

Coeur d'Alene Basin 5-yr (2004-2008) Recommended Plan

**Prepared by:
Basin Commission Technical Leadership Group**

**Prepared for:
Coeur d'Alene Basin Improvement Project Commission Board**

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1 SUMMARY

The five-year plan for 2004-2008, recommended by the Technical Leadership Group (TLG) and submitted to the Coeur d'Alene Basin Improvement Project Commission Board (Commission), identifies projects and activities throughout the Basin. Table 1-1 summarizes the scope and objectives of the proposed work and the lead planning agencies identified at this time. It is anticipated that the lead agencies will be responsible for planning, developing designs, coordinating with other agencies and following the TLG operating procedures for communication among the TLG, CCC, and Basin Commission.

Annual work plans will recommend specific actions from within this plan along with a suggested source of funds and estimated budget. Although it is clearly understood that implementing this plan depends on funding, this plan is built around a reasonable expectation of what money may be available.

1.1 Process of Development of the Proposed Plan

The proposed plan was developed by the TLG beginning in April 2003. During the development, four drafts were circulated to the TLG and CCC for review and comment. The process and schedule that resulted in this document are summarized as follows:

- **April** - The TLG met in Coeur d'Alene on April 22 and agreed upon general priorities for the 5-year planning period. The outcome of the meeting formed the basis of the initial draft outline of the Plan. This initial draft was circulated to the TLG and CCC for comments on April 30.
- **May – June** - Project Focus Teams (PFT) comprised of TLG and CCC representatives, developed additional information and details on the content of the Plan during May and June. Input from the PFT and comments received were added to the draft Plan. The preliminary draft was circulated for review by the TLG and CCC on July 3.

- **July** – The TLG meet in Coeur d’Alene on July 10 to review and discuss the preliminary draft. A revised draft was distributed to the TLG and CCC on July 18. Comments were collected from the TLG and CCC and a final draft was distributed on August 1.
- **August** – The final Proposed Plan from the TLG was forwarded to the Commission staff on August 8.

1.2 Comments Received on Drafts of the Proposed Plan

Comments and concerns addressing technical issues that were received from the TLG and CCC on drafts of the Proposed Plan are incorporated into this document. Comments received from CCC members addressing policy issues were directed to the CCC chair for presentation.

Table 1-1. Summary of Activities Proposed for Implementation of the ROD for 2004-2008 Planning Period

Proposed Activity	Scope	Objective	Lead Planning Agency	
Repositories	Utilize Big Creek Repository for yard soils. 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 within next 5-10 years.	Provide disposal capacity for yard 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	
Human Health Remedy				
	Basin Institutional Controls Program (ICP)	Develop a Basin-wide ICP and begin operation.	Protect soil remedy and public health, support construction projects and facilitate commerce.	IDEQ
	Residential Properties	Complete soil remedy.	Protect human health in a way that minimizes community disruption.	IDEQ
	Recreational Areas	Complete remediation on at least two IDFG sites and recommend that USFS conduct remediation and improve management at four sites. Install informational signage on at least nine sites. Encourage development of Lower Basin recreational management plan. Continue evaluation of candidate sites for remediation or information	Provide safe recreational opportunities along the Coeur d'Alene River	EPA working with land management agencies
	Mine & Mill Sites	Design and begin remediation of Constitution tailings piles. Design remedial action and complete work at Rex site. Design remedial action for Golconda tailings. Remediation of Sisters waste rock pile	Be prepared for remediation of priority mine and mill sites that are used for recreations and contribute human health risks as well as water quality impacts. Conduct remedial actions to the extent funds are available	EPA and IDEQ. Collaboration with BLM in Pine Creek

Table 1-1. Summary of Activities Proposed for Implementation of the ROD for 2004-2008 Planning Period (Continued)

Proposed Activity	Scope	Objective	Lead Planning Agency	
Upper Basin Remedy				
		<p>Evaluate approaches and technologies for water treatment at Canyon Creek which shall include at least one field pilot project.</p> <p>Remediate mine wastes along Denver Creek tributary to Pine Creek.</p> <p>Monitor previous remediation in E Fork of NineMile, and water treatment pilots.</p> <p>Preliminary design of flow structure between Ninemile and South Fork.</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 soil.</p>	<p>Prepare for water treatment at the mouth of Canyon Creek as the way to achieve the greatest reduction of zinc load in the South Fork above the Box.</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>Collaboration with BLM in Pine Creek.</p> <p>USFWS has lead in soil cleanup standard</p>
Lower Basin Remedy				
		<p>Pilot project for conversion of agriculture land into waterfowl habitat.</p> <p>Pilot project on soil amendment to reduce bioavailability of lead.</p> <p>Design wetland remediation approach.</p> <p>Design splay remediation approach.</p> <p>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 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 of within the River system.</p>	<p>EPA, IDEQ USFWS and Coeur d'Alene Tribe</p>

Table 1-1. Summary of Activities Proposed for Implementation of the ROD for 2004-2008 Planning Period (Continued)

Proposed Activity	Scope	Objective	Lead Planning Agency
Basin Wide Environmental Monitoring	Initiate long-term monitoring and make data available.	Assess effectiveness of remedial actions and trends in overall ecological improvement due to remediation and natural attenuation.	EPA working with other agencies including IDEQ, USFWS, and USGS
Lake Coeur d'Alene Study	Continue implementing the study plan previously approved.	Improve the understanding of biological baseline and fate and transport processes in the Lake.	CdA Tribe, USGS, and USFWS
Lake Coeur d'Alene Management Plan	After the Lake Management Plan is released by the State of Idaho and the Coeur d'Alene Tribe, the scope of actions in the TLG plans will be determined per direction of the Basin Commission.	Maintain steady improvement of Lake water quality and ensure stability of metals in bottom sediments.	IDEQ and CdA Tribe

2 INTRODUCTION

This 5-year plan describes the proposal by the Technical Leadership Group (TLG) to the Basin Commission for continuation of remedial activities in the Coeur d'Alene Basin per the OU3 Record of Decision (ROD). The plan also describes proposed actions that the TLG believes are necessary for cost-effective implementation of the remedial actions and may be funded outside of the CERCLA process.

The actions called for in the Lake Management Plan (LMP) may be incorporated into future addendums, as necessary, to the 5-year Plan and subsequent annual plans under direction of the Basin Commission. IDEQ and the Coeur d'Alene Tribe are currently reviewing comments received on the draft amended LMP that was released December 2002. Upon finalization of the LMP by Idaho and the Coeur d'Alene Tribe the Commission may adopt it and oversee its implementation. Per direction from the Commission LMP activities may be included in its proposed work plans.

The 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.

The Basin Commission's Technical Leadership Group began the process of advising the Commission on the sequence of remedial actions with the first one-year plan submitted in February 2003. The remedial actions, demonstration projects and preliminary design work approved in the 2003 one-year work plan are currently underway.

This five-year plan is the next step of advising the Commission on a proposed sequence of remedial actions. The scope of the plan corresponds generally to the level of funding and the funding sources anticipated over the five year period, 2004 – 2008, for implementation of the ROD. The bulk of EPA remedial action (RA) funds will be allocated for remediation focused on the human health remedy until completed as defined by the Record of Decision.

EPA remedial design (RD) funds are expected to be available to fund work necessary to prepare for remediation such as filling data gaps, preliminary design engineering, and technology development. Congressional earmark funding under the Clean Water Act may be available for "...research, investigation, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of pollution." Additional Congressional earmarks or other federal, state, or local funds may come available in the future for other activities. In addition, EPA RA funding may become available for priority ecological projects that are ready for implementation.

The purpose of the plan is to propose priorities and sequencing for human health and ecological cleanup. The TLG recommends developing an annual plan each year, proposing tasks from within this plan to guide the use of CERCLA and non-CERCLA funds available for work in the Basin. The degree to which this plan will be implemented within a five year period will depend upon available funds and the annual planning processes.

The plan proposes an approach and priority projects for the 5-year planning period. The proposal includes work on the following elements:

- Development of Repositories
- Development of the Institutional Controls Program
- Remediation in the Residential Areas
- Remediation in Lower Basin Recreational Areas
- Remediation of Mine and Mill Sites in the Upper Basin
- Preliminary Design Actions in the Upper Basin
- Preliminary Design Actions in the Lower Basin
- Basin Wide Environmental Monitoring

Activities currently underway, such as those for the human health remedy, the river bank pilot project and the study of processes in Lake Coeur d'Alene are briefly described to provide the thread of continuity.

3 DEVELOPMENT OF 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 generated by remedial actions. IDEQ and EPA are taking the lead in developing repository options. EPA is currently the lead planning agency for the Big Creek repository but IDEQ will assume that responsibility next year. USEPA has funded IDEQ for 2003-2004 to continue siting and planning activities for other repository locations. Repository siting and design shall follow the requirements set forth in the ROD.

Efforts to date have focused on developing a repository on a reclaimed tailing pond once owned by the Sunshine Precious Metals Company. The site commonly known as the Big Creek Repository, first received Coeur d'Alene Basin clean-up wastes in 2002. The site will be fully operational as the primary Basin yard remediation repository in 2003. IDEQ has recently gained possession of the 22-acre Big Creek repository and will assume responsibility for operation of the repository after the 2003 field season.

Preliminary evaluation of over 100 potential sites throughout the Basin has shown that gaining property ownership or access may be the paramount issue that must be resolved when screening potential sites. 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, party to the NRDA lawsuit suggested that a ruling on the lawsuit will be necessary before engaging in land transfer negotiations. Private land is likely the easiest to acquire but remedial action funds and associated agreements for ownership and O&M would be needed before purchase of the property. Ultimately an Institutional Controls Program (ICP) will be developed for the entire Basin. Once an ICP is in place, and a site or sites are secured, it is anticipated that land acquisition will be less of a near-term issue, though longer term needs will remain an important objective. The State anticipates that the ICP will be in place and operable in 2005.

In addition to property ownership, legal, regulatory and fiscal issues will affect repository development. Some of the questions encountered during preliminary screening efforts include:

- Who will be the owner and responsible party for long-term care of the 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?

While the TLG fully acknowledges the difficulties with property ownership and the legal and regulatory uncertainties, the TLG recommends the following goals for this 5-year plan.

- Utilize the Big Creek repository for soils generated from yard remediation.
- Secure properties and bring on-line repositories in the Upper and Lower Basin communities as needed to support cleanup work in the next 5 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 TLG recommends an approach consistent with the process laid out in the ROD which involves: 1) site identification, 2) technical evaluation, 3) public input/notification and 4) decision documentation. IDEQ and EPA would be responsible for getting input from local governments, landowners, and other stakeholders regarding candidate repository sites and obtaining legal and policy guidance to inform answers to the pertinent questions. In addition, the TLG recommends the formation of a Project Focus Team (PFT) 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 lead by 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.

Identification of candidate sites can draw upon the work of the Panhandle Health District (PHD), under a grant received from the Superfund Redevelopment Initiative, to assist communities in developing an approach to dealing with contaminated soil and other materials generated as part of the Coeur d’Alene Basin cleanup. Proposals regarding soil disposal have been developed and adopted by the Cities of Wallace and Mullan. Discussions are ongoing with the City of Osburn.

4 REMEDY FOR HUMAN HEALTH EXPOSURES

Remediation of human health exposures is a remedial action priority as defined in the ROD and includes developing and maintaining an institutional controls program (ICP) and conducting cleanup in residential and commercial properties 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 are proposed for design and remediation during this plan are described.

4.1 Institutional Controls Program

The TLG sees development and implementation of the institutional controls program (ICP) as a priority during this planning period to protect the remedy and public health, support construction projects and facilitate commerce. Issues for resolution include the administrative structure, the boundaries of jurisdiction, as well as sources of funding and support. The ICP in the Box has been a successful program and can serve as a model for the ICP throughout the Basin. Differences between the Box and Basin that will need to be addressed include the larger, unbounded area of the Basin and the greater number of governmental entities and jurisdictions. Active communication and planning between the public and local, state and federal governments are required to establish the Basin ICP. Idaho DEQ is beginning the planning process for an ICP by initiating discussions with local governments in 2003.

4.2 Residential Areas

The TLG supports a goal of completing the human health residential remediation in both the Upper and Lower Basin by the end of the 5-year plan. Although achieving this goal will depend upon a number of factors including availability of funding, it is the goal that was forwarded during preparation of the Record of Decision. Based on an assumed number of yards in the Upper and Lower Basin with lead concentrations in soil exceeding the cleanup standards, funding for about 200 yards per year will complete the remediation during the 5-year period of this plan. IDEQ is the lead planning 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. EPA and IDEQ have been using several communication tools to raise public awareness about this program. IDEQ is providing questionnaires to homeowners during neighborhood soil sampling to determine if young children or expectant mothers reside in the home. EPA has funded radio ads on station KWAL AM and sent postcard announcements to more than 1,500 homeowners in the Basin. The outreach strategy will be continually evaluated to improve its effectiveness.
- Analysis of lead concentrations in soil is needed before remediation can occur. Soil sampling and analysis is beginning this year and will continue, collecting data on at least 600 yards per season. The sampling data will be compiled in a data base and will inform decisions on which properties are remediated each season.
- Remediation of properties in Osburn and Mullan, approved in the 2003 workplan and started in 2003 will be completed. After Osburn and Mullan are complete, remediation will move to areas located toward the middle of the Upper Basin and through the Lower Basin.

- 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. Management of properties for which owners do not want remediation will be determined on a case-by-case basis.
- 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 MCLs.

4.3 Recreational Areas

The ROD includes remediation of Lower Basin recreational areas to reduce human exposure to lead and other metals. Thirty-one recreational sites were identified in the ROD with the recognition that other recreational sites may be evaluated for cleanup based on factors such as risk of exposure, location and use. Other sites that may be evaluated include, but are not limited to, new recreational sites that have recently developed in conjunction with the Trail of the Coeur d'Alenes.

Cleanup of the recreational areas commenced with the February 2003 one-year plan. Sites underway are the area east of Rose Lake Boat Launch and Hwy 3/Union Pacific Railroad trail access point.

The following design principles were identified by the Recreational Area PFT for the one-year plan and were applied to development of the five-year proposal:

- Primary objective is to protect human health, particularly young children.
- 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 (e.g., potable water, septic systems, etc.).
- 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 describing the sites identified in the ROD and visually evaluating the sites through a river-based field trip on July 8, 2003, the TLG is proposing a two-stage approach for the five-year plan to address recreational areas in the Lower Coeur d'Alene Basin. This approach was developed by the Lower Basin Recreational Area PFT comprised of TLG and CCC representatives.

4.3.1 Stage 1 – Recreational Sites Identified in the ROD

The first stage proposed is active remediation at six recreational sites selected from those identified in the ROD. The sites proposed for remediation are used for recreation and candidates for a low-

maintenance remedy that will be protective of human health. It is not clear that remediation of other common use sites identified in the ROD would achieve long-term benefits due to recontamination, ownership and access concerns. EPA can use its CERCLA funding to remediate state, county or local government-owned recreational properties. CERCLA funds can not be used for sites on Federal land managed by US Forest Service and Bureau of Land Management.

Table 4-1 lists recreational sites identified as candidates for active remediation under the Basin Commission's five-year plan. The maps of sites are attached as Figures 1, 2, 3,4 and 5.

Table 4-1. Candidate Recreational Sites for Active Remediation

ID	Site Name	Owner	Proposed Actions
47	Rainy Hill Boat Launch	USFS	- Recommend that USFS consider paving existing boat launch parking area and establish paved picnic site near restrooms on north side of site - Continue day use only limitation
44/45	Medimont Boat Launch Area	USFS	- Recommend that USFS consider paving existing boat launch parking area and establish paved picnic site near restrooms on north side of site - Continue day use only limitation - Bank stabilization issues would need to be addressed - Consider establishment of overnight RV parking area (similar to BLM's Killarney Lake Rec Area)
59/60	East of Rose Creek/West of Rose Lake	USFS	- Recommend USFS consider restricting access to contaminated dune area and to install sign visible from river (current sign visible from road only)
46A	Rainy Hill Camping Area (on uncontaminated hill)	USFS	- Recommend USFS evaluate establishment of a camping area consistent with a Lower Basin Recreation Plan (if developed)
33	Anderson Lake Boat Launch	IDFG	- Consider improvements in conjunction with Hwy 97 bridge replacement (scheduled for 2005) and development of Lower Basin Recreational Area Plan
NA	Thompson Lake Boat Launch	IDFG	- Consider improvements to site to make it more attractive to users

There are numerous beach sites in the lower Basin that have recreational use but were not selected in this plan as candidates for active remediation. Until upstream sources of contamination are eliminated, the beaches along the Coeur d'Alene River pose special challenges for remediation because of the high likelihood of flooding and consequent recontamination. For these beach sites, the TLG suggests an "Information and Education" program to inform the Lower Basin recreational users of site risks and safe-use practices (e.g., washing hands before eating, not eating off of the ground, etc.) until permanent remediation can be achieved. The TLG encourages a balance between sign-overload and advising prospective users of risks from exposure to lead in the soil.

Some of the sites identified in the ROD are privately owned. These sites have not been included in this proposal because the intent is to establish publicly accessible recreational sites.

Table 4-2 identifies sites that do not currently have signage and where implementing effective, low-maintenance remedial actions would be difficult. It is recommended that signs alerting potential

users to contamination issues in the Lower Basin be posted at these sites. (Duplicate signs like those currently posted at selected locations in the Lower Basin are in storage and could be readily installed at these sites.)

Table 4-2. Candidate Recreational Sites for Informational Signage

ID	Site Name	Owner	Rationale
39-41	Thompson Lake Boat Launch - Blue Lake (North side of river)	IDFG	Several actively used ad hoc campsites, very visible from UPRR trail
48	RM 145	USFS	Beach, good boat access
51	Lane Beach	IDFG	Beach, easy boat access
52	Near east end of Killarney Lake	IDFG	Big sandy beach
54	Black Rock Gulch Beach	IDFG	Beach
55	Quarry Beach	IDFG	Beach, rope swing
58	East end of Black Rock Gulch Marsh	IDFG	Beach
NA	Upstream of entrance to Rainy Hill river access (south side of river)	IDFG	Beach
68	South of Mission Flats	Shoshone County	Beach, very visible from UPRR Trail

4.3.2 Stage 2 – Future Actions

Lower Basin Recreational Management Plan – For the latter years of the five-year plan, the TLG recommends that the Basin Commission encourage development of a Lower Basin recreational management plan/policy. Many agencies and entities, including BLM, IDFG, the CDA Tribe, ID Parks and Recreation, USFS, 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 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 once the use patterns of the Trail of the Coeur d’Alenes are established. Release of the AVISTA report is scheduled for March 2004.

4.4 Mine & Mill Sites

Priorities are proposed among mine and mill sites in the Upper Basin that pose risks of lead exposure to recreational users as well as impact water quality. The mine and mill sites that are listed in the ROD that cause concerns for water quality and human health exposure are:

- 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)

Given the current budget projections, EPA funding does not seem likely in the next few years for remedial actions at mine and mill sites in the upper Basin. Therefore, the TLG suggests focusing on developing remedial designs for those sites identified as priorities during this 5 year planning period. These sites will then be ready for implementation of remedial action when funding is available.

Criteria used to select the priority mine and mill sites were:

- 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 are proposed as priorities. The plans for these sites are described as follows:

- The TLG suggests doing the design for remedial action at the Upper and Lower Constitution tailings piles as the highest priority among mine and mill sites. In addition to reducing exposure of lead to recreational users, removing tailings from the floodplain will reduce the loading of metals to Pine Creek and contribute to the goal of habitat improvement. BLM has been doing removal actions at the site and could have funds available for portions of the remediation on federal land. The design will likely include partial capping in place coupled with excavation and disposal of some of the material in a local repository constructed above flood level. No disposal in a regional repository is anticipated. Ownership of the Upper and Lower Constitution sites include BLM and a private party. It is proposed that BLM begin the design. Additional funds from EPA or other sources would be needed to complete the overall design and plan. Concurrent with completion of the design, property ownership issues will be completed and implementation of the remedial action can be considered in annual work plans as funds become available.
- The second highest priority among the mine and mill sites is the Rex site due to its popularity for recreation, the potential risk of a catastrophic tailings dam failure, and water quality impacts to the upper reaches of the east fork of Nine Mile Creek. BLM is undertaking investigation and planning tailings dam stabilization efforts. In addition, BLM funds could be available for portions of the remediation. The TLG suggests completing the design work previously begun by IDEQ. No disposal in a regional repository is anticipated.
- The Golconda tailings and waste rock pile were selected as a priority for design due to its proximity to the Trail of the Coeur d'Alenes and the water quality impacts to the upper South Fork. Remediation of Golconda would require disposal of tailings dispersed along the steam banks in a regional repository.

- The Sisters waste rock pile is a priority for remediation because of its proximity to the Woodland Park residential community and the risks of lead exposure to children playing in the area. It is anticipated that the remediation will be straight forward and therefore does not require a long lead time for design.

5 ECOLOGICAL REMEDY IN THE UPPER BASIN

Ecological work in the Upper Basin described in the Record of Decision includes remediation identified for Nine Mile 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. Water treatment technology assessments and pilot tests are proposed for this 5-year plan. It is suggested that this planning period focus on developing the most cost-effective long-term solution to improving water quality from Canyon Creek.

A treatment technologies evaluation, underway by URS for EPA is scheduled to be completed in 2003. The evaluation which includes an engineering assessment and laboratory tests will inform the next steps toward developing a design for water treatment. Depending upon available funding, pilot tests in the field are anticipated in years 2004-2005. The outcomes of the pilot tests will be used to develop full-scale treatment designs. Additional technology development and pilot tests may be conducted as the technical evaluation moves forward. Consideration of hydrologic controls and innovative approaches to technology may be necessary to develop a cost-effective long-term solution.

EPA is the lead agency for the current work by URS. EPA will work collaboratively with IDEQ for planning and implementing future activities.

Fishery Habitat Improvements - Pine Creek is proposed by the TLG as the 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 agency 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. The TLG recommends cleanup in Denver Creek and the Upper and Lower Constitution tailings piles as the first priorities. The potential exists for BLM to contribute

funds to projects in the Pine Creek watershed if performed as joint-funded efforts along with Commission-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 Bureau of Land Management 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 a significant reduction in the sediment and metals load. The TLG recommends revisiting past planning efforts conducted for this drainage such as the proposal developed in 2002 through an EPA Watershed Initiative Grant Application. BLM and other agencies will continue to pursue other sources of funding and joint cooperative projects to continue the cleanup of mine wastes impacted Pine Creek until remedial action funding becomes available.

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 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 treating water from the Gem portal and 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 USFWS and funded by EPA.

6 ECOLOGICAL REMEDY IN THE LOWER BASIN

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 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 feels 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. The TLG has identified a set of actions to improve the understanding of the Lower Basin that are necessary to set the stage for cost-effective remediation in later years. These actions will be prioritized in the annual work plans.

As the lead agency for much of the work proposed in the Lower Basin, EPA envisions Interagency Agreements (IAG) with US Fish and Wildlife Service, Coeur d'Alene Tribe and the USGS to perform the tasks. IDEQ is the lead agency on the river bank stabilization demonstration project that is currently underway.

The TLG recommends tasking a PFT with the charge of drafting input to the next annual plan proposing an approach for conducting projects to answer technical questions and increase the level of certainty in our understanding of the natural processes of the Lower Basin. Developing this plan would be completed within the first year and the activities quickly commenced. With improved understanding, sound decisions on the most cost-effective designs and sequence of remedial actions can be made. When developing the plan for gathering necessary information, the PFT should give priority consideration to the projects suggested by the TLG during development of this 5-year plan. The projects proposed by the TLG are described below. The order of listing is not intended as a prioritization sequence.

- A pilot project converting agriculture land to wetland waterfowl habitat to evaluate effectiveness of various approaches and techniques. It is anticipated that federal settlement dollars could provides funds for this effort. This project should include an assessment and feasibility study to identify potential areas for conversion and techniques for soil preparation. This project is not directly linked or influenced by the hydrodynamics of the River system and therefore can be initiated independent of the development of a

comprehensive approach to guide work on the River system. US Fish and Wildlife Service will be the lead agency in guiding the assessment.

- A large scale soil amendment pilot project to reduce bioavailability of lead. This project would be based upon results of the prior IDEQ and US FWS 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 the Lake Coeur d'Alene.
- 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 USEPA, IDEQ, USGS, and University of Idaho. In response to the skepticism by some within the TLG 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 numerical model of the hydrodynamics of selected reaches within the Coeur d'Alene 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 is positioned to contribute funds and conduct the LiDAR (Light Detection And Ranging) survey as well as participate in the modeling effort in collaboration with the University of Idaho. This type of modeling could inform decisions on the areas and design of remediation of river banks, splays and riverbed sediments. The in-channel model may consist of a 1-dimensional or pseudo 2-dimensional model to evaluate the river system on a macro scale. A more refined model could be developed to examine specific reaches or specific designs for the banks and beds. An overbank floodplain flow and sediment routing model will allow predictions of the potential for recontamination and its extent. In addition it can serve as a tool 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 proposed 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 US Fish and Wildlife Service 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 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. 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 cleanup goal for lead in riparian soil for use in remedial actions. US Fish and Wildlife has begun this process through an interagency agreement with USEPA.
- Make full use of information from AVISTA studies which will help refine our understanding of hydrodynamic processes in the lower Basin and aid with prioritization of future remedial actions.

7 BASIN-WIDE ENVIRONMENTAL MONITORING PROGRAM (BEMP)

The TLG proposes initiating a long-term Basin environmental monitoring program (BEMP) developed by EPA working collaboratively with the TLG, CCC, and Basin regulatory stakeholders. The ROD calls for such a monitoring plan and is necessary for successful implementation and evaluation of the remedies. The proposed monitoring program will provide data relative to the following Basin-wide monitoring objectives:

- Assess long-term status and trends of surface water, soil, sediment, and biological resource conditions in the Basin.
- Evaluate the effectiveness of the Selected Remedy.
- Evaluate progress toward cleanup benchmarks.
- Provide data for CERCLA-required five-year reviews of the progress on remedy implementation.
- Improve understanding of Basin processes and variability to in turn improve the effectiveness and efficiency of subsequent remedial action implementation.

To maximize the value of the resulting data, sentinel and benchmark surface water locations are proposed with different sampling frequencies and analytical protocols. Basin-wide monitoring data will be integrated with data collected within the Box, Coeur d'Alene Lake, and remedial action-specific effectiveness monitoring data to gain a better understanding of Basin conditions and how to improve the cleanup effort.

The BEMP currently being drafted incorporates sentinel locations that will be sampled eight times annually with analysis for the complete suite of selected analytes. Sentinel locations were selected to provide information on Basin-wide conditions and mass balances of metals, nutrients and sediment loading and include Elizabeth Park, South Fork at Pinehurst, South Fork at Smeltonville, North Fork at Enaville, Coeur d'Alene River at Harrison, St. Joe River at its mouth, and Spokane River at the Lake outlet.

Benchmark locations have been identified to complement the monitoring of the sentinel stations for analysis of trends in water quality. Benchmark locations will be sampled once each year at low flow with analysis for dissolved metals. At five-year intervals the benchmark locations will be monitored according to the protocol of a sentinel location. Benchmark locations include an Upper South Fork site above Mullen, mouth of Canyon Creek, mouth of Ninemile Creek, upper E. Fork of Ninemile Creek, Lower E. Fork of Ninemile Creek, Pine Creek below Amy Gulch, South Fork at Cataldo, and the Spokane River at the State line.

The TLG and CCC reviewed a working draft of the BEMP in April 2003. Monitoring PFT meetings were held in April and July to further discuss revisions to the draft BEMP. EPA is revising the draft monitoring plan to address changes and to reconcile desired monitoring activities with available funding. The BEMP monitoring is funded with remedial action monies (and will accordingly require state match). Pending completion of the BEMP plan and State Superfund Contract, implementation of the BEMP is anticipated to begin in 2004.

8 LAKE COEUR D'ALENE STUDY PROGRAM

The three year program for collecting routine water quality data, further studying the fate and transport of metals in water and sediments in the Lake and gathering data on baseline levels of metal concentrations in fish and waterfowl began in 2003 will be continued per the approved 3-year study plan. This study is funded in part through Clean Water Act Grants and funds from the United States Geological Survey and US Fish and Wildlife Service as well as in-kind services from the Coeur d'Alene Tribe.

9. LAKE MANAGEMENT PLAN ACTIVITIES

Activities from the Lake Management Plan (LMP) may be incorporated into future addendums, as necessary, to the 5-year proposed plan and annual work plan per direction from the Commission as described in Section 2. At a minimum, it is envisioned that the LMP will identify management actions and a monitoring protocol. Independent of the LMP the project of Lake Education and Information will continue as approved by the Basin Commission in March 2003.