) CAEDYM is a model with multiple modules that models dissolved oxygen, oxygen, nutrients, phytoplankton, and zooplankton in the Lake's upper and lower waters and Lake sediments. A combination of low phosphorus concentrations and zinc toxicity is currently keeping the Lake's algal biomass at an acceptable level. Efforts to reduce zinc loading from the CDA River are unlikely to result in a significant reduction in zinc toxicity to algal growth in the near term. The Kuwabara *et al* data (2006) suggest that even if zinc concentrations were reduced by an order of magnitude, continued loading from the watershed (although reduced) and also from the lakebed sediment will continue to cause toxicity to non-diatom species.

Decision makers should pay careful attention to nutrient loading to the Lake as it may respond significantly to increased phosphorus input – with or without zinc toxicity. The shallow southern portion of the Lake is already showing signs of this and if the phosphorus loading is not effectively managed, there is potential for the symptoms of eutrophication to progress farther into the deep northern body of the Lake. The model simulations suggest that increased phosphorus loading will either produce increased diatom biomass should zinc toxicity remain, or increased biomass of a mixed assemblage including more green and blue-green algal species should the zinc concentrations within the water decrease considerably. However, the overall algal biomass in the Lake should remain below 5 micrograms per liter of chlorophyll-a, if phosphorus loading is appropriately managed.

Lower River Sediment Transport Model and Bed Evolution - Phase 2

Purpose of Project - Develop a set of tools that can be used by resource managers for evaluating proposed projects designed to minimize the transport of metal contaminated sediments in the Lower CDA River. Objectives include the utilization of existing data and collection of additional data to develop and calibrate computer models of the River between Cataldo and CDA Lake. These models would be capable of simulating the hydraulic and sediment transport characteristics of the River over a wide range of stream flow and Lake elevation conditions. The models would be used to test proposed projects prior to implementation with the goal of improving their design and avoiding unanticipated and costly mistakes.

Status of Project - All work complete.

Conclusions - A computer sediment transport model, HEC-6 was used to simulate water surface and streambed elevations, erosion and deposition of the streambed, and sediment transport. The calibrated model was used to evaluate the feasibility and potential effects of management alternatives on the streambed. Four alternatives were simulated to understand the effects from dredging the streambed and reducing sediment discharge input. Management alternatives 1 and 3 used river discharge data from 2000, and 2 and 4 used data from 1997. Before start of the simulations, seven cross sections in the Dudley reach of the river were deepened 20 feet to simulate dredging about 296,000 cubic yards of sediments. Simulations indicated that it would take between 24 to 45 years of various flows to fill up the dredged area. It may take many years or even decades for the river to reach equilibrium conditions after incoming total sediment discharge is decreased. Effects from extreme flood events on the channel and flood plain are unknown.

The FASTMECH computer model was used to increase understanding of the two-dimensional flow hydraulics as they vary across the channel and in river beds and simulated bed shear stresses covering a 5.3 mile reach near Dudley. The model showed that flow depths increased as river discharges increased except where high lake elevations cause water-surface elevations to be high due to backwater conditions. The model also showed several areas where reverse flow (back-eddies) occurred and that the potential of sediment mobility occurs when bed shear stress exceeds the critical shear stress of the particle. Simulated sediment mobility indicated the transport of very coarse sand to fine gravel in these simulations.

Assessment of Economics and Effectiveness of Alluvium Sorting as a Mine Waste Removal Strategy

Purpose of Project - The pilot work was implemented to answer a number of questions concerning the alluvium sorting approach to mine waste removal and disposal from watersheds in the Basin: 1) Is the additional cost of sorting stream bed materials contaminated with mine wastes balanced by savings in transportation and repository volume costs; and 2) Is there an added benefit because sorting results in a more homogeneous waste material that reacts to compaction better and ultimately results in lower permeability of compacted waste in the repository. The project also included a monitoring component. Using a gravel quality monitoring approach, the amount of mine waste contamination was assessed in the gravels of Prichard Creek at the removal sites pre- and post-project implementation.

Status of the Project - All work complete.

Conclusions - The economic and physical (density/permeability) consequences of sorting alluvium demonstrated that the sorting strategy for alluvium-tailings material resulted in a small savings in transportation costs and a large savings in repository construction costs. These savings far offset the added expense of sorting. Large cost savings were obtained despite some inefficiency in the project that could be rectified in subsequent projects. Having a commercial outlet for the oversize material would save additional funds, even if the material was donated. Disposal in the aggregate market will also remove a material from the floodplain that, if not handled properly, will negatively affect revegetation efforts. Sorted material compacted in the repository achieved significantly lower permeability (20 times) than the bulk material with equal compaction treatment. The result was a waste deposit less prone to groundwater percolation independent of the capping system employed.

CDA Lake Management Plan Implementation

Purpose of Project - Since the 1996 CDA Lake Management Plan (LMP) was adopted, new information has become available, legal and regulatory decisions have been made, basin-wide remedial actions have been taken, and some implementation has occurred, all of which have impacted the appropriateness and effectiveness of the 1996 LMP and proposed management actions. One of the conclusions of the review and update of the 1996 LMP was that the need exists for a process to routinely evaluate the effectiveness of management actions taken. Some of the biggest threats to lake water quality come from man caused activities adjacent to the near shore areas surrounding the lake including stormwater runoff from construction and lake shore development related activities. While the scope of this project proposal is to conduct an extensive evaluation of all activities within a one mile perimeter of the lake shore, initial emphasis will be placed on development and construction activities.

Status of Project - All work complete.

Conclusions - The project was to conduct a survey of implementation of the existing 1996 Coeur d'Alene Lake Management Plan (LMP) (CLCC *et al.* 1996). The main focus of the 1996 LMP strategy was to minimize the release of metals to the water column from lakebed sediments through effective nutrient management and upstream metals load reductions.

A primary component of the 1996 LMP was Management Action Tables (MATs). These tables were developed by numerous individuals in the governmental, business, and private sectors working within Technical Advisory Groups for broad land use categories such as: forest practices, wastewater, and agriculture. Management action items within the tables were a compilation of current rules, regulations, recommendations, Best Management Practices (BMPs), and other actions that play a role in water quality management of Coeur d'Alene Lake and its tributaries. A column titled "Lead Group" identified government agencies and other entities who would take the lead for implementing individual action items.

During 2002, IDEQ and the Coeur d'Alene Tribe (Tribe), in consultation with governmental agencies and other stakeholder groups, conducted an evaluation of the 1996 LMP and its implementation. The evaluation took into account the development of new information and recent legal or regulatory decisions. Local, State, Tribal, and Federal governmental entities participated in this effort, along with industry, business, and environmental representatives. The result was a draft *Coeur d'Alene Lake Management Plan Addendum* (December, 2002) that offered conclusions and recommendations; however, it was never finalized. During the development of the 2002 draft (MATs), there was a considerable amount of collaborative effort among stakeholders to revise the 1996 LMP. Thus, IDEQ and Tribal staff decided to utilize these 2002 MATs for the implementation survey.

The purpose of this Implementation Survey between IDEQ and the Tribe was to conduct a survey of measures taken by various agencies, organizations, and industries to fulfill the management actions recommended and specified in the 1996 and 2002 MATs. The survey was intended to evaluate what BMPs are in place to protect water quality and determine the effectiveness of those being used. To initiate the project, IDEQ and Tribal staff created questionnaires tailored to individual stakeholders identified as Lead Groups assigned to MAT recommendations. Questionnaires were mailed out and face-to-face interviews were scheduled. A total of 43 interviews were conducted from June 2006 to May 2009.

During our interviews, we found that there were several common themes among the Lead Groups. They are as follows:

- The key to compliance of various codes requires an “in-the-field” presence of inspectors; additional staff is recommended.
- Across the board, agencies felt there is a real value in education efforts, but there is very little funding allocated. In-the-field inspectors provide one-on-one education.
- Monitoring of BMP effectiveness is not commonly done due to minimal budget allocations.
- There needs to be a better understanding of the current water quality conditions within Coeur d’Alene Lake and its tributaries.
- Better coordination of activities between Basin wide stakeholders is needed.

The MATs include the following land use categories or activities that were evaluated during this survey: 1) Forest Practices; 2) Agricultural Practices; 3) Development and Stormwater; 4) Roads; 5) Wastewater; 6) South Lake and Rivers; and 7) Motorized Watercraft. In Section 2 of this report, each of these categories has a list of “issues of concern” in relation to the land use and potential impacts to water quality. These issues are too numerous to list in the Executive Summary, but below is a sample within each category:

Forest Practices

- For all entities interviewed, there is a major emphasis on a lack of funding for road maintenance needs; for example, managing legacy roads and replacing culverts.

Agricultural Practices

- There is limited participation in riparian buffer protection programs.

Development and Stormwater

- There remains some non-compliance among development projects, and often notice of noncompliance is dependent upon citizen complaints and random EPA inspections (larger developments). County and City fines for non-compliance do not always discourage violators.

Roads

- Private roads are often built without adequate sediment and stormwater BMPs. For example, a recognized problem involves the “weekend warriors”, or folks who use their heavy equipment for grading and digging without getting a permit or having plans approved. In general, private roads need improved stream crossing BMPs and larger culvert sizes (or bridges).

Wastewater

- There are a high number of individual subsurface sewage systems around the Lake, and many systems were constructed prior to 1974. These systems did not require permits and some are sub-standard to

current requirements. There is a PHD Repair Permit where if a system has failed and the homeowner wants an upgrade, a PHD inspector goes for a “best fit” for upgrading to current standards. Many older lots cannot meet current standards when they upgrade.

South Lake and Rivers

- There are differing opinions among agencies and citizen representatives between bank stabilization techniques/designs; i.e. predominately hard treatment (aka. rip-rap) versus inclusion of soft treatment (vegetation features) and ecological impacts.

Motorized Watercraft

- The “Clean Marina” Program needs to be revitalized (a program to assist marina operators and boaters to reduce pollution in and around the lake). A draft “Clean Marina” Program was initiated by the Coeur d'Alene Tribe, IDEQ, Kootenai County Parks and Waterways, PHD, US Coast Guard Auxiliary, and IDL in the early 2000's. This program was never finalized or implemented.

Other BEIPC Activities and Responsibilities:

Lake Management Activities

The original CDA Lake Management Plan (LMP) was prepared by the CDA Tribe, Clean Lakes Coordinating Council and Idaho Division (Department) of Environmental Quality and accepted by the CDA Tribe, Kootenai and Shoshone Counties in 1996. In February 2004, the BEIPC voted to coordinate and be involved in implementing the LMP and any future modifications to the plan. In 2009, the LMP was finalized and coordination with the BEIPC was outlined in Section 4.5.1 of the LMP. LMP related accomplishments in 2010 consisted of the following;

- 1) Tribe and IDEQ LMP staff became involved in the CDA River and Lake tributaries Watershed Advisory Group (WAG), and the St. Joe/St. Maries Rivers WAG. These WAGs will be doing a 5-year review of State TMDLs for these waterbodies.
- 2) Tribe and IDEQ LMP staff produced the draft 2007-08 water quality monitoring report for CDA Lake and provided it to the TLG for review.
- 3) Lake monitoring continues for Tribe and IDEQ staff. With a full-time science staff now onboard for IDEQ, Lake monitoring stations were increased from 2 to 7 sites.
- 4) LMP Coordinators worked with the BEIPC Executive Director to provide LMP activity updates to be included in this 2010 BEIPC Accomplishment Report, the 2011 BEIPC annual work plan, and the 2011-2015 BEIPC five-year work plan.
- 5) LMP staff participated in staffing a water quality educational booth at the North Idaho Fair in August, jointly with the BEIPC.
- 6) LMP staff worked with their consultant, Robinson Research, who conducted and completed a Needs Assessment for an education/outreach program. The Needs Assessment involved four methods: 1) focus group interviews; 2) interviews with leading stakeholders within the Basin; 3) a telephone survey

questionnaire; and 4) an internet survey questionnaire. LMP staff prepared and mailed approximately 3,500 postcards to Coeur d'Alene Lakeshore home owners advertising the internet option to take the survey. There were also newspaper articles advertising the internet survey.

- 7) Tribe and IDEQ staff conducted water quality sampling in the St. Maries/ St. Joe River watersheds as part of the 3-Year Nutrient Source Inventory that was developed in the early spring of 2010.
- 8) Three IDEQ personnel were SCUBA trained and certified to conduct underwater aquatic plant surveys within bays of northern waters.
- 9) In August and September, IDEQ staff conducted the initial aquatic plant survey in Rockford Bay. Methods and protocol were developed with the assistance from the aquatic plant scientists for the Tribe.
- 10) Tribe completed herbicide applications in select areas of southern waters during the summer of 2010.
- 11) IDEQ and Tribal staff conducted a river bank inventory/erosion survey on the St. Joe River. Staff will utilize this information and work with the Natural Resource Conservation Service (NRCS), Avista, the Counties, and local landowners to prioritize future river bank stabilization projects.
- 12) LMP staff worked with the University of Idaho Extension in the development of a voluntary water quality monitoring program (IDAH20) to be implemented Panhandle-wide.
- 13) Throughout 2010, Staff provided updates on LMP activities to a variety of community groups (i.e. environmental organizations, homeowner/lakeshore property owners associations, chambers of commerce, etc.)
- 14) LMP staff provided comment and review to land use applications throughout the Basin where there could be potential impacts to Lake or tributary water quality.
- 15) LMP staff conducted a shoreline inventory in the summer of 2010 in order to gage the level of development that had occurred since the inventory was initially conducted in 2006.

This level of coordination with BEIPC forums will maximize opportunities for information exchange and advice, while recognizing that IDEQ and the Tribe retain their respective decision making authorities under CERCLA and the Clean Water Act (CWA).

Funding for the Environmental Cleanup, Flood Control and Infrastructure Revitalization

Funding for the BPRP in 2010 was provided by the EPA and the State of Idaho on private lands. The Federal Land Management agencies provided funding for human health and ecological system cleanup actions on federally managed lands. For the near future, funding for implementation of additional human health and ecological remedies in OU-3 will be provided through the Successor Coeur d'Alene Custodial and Work Trust (SCCWT). Developing a Flood Control program including levee evaluation and required upgrade, plus seeking a funding source for the work, was assigned to the BEIPC Executive Director in November 2009. Funding for the infrastructure revitalization activities is currently being addressed in the Drainage Control Infrastructure Revitalization Plan (DCIRP) process.

The BEIPC through the office of the Executive Director has been working on seeking funding for an analysis of flood control needs and the existing levee system in the South Fork CDA River and Pine Creek. Working with the U.S. Army Corps of Engineers and the office of U.S. Senator Crapo, a project authorization request under the Water Resources Development Act has been submitted to the U.S. Senate Environment and Public Works Committee for consideration. The Executive Director will continue to work with the Idaho Silver Jackets organization including the U.S. Army Corps of Engineers, FEMA, Idaho Bureau of Homeland Security, Idaho Department of Water Resources, and the U.S. Weather Service to develop 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 DCIRP.

Communications and Public Involvement

In 2010, the Communications PFT increased its efforts to strengthen public involvement in BEIPC activities and communication between the CDA Basin community, the BEIPC, and agencies involved in the cleanup. The Citizens Coordinating Council (CCC) was the focus organization to help implement this process.

The Communications PFT worked on the following activities during the year:

- Revised and updated the BEIPC/CCC informational brochure.
- Provided information on the updated list of BEIPC outreach avenues for conversion to a FTP site for BEIPC related agencies.
- Suggested ideas to the BEIPC and CCC for increasing participation (i.e. changes to the CCC meeting formats, CCC revitalization, etc.)
- Participated in BEIPC public education/outreach efforts at the North Idaho Fair in a joint booth with other agencies and Basin related groups.
- Developed a questionnaire to conduct a CCC survey.
- Provided assistance for public education and outreach about the BEIPC to related groups at community open houses and other events.
- Produced a Frequently Asked Questions (FAQ) sheet on public commenting.
- Helped to sponsor a mini-workshop with the CCC on how to provide effective public comment which may be presented at other venues.
- Provided assistance, when requested, to BEIPC groups and staff on communication products such as presentations, information sessions, news articles, displays ads, etc.
- Looked into alternatives for communication resources such as video training, public service announcements, etc.
- Continued working with the PFT's Recreation Education Subcommittee (RES) to strengthen communication and education about taking precautions and playing safe when visiting recreational areas where contamination may be a concern within the Lower CDA Basin.
 - The RES began work to collaborate with other agencies regarding recreation education.
 - The RES updated Riley Raccoon's image and is working on a poster campaign to educate families who recreate in the Lower Basin.



Joint Display and Info Booth at North Idaho Fair

Natural Resource Damage Restoration

The CDA Basin Natural Resource Damage Assessment and Restoration Trustees have implemented several restoration projects within the Basin. The Trustees include the U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, and the CDA Tribe. The purpose of the Trustees' restoration projects is to partially compensate the public for losses associated with identified natural resource injuries due to the release of hazardous substances as a result of mining and mining related activities in the Basin. The Trustees completed or are working on a number of projects throughout the Basin, and upon request, provided updates to the BEIPC at quarterly meetings. In 2010, projects included work in Moon Creek, Pine Creek Basin, wetland restoration in the Lower CDA River, and Hepton Lake. These projects were planned and authorized through the Coeur d'Alene Basin Interim Restoration Plan that was approved in 2007. The Trustees published a report titled *Coeur d'Alene Basin Natural Resource Damage Assessment and Restoration Accomplishments* highlighting these projects. A copy of the report can be obtained at:

<http://www.fws.gov/Pacific/ecoservices/envicon/nrda/pdf/CDAnrdaReport111009.pdf>.

Some specifics on work that was conducted in 2010 include, but are not limited to:

- Pine Creek Restoration- approximately 16,000 riparian plants were installed using an excavator where trees were planted in shallow trenches.

- Hepton Lake- soil core samples were collected along the levee and analysis of levee stability and integrity began in the late summer/fall of 2010.
- Schlepp Easement Restoration- approximately 9,570 shrubs were planted in the east and west field riparian areas and approximately 22 acres were seeded with wetland plants and native grasses. Reed canary grass, a species not suitable for wetland conversion, was treated on approximately 45 acres.
- Moon Creek- ongoing monitoring (fish sampling and habitat quantity and quality) was completed with issue of the monitoring report which was also provided to the BEIPC. Throughout 2010, there were numerous site visits with various interested parties such as State and Federal elected officials and their staffs, local community leaders, ASARCO Work Trustee, Basin Commissioners, staff, and other interested parties.

Throughout 2010, the Trustees continued to coordinate with the BEIPC through Project Focus Teams and BEIPC quarterly meetings.

Challenges Ahead

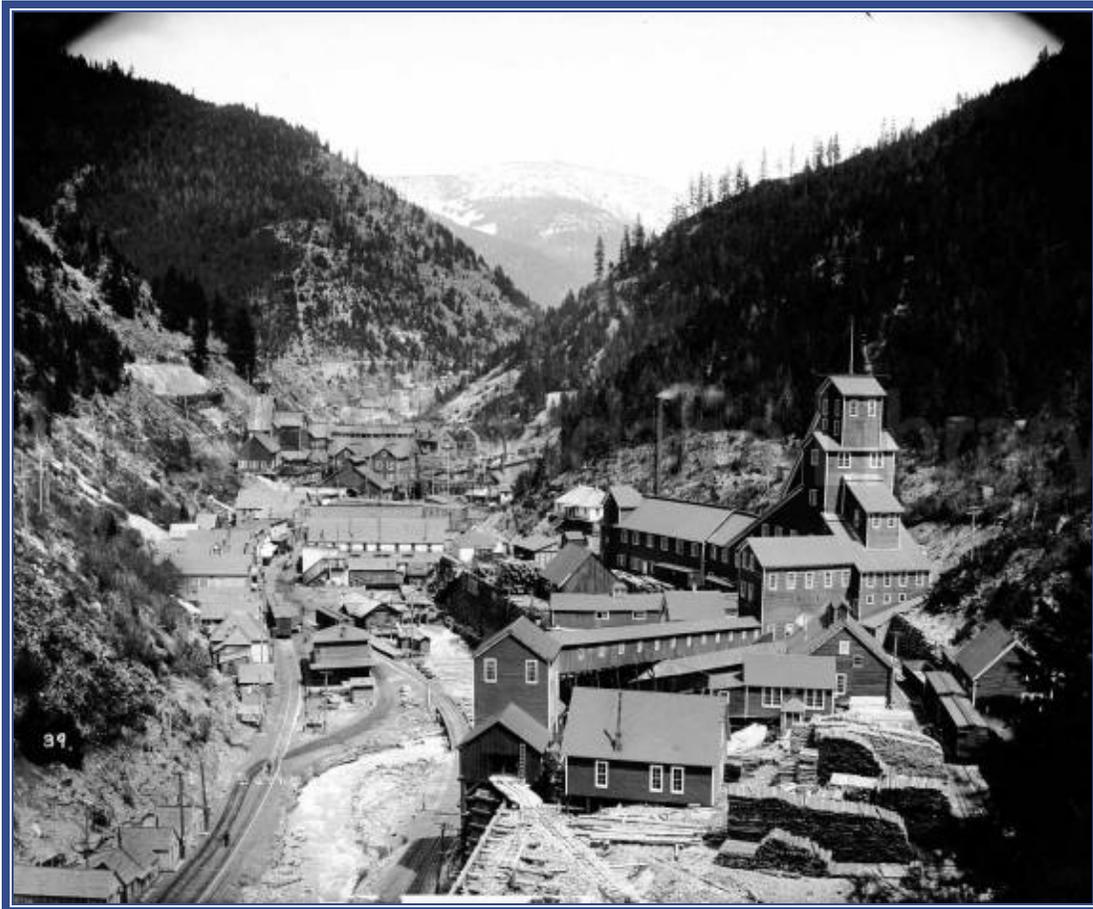
As in the past, the cleanup effort in 2010 was mostly focused on human health risks resulting from contaminated residential and commercial properties. Not including properties remediated in the Box, roughly 2,750 properties have been remediated in the Basin, and EPA and IDEQ expect to complete most of the property cleanup in the Basin from Harrison to Mullan over the next two to three years. While human health remains a priority, EPA has begun efforts on cleanup work in fish and wildlife habitat areas, surface and groundwater, and old mine and mill sites working with the BEIPC, IDEQ, other cooperating agencies, and stakeholders. To accomplish this work, the Superfund RODs for the Upper Basin and the remaining work in OU-2 of the Bunker Hill Box are being addressed with the ROD Amendment work started in 2009 and planned to be completed in 2011.

Besides the ROD Amendment work for the Upper Basin, the Lower Basin (Cataldo to Harrison) PFT is continuing work on Lower Basin ecological issues and project planning. Because the Coeur d'Alene 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 focus for the PFT.

Other major challenges include: managing the Institutional Controls Program (ICP); developing additional waste repositories for disposal of remedial action and ICP wastes; implementing the ROD Amendment for the Upper Basin; assisting the community in implementing an infrastructure revitalization and storm water drainage control program; developing a solution to major flooding issues in Lower Pine Creek and the South Fork of the CDA River; and continued coordination with the CDA Tribe and State's efforts to implement the 2009 Lake Management Plan.

Finally, with the ASARCO bankruptcy settlement, a large amount of funding is available for environmental remediation and natural resource restoration actions. Careful action through the implementation of the Upper Basin ROD Amendment and diligent work on the part of the Natural Resource Trustees is necessary to ensure that the available funds are expended in a judicious manner. Although the settlement includes a large amount of funding for cleanup and restoration work, it still falls far short of the amount needed to complete all necessary actions in the entire Basin. A continuing stream of funding is fundamental to the success of the BEIPC process as well as the environmental remediation and restoration efforts. Securing long-term federal

and state funding is necessary to ensure implementation of the remedy objectives for the entire Basin. EPA cannot provide funding for natural resource damage restoration work which is the responsibility of the Natural Resource Trustees. Assuring sustainable funding intended to advance cleanup as planned in the RODs and amendments, along with operation and maintenance of the implemented remedies and restoration of damaged natural resources still represents a significant challenge in the future.



Mine, Burke Idaho 1910