

**Coeur d'Alene Basin Five-year
(2005-2009) Work Plan
Final**

INTRODUCTION

This plan for calendar years 2005-2009 covers environmental cleanup and improvement activities in the Coeur d'Alene Basin planned by the Basin Environmental Improvement Project Commission (BEIPC) in accordance with its responsibilities as stated in the Memorandum of Agreement (dated August 2002). The work plan is the BEIPC's "game plan" for the next five years of implementation of the Record of Decision (ROD) for Operable Unit # 3 (OU3) of the Bunker Hill Mining and Metallurgical Complex Superfund Site, (Coeur d'Alene Basin), and other activities involving the BEIPC. This plan has been prepared by the Technical Leadership Group (TLG) in collaboration with the Executive Director with review by the Citizen Coordinating Council (CCC), and is based on their recommendations for activities and work to be performed in CY 2005 - 2009. The organization of the work plan is a reflection of the anticipated funding sources for the work. Annual work plans will recommend specific actions from this five-year plan along with a suggested source of funds and estimated budget. This proposed five-year work plan is organized as follows:

Part 1 –Work Funded with Superfund or Other Cleanup Monies

Part 2 – Activities and Work Funded Through the Clean Water Act (CWA) Grant Program

Part 1 of this document includes proposed work to implement the OU3 ROD with funding from the U.S. Environmental Protection Agency (EPA's) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Superfund program or other environmental cleanup funding. The OU3 ROD identifies approximately \$350 million of remedial actions in the State of Idaho as well as about \$10 million in cleanup actions in the State of Washington. For planning purposes a 30-year period of remediation was anticipated. Except for establishing the human health remedy as a top priority, the ROD does not address the sequence of actions.

Part 2 of this document addresses the work to be accomplished in 2005-2009 with CWA Grant funding. In Fiscal Years 2002, 2003, and 2004, funding under the CWA was provided for the BEIPC to be used for *"...research, investigation, experiments, training, demonstrations, surveys, and studies related to the causes, effects, extent, prevention, reduction, and elimination of pollution."*

PART 1 – OU-3 ROD WORK FUNDED WITH SUPERFUND OR OTHER CLEANUP FUNDING

Funds made available through EPA's CERCLA appropriations are available for environmental remediation on privately owned lands and state, county and local government owned properties. EPA's CERCLA funds cannot be used for cleanup of sites on public (Federal) land. Work proposed on public lands is the responsibility of the federal land management agencies. The State of Idaho may also supply funding through the Idaho Department of Environmental Quality (IDEQ) for environmental cleanup activities.

For Part 1, the scope of the proposed five-year work plan corresponds generally to the level of funding and the funding sources anticipated over the five-year period, 2005-2009, for implementation of the ROD. The 2005-2009 workplan proposes a cleanup approach and a listing of priority projects for the 5-year planning period. The proposal includes the following OU3 ROD work to be funded with Superfund or other cleanup monies:

- Evaluation of OU3 Removal Actions
- Development of Repositories
- Development of the Institutional Controls Program
- Remediation in the Residential and Community Areas
- Remediation of Drinking Water Supply Problems
- Remediation in Lower Basin Recreational Use Areas
- Remediation of Mine and Mill Sites in the Upper Basin
- Preliminary ecological actions in the Upper Basin
- Preliminary ecological actions in the Lower Basin
- Basin Environmental Monitoring

Part 1 also includes the following items:

- Implementation of the Phase II Component of Overall OU2 Remedy
- Coordination with the EPA Five-Year Review
- Consideration of the National Academy of Sciences Study

Table 1-1 is a summary of activities proposed for 2005-2009 to be funded with Superfund or other cleanup monies. More detailed descriptions of the activities follow the summary table.

Table 1-1 Summary of Activities Proposed for Implementation of the ROD for 2005-2009

Proposed Activity	Scope	Objective	Lead Agency
Evaluation of OU3 Removal Actions (see EPA 5-Year Review Report)	Various parties have performed CERCLA removal actions in Canyon, Ninemile, Pine, Moon, and Grouse Creeks and in the CDA River to cleanup contamination, protect human health and restore ecological systems. Results of these activities need to be evaluated and if warranted, incorporated into the OU3 remedial action program.	Complete evaluation of these sites in context of the ROD and its schedule and incorporate into remedial action program as warranted. Ensure that removal remedies are protected and that if incorporated into the remedial action program, uncompleted work and site maintenance are performed.	EPA IDEQ, BLM, US Forest Service, CDA/Trib
Repositories	Utilize Big Creek Repository for property remediation program. Bring on-line, as needed, repositories to support cleanup. Bring on-line repository capacity for the Institutional Controls Program (ICP). Plan, secure properties and be ready for remediation in Upper and Lower Basin anticipated in the next 5-10 years.	Provide disposal capacity for property waste soil and ICP long-term needs. Meet demand for disposal of contaminated soils from construction activities and remediation. Prepare for demand from remedial actions anticipated in years 5-10 throughout Basin.	IDEQ and EPA
Basin Institutional Controls Program (ICP)	Develop a program to manage activities in OU3 to protect remediated areas from recontamination and to protect human health and the environment in areas designated for cleanup actions where no remedy is yet in place.	By December 2006, establish an ICP in OU3.	IDEQ
Residential and Community Area Sampling and Remediation	Protect human health by continuing property sampling and property remediation program.	Property sampling substantially complete by December 2009. Continue to protect human health by remediating 400-500 properties per year as funding allows and in a manner that minimizes community disruption.	IDEQ

Proposed Activity	Scope	Objective	Lead Agency
Drinking Water Supply	Protect human health by providing adequate drinking water supplies by continuing the sampling and remediation program.	Program substantially complete by December 2009.	IDeq
Recreational Areas	Continue to identify contaminated recreation use areas along the CDA River and remediate areas or develop substitute clean areas. Develop a Lower Basin recreational management plan.	Complete contaminated recreation use area inventory. As funding is available, remediate use areas identified for continued use, construct substitute clean areas, and close areas no longer intended for use. Substantially complete a Lower Basin recreational management plan.	EPA with state and federal land management agencies
Mine & Mill Sites	Cleanup priority sites that contribute to human health risks, are currently utilized for recreation activities, and contribute to water quality impacts. Continue to evaluate and prioritize additional mine and mill sites identified in OU3 ROD and begin designs so remedial actions can be initiated as funds become available.	Design and complete remedial actions at Constitution tailings piles and Rex site. Design and initiate remedial action for Golconda tailings. Design and complete remediation of Sisters waste rock pile. Conduct remedial actions at additional identified sites as funds become available	EPA, IDEQ. With BLM in Pine & Ninemile Creeks.

Proposed Activity	Scope	Objective	Lead Agency
Upper Basin Ecological Remedies	<p>Continue to evaluate approaches and technologies for water treatment in Canyon Creek that include pilot projects to develop design criteria and operational information. Remediate mine wastes along Denver Creek tributary to Pine Creek.</p> <p>Monitor previous remediation in East Fork of Ninemile, and water treatment pilot projects.</p> <p>Monitor existing growth media plots, assess biostabilization methods and develop media for capping waste material.</p> <p>Plan and prioritize remedial actions for other source areas.</p> <p>Develop lead cleanup goal for riparian soil.</p>	<p>Develop water treatment approaches for surface and groundwater in Canyon Creek that are acceptable to all stakeholders and achieve the greatest reduction of zinc load that is economically feasible. Coordinate work with study performed under the CWA.</p> <p>Improve fisheries in the 3.5 mile reach of Pine Creek.</p> <p>Incorporate lessons learned from previous and current work into designs for water quality improvements and fisheries improvement.</p> <p>Apply cost-effective solutions to capping waste material.</p> <p>Prepare for remediation in future planning periods.</p>	<p>EPA and IDEQ.</p> <p>With BLM in Pine & Ninemile Creeks. USFWS has lead in soil cleanup standard.</p>

Proposed Activity	Scope	Objective	Lead Agency
Lower Basin Ecological Remedies	<p>Develop a pilot project for conversion of agriculture land into waterfowl habitat.</p> <p>Complete a pilot project on soil amendment to reduce bioavailability of lead.</p> <p>Design wetland remediation approach.</p> <p>Design splay remediation approach.</p> <p>Perform numerical modeling of River processes and sediment.</p> <p>Collect data on river bank conditions and metal concentrations.</p> <p>Monitor bank stabilization pilot projects and evaluate effectiveness.</p> <p>Develop lead cleanup goal for riparian soil.</p> <p>Incorporate findings from AVISTA studies into remediation strategies.</p>	<p>Generate data, information and understanding to inform fundamental questions about the movement of lead in the River system to allow sound decisions on the sequence of remedial actions in the Lower Basin.</p> <p>Develop cost-effective methods for reducing lead exposure to waterfowl.</p> <p>Develop designs for remediation of wetlands and splay areas.</p> <p>Advance understanding of the flow and transport processes through the Lower Basin.</p> <p>Prepare for remediation within the River system.</p>	EPA, IDEQ, USFWS and Coeur d'Alene Tribe
Basin Environmental Monitoring	<p>Continue to implement long-term monitoring and make results available via www.storet.org.</p> <p>Implement remedial action effectiveness monitoring as appropriate.</p>	<p>Assess effectiveness of remedial actions and trends in overall ecological improvement due to remediation and natural attenuation.</p>	EPA working with other agencies including IDEQ, USFWS, and USGS
Phase II Component of overall OU2 remedy	<p>The effectiveness evaluation of the Phase I source control and removal activities to meet water quality improvement objectives for the OU2 ROD will be used to determine appropriate Phase II implementation strategies and actions. Implementation of future Phase II remedial action will require a ROD amendment and a State Superfund Contract (SSC) between EPA and IDEQ.</p>	<p>Complete effectiveness monitoring of Phase I by July 2007. Revise the monitoring plan as appropriate.</p> <p>Complete negotiations between EPA and IDEQ concerning a SSC and preparation of any necessary ROD amendment.</p>	EPA, IDEQ

1.1 EVALUATION OF OU3 REMOVAL ACTIONS

Various parties have performed CERCLA removal actions in Basin sub-watersheds including Canyon, Ninemile, Pine, Moon, and Grouse Creeks and along the Upper South Fork and Lower Main Coeur d'Alene River to cleanup contamination, protect human health and restore ecological systems. Results of these activities need to be evaluated based on the OU3 ROD schedule and if warranted, incorporated into the OU3 remedial action program. Continued monitoring is needed at a number of sites to protect the investment.

1.2 REPOSITORIES

Repositories are necessary for many of the activities anticipated within 5 years and for long-term implementation of the remedy. Repository development is an ongoing process that will address the demand for waste disposal space generated by remedial actions and an Institutional Control Program. IDEQ and EPA are taking the lead in developing repository options. IDEQ assumed the lead planning agency role for the Big Creek repository operations and improvements from EPA in 2004. EPA intends to fund IDEQ for 2005-2006 to continue siting and planning activities for other repository locations. Repository siting and design will be pursuant to the requirements set forth in the ROD.

Efforts to date have focused on developing and operating the Big Creek Repository (BCR), which first received Coeur d'Alene Basin clean-up wastes in 2002. The site was fully operational as the single Basin yard remediation repository in 2003 and received approximately 58,000cyds of compacted waste in 2004. The remaining capacity of the BCR is approximately 100,000-150,000cyds and will be consumed in less than 3 years at the current rate of fill. To fully use this capacity some modifications will be required such as raising existing power lines that run through the repository and changing some site configurations.

Given the imminent demand for repository space, EPA and IDEQ have conducted preliminary evaluation of over 250 potential sites throughout the Basin in an effort to determine candidate repository sites. Gaining property ownership or access may be the paramount issue facing the repository project focus team (PFT) and the overall cleanup effort. Although theoretically possible, acquisition of Federal and State property for a repository would likely be a very long and complex process. Discussions with mining companies, parties to the Natural Resource Damage Assessment (NRDA) lawsuit, suggested that a ruling on the lawsuit will be necessary before they engage in land transfer negotiations. Privately owned land most likely presents the best opportunity for siting a repository, but dedication of funding for construction and operation and maintenance of repositories and the associated required agreements for repository ownership must be determined before purchase of the property. IDEQ has identified several sites that are still in the preliminary evaluation stages. These sites will be presented to the BEIPC should they pass further evaluations. One such site located at the east end of Mission Flats was recently presented to the commission and is currently undergoing final evaluation determinations. Others will be elevated as they move through the evaluation process. Ultimately an Institutional Controls Program (ICP) as outlined in Sub-section 1.3.1 will be developed for the entire Basin. Once it is in place, and ICP repository site or sites are secured, there will be some relief of the

pressing need for repositories, but there will still be a driving need for larger repositories to support clean-up projects in the Basin.

In addition to property ownership, legal, regulatory and fiscal issues will affect repository development. Other repository-related issues that the PFT, EPA and IDEQ face are:

- As part of the technical evaluation, proximity of proposed site to the flood plain and impacts thereof.
- Who will be the owner and responsible party for long-term care of a repository?
- What options are available to answer liability indemnification concerns of participating agencies or property owners?
- What are the various types of repositories that are needed and what are their appropriate uses?
- Under what conditions is construction of a repository over historic mine wastes viable?
- Under what conditions can the land filled as a repository be developed?
- What are the appropriate or required institutional controls for repositories?
- What is the appropriate funding arrangement for repository development, operations and maintenance?
- Should different expectations be established for larger repository locations? If so, what is “large” and what should these expectations be?
- What role does the flood plain play in siting repositories?

Recognizing the difficulties with property ownership and the legal and regulatory uncertainties involved, following are the goals for this 5-year period:

- Utilize the Big Creek repository for soils generated from Basin remediation projects.
- Secure properties and bring on-line repositories in the Upper and Lower Basin as needed to support cleanup work in the next 3 years.
- Develop and bring on-line within the next 5 years repository capacity to serve the Institutional Controls Program throughout the Basin.
- Plan, secure property and be ready for timely operation to meet disposal needs in the Upper and Lower Basin for remediation anticipated within the next 5 – 10 years.

In order to achieve these goals, the process established in the ROD will be implemented including: 1) site identification, 2) technical evaluation, 3) public input/notification and 4) decision documentation. IDEQ and EPA are responsible for getting input from local governments, landowners, and other stakeholders regarding candidate repository sites and obtaining legal and policy guidance to develop answers to the pertinent questions. In addition, the repository PFT will continue to assist IDEQ and EPA with site identification and technical evaluation of specific sites according to guidelines in the ROD. Concurrent with this technical evaluation, a public outreach effort and comment period will be initiated, lead by a designated entity for proposed repository sites. Upon completion of the public outreach efforts, the decision documents and designs will be prepared.

1.3 HUMAN HEALTH ISSUES

Remediation of human health exposures is a remedial action priority as defined in the OU3 ROD and includes developing and maintaining an ICP as outlined in Sub-section 1.3.1 and conducting cleanup in residential and community areas as well as recreational areas. The ROD also identifies mine and mill sites that are used for recreation and represent risks to human health. Priority mine and mill sites that are proposed for design and remediation in the next five years are described in this plan.

1.3.1 Institutional Controls Program

Development of an ICP is necessary to help protect remediated areas from recontamination to protect public health, support economic development and construction projects, and facilitate commerce. At areas designated for cleanup actions and where no remedy is yet in place, an ICP may be necessary as well to protect public health, to support economic development and construction projects, and to facilitate commerce in the interim. Issues left to resolve include, but are not limited to; the geographic extent in which the ICP will be implemented, repository locations for ICP waste material, how the development of the ICP will allow for local input and comment, and how governmental entities will coordinate the ICP. Active communication and planning between the public and local, state, and federal governments will continue in the Basin ICP process. IDEQ will continue to lead this effort.

1.3.2 Residential and Community Property Remediations

The original goal was to complete the residential property human health remediation in both the Upper and Lower Basin by the end of the original 2004-2008 work plan. This five year completion goal was based on the OU3 ROD's estimated number of residential properties requiring remediation, which represented about 30% of the estimated number of residential properties in the Upper and Lower Basin. Although post-ROD soil sampling only has been underway for two years, data collected to-date indicate that the percentage of residential properties (including driveways) and street rights-of-way exceeding action standards is higher than the ROD estimate in some communities. If these sampling results continue, it will be very difficult to achieve the initial goal of completing residential remediation in five years. However, whether this trend will continue as soil sampling is completed is not known at this time. As noted in the previous 5-year plan, achieving a five-year completion goal depends upon a number of factors. These include soil sampling results, availability of funding, securing additional waste repositories, and property owner cooperation. The goal now is to continue to strive for 5-year completion of the program accounting for all of the factors involved with a final goal to complete the program as soon as is practical. To track progress, an annual construction completion report has been and will continue to be prepared as the residential remediation program is implemented. IDEQ is the lead implementation agency for this activity.

The proposed approach to prioritizing areas and properties for soil remediation is similar to that used in the Box which has been effective and efficient. The elements of the remedial action include the following:

- The High Risk Program will continue throughout the Basin. This is the program where the homes of young children (0-6 years in age) and expectant mothers are prioritized for sampling and remediation each year. A critical aspect of this program is outreach to inform residents. Several communication tools are being used to raise public awareness about this program. IDEQ conducted a door-to-door survey in 2004 that helped identify high-risk homes and is providing questionnaires to homeowners during neighborhood soil sampling to determine if young children or expectant mothers reside in the home. The outreach strategy will be continually evaluated to improve its effectiveness. Based upon the National Academy of Sciences' pre-publication report recommendations, the BEIPC will explore ways to increase participation in blood lead sampling.
- Analysis of lead concentrations in soil is needed before remediation can occur. Soil sampling and analysis will continue and the goal is to collect data on at least 700 residential properties per season. The sampling data are being compiled in a database, which is used to plan property remediation each season.
- Area by area remediation will be conducted to help minimize recontamination and increase construction efficiency. Area by area remediation will be flexible to tie into other infrastructure and excavation projects in the communities. A goal is to minimize disruption in a neighborhood and reduce the potential for recontamination by completing neighborhoods before moving on and remediating new areas. An additional goal is to complete entire communities as soon as possible taking into consideration the need to continue the high risk remediation program, availability of sampling data, and funding and weather constraints.
- Private drinking water wells that are located on properties where soil is being sampled will also be sampled. Per the ROD, the well water will be analyzed for arsenic, cadmium and lead and alternate drinking water provided for those homes where the concentrations of metals exceed maximum contaminate levels (MCLs).

1.3.3 Recreational Use Areas

The OU3 ROD includes remediation of Lower Basin recreational use areas to reduce human exposure to lead and other metals. Some priority recreational use areas were identified in the ROD with the recognition other recreational areas may be evaluated for cleanup based on factors such as risk of exposure, location and use. Other sites may also be evaluated.

Remediation and development principles were identified by the recreational area project focus team (PFT) comprised of TLG and CCC members for the initial one-year and five-year work plans. The following principles remain valid and appropriate for this revised work plan:

- Primary objective is to protect human health, particularly young children.
- Work with impacted communities and local residents when considering recreational site development.
- Design to minimize long-term operation/maintenance costs and repository requirements.

- Create clean oases for public use (based upon community interests).
- “Reality check” of the scale and scope of what can be done.
- Build upon existing features to enhance use and reduce risks to human health.
- Provide enough amenities to attract folks to clean “safe” areas; do not create attractive nuisances or beautification-only projects.
- Design individual recreational sites to be consistent with an overall strategy for Basin recreational areas.

After considering available information concerning Lower Basin recreational sites and evaluating the sites through a river-based field trip on July 8, 2003, the PFT and TLG proposed a two-stage approach for the 2004-2008 five-year work plan to address recreational areas. This approach continues to be valid for this updated work plan for 2005-2009.

Stage 1 – Recreational Areas Identified for Remediation - The first stage is remediation at existing publicly-owned recreational sites selected from those identified in the ROD. The areas proposed for remediation are existing recreation areas with a potential for a low-maintenance remedy that will be protective of human health. EPA can use its CERCLA funding to remediate state, county or local government-owned recreational properties. EPA’s CERCLA funds cannot be used for sites on public (Federal) land managed by the USDA Forest Service (FS) and DOI Bureau of Land Management (BLM); the federal land management agencies are responsible for environmental cleanup and improvement on public lands.

Table 1-2 identifies recreational sites identified as candidates for remediation under the 2005-2009 work plan. These sites were also included in the 2004-2008 five-year work plan and remain valid candidates.

Table 1-2 Priority Recreational Use Areas for Remediation

Site Name	Manager/Owner	Proposed Actions
Rainy Hill Boat Launch	Forest Service	- Recommend that FS consider paving existing boat launch parking area and establish paved picnic site near restrooms on north side of site - Continue day use only limitation
Medimont Boat Launch Area	Forest Service	- Recommend that FS consider paving existing boat launch parking area and establish paved picnic site near restrooms on north side of site - Continue day use only limitation - Consider establishment of overnight RV parking area
East of Rose Creek/West of Rose Lake	Forest Service	- Recommend FS consider restricting access to contaminated dune area and install sign visible from river (current sign visible from road only)
Rainy Hill Camping Area (on uncontaminated hill)	Forest Service	- Recommend FS evaluate establishment of a camping area
Anderson Lake Boat Launch	Idaho Dept. of Fish and Game	- Consider improvements in conjunction with Hwy 97 bridge replacement (scheduled for 2005-2006)

The FS is working to acquire funding to implement remedial actions on public lands it manages and the project at Rainy Hill Boat Launch is the agency's highest local priority.

The Anderson Lake Boat Launch is immediately downstream of the Idaho Highway 97 Bridge across the Coeur d'Alene River. The Idaho Transportation Department (ITD) has completed the design phase for replacement of this bridge. Construction is anticipated for the 2005 and 2006 construction seasons. The new bridge will be considerably wider and bridge access will be adjusted accordingly which may in turn impact the Anderson Lake Boat Launch access point. Accordingly, EPA is deferring any decisions regarding additional remedial action work at the Anderson Lake Boat Launch so that any additional cleanup efforts can be coordinated with the bridge replacement. EPA arranged a visit by the PFT in March 2004 with ITD representatives and will continue to stay abreast of ITD's plans to the extent that this activity may influence the Superfund remedy.

Stage 2 – Future Actions –

Lower Basin Recreational Management Plan – For the latter years of the five-year plan, development of a Lower Basin recreational management plan/policy is planned involving agencies, local communities, impacted land owners and other stakeholders. Many agencies and

entities, including BLM, Idaho Fish and Game (IDFG), the CDA Tribe, Idaho Department of Parks and Recreation (IDPR), FS, and counties, manage recreational sites in the Lower Basin. These entities may benefit from the establishment of a coordinated plan to administer recreational areas. This effort could include development of collaborative informational/educational strategies regarding the Basin and CDA Lake. The plan could also address development of cooperative maintenance agreements.

Remedial Sites Yet to be Identified – Additional candidate sites for remedial action may be evident following review of the ongoing AVISTA work and IDPR Lower Basin recreational use survey. When the use patterns of the Trail of the Coeur d'Alenes are established and understood then the PFT will identify other potential recreational area cleanup projects on publicly owned lands.

1.3.4 Mine & Mill Sites

The OU3 ROD identified a number of mine and mill sites with potential for human health exposures, primarily from recreational use. Prioritization of mine and mill sites in the Upper Basin is primarily based on risks of lead exposure to recreational users. Remedial designs will address these risks as well as any impacts to water quality. The mine and mill sites that are listed in the ROD that appeared to represent a potential risk to human receptors are as follows:

- Day Rock in Nine Mile Creek
- Upper and Lower Constitution, Highland Surprise, Nabob, Nevada Stewart, Hilarity, in Pine Creek
- Standard Mammoth, Sisters and Burke Concentrator in Canyon Creek
- Hercules, USBM, and Silver Dollar in South Fork
- Golconda, Morning No. 6, and National in the Upper South Fork
- Rex mill site in the east fork of Nine Mile Creek (added subsequent to the ROD)

Criteria considered by the Mine and Mill PFT to prioritize mine and mill sites are:

- Popularity of the site for recreational use and risks of lead exposure to users
- Impacts to water quality in priority drainages
- Size and physical stability concerns
- Opportunity to combine efforts and funds from other sources
- Need for repository capacity
- Complexity of the site for design purposes

The Constitution tailings piles, the Rex mine and mill site, the Golconda site, and the Sisters waste rock dump were identified in 2003 as initial priorities. These four sites were incorporated into the BEIPC five-year work plan. During 2004 pre-remedial field sampling efforts were completed at all four sites.

Work at the Constitution site was conducted by the U.S. Army Corps of Engineers under an Interagency Agreement with EPA and BLM. During 2004 the Corps completed the 65% design for this site. Consolidation of the mine tailings from the upper and lower mine sites into a single

repository at the Upper Constitution Mine is the recommended remedy. Construction of the remedy is expected to begin in the summer of 2005 using EPA remedial action funding. The 2005 Phase 1 construction activities are focused on the mine and mill tailings areas. Phase 2 construction will focus on the remediation of the waste rock areas, the mine adits, and stream rehabilitation and bank restoration work in 2006.

Work at the Golconda, Sisters and Rex sites has been conducted by Parametrix who is under contract with EPA. During 2004 Parametrix completed pre-design field work at these three sites. Design is currently underway for the Golconda site including provision for an interim action to stabilize the waste rock pile and address the adit flow. Further work will be needed during 2005 to complete the full design of the Golconda site. Construction is currently underway at the Sisters where the entire site is being addressed including regrading of the waste rock pile, placement of clean cover soils, and revegetation. Construction work for both of these sites is funded by the State of Idaho. Design work for the Rex site is ongoing and is expected to be completed in 2006. EPA and BLM are evaluating possible interim actions for this site that could be conducted during the summer 2005.

Looking ahead to the later years of the five-year plan, the PFT will continue to evaluate the other sites identified in the OU3 ROD that have a potential for human health exposure from recreational use. Using the factors listed above, the PFT will prioritize sites for initiation of remedial designs including the collection of pre-design field data. Initiation of designs and remedial actions will be contingent on available funding. Prioritization and selection of the next candidate sites will be completed in 2005.

1.4 ENVIRONMENTAL RESTORATION ISSUES

Environmental restoration issues under consideration by the BEIPC include involvement in the implementation of the 2001 OU2 ROD Amendment as well as environmental restoration work in the Upper and Lower Basin described in the ROD for OU3.

1.4.1 Upper Basin Remedies

This work includes remediation identified for Ninemile Creek, Pine Creek, Canyon Creek and the South Fork. Remediation in these areas is tied to benchmarks established in the ROD that are directed toward improvements in water quality and in the fishery.

Priorities proposed in this plan for improvement in water quality and fisheries habitat are water treatment in Canyon Creek, and remediation of mine wastes along Pine Creek. Treatment in Canyon Creek was selected as the priority action because it is expected to provide the greatest reduction of dissolved zinc and cadmium in the South Fork of the Coeur d'Alene River upstream of the "Box". Remedial actions in Pine Creek were selected as the priority because this drainage provides the best opportunity for meeting fisheries benchmarks specified by the ROD in the near term.

Water Treatment - Treatment of water in Canyon Creek is proposed as the remedial action priority for reduction of dissolved metals in the South Fork above the Box. To reduce zinc loads

to the South Fork Coeur d'Alene River, the OU3 ROD calls for treatment of up to approximately 60 cubic feet per second (cfs) of Canyon Creek surface water. The ROD assumes a yearly average treatment reduction of 322 pounds per day of dissolved zinc load directly in Canyon Creek, and requires that treatment be demonstrated for creek water near the mouth of the creek. Water treatment technology assessments and pilot tests are ongoing in this 5-year plan. The planning period will focus on developing the most cost-effective long-term solution to improving water quality from Canyon Creek that will meet the goals of the OU3 ROD.

Pursuant to the ROD water treatment technology assessments and pilot tests are underway in order to focus on developing the most cost-effective long-term solution to improving water quality from Canyon Creek that will meet the goals of the OU3 ROD.

Based upon preliminary studies and current information the approach to treatment of Canyon Creek water continues to evolve. It is possible that several technologies, either active or passive, could be used in series or parallel to treat either Canyon Creek surface or groundwater. The ongoing treatability studies and monitoring are essential to the selection, design, and construction of any eventual water treatment system for Canyon Creek.

Work Completed in 2004

During 2004, EPA completed two reports related to Canyon Creek. The first was a hydrogeological data assessment for Canyon Creek. The purpose of this review was to summarize existing Canyon Creek Segment 5 hydrologic and hydrogeologic data and identify potential data needs to support implementing the Canyon Creek remedy for reducing the metals load from Canyon Creek to the South Fork. The second major effort was completion of Phase I of the Canyon Creek Treatability Study. The Canyon Creek Treatability Study was divided into two phases, Phases I and II. Phase I of the study has been completed and focused on the identification and evaluation of existing conventional technologies potentially applicable to Canyon Creek conditions, and the performance of limited laboratory treatability testing to make recommendations for a Phase II effort. The laboratory-scale treatability studies were conducted on both surface and groundwater collected from Canyon Creek. The treatability study used a series of jar tests to evaluate the effectiveness of a variety of combinations of lime stabilization, iron co-precipitation, polymer flocculation, and ballasted-micro sand separation technology. Lime stabilization was evaluated by varying the pH using a lime slurry. Iron co-precipitation was assessed by varying the dosage of ferric chloride and/or ferrous sulfate. Flocculant performance was assessed for cationic, nonionic, and anionic polymer products. Sludge produced during the jar tests was evaluated for settling rate, density, and filterability.

Results of Phase I Testing

Several combinations of the approaches identified in the Phase I testing proved to be very effective with respect to total metal removal and achievement of water quality criteria. The optimum treatment parameters identified in the surface water and groundwater testing phases include pH adjustment by lime addition, coagulant addition for iron co-precipitation, and anionic flocculent and microsand addition for rapid solid-water separation. For optimum treatment average percent reductions for dissolved zinc, cadmium, and lead were similar and over 99 percent in both the surface and groundwater phases: approximately 99.7 +/- 0.1 percent.

Treated water had concentrations well below Ambient Water Quality Criteria (AWQC) (AWQC ratios well below 1.0) for zinc and cadmium. If these optimum results could be scaled up, they would indicate that dissolved metals can be removed to essentially negligible levels in treated Canyon Creek surface water, groundwater, or combinations of both.

Work in 2005

The Phase II work is underway and is expected to build on the results of Phase I, with the design and implementation of a pilot-scale testing program for the “most favorable” technologies that could meet the Canyon Creek water treatment goals of the selected remedy. Phase II work will continue through 2005 and includes bench and pilot scale studies shown below. All testing will be conducted using low flow/high concentration water from Canyon Creek. Lab testing would use relatively high concentration groundwater. Field pilot testing will use groundwater or blended groundwater and surface water (possibly done in sequential parts of the testing period).

1. Reactive media treatment – laboratory screening (proof-of-concept) testing of dolomite and potentially other media.
2. Reactive media treatment [optional, if results of lab screening are positive] – laboratory flow-through testing (possibly, if schedule permits) and/or onsite small-scale pilot testing of best-performing media.
3. Sulfate reducing Bacteria (SRB) treatment – laboratory screening (proof-of-concept) testing.
4. SRB treatment [optional, if results of lab screening are positive] – onsite small-scale pilot testing.
5. HDS process treatment – onsite pilot testing.

In addition to this work EPA’s Office of Research and Development has funded MSE for work in Canyon Creek to evaluate passive treatment media. The purpose of this study is to evaluate passive treatment systems side-by-side while treating similar contaminated source water(s), which contributes to the increased metal loading to the Coeur d’Alene Basin. The proposed work will: 1) identify media that will effectively reduce metals loading in Coeur d’Alene Basin; 2) start development of a chemistry based framework for matching media to contaminated water sources; and 3) provide performance data to support scale-up and economic evaluation. Potential reactive media for the passive treatment technologies that may be tested in the laboratory and/or field include, but are not limited to:

- aluminum modified ferrihydrite
- granular ferric hydroxide;
- granular activated alumina;
- anaerobic biological treatment;
- sulfide;
- iron filings (zero valent iron);
- manganese dioxide-coated sand;

- amorphous ferric oxyhydroxide coated media;
- granular activated carbon;
- fishbone apatite (as a polishing system); and
- aerobic biological treatment.

Looking Ahead

It is expected that a specific technology or combination of technologies will be identified by 2006. A design would then be initiated depending upon available funding. Construction of a treatment system will be contingent on funding and a State Superfund Contract for this work.

Fishery Habitat Improvements - Pine Creek is a priority area for improvement of the fishery. Implementation of the remedy selected in the ROD is expected to significantly improve 3.5 miles of a fishery. These improvements are expected to allow natural increases in salmonid populations and enhance spawning and rearing. EPA and BLM are the lead agencies for remedial actions in Pine Creek. BLM has already done a significant amount of stream and mine site stabilization on public and private lands in Pine Creek. BLM is developing a master stream stabilization plan. Cleanup in Denver Creek and the Upper and Lower Constitution tailings piles are a first priority. The potential exists for BLM to contribute funds to projects in the Pine Creek watershed if performed as joint-funded efforts along with BEIPC directed projects.

Denver Creek includes waste from the Sidney, Little Pittsburgh and Hilarity mines. Projects in the reach will complement the work done by the BLM at the Sidney and Denver mine sites. Stabilization of the mine wastes and floodplain sediment along with restoration of the riparian corridor along Denver Creek will contribute to a significant reduction in the sediment and metals load. Past planning efforts conducted for this drainage such as the proposal developed in 2002 through an EPA Watershed Initiative Grant Application will be revisited. BLM and other agencies will continue to pursue other sources of funding and joint cooperative projects to continue the cleanup of mine wastes impacting Pine Creek.

In addition to technology evaluation for water treatment in Canyon Creek and remedial designs for mine and mill sites, many remedial actions identified in the ROD will require additional information and analysis to support design and remediation. Information needs that are considered priorities by the TLG and Executive Director within this 5-year plan are proposed herein. Development of necessary information and understanding in the near term will allow efficient implementation of remedial actions in future years.

Recommended preliminary work to support future remedial actions:

- Develop a plan and monitor effectiveness of the remediation done at Interstate and Success in Nine Mile Creek.
- Conduct a preliminary design of surface water flow structures to improve fish migration between the South Fork and Nine Mile Creek.
- Evaluate ongoing water treatment projects including the Success passive apatite barrier; the BLM water treatment pilot plants; the MSE work at Nevada Stewart; and the wetland

cells treatment of water from the Gem portal with incorporation of the findings into treatment technology assessments and design.

- Conduct an assessment of soil-metal biostabilization methods and techniques. This effort is currently in the planning stage and depending upon funding should develop over the next 5-years, suggesting specific locations and designs for pilot tests.
- Monitor performance of the growth media plots constructed in 2003 at the Silver Dollar Mine.
- Continuation of the work to develop adequate compost and/or growth media for capping and revegetation contemplated in the ROD.
- Plan and prioritize remedial actions for other source areas.
- Develop a cleanup goal for lead in riparian soil. The data collection is complete and evaluation is underway to propose a cleanup standard. The work is being conducted by U.S. Fish and Wildlife Service (USFWS) and funded by EPA.

1.4.2 Lower Basin Remedies

In the 2004 work plan, it was noted that a better understanding of the complex and dynamic system in the Lower Basin and sound answers to these questions were necessary before a sequence of remedial actions could be recommended. In response, the Lower Basin Forum was formed in 2004 to provide a context for discussion of Lower Basin issues. The ecological work described in the 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 improving wildlife habitat and reducing particulate lead in the Coeur d'Alene River.

Many issues and uncertainties pertaining to the prioritization of remedial actions in the Lower Basin have been raised over the past years. Examples of ongoing questions and debate include the following:

- Where will the most “bang-for-the-buck” be achieved and what are the most effective remedial designs to reduce lead mobilization and transport by sediment – remediation of river banks, bed sediments or splay areas?
- How will remediation in one area of the River system affect erosion, scouring and deposition in other areas?
- How will remediation upstream affect lead mobilization and transport in the Lower Basin?
- How will the ongoing reduction in sediment load from the North Fork through the Total Maximum Daily Load (TMDL) process affect sediment transport in the Lower River?
- How do different designs affect the effectiveness and unintended consequences of remedial actions?
- What is the potential under varying conditions for recontamination of banks and the floodplain of the Coeur d'Alene River?

The TLG and Lower Basin Forum believe that a better understanding of the complex and dynamic system in the Lower Basin and sound answers to these questions are necessary before a sequence of remedial actions can be recommended. A number of the current Clean Water Act Grant projects were proposed in order to provide answers to these questions. A major focus over

the next several years will be to take information from Clean Water Act Grant studies and pilot projects, and apply it to planning, designing, and sequencing ecological remedial work in the Lower Basin.

When developing the plan for integrating information from the Clean Water Act Grant projects, and for gathering additional necessary information, the Lower Basin Forum will give priority consideration to the projects suggested by the TLG during development of the 2005-2009 five-year plan. The projects proposed by the TLG and Lower Basin Forum are described below. The order of listing is not intended as a prioritization sequence. These actions will be prioritized in the annual work plans.

- A pilot project converting agriculture land to wetland waterfowl habitat to evaluate effectiveness of various approaches and techniques. It is anticipated that federal NRDA settlement dollars could provide funds for this effort. This project should include an assessment and feasibility study to identify potential areas for conversion and techniques for soil preparation.
- A large-scale soil amendment pilot project to reduce bioavailability of lead. This project would be based upon results of the prior IDEQ and USFWS study and the current study underway at the University of Idaho. In addition to reducing bioavailability of lead, the pilot project will evaluate the effects of phosphate amendments on the potential nutrient load into CDA Lake.
- Data collection and numerical modeling to answer questions about in-channel sediment transport and overbank inundation and deposition is proposed as a collaborative effort among EPA, IDEQ, U.S. Geological Survey (USGS), and University of Idaho. In response to the skepticism by some about the value of such modeling, this effort should be open and transparent to all interested parties for their review and assessment.

Based upon limited data, a 1-D numerical model of the hydrodynamics of selected reaches within the lower CDA River has been done by the University of Idaho with funds from the State of Idaho. This model is useful at looking at gross sediment transport and can serve as the starting point for additional modeling work. USGS, in collaboration with IDEQ, has recently developed a calibrated 1-D sediment transport model of the lower CDA River as Phase I of a two-phase project. USGS conducted a LiDAR (Light Detection and Ranging) survey of the lower river's floodplain during Phase 1. Phase 2 will develop a multi-dimensional sediment transport model that could be programmed to examine specific reaches or specific designs for the banks and beds. The models developed by both phases of the USGS/IDEQ project could inform decisions on the areas and design of remediation of river banks, splays and riverbed sediments. An as-yet-to-be proposed modeling project would combine the LiDAR data with an overbank floodplain flow and sediment routing model that would allow predictions of the potential for recontamination and its extent. The combination of river channel and floodplain sediment transport models could serve as the tools to evaluate the cause and effect between deposition and erosion. Developing such capability will depend upon

high-resolution elevation mapping such as that achieved with LiDAR mapping technology already completed by the USGS.

- Conduct or prepare for a pilot project to develop design criteria for remediation of wetlands and shallow lake and provide information on methodology and effectiveness. Wetland remediation data gathering (such as the depth and extent of contamination) and design analysis will lay the ground work for the demonstration project. Based on waterfowl use and sediment contamination levels, Bare Marsh or Orling Slough has been tentatively identified as a location for a demonstration project because they are small and readily accessible. EPA will work with USFWS to conduct these actions.
- Conduct or prepare for a pilot project for design of remediation approach of splay areas and provide information on methodology and effectiveness. Strobl Marsh is tentatively identified as the preferred location for a demonstration project.
- Collect data on bank conditions and metal concentrations to complement the Natural Resource Conservation Service (NRCS) bank inventory and produce a map characterizing the river bank that can be used to prioritize stretches for remedial actions per the ROD.
- Continue evaluation of the bank stabilization demonstration projects and ongoing monitoring as approved in March 2003 and December 2004. The feasibility of continuing this demonstration effort will depend upon the outcome of the monitoring. IDEQ is the lead agency for this work. Decisions about future remedial actions for bank stabilization will be based upon the monitoring outcome of the demonstration project as well as surveys of river conditions, understanding the hydrodynamics of the river gained from modeling efforts and requirements of ROD. In addition, regulatory approaches to reduce erosion of river banks and mobilization of sediment such as control of boat wakes will be evaluated.
- Continue the development of a clean up goal for lead in riparian soil for use in remedial actions. USFWS has begun this process through an interagency agreement with EPA.
- Make full use of information from AVISTA studies that will help refine our understanding of hydrodynamic processes in the lower Basin and aid with prioritization of future remedial actions.

1.5 BASIN ENVIRONMENTAL MONITORING

Basin Environmental Monitoring Plan - Implementation of the long-term status and trends Basin environmental monitoring program (BEMP) will be continued with EPA funding. Establishment of a Basin-wide environmental monitoring plan is required under the OU3 ROD. The monitoring program is critical to the successful implementation and evaluation of the Selected Remedy. EPA worked with the monitoring project focus team (PFT) to develop the Basin-wide environmental monitoring program. The PFT, TLG and key stakeholder agencies concurred that the BEMP is appropriate given available funding to obtain technical data for

assessment of long-term status and trends, evaluation of overall effectiveness of the Selected Remedy, evaluation of progress toward cleanup benchmarks, and future Five-Year reviews. In February 2004, the BEIPC approved implementation of the BEMP. BEMP monitoring activities were initiated in 2004.

Environmental monitoring data collected under the OU3 BEMP (and for OU2) will be managed in a centralized database repository that was established in 2004. EPA has established an instance of STORET (www.storet.org) that includes historical site data and has the capacity for future data. STORET is national EPA's web-based repository for historic and future water quality, biological and physical data. The STORET data management system is used by state, tribal, EPA and other federal agencies, universities, and citizens to access the nation's environmental monitoring data. STORET was selected as the data management system for the BEMP data because it is EPA's environmental data system; it is a non-proprietary system and is a cost-effective way to manage the considerable site data. Currently the results from site surface water, soil and sediment sampling are included on www.storet.org; human health-related data will not be included in this database.

Remedial Action Effectiveness Monitoring - Action-specific effectiveness monitoring will focus on areas that have been addressed by remedial actions (e.g., tributaries, river reaches, etc.). The purpose of the effectiveness monitoring is to assess the success and effect of a given remedial action. By comparison, the BEMP will address basin-wide status and trends by monitoring a limited number of strategic locations. Both the remedial action-effectiveness and long-term monitoring plans will be integrated by coordinating monitoring to generate comparable data (same timeframe or synoptic) and using common sampling locations, where possible. Effectiveness monitoring, while not detailed in the BEMP, will incorporate similar monitoring hypotheses as those included in the BEMP. The adaptive management approach will maximize the utility of effectiveness monitoring data through comparison of results to expectations.

Remedial action effectiveness monitoring in OU3 will be included in the designs and implementation plans for ecological-related remedial actions. In 2004, remedial action effectiveness monitoring was implemented at the human health-related remedial actions recently implemented at the East of Rose Lake Boat Launch and Highway 3/Trail of the Coeur d'Alenes Crossing site.

1.6 PHASE II COMPONENT OF OVERALL OU2 REMEDY

As part of the State Superfund Contract (SSC) for OU2, a Comprehensive Cleanup Plan (CCP) was developed to define a path forward for remedy implementation in OU2. The CCP calls for a phased approach to implementing the OU2 remedy. In Phase I, the focus is on remedial actions aimed at removing and consolidating extensive contamination from various site areas, demolition of structures, development and implementation of an ICP for OU1&2, future land use development, and public health response actions. Phase I work also includes support studies for long-term water quality improvement and evaluation of Phase I remedial action effectiveness.

Phase II of the OU2 remedy will be implemented following completion of source control and removal activities and evaluation of the effectiveness of these activities in meeting water quality

improvement objectives. Phase II will consider any shortcomings encountered in implementing Phase I and will specifically address long-term water quality, ecological and environmental management issues. Both ROD and SSC amendments will be required prior to implementation of any Phase II remedial actions. EPA and IDEQ are the responsible parties for modifying the ROD and negotiating a State Superfund Contract.

The BEIPC has elected to address implementation of Phase II as provided in the Memorandum of Agreement (MOA) for the BEIPC. The MOA states that the Commission may address "A Record of Decision implementing Phase II" of the Comprehensive Cleanup Plan for the Box consistent with the 1992 ROD. The BEIPC will participate in these activities by educating the community and legislative bodies of the need for funding for this work, providing technical input into the remedy alternative development and selection (for including evaluation of technical reports, pilot studies, and feasibility study documents), and providing input into the public processes associated with ROD modifications.

1.7 CONSIDERATION OF EPA'S 5-YEAR REVIEW

EPA's 5-Year Review of the Bunker Hill Superfund Site is scheduled for completion in September 2005. BEIPC will consider the content of the review report and determine an appropriate course of action in its work planning process.

1.8 NATIONAL ACADEMY OF SCIENCES STUDY

The prepublication report of the National Academy of Science (NAS) study of EPA's assessment and cleanup decisions in the Coeur d'Alene Basin was released on July 14, 2005 and the final report is scheduled to be published in October 2005. The BEIPC will review the prepublication report and the final report concerning Coeur d'Alene Basin recommendations and determine if immediate action is required based on the report and determine an appropriate course of action for the BEIPC after the final report is published.

1.9 LAKE MANAGEMENT PLAN ACTIVITIES

Coeur d'Alene Lake is not included in the OU-3 Selected CERCLA Remedy. The Coeur d'Alene Tribe and IDEQ are attempting to revise the current Lake Management Plan (LMP) that was accepted by the BEIPC for use in the CDA Basin. The BEIPC is involved in a number of activities in support of this effort. A number of these efforts are outlined in Part 2 of this work plan. It is the goal of all parties involved to develop one LMP to improve and protect CDA Lake water quality in totality. When this plan is finalized the Tribe and State will coordinate their activities to implement the LMP with the BEIPC. Once the LMP is approved by the Tribe and the State, the BEIPC will request that the EPA develop criteria for the deletion of the CDA Lake portion of the Superfund Site.

1.10 PARTIAL DELETION OF AREAS WITHIN THE SUPERFUND SITE

In accordance with the National Contingency Plan, 40 CFR 300.425(e), the BEIPC will request that EPA develop criteria for deleting geographic portions of the listed Superfund Site where no

further response is appropriate such as the Idaho reach of the Spokane River or other areas where all response work is completed.

1.11 FUNDING SOURCE EVALUATION

The BEIPC will form a Funding Project Focus Team (PFT) to examine potential environmental cleanup and restoration funding sources and present an assessment of funding availability. This assessment will include a discussion on constraints for the use of various funding sources. This work should be completed by December 2006.

Part 2 – Activities and Work Funded Through the Clean Water Act Grant Program

2.0 INTRODUCTION

CWA funds are being used “**to conduct and promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction and elimination of pollution**” (Clean Water Act 104[b][3]). Within these constraints, the BEIPC has, over the last three years, approved a number of projects to be funded under the CWA. A portion of these projects are designed to support CDA Lake management activities.

The first round of CWA funds were available in FY2002 and obtained by IDEQ (acting as fiscal agent for the BEIPC) in the summer of 2003. Those projects started in 2003 are nearing completion. The next round of funding for FY2003 was available to the BEIPC during the summer of 2004. These projects are at various stages of implementation. Finally, the most recent round of CWA funds (FY2004) are currently available and projects will commence in the summer of 2005.

This section of the Workplan outlines each year’s activities of all ongoing projects. As these projects reach completion, the Commission will receive reports detailing the results of each one. Over the next five years, information taken from these reports will be used to develop future work plans.

2.1 Fiscal Year 2002 Grant

Lake Monitoring Water Quality Studies

Sub-grant amount: \$515,000 plus \$13,000 additional (FY 2004) to sample southern lake nearshore stations.

Sub-grantee: CDA Tribe, USGS

Description of work to be performed during 2005-2009 by the CDA Tribe and USGS -

During 2005, collect limnological samples at 5 pelagic stations during late January, early April, mid-May, mid-June, mid-July, late August, mid-October, and early December. During 2006, collect limnological samples at 5 pelagic stations during late January, early April, mid-May,

mid-June, mid-July, and late August; such sampling then terminated. During 2005, collect limnological samples at 18 nearshore stations during early April, mid-June, and late August; such sampled then terminated. Publish water year 2004 data in April 2005; publish 2005 water year data in April 2006; and publish 2006 water year data in April 2007. During 2005-2006, compile and evaluate limnological data and riverine inflow/outflow data in order to describe interaction of physical, chemical, and biological conditions in Coeur d'Alene Lake over water years 2004-2005. Publish that evaluation late in 2006 as a USGS Scientific Investigations Report. Project terminates at close of 2006.

Description of work to be performed during 2005-2009 by the USFWS – Identify baseline conditions for ecological receptors in CDA Lake, information necessary to determine future changes in the ecological condition of the lake. Information may be used in the future to determine if remedial actions implemented under the OU3 ROD are effective in reducing the concentrations and ecological effects of contaminants in the lake and determine if management actions implemented under the Coeur d'Alene Lake Management Plan are effective in reducing the concentrations and ecological effects of contaminants.

A final report on the health of waterfowl utilizing CDA Lake as it relates to lead exposure will be completed and released in 2005.

Evaluate metal residues in whole bullheads as a baseline of metal bioavailability to fish, health of fish receptors, and risk of exposure of piscivores to lead in CDA Lake. Bullheads will be collected with boat and backpack mounted electroshocking equipment and analyzed for whole body arsenic, cadmium, lead and zinc. Target sampling locations will include those previously sampled for the waterfowl health assessment. Five bullhead composite samples (3 fish per composite) will be collected from each of 9 bays; 135 fish will comprise 45 total composite samples. Bullhead collection and processing is scheduled to take place May 2005. Statistical analysis and a final report will be completed following receipt of metals analysis from the contract laboratory.

The collection and analysis of bullheads as a representative of lake fish receptors, in conjunction with information gained from the waterfowl health evaluation portion of the study, will provide good baseline conditions for ecological receptors of concern in CDA Lake. This information will be valuable in future lake management decisions.

Streambank Stabilization

Sub-grant amount: \$445,000 FY 2002, \$122,386 FY 2003, \$15,540 from BLM

Sub-grantee: IDEQ

Description of Work to be performed 2005-2009 - The purpose of the project is to construct and monitor the effectiveness of several techniques to protect the Coeur d'Alene River banks from boat wake erosive forces. Five treatments that emphasize bioengineering approaches are being installed along both banks of an 1800-foot-long river reach 1.5 miles upstream from Medimont on privately-owned and State-owned land. Earthwork was conducted during the

period when the level of CDA Lake, and thus the lower CDA River, is being lowered so as to avoid working under water. Grading to achieve gentler slopes was done only where woody vegetation is generally absent. Vegetation will be planted spring 2005 and will be irrigated during the summer as warranted. The site was surveyed prior to construction and will be monitored in 2005, 2006, and 2007 to document changes. Monitoring activities will include measuring cross-sections, bathymetry, and erosion pins and photo documentation.

Lake Education and Outreach Program

Sub-grant amount: \$80,000

Sub-grantee: CDA Tribe & KSSWCD (Kootenai-Shoshone Soil & Water Conservation District)

Description of work to be performed during 2005-2009 - The Kootenai-Shoshone Soil & Water Conservation District (KSSWCD) and Coeur d'Alene Tribe will continue to present the power-point presentation entitled "Our Gem" to area schools, community groups, homeowner associations, agencies and other interested parties.

As has been the case for the last 2 years, the Tribe and KSSWCD will also have a Lake Education Outreach booth at the Kootenai County Fair.

In addition, the Tribe and KSSWCD will finalize the Lake Education Outreach map and distribute this map to local area vendors and at key boat ramps throughout the summer of 2005.

Finally, the Tribe and the KSSWCD will write a brief summary of their perception of the effectiveness of this 2-year public education outreach and develop a funding proposal for further lake education public outreach. If funded, more outreach will occur and will be further defined in future plans. All work will be complete by the end of 2006.

Mullan Inflow and Infiltration Assessment

Sub-grant amount: \$800,000.00

Sub-grantee: South Fork of the Coeur d'Alene River Sewer District

Description of work to be performed during 2005-2009 - No further construction is planned for this project. The remainder of the budget has been reserved for the following activities:

- Sampling and analyzing influent and effluent wastewater at the treatment plant for metals levels.
- Analyzing metals loading trends to the wastewater treatment plant and verifying impacts from the construction portion of the project.
- Analyzing influent flow trends to the wastewater treatment plant and verifying impacts from the construction portion of the project.
- Updating the final report as warranted.

2.2 Fiscal Year 2003 Grant

Woodland Park Groundwater Quality Monitoring

Sub-grant amount: \$35,948

Sub-grantee: IDEQ

Description of work to be performed during 2005-2009 - January of 2005, two wells will be sampled for dissolved metals (Pb, Cd, As, Zn, Ca, Mg) to determine if winter conditions are significantly different from the other quarters. In April, 30 wells will be sampled for dissolved metals. The water will be sampled using peristaltic pumps and dedicated tubing. Field parameters including pH, conductivity, and water temperature will be recorded. The water samples will then be submitted to SVL Analytical for analysis.

The data collected in the last two quarters of 2004 and the first two quarters of 2005 will be compiled and used to make responsible treatment option decisions. The project will be completed by June of 2005.

Meyer Creek Flood Control

Sub-grant amount: \$31,521

Sub-grantee: IDEQ

Description of work to be performed during 2005-2009 - A field investigation is underway to collect technical and design parameters. Elevation survey of the zone of potential impact will be completed. Conditions of the existing Meyer Creek waterway will be assessed and modeling of flood flows will be completed. Sediment and water samples will be collected. A preliminary assessment document will be delivered to the BEIPC and the City of Osburn. If desired, TerraGraphics staff will meet with Osburn city representatives and representatives from the BEIPC to discuss the preliminary assessment. Finally, a Findings and Recommendations report will be delivered detailing the complete findings of the study by the end of 2005.

Upper East Fk. Ninemile Water Quality Evaluation

Sub-grant amount: \$193,652

Sub-grantee: INL

Description of work to be performed during 2005-2009 –

2005 Scope of Work:

Success Passive Water Treatment

- 1) Injecting air into the Apatite to break up clogging in the media. This has showed temporary success at the Nevada Stewart site.
- 2) Analyze Apatite to determine forms of metal precipitates and where the reactions occur. Apatite samples will be collected and taken to the INL for analysis using XRF, Powder X-ray Diffraction, Electron Microscopy, standard metal analysis, and microbial assay. This will provide information on the types of precipitates that have formed, where they have formed, the types of microbial populations in the system, and general chemistry to determine what can be done to improve the process.
- 3) Based on the results of the tracer study completed in CY 2004, Arcadis has chosen not to test nutrient addition to facilitate in situ metal reduction and precipitation. The project work plan has been amended to include installation of new modified media in the Apatite II barriers during 2005.

East Fork Ninemile Creek Monitoring

This project consists of sampling of physical, chemical and biological characteristics over about a 3-4 mile stretch of the East Fork of Ninemile Creek to determine seasonal changes in metal loading, where the loadings occur at, and the forms the metals are in will be determined. Sampling will occur quarterly with two sample events occurring at the beginning and end of the spring runoff event.

The final report will be drafted in 2005 and a final version completed in 2006.

Metal & Nutrient Removal Pilot @ Page WWTP

Sub-grant amount: \$179,763

Sub-grantee: South Fork of the Coeur d'Alene River Sewer District

Description of work to be performed during 2005-2009 – No further pilot testing is planned for this project. The summary report will be completed in 2006:

East Fork Pine Creek Revegetation Pilot Project

Sub-grant amount: \$61,624

Sub-grantee: BLM

Description of work to be performed during 2005-2009 - Spring planting will take place in late April-early May, 2005. Field measurements, including stream flow measurements and surveying channel cross-sections, for characterization of other planting sites within the project area will be collected throughout the summer. Additional planting will resume in the fall of 2005. Monitoring of plant growth and survival rates will continue throughout the growing seasons from spring 2005 through fall 2009. Any changes to planting site conditions, including depth to water, effects of floods or channel shifting will also be monitored.

Inventory and Evaluation of Private Lands for Potential Restoration of Wetland Habitats

Sub-grant amount: \$152,406

Sub-grantee: USFWS

Description of work to be performed during 2005-2009 – Privately owned agricultural and wetland areas in the Coeur d'Alene Basin identified as having potential for creation or enhancement of wetland habitat will be inventoried by Ducks Unlimited (DU) biologists. USFWS/DU contracting for work will be completed in early 2005. The DU lead investigator has begun land ownership mapping. The proposed survey will inventory private wetlands and associated agricultural lands to determine: (1) their value as wetland habitat, (2) what modifications necessary to restore to optimal habitat, (3) the landowner acceptance of wetland restoration on the property, and (4) the level of lead contamination on the property. Landowners will be surveyed to determine interest in wetland creation or enhancement on their respective properties. Properties identified as potential remediation/restoration projects will be assessed for their habitat quality. Consistent with the provisions of the CWA, USFWS will investigate the extent of contamination relative to the known level of toxic effects to waterfowl in the Coeur d'Alene Basin. Soil/sediment samples will be collected with stainless steel corers with plastic liners. The majority of samples will be removed from liners and analyzed for metals of concern on site with a portable X-ray fluorescence analyzer (XRF) following EPA Method 6200. It is anticipated that splits of 10%-20% of recorded XRF samples will be collected in glass jars or butyrate tubes and sent to a contract lab that meets or exceeds USFWS' QA/QC requirements for verification analysis following chain of custody procedures. Designs for restoration of existing wetlands or creation of new wetlands will be prepared for those properties that have low toxicity to waterfowl and that provide or could provide high quality wetland function.

Landownership, potential project location and toxicological surveys will continue through 2009 based on need and project status. The completed project will provide a comprehensive inventory that identifies private land that may be suitable for wetland remediation and restoration projects in the Coeur d'Alene Basin. This inventory will be useful for identifying agricultural and wetland habitats that could be remediated or restored as part of the ROD, through use of settlement dollars currently available to the federal natural resource trustees and Coeur d'Alene Tribe, or through existing federal and state grant/cost-share programs aimed at restoring and protecting wetland habitat.

Monitoring Fish Responses to Bank Stabilization in the Coeur d'Alene River

Sub-grant amount: \$107,550

Sub-grantee: USFWS

Description of work to be performed during 2005-2009 – Bank stabilization efforts will likely be proposed to treat more than 20 miles of the CDA River banks in coming years. Resource management agencies are being asked to evaluate the impact of a rapidly increasing number of bank stabilization project proposals for the CDA River. This monitoring effort will (1) establish

baseline fish community structures, (2) evaluate variability in fish community structures over time, (3) evaluate the effect of existing bank stabilization projects on fish communities, (4) determine appropriate monitoring strategies for future bank stabilization projects, (5) and recommend bank stabilization techniques that have positive effects or minimal adverse effects on fish communities.

A University of Idaho graduate student has been selected and potential study designs are being evaluated and discussed. Study areas will include larger areas with relatively few implemented bank stabilization projects, areas potentially affected by implemented bank stabilization projects, and areas with proposed bank stabilization projects. The graduate student will help evaluate fish species, age structure, and relative abundance within these study areas using standard survey techniques such as electrofishing and/or snorkeling. Methodology is currently being designed to meet the goals of the project. Monitoring will begin summer 2005 and continue through spring 2007. A final report is expected early 2007.

Results of this monitoring effort will provide information that will reduce agency concerns and requirements when considering approval of required permits. Additionally, results will likely reduce individual bank stabilization project costs and permitting requirements by providing much of the initial baseline information, by defining appropriate monitoring techniques, and by identifying inter-species interaction dynamics associated with natural and artificial habitat structures within the CDA River system.

Computer Models to Assess Sediment Transport and Bed Evolution in the Lower Coeur d'Alene River Phase 1 and 2

Sub-grant amount: Phase 1 - \$193,706 FY 2003, Phase 2 - \$128,000 FY 2004

Sub-grantee: USGS

Description of work to be performed during 2005-2009 - One-dimensional sediment model will be calibrated. Various flow and sediment transport scenarios will be run for final report. Data necessary for multi-dimensional bed-shear stress model will be collected. Multi-dimensional model will be developed of a single 1500 m reach near Dudley or Rose Lake. Multi-D model will be used to test various flow and lake level scenarios. Model development and results of both the One and multi-dimensional models will be summarized in a final report to be published in 2006.

Simulation Model to Evaluate Coeur d'Alene Lake's Response to Watershed Remediation-Phases 1 and 2.

Sub-grant amount: Phase 1 - \$190,406 FY 2003, Phase 2 - \$221,800 FY 2004

Sub-grantee: USGS

Description of work to be performed during 2005-2009 - During 2005, assemble and provide data bases to Univ. of Western Australia model team; data bases relate to lake bathymetry,

inflow/outflow hydrology, inflow/outflow constituent loads and concentrations, meteorological forces, and limnological variables through out water column. Continue with USGS National Research Program bioassay experiments to define zinc toxicity equations for lake phytoplankton. Continue USGS Geologic Discipline study to develop benthic flux equations for metals and nutrients. During last two weeks of May, conduct extensive field experiment on CDA Lake to provide calibration data for 3-D hydrodynamic model, ELCOM. Complete development of 1-D model, DYRESM, late in 2005. Using calibration data sets derived from limnological sampling program, test DYRESM's ability to simulate interaction of physical, chemical, and biological processes.

During 2006, complete USGS studies of zinc toxicity and benthic flux and have model team incorporate new equations into ecological model, CAEDYM. Develop and test 3-D linked-model application, ELCOM-CAEDYM to test its ability to simulate interaction of physical, chemical, and biological processes under historic and current conditions. Consult with Basin Commission entities to design suite of simulations to represent remediation of metals and nutrients within lake's drainage basin. Run such simulations to assess synergistic and antagonistic combinations of metal and nutrient load changes to lake. Project completed at end of 2006.

North Fork Coeur d'Alene River Hydrologic & Sediment Study

Sub-grant amount: \$165,810

Sub-grantee: IDEQ

Description of work to be performed during 2005-2009 -

April – September 2005

1. Request for Proposal for contract bid solicitation will be completed in March 2005 and the North Fork Technical Advisory Team (TAT) will be established. Bid solicitation data requested by April, and a contractor will be selected by late May.
2. June through September, the Contractor will collect existing, known information about the North Fork sub-basin from agencies such as the USDA Forest Service (FS), Idaho Fish & Game, University of Idaho, and IDEQ. By October, the Contractor will produce a draft summary report of existing documented knowledge (or what is confidently known) about physical and biological conditions, and recent watershed improvement projects. This draft summary will be reviewed by IDEQ and the TAT.

A contract will be developed between IDEQ and the Forest Service for \$10,000 for FS resources in preparation and collection of hardcopy and electronic information to pass on to the Contractor.

October 2005 – April 2006

1. The Contractor will conduct in-office work to perform an initial watershed assessment of existing conditions, and possible causes of the observed biological impairment in sub-

basin streams. This analysis will identify priority areas for field examination of significant sediment sources, and channel stability condition as it relates to possible hydrological modification from a long history of land use activities.

2. Prepare final document, *Summary of Known Existing Information and Improvement Projects*.

May - October 2006

1. A season of field work: conduct on-the-ground surveys and inventories of sediment sources which could be the focus and target of a TMDL Implementation Plan, and conduct in-channel surveys for evidence of impairment by hydrologic modification.

October – December 2006.

1. Complete watershed assessment using survey information collected during the 2006 field season.
2. Produce a final report, *Watershed Assessments of Selected Sub-watersheds*.

Project should be complete by the end of 2006 (with the possibility of a short-term contract extension to complete final report).

Mica Bay Nutrient Reduction Project – Phase 1 & Phase 2

Sub-grant amount: \$20,000 FY 2003, \$121,000 FY 2004

Sub-grantee: IDEQ

Description of work to be performed during years 2005–2009 –

CY 2005

The Phase 1 assessment report for nutrient reduction and wetlands enhancement alternatives at the Mica Bay/Creek site will be completed and submitted to the PFT and TLG for review. Assuming the Phase 1 report is approved, Phase 2 activities would commence. The Phase 2 design process for the selected alternative approved by the TLG and PFT will be initiated. Design survey and engineering will begin and likely be completed within 2005. Conservation easement negotiations will be initiated with the project landowner. It is assumed that IDEQ, as the project sponsor, will either be the conservation easement holder or will help designate such holder. Permitting issues will be explored with US Fish and Wildlife and US Army Corps of Engineers. If permitting becomes more than simple applications, the project will notify the PFT/TLG.

CY 2006

A construction contractor will be selected and approved for implementing the project plans and specifications. Construction will occur during late summer/fall. A monitoring plan will be developed to observe water quality and wetland function improvements.

CY 2007-2009

Project monitoring will occur in accordance with the Monitoring Plan and as allowed by funding.

Lower Lakes Aquatic Vegetation Survey

Sub-grant amount: \$143,275

Sub-grantee: CDA Tribe

Description of work to be performed in calendar years 2005-2009 –

Survey transects: The transect survey initiated in 2004 will be repeated during the mid-July to mid-August period of 2005. The quantitative sampling is a modification of a "line intercept" method where submersed aquatic plant samples are collected along a fixed line which is oriented from a start point on shore by a compass heading. Along this line samples will be collected using SCUBA techniques at fixed intervals using a "quadrat"; a fixed-corner, three-sided frame that defines a standard sampling area. Collected samples will be sorted by species and sub-samples delivered to a contract laboratory for biomass and nutrient content determinations. Laboratory data will be tabulated and statistically analyzed to determine the significance of various relationships (species biomass versus transect and depth, for example) and to determine average areal biomass and nutrient content.

Grid sampling: The grid point inspection initiated in 2004 will be repeated following the transect surveying (i.e. mid August to mid-September, 2005). Using GPS equipment, each grid point to be inspected will be located and one toss made with a weighted "rake-on-a-rope". Aquatic plant species captured by the rake at each sample site will be recorded. Grid data will be tabulated and used to estimate total areal coverage of the various species present.

Nutrient release research: A literature search and communications with university researchers and others will be performed to collect available information on nutrient release from aquatic plant species.

Prepare project completion report: This will include a summary of materials and methods, summary of plant biomass data for each species collected with year-to-year variations, summary of grid node survey findings, calculation of release of phosphorus and nitrogen from existing population as lake-wide loadings, appropriate statistical analyses, discussion of the infestation of Eurasian watermilfoil that was found and overall conclusions. This report is expected to be finalized during early 2006.

Canyon Creek Groundwater Metal Source Characterization

Sub-grant amount: \$190,253

Sub-grantee: INL

Description of work to be performed in calendar years 2005-2009 -

In 2004, core samples were collected at three locations in the Woodland Park area of Canyon Creek. Sub-samples at four intervals from each core were immediately frozen in liquid nitrogen for transport to the Idaho National Laboratory (INL). The samples have since been stored at – 80°C at the INL. Additional samples were collected for the purpose of testing metal extraction and leachability tests.

Year 2005 Tasks:

- 1) Complete compilation of water chemistry data for Canyon Creek. Data to be used to help interpret sequential extraction data and to establish range of conditions for leachability tests.
- 2) Finalize sequential extraction method following review of standard and commonly used sequential extraction procedures – tailored to Canyon Creek sample properties. Establish protocol and analytical methods for extracted metals. Specific target metals are zinc, cadmium and lead, although a large number of additional metals will be reported as a consequence of the analytical method (inductively coupled plasma – mass spectrometry).
- 3) Test sequential extraction method on non-critical sub-samples.
- 4) Complete sequential extraction procedures. Collect sub-samples for selected spectroscopic analysis that will be used to verify and interpret results from sequential extractions. (Spectroscopic analysis will include synchrotron-based X-ray absorption for metal identification and oxidation state.)
- 5) Conduct metal leachability tests in flow-through columns. Range of solution chemical conditions to be determined from analysis of Canyon Creek water chemistry data.
- 6) Conduct one metal mobility test in a flow-through column in order to demonstrate how speciation and leachability test data are applied in model simulations.
- 7) Report on: metal speciation, metal leachability and practical prediction of metal mobility in a packed sediment column.

Year 2006+ Tasks:

The expectation is that the original scope of this project will be completed in 2005.

2.3 Fiscal Year 2004 Grant

Sub-grant code and title:

(Official project codes have not yet been assigned to the '04 CWA projects and no work has been done on these projects as of 12/31/04)

Mica Bay Nutrient Reduction Project – Phase 2
(See report under FY 2003 funded project)

Additional Water Quality Sampling in Selected Near-Shore Areas of Southern Lake Coeur d’Alene (see report for lake monitoring and water quality studies in FY 2002 funded project)

Plummer Wastewater Treatment Pilot

Sub-grant amount: \$129,900

Sub-grantee: City of Plummer, Idaho

Description of work to be performed during 2005-2009 - To date the City has paid for engineering to complete preliminary plans and will continue with some expense for engineering and design work to keep the project on schedule. The City has also procured wetland plants which are being grown for the project. The City is responsible for these costs.

The City will meet April 29, 2005 with EPA, IDEQ and Tribal representatives to discuss the City’s draft facility plan. A revision of the facility plan will follow and be submitted to IDEQ for acceptance. This plan will include the wetland pilot study.

Once award is made the City will commence work as outlined below with the project funds. This time line is using an anticipated date of July 1, 2005 for funds. We expect to have the design, plans and specifications substantially completed and ready for final approval at July 14, 2005 Council meeting. We will seek quotes for the construction to be awarded at the August 11, 2005 Council meeting. We plan to begin construction immediately and construction of the pilot site should be complete by the end of September, 2005.

Monitoring and testing will be completed on a monthly basis from September, 2005 through August, 2006. A final report on the pilot will be completed and a determination will be made as to the success of the project. The report and data will be available for everyone.

If successful, we plan to submit to IDEQ for approval to utilize a full-sized overland flow wetland in the plans for our final wastewater treatment plant upgrade. If it is not successful, we will finalize plans for our final wastewater treatment plant upgrade using other technology.

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

Sub-grant amount: \$165,700

Sub-grantee: CDA Tribe

Description of work to be performed in calendar years 2005-2009 -

Field Monitoring:

Water quality and constituent concentration data will be collected at key points including potential pollutant sources in the Plummer Creek watershed. Approximately 18 samples will be collected on a regular basis (approximately bi-weekly March-April, and monthly for the remainder of the year) from each point for two full water years starting Oct. 1, 2005. In addition, point source discharges (i.e. the Plummer City Wastewater Treatment Plan outfall) will be monitored. The following field data will be collected: instantaneous streamflow, specific conductivity, dissolved oxygen (mg/L and % saturation), pH and water and air temperatures. Samples will also be collected for laboratory analysis of phosphorus (total and dissolved "ortho"), nitrogen (nitrate+nitrite, ammonia, total Kjeldahl), hardness, total suspended solids and fecal Coliform bacteria.

Modeling for Estimating Nutrient Loads: The Generalized Watershed Loading Function (GWLF) model will be used to simulate watershed nutrient loadings. GWLF is used for mixed land use watersheds to evaluate the effect of land use practices on downstream loads of sediment and nutrients (nitrogen and phosphorus). An added in-stream routing and sediment transport component is linked to BasinSim GWLF model with a generic ArcView interface that is able to utilize national land use and soil GIS data. The model will be configured based on watershed data (e.g., land use, soils, weather, crop, point source, etc.) for a number of sub-watersheds.

Management Plan: Once the watershed loading is characterized with the model, the results can be presented to the stakeholder group to identify areas and opportunities for future management options. The "ideas" from the stakeholders will be prioritized to identify several management scenarios that will be evaluated using the calibrated GWLF model. The analysis will evaluate the results/impacts of implementing the different management alternatives. A Management Plan document will be prepared which described the monitoring, modeling and management recommendations.

Pinehurst Flood Impact Study

Sub-grant amount: \$330,000

Sub-grantee: IDEQ

Description of work to be performed during 2005-2009 -

Phase 1 - 2005

Conduct Little Pine Creek Assessment to evaluate distribution of metal contaminated sediment within the creek and Division Street drainage system. Prepare design report for performing the Little Pine Creek pilot segment. Project report will present the pilot project approach for evaluating stream restoration impacts on water quality metal reduction.

The TLG will review and provide guidance in proceeding with the project. Presuming that only minor comments and adjustments are required, the project will proceed to Phase 2 in 2006.

Phase 2 – 2006

Upon approval from the TLG, Little Pine Creek improvements will be designed and presented in a bid package. Discussion of Division Street improvements will occur with the TLG and City of Pinehurst. A design package will be prepared that includes stream improvements and Division Street storm drainage improvements. A construction contractor will be secured and the project implemented in 2006. A monitoring program will be developed that observes water quality parameter changes after three a year period.

Phase 2 – 2007-2009

The monitoring program will measure water quality changes in Little Pine Creek and Division Street. Also, City of Pinehurst O&M efforts related to the pilot project features will be reported. An annual significant storm event will trigger water and sediment sampling along the systems once each year for three years. A summary report will be prepared for the TLG/PFT at the end of three years.

Silver Crescent Mine and Mill Complex Habitat Restoration

Sub-grant amount: \$318,700

Sub-grantee: USDA Forest Service

Description of work to be performed during 2005-2009 - Final design will be completed by the FS in 2005 using partner funding (FS, BLM, USFWS, and CDA Tribe). CWA Grant funds will be used for construction contract award late in 2005 or early 2006 with implementation start planned for 2006. Stream channel construction with wildlife and fish habitat structure installation will encompass the bulk of the construction phase at the site. Comprehensive native vegetative restoration at the site which will include treatment for noxious weeds will follow, possibly utilizing a second contract in 2007. A post construction report will outline the entire project and any changes that were made. This report will include an evaluation of successes and a section dedicated to “lessons learned”. Site maintenance and a 5-year monitoring effort will start at the close of the construction phase.

Canyon Creek Treatability Study

Sub-grant amount: \$100,000

Sub-grantee: IDEQ

Description of work to be performed during 2005-2009 - IDEQ will issue a request for design services; evaluate proposals; and select an engineering firm for the project. In 2005 work will begin on the design including the gathering and review of information, conceptual designs, and identification of project requirements. How much of the design can be completed in 2005 will depend upon how quickly the grant monies are available.

The design will be finalized in 2006 with no follow-on work anticipated in subsequent years.

South Fork Sewer District Toxicity Reduction

Sub-grant amount: \$115,900

Sub-grantee: South Fork of the Coeur d'Alene River Sewer District

Description of work to be performed during 2005-2009 -

No work has been done on this project to date. The activities planned include:

- Baseline toxicity testing – August/September 2005.
- Review of potential sources of toxicity at the Page WWTP – November/December 2005
- Toxicity control evaluation (TCE) – June-December, 2006
- Final report – January, 2007

Simulation Model to Evaluate Coeur d'Alene Lake's Response to Watershed Remediation-Phase 2 (See report for project CW09 for FY 2003 projects)

Computer Models to Assess Sediment Transport and Bed Evolution in the Lower Coeur d'Alene River, Phase 2 (See report for project CW08 for FY 2003 projects)

Assessment of the Economics and Effectiveness of Alluvium Sorting as Mine Waste Removal Strategy at the Project Implementation Level

Sub-grant amount: \$207,000

Sub-grantee: IDEQ

Description of work to be performed during 2005-2009 - Post project gravel quality measurements will be made for two years post implementation or after a channel forming discharge event with the potential to re-contaminate the alluvium. Sampling will be scheduled to assess gravel quality after a channel forming discharge event.

Coeur d'Alene Lake Management Plan Implementation

Sub-grant amount: \$137,200

Sub-grantee: IDEQ, CDA Tribe

Description of work to be performed during 2005-2009 -

August – December 2005

The intent of the IDEQ is to fill a Coeur d'Alene Lake Manager position after July 1, 2005. This new IDEQ position was approved by the state legislature during the 2005 session. It is

anticipated that duties of the lake manager position will include coordination with the Tribe to conduct the work of this CWA sub-grant. Funding for the IDEQ position will not come from the CWA sub-grant award. The Tribe will utilize a portion of the funds allocated through this sub-grant to hire lake management staff to work with IDEQ's Lake Manager to coordinate the activities of the lake management plan audit.

From August through December 2005, contact and establish meetings with representatives from agencies and private businesses that manage or conduct land use and disturbance activities within the immediate vicinity of the lake. The meetings would present the purpose of the work, and seek cooperation and input for the survey and effectiveness audit. Agencies and businesses would include, but may not be limited to:

Kootenai County
Coeur d'Alene Tribe
IDEQ
City of Coeur d'Alene
Idaho Department of Lands
USDA Forest Service
Panhandle Health District
Kootenai/Shoshone Soil & Water Conservation District and NRCS
North Idaho Building Contractors Association
Coeur d'Alene Realtors
Private timber companies
Wastewater discharges
Marina operators
Golf course managers

January – August 2006

With anticipated cooperation and input from the agencies and businesses listed above, conduct and complete a survey and effectiveness audit that would:

- Evaluate what best management practices (BMPs) are in place to protect water quality;
- Determine the effectiveness of those BMPs being used;
- Evaluate areas and activities where BMPs are required under various regulations, but are not being applied or are being applied improperly;
- Establish specific BMP audit procedures where needed for the following, but not limited to these activities - road construction and maintenance, building and facility construction, installation of septic and other wastewater treatment systems, operation and maintenance of marinas and docks, construction, operation and maintenance of golf courses; recreational use of the Coeur d'Alene and St. Joe Rivers and agricultural operations; and
- Determine future programmatic funding projections to continue nutrient management activities.

Results of the survey will be incorporated into the revise Lake Management Plan currently being developed by IDEQ and the Tribe. This work will also serve as the basis for establishment of a

standardized audit process that can be repeated as needed to evaluate the effectiveness of LMP actions. Public outreach efforts will be made to develop and sustain the public support in helping to implement the LMP.