New World Mining District Response and Restoration Project

PROJECT SUMMARY 2004

United States Department of Agriculture
Forest Service
Northern Region
Gallatin National Forest

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PROJECT SUMMARY
2004
NEW WORLD MINING DISTRICT
RESPONSE AND RESTORATION PROJECT

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INTRODUCTION

The New World Mining District (District) Response and Restoration Project officially began when the USDA Forest Service submitted an implementation plan to the State of Montana on January 22, 1999. Since that time, the Forest Service has engaged in a number of activities including collecting environmental and engineering data to better understand the site, further investigate portions of the District that were not well understood, and design and construct cleanup actions for the highest priority sites in the District.

Because a considerable amount of work has been done since the project was initiated by the USDA Forest Service in 1999, this Project Summary document, which was first distributed in the fall of 2000 and updated annually, is being updated to keep people abreast of on-going project activities. As with the 2003 Project Summary, this Project Summary focuses on project cleanup activities. Previous summary documents presented the project's history, mining-related problems, legal considerations, and cleanup process.

PROJECT SETTING

The District, which includes a mixture of National Forest and private lands, is a historic metals mining area located in the general vicinity of Cooke City, Montana, in the Beartooth Mountains. The historic mining district is centered northeast of Yellowstone National Park, and contains hard rock mining wastes and acid discharges that impact human health and the environment. Human health and environmental issues are related to elevated levels of heavy metals present in mine waste piles, open pits, acidic water discharging from mine openings, and stream sediments. Cleanup work is challenging in this harsh, mountainous environment due to a severe climate, short construction season, and large amount of snowfall that the District receives.

The 40 square mile District is located at an elevation that ranges from 7,900 feet to over

See Figure 1 for Project Location (p.2)

10,400 feet above sea level, and is snow-covered for much of the year. Historic mining disturbances affect about 65 acres with the largest disturbances attributed to the McLaren Pit (12 acres) and the McLaren Tailings (11 acres). The Glengarry Adit and the nearby Como Basin (5.5 acres) are the other major source areas in the District that contribute pollutants to headwater streams.

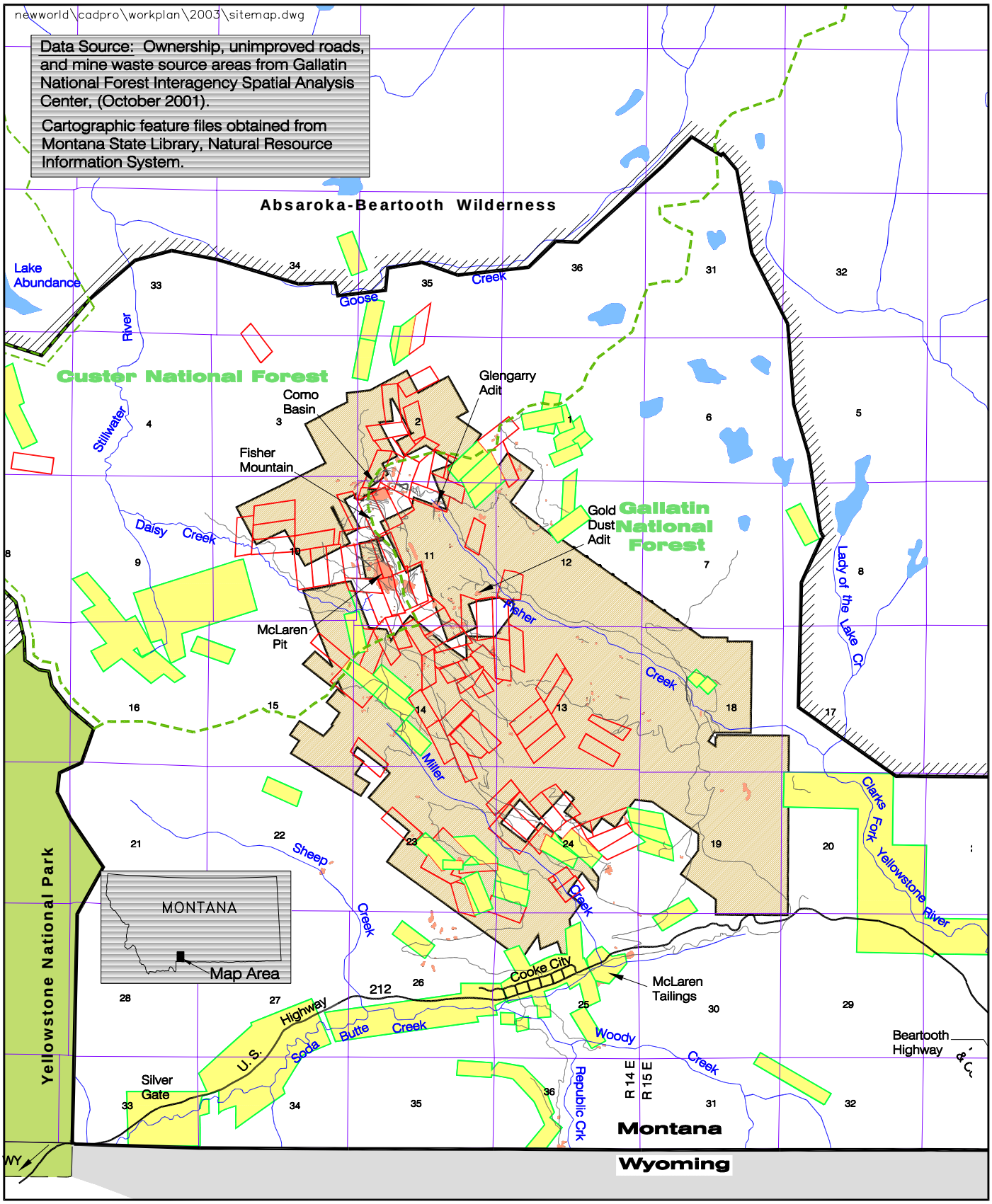
The District is situated at the headwaters of three river systems that all eventually flow into the Yellowstone River. These rivers include the Clark's Fork of the Yellowstone, the Stillwater, and the Lamar. The Lamar River flows through Yellowstone Park. The major tributary streams affected by mining disturbances within the District include Daisy, Miller, Fisher, and Soda Butte creeks.

PROJECT RESOURCES

Maps of the project site, previous Project Summaries, and numerous technical documents concerning the site are available at the project website and at information repositories located in Cooke City at the Chamber of Commerce office, in Gardiner at the Forest Service's Gardiner Ranger District office, and in Bozeman at the Gallatin National Forest Supervisor's Office. We encourage you to investigate these information sources to gain a more complete and detailed understanding of the New World Mining District Response and Restoration Project.

Visit our project website
for additional project information,
project documents, and current activities.

http://www.fs.fed.us/r1/gallatin



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Project Vicinity Map
New World Mining District
Response and Restoration Project
Cooke City Area, Montana
FIGURE 1

CLEANUP APPROACH

The USDA Forest Service is the lead agency responsible for implementing the cleanup of mining related impacts in the District. Other state and federal agencies are cooperating with the effort, including the U.S. Department of Interior (DOI), the Environmental Protection Agency (EPA), and the Montana Department of Environmental Quality (DEQ). Numerous interested parties are also actively involved in following project activities and providing comments to the Forest Service. These groups include the Beartooth Alliance, Greater Yellowstone Coalition, Park County Environmental Council, Northern Plains Resource Council, and numerous other concerned citizens and environmental groups.

The USDA Forest Service uses their authority granted under the Comprehensive Environmental Response, Compensation, and Liability Act (the Superfund enabling law) to proceed with the cleanup. Following EPA guidance, the Forest Service follows the Non-Time-Critical Removal Action process to implement the cleanup.

The overall goal for cleanup is to improve water quality in the District to the highest quality possible, and reduce or eliminate risks to people and the environment from historic mining impacts. The general strategy the USDA Forest Service is using on this project is to mitigate the readily identifiable solid waste sources as a first phase of cleanup. This is followed by a second phase that addresses problems associated with the more difficult mine discharges.

To support activities that occur each year of the project, the USDA Forest Service has prepared annual work plans since 1999. The annual work plans specifically identify the work that is proposed each year. Recognizing that this project also involves restoration, the Forest Service integrates restoration elements within the cleanup process by including restoration in the overall strategy, where possible, for each of the cleanup projects undertaken.

A brief description of the approach used for cleanp follows:

PRIORITIZING AND EVALUATING MINE WASTE SOURCES

One of the key parts of the cleanup evaluation was ranking the mine waste sites in the District using a modified hazard ranking system developed by the Montana DEQ. This system, the Abandoned and Inactive Mine Scoring System, or AIMSS, uses site specific data to evaluate the risk of pollution from mine waste sources via four pathways: groundwater, surface water, direct contact, and air. About 50 site variables, including the results obtained from sampling the waste materials, are input to the scoring system to determine both individual pathway scores and a total score. Higher weights are ascribed to the following: observed releases to groundwater and surface water, especially where an exceedance of a standard is documented; sources that are closer to a population base; and, higher contaminant concentrations, large contaminant quantities, and/or large areas of disturbance. Results of the AIMSS scoring have been presented in numerous project documents including the *Selective Source Response Action Engineering Evaluation/Cost Analysis*.

Using the goals and objectives outlined in the consent decree, and the results of the AIMSS ranking, higher priority sites are waste sources that are in direct contact with surface water or groundwater, or that have discharges that impact water quality or human health. There are a number of District waste sites that fall into this category, such as the McLaren Pit, McLaren Adit, Como Basin, and Glengarry Adit. Waste sources that are relatively benign will be considered, but it is likely that only minor work would be involved with cleanup of the lowest ranked sites, if at all.

The consent decree and settlement agreement require that funds for this project be first expended on cleanup of mining wastes present on "District Property." District Property is defined in the consent decree as all property or interests in property that the mining company relinquished to the U.S. Government. The McLaren Pit and Glengarry Adit sites, for example, are District Property. The McLaren Tailings site, on the other

hand, is a non-District Property. Non-District Property cannot be cleaned up until the Notice of District Property Work Completion (Notice) from the federal government and the State of Montana are received. However, the USDA Forest Service has included non-District Property in the assessment phase of the project. The agency cooperators are involved in obtaining additional funding to cleanup non-District Property wastes.

ENGINEERING DESIGN AND CLEANUP CONSTRUCTION

Due primarily to weather limitations, cleanup construction in the District must be done during the short field season from mid-June to mid-October. Because of this, the USDA Forest Service has broken the cleanup into smaller projects that can be constructed in one to two seasons. To this end, cleanup actions are evaluated each fall/winter/spring in a Superfund document called an Engineering Evaluation/Cost Analysis (EE/CA).

Using the AIMSS list as a starting point, source area characteristics are appraised and cleanup alternatives are developed to mitigate site-specific problems. This is described in an EE/CA, and involves taking a comprehensive look at site characteristics and human health and environmental risks, and then follows an established process of screening relevant response options, developing response alternatives, and evaluating alternatives in detail.

Reclaimed Rommel Tailings Site - August 2003

The detailed analysis of alternatives weighs the expected results of an alternative against seven criteria including overall protection of human health and the environment, compliance with laws and regulations, long- and short-term effectiveness, implementability, cost, and others. After weighing the pros and cons of a number of alternatives, the Forest Service selects a preferred alternative and issues the EE/CA to the public to solicit comments. Significant comments are addressed in a final EE/CA and a decision document, called an Action Memorandum, is issued. EE/CAs have been prepared annually for the project since 1999.

PROJECT ACTIVITIES

In March 1999, the Forest Service initiated the planning process for the project. Planning documents were in place in June 1999, and work began with the monitoring of surface water and groundwater quality at selected monitoring points. A list of activities that have been conducted to date is provided below.

- Prioritized mine waste sources in the District.
- Established a database management system for the project.
- Cataloged existing information available for the site and completed a technical evaluation of existing data.
- Developed a suitable basemap to support engineering design.
- Obtained data to fill identified data gaps for proposed response actions at the site.
- Identified unrecorded cultural features.
- Conducted geochemical sampling of mine wastes throughout the District.
- Improved portions of the Daisy Pass and Lulu Pass roads to accommodate construction traffic.
- Evaluated areas of erosion contributing excessive sediment to area drainages.
- Completed a repository siting evaluation report and collected hydrogeologic data on two prospective repository sites.

- Completed a U.S. Geological Survey led surface water tracer study on Daisy Creek and MillerCreek to determine surface water inputs of metal contaminants.
- Prepared EE/CAs for the following Response Actions: Selective mine waste sources in Fisher Creek; the McLaren Pit; the Como Basin, GlengarryAdit, and remaining sources in Fisher Creek; and, mine waste sources in the Miller Creek drainage.
- Cleaned up selective waste dumps and placing wastes in an engineered repository for the Selective Source Response Action.
- Reopened the Glengarry Adit and Como Raise to more fully characterize underground sources of water within the mine.
- Reopened and investigated water sources discharging from the McLaren Mine.
- Grouted a borehole in the McLaren Mine to eliminate water from entering the mine from the borehole.
- Completed construction of the preferred Response Action for the McLaren Pit.
- Evaluated water quality treatment alternatives for acid mine discharges.
- Investigated soils impacted by metals on National Forest System lands in the vicinity of the Republic Smelter.
- Monitored revegetation success at dumps reclaimed in 2001.
- Initiated construction of the preferred Response Action for the Glengarry Adit.
- Monitored surface water and groundwater quality several times each year at numerous sites throughout the District.

All of the activities completed have been documented in work plans, reports, or technical memoranda, and have been issued to DOI, DEQ, EPA, and the public for review and comment.

CLEANUP ACTIVITIES

Numerous cleanup activities have been conducted to prepare for or to complete cleanup at prioritized sites. These activities and projects are described below.

REPOSITORY STUDY

One of the first priorities established by the project team was to identify a central repository site that could be used to isolate mining wastes that could not be reclaimed in-situ. The initial (Phase I) repository siting evaluation examined locations able to contain a minimum of 500,000 cubic yards of waste material, or approximately 810,000 tons.

Phase I was conducted in March through July 1999, and used existing technical information available from previous investigations to identify sites with physical and environmental characteristics that would be suitable for disposal of mining wastes. The data evaluated included groundwater, surface

Selective Source Repository - June 2004

water, geology, soil, geotechnical, vegetation, and other environmental information. Phase II was conducted from July 1999 through September 2000, and involved collecting site-specific data at the highest ranked sites determined in the Phase I evaluation.

The SB-4B site, which is located east of the Lulu Pass Road about 0.5 miles north of Highway 212, ranked the highest of the 28 sites evaluated. Evaluation criteria included: location of major faults; geologic setting; steepness of slopes; avalanche potential; precipitation and snowfall; and, access using existing roads. One of the key characteristics of the SB-4B site is the presence of a relatively thick surface deposit of glacial till, which is preferred to bedrock or alluvium because of its lower permeability and because it can be salvaged and used in repository construction. The amount of fine-grained material in the till results in relatively low horizontal and vertical hydraulic conductivity, two characteristics important in limiting the movement of leachate that could potentially migrate below a repository facility.

ROAD IMPROVEMENTS

To support cleanup construction, the Forest Service initiated a road improvement project in 1999 to enhance the two major roads in the District. Improvements to the Daisy Pass and Lulu Pass roads primarily involved regrading the road surface, improving drainage, and bringing in gravel surfacing to cover numerous soft spots in the road. In 2000, major road improvements were completed with the construction of two bridges on the Lulu Pass Road. The first bridge replaces the existing low water crossing of Fisher Creek. The second spans Polar Star Creek, a tributary to Fisher Creek just below the Glengarry Dump.

SELECTIVE SOURCE RESPONSE ACTION

Using the AIMSS list as a starting point, source area characteristics were appraised and an initial cleanup project was proposed in 1999. The first draft of the Selective Source Response Action EE/CA, which targeted removal of nine waste dumps impacting surface water in the Fisher Creek headwaters, was written, and the preferred alternative (waste removal to the SB-4B repository site) was selected. As a result of public comment, however, the 1999 cleanup work was delayed so that more groundwater quality and flow information could be collected at the repository site.

Following an additional year of collecting data at the SB-4B repository site, the Selective Source Response Action EE/CA was re-released to the public in 2000, and the preferred alternative re-selected. An engineering design package was prepared in the fall of 2000 which detailed reclamation plans for the selected sites, and presented plans and specifications for the construction of a repository with a bottom liner, leachate collection system, and a double-lined capping system.

The Selective Source Response Action was initiated in 2001 and was completed in 2002. This initial cleanup project involved removing approximately 32,000 cubic yards of mine waste rock and mill tailings from nine mine waste areas, disposing of these wastes in the SB-4B repository, and revegetating about 4.6 acres of the former waste areas. The waste sites cleaned up represent about 9% of the total acreage and 8% of the total volume of waste on District Property. The repository is designed for expansion, and it is planned to be reopened in 2005 or 2006 to dispose of additional wastes remaining in the District.

This initial cleanup project involved removing approximately 32,000 cubic yards of mine waste rock and mill tailings from nine mine waste areas….

The major components of repository construction involved development of a rock quarry, construction of a 12,000 cubic meter rock toe buttress, installation of a one hectare bottom liner system with toe drains and sump, and installation of temporary and permanent cover systems. Due to difficulties involved with construction and the short construction season, temporary measures used to winterize the construction site in 2001 could not prevent spring runoff from wetting the waste placed

in the repository, which resulted in the repository sump filling with water in the spring of 2002. Water that has accumulated in the sump since 2002 has been disposed on-site as snow (about 11,000 gallons) and at the Cody, Wyoming, sewage treatment lagoon (about 80,000 gallons). Additional water is expected to accumulate in the repository in the future, but this water will diminish in volume after the repository is permanently closed.

Water quality improvements in tributaries draining the former waste areas are expected from this action, although improvements are likely to be gradual from this action alone and later augmented by additional work that is planned for the Fisher Creek drainage. Water quality will continue to be monitored at select stations downstream of the reclaimed sites to document changes in water quality.

MCLAREN PIT RESPONSE ACTION

Planning and preparation for the McLaren Pit Response Action began in 1999. A considerable amount of environmental and engineering data was needed, and the 2000 field season was the time when most of these data were collected. The USGS, working under an agreement with the Forest Service, conducted an ionic tracer study of metals loading in Daisy Creek in 2000, and the Forest Service's primary contractor, Maxim Technologies, Inc., collected data in the McLaren Pit that would support the preparation of an EE/CA. Hydrologic and metals loading models were completed with these data, indicating that the McLaren Pit contributed from 20% to 50% of the metals load in Daisy Creek. With the results of these studies substantially complete in the fall of 2000, a draft of the McLaren Pit Response Action EE/CA was prepared and released to the public in May 2001.

McLaren Pit Liner Construction - August 2003

McLaren Pit Liner Construction - September 2003

An engineering design and construction package for the McLaren Pit response action was completed in March 2002. The design involved capping about 11 acres of the pit with a geomembrane, covering the geomembrane with a drainage layer and soil, and constructing runon and runoff channels to convey water off of the capped wastes. The project was initiated in 2002, with construction of the multi-layered cover completed by October 2003.

Cleanup of the McLaren Pit involved consolidation of waste rock from dumps in the Daisy Creek headwaters into the McLaren Pit, and capping of the consolidated wastes with an impermeable cap. The scope of the McLaren Pit Response Action is limited to reducing or eliminating uncontrolled releases of metals from mine waste material in the Daisy Creek headwaters. By addressing releases from mine wastes in the McLaren Pit and nearby mine dumps, some reduction in contaminant concentrations are expected in surface water and groundwater, along with an overall reduction in sediment production from the site.

Waste dumps consolidated in the pit included the McLaren Pit spoils (wastes formerly located below the county road and west of the pit) and the multicolor dump. Approximately 24,000 cubic

yards of waste rock were consolidated from these two dumps.

COMO BASIN/GLENGARRY ADIT/ FISHER CREEK RESPONSE ACTION

The Glengarry Mine has been targeted for rehabilitation since the inception of the Response and Restoration Project because it is one of the principal sources of metals loading in the headwaters of Fisher Creek. The mine discharges 23 to 57 gallons per minute (gpm) of low pH, iron- zinc, and copper-bearing water directly into Fisher Creek.

Construction cleanup work for the Glengarry/Como Basin/Fisher Creek source areas was initiated in 2003 and will likely take two to three years to complete.

The Glengarry Mine consists of 3,060 feet of drifting and two nearly vertical raises. One of the raises extends 425 feet upward and surfaces in the Como Basin at the foot of the north flank of Fisher Mountain. The top of this raise passes through the Meagher Limestone formation, and a massive sulfide deposit hosted in the Meagher.

The Glengarry Tunnel was reopened to assess underground conditions in the fall of 2000. During this phase of reopening and assessment, accumulated debris and ferricrete mud two to five feet deep were removed from the tunnel beginning at the portal and extending back to a "Y" intersection 1,540 feet in from the portal. In 2001, the raise that extended to the near-surface in the Como Basin was reopened and repaired down to a depth of 215 feet, well below the base of the Meagher Limestone. Three short horizontal workings were encountered in the Meagher and water inflows were measured and sampled.

Water flowing into the Glengarry Mine comes from essentially three point sources and one diffuse source. The point sources are the Como raise, the first raise, and a roof leak at 1,050 feet in from the portal of the adit. Diffuse roof leaks were observed primarily in the first 1,200 feet in porphyritic rock.

Load analysis shows that the vast majority of loading into the adit comes from the raises and the 1050 roof leak, and not the diffuse roof leaks. Comparison of loading sources shows that the Glengarry Tunnel receives several orders of magnitude more copper from the top of the Como raise than from all the other in-flow sources combined. The raises also contribute more manganese load as well. The 1050 roof leak contributes more arsenic, aluminum, and cadmium load than the raises. In addition, the two raises and the 1050 roof leak each contribute at least an order of magnitude more iron than do the diffuse roof leaks. Comparison of the percent contribution of inflows, relative to outflow, shows that roughly equal loads of iron, lead, and zinc are released by the raises and the 1050 roof leak. These results clearly show that control of discharge from the Como raises and the 1050 roof leak are most important in reducing contaminant loading from the Glengarry Adit to Fisher Creek.

A Draft EE/CA was released to the public in June 2002 that evaluates response action alternatives to address mining impacts from the Glengarry Adit, the Como Basin, and remaining mine waste dumps in the Fisher Creek drainage. The EE/CA was structured around each of these three source areas. Response Action alternatives were developed for each of the three source areas to specifically address human health and environmental problems.

The preferred alternative for the Glengarry Adit involves grouting and backfilling the Como raise, grouting the 1050 roof leak, and partially backfilling the drift. For the Como Basin, the preferred alternative involves capping unconsolidated and disturbed materials in the basin with a geomembrane. For mine dumps in upper Fisher Creek, removing the two largest waste rock dumps (the Glengarry and Gold Dust) to the Selective Source repository, and implementing run-on and runoff controls at the remaining dumps that pose potential sediment and erosion issues were selected as the preferred alternative for this source area.

Como Raise Grouting Operation - August 2003

MILLER CREEK RESPONSE ACTION

An EE/CA for sources located on District Property in the Miller Creek drainage was completed in June 2003 and released to the public for comment. This EE/CA evaluates response options and technologies to mitigate potential impacts from mine waste areas that contribute to surface water quality degradation.

The preferred alternative for the Miller Creek response action is removal of two of the larger dumps in the drainage to the Selective Source repository, and implementing surface water controls at several other dumps. The remaining mine waste dumps in the Miller Creek drainage appear to contribute little in the way of impacts to water quality. The dumps planned for removal are the Black Warrior and Little Daisy.

The Black Warrior dump is the only human health risk identified in the Miller Creek drainage. It contains about 22% of the total mine waste on District Property in the drainage. At the Little Daisy Mine, waste rock sits at the mouth of the adit, and discharge from the adit flows through the dump. The flow continues in the subsurface beneath shallow colluvial and talus material below the mine site but the water does not obviously come to surface further downslope. The Little Daisy dump is comparable in size to the Black Warrior, containing about 24% of the total waste on District Property in Miller Creek. Removing these two dumps to the repository eliminates 46% of the total volume of waste rock present in Miller Creek. Impacts to surface water from the Little Daisy Mine outflow and waste rock could not be detected by a synoptic sampling study completed by the USGS in Miller Creek.

Elsewhere, environmental risks appear to be associated with mine waste that is in contact with surface water and/or groundwater. This is the case at only four dumps, while remaining waste dumps in the drainage lie topographically well above the valley bottom, in mostly dry locations, and present no risk to human health and little threat to surface or groundwater quality (except for brief periods during active precipitation or snowmelt).

NATURAL RESOURCES RESTORATION

In addition to alternatives related to mine waste dumps in the Miller Creek drainage, the Miller Creek EE/CA examined restoration actions to respond to impacts to natural resources that are related to sediment contamination derived from roadways throughout the district. Areas of known and potential acid production and other areas of anomalous metal concentrations in soil and bedrock represent significant sources of contamination, which are exacerbated by surface disturbances such as roads that expose these materials to ongoing erosion both on roadbeds and cut and fill slopes. Many of these roads were historically developed to access the numerous mines and prospects in the District. Sediments derived from roads impact surface water quality as well as aquatic habitat, and reducing sediment derived from roads will improve water quality. Another natural resource restoration issue considered in the Miller Creek EE/CA is the replacement of damaged wetlands in front of the portal of the Glengarry Adit in Fisher Creek. These two items, along with cleanup of mining-related solid waste at the Cumberland Barrel Dump in Miller Creek, are considered ancillary actions to the preferred Miller Creek Response Action alternative.

ADIT DISCHARCE RESPONSE ACTION

Response Actions associated with adit discharges in the District will be evaluated in a separate EE/CA in 2004. There are 25 discharging adits in the District (including the Glengarry), and the likely response actions that would treat or eliminate these discharges are similar. The EE/CA will address risks to water quality from any remaining discharges by evaluating potential treatment scenarios and potential load reductions that might be realized. The result of the EE/CA will be a preferred alternative(s) to address impacts from these discharges to water quality.

The Forest Service took an initial look at feasible water quality treatment alternatives, and has identified one potential passive treatment approach that may be applicable to these mine discharge sources. This approach involves building a treatment cell filled with organic and nutrient substrates, burying the cell to eliminate oxygen, and routing mine drainage through the buried cell.

In anticipation of evaluating potential alternatives for this EE/CA, the USDA Forest Service is evaluating grouting technologies in two of the accessible adits, the McLaren and the Gold Dust. Both contain exploratory boreholes that are sources of water to the underground workings. A single borehole in the McLaren Adit at a distance of 366 feet in from the portal contributed more than 70% of the copper load measured in water discharging from the portal. This borehole was grouted shut in 2003. Several boreholes present in the Gold Dust workings may be grouted in 2004 to determine the effectiveness of this technology in reducing adit discharge flows and associated metals loading.

McLaren Mine Adit

MCLAREN MILLSITE AND REPUBLIC SMELTER

These two sites are on non-District Property located adjacent to Soda Butte Creek near Cooke City. The sites are located on National Forest System (NFS) and private land and contain waste rock, concentrate, smelter waste, and metals contaminated soil that could potentially impact human health and the environment. The USDA Forest Service and the Montana DEQ conducted previous investigations at the sites in 1999, 2000, and 2002. At the McLaren Millsite, laboratory analysis of soil samples collected from mine waste show arsenic levels ranging between 8 and 46 milligrams per kilogram (mg/kg), copper between 170 and 5,770 mg/kg, and lead between 74 and 269 mg/kg. Soil pH was extremely acidic, ranging between 1.9 and 3.0 standard units (s.u.). Analytical results for native soil underlying mine waste indicate that native soil has much lower concentrations of arsenic, lead, and copper. The estimated volume of mine waste on NFS lands was calculated as about 8,520 cubic yards.

Runoff discharging from the site during two thunderstorm events was sampled in 2003, along with samples collected from Soda Butte Creek upstream and downstream of where runoff entered the creek. Results of these sampling events demonstrated that impacts to Soda Butte Creek water quality are measurable. Aluminum, copper, iron, and manganese concentrations were one to two orders of magnitude higher in Soda Butte Creek downstream of the runoff discharge point, which was high enough to exceed the acute aquatic standard for aluminum and copper and the chronic standard for iron. A noticeable decrease in pH, bicarbonate, and carbonate were also noted in the downstream sample, along with increases in specific conductance, total dissolved and suspended solids, and sulfate.

Investigations of the Great Republic Smelter site by the USDA Forest Service and the Montana DEQ indicate that about 100 cubic yards of the total 3,250 cubic yards of waste present at the site lies on NFS lands. Metal contaminants in soil surrounding the smelter site contained concentrations of lead in soil exceeding the project human health guideline for recreational use (1,100 milligrams per kilogram).

Using funding and resources separate from the New World Response and Restoration project, the USDA Forest Service completed an EE/CA that was released to the public in February 2004. The preferred alternative is total removal of wastes and contaminated soils from NFS lands at both sites to the Selective Source repository. This cleanup work, while contingent on receiving funding from the USDA for the project, would be planned and executed to coincide with removals of the Fisher Creek and Miller Creek dumps. Because the USDA Forest Service has no regulatory authority to address the waste on private land, the Montana DEQ has developed separate EE/CAs for each site that addresses mine waste on private land.

CLEANUP ACTIVITIES PLANNED FOR 2004

The following work activities are planned for the 2004 field and construction season:

- Maintain community relations.
- Maintain project database and Website. Continue long-term monitoring of surface water and groundwater.
- Monitor water quality at supplemental surface water, adit locations, and the repository sump.
- Monitor water quality in stream reaches below the McLaren Pit and Glengarry Adit construction areas.
- Monitor reclamation success at the McLaren Pit.
- Complete construction of the Glengarry Adit Response Action.
- Construct Fisher and Miller Creek Surface Controls.
- Complete Response Action construction package for cleanup of the Como Basin and expansion of the Selective Source repository.
- Prepare an Adit Discharge Response Action EE/CA.
- Grout exploration boreholes in the Gold Dust Adit.
- Characterize the distribution of sediment in Fisher and Daisy creeks.
- Ferricrete study.
- Grizzly bear study.
- Stillwater Marsh study.
- Initiate the process to list the District on the National Register of Historic Places.
- Prepare 2005/2006 Work Plan.

CLEANUP TIMETABLE

Table 1 shows the timetable for completed and planned cleanup projects. The first year shown, 2001, is the first year of actual cleanup work. Work completed in 1999 and 2000 focused on assessment of environmental impacts, road improvements, and planning and preparation for cleanup. As shown in the table, project work on District Property is expected to be completed by 2007 with monitoring continuing for several years. Remaining work on Non-District Property (Table 1) is contingent on receipt of a Notice of District Property Work Completion from the United States and the State of Montana, as well as availability of funding for cleanup.

The timetable presented in Table 1 may require modification as the project proceeds, as the schedule may be affected by a variety of factors including, but not limited to, weather conditions, availability of materials, equipment, and/or supplies, contract administration delays, or contract appeals. A delay on one project in one year may also lead to delays in other projects shown in Table 1, as most of the cleanup activities planned for future years are either contingent upon the completion of other cleanup activities or have to be done in conjunction with other cleanup activities.

PROJECT CLOSURE

Long-term monitoring plans were developed to evaluate the beneficial effects of cleanup on surface water quality and effectiveness of revegetation establishment. With these monitoring plans in place, the USDA Forest Service can evaluate the results of the yearly cleanup projects in terms of both water quality and erosion protection, and then assess what additional actions will be necessary as the project proceeds. Once District Property wastes are cleaned up to the extent practicable, and a Notice of District Property Work Completion is received, remaining funds can be spent on non-District Property waste sites.

Reclaimed Lower Tredennic Site - August 2003

TABLE 1
CLEANUP TIMETABLE
New World Mining District Response and Restoration Project

YEAR	PROJECT	NOTES
2001	Selective Source Response Action	Removal of waste from eight sites
2002	McLaren initial year	Construction of waste rock consolidation and drainage controls
	Monitoring and Maintenance	Surface water, groundwater, revegetation; Selective Source Repository sump repair
2003	McLaren second year	Complete waste regrading; construct cover system
	Glengarry Adit initial year	Grout Como Raise; prepare Glengarry tunnel for grouting and backfilling
	Monitoring and Maintenance	Surface water, groundwater, revegetation monitoring; as necessary maintenance
2004	Glengarry Adit second year	Install plugs and cemented fill
	Fisher and Miller Creek Source Controls	Regrade and revegetate waste rock dumps at eight sites
	Monitoring and Maintenance	Surface water, groundwater, revegetation monitoring; as necessary maintenance
2005 known projects	Como Basin Cap and Cover – first year construction	Cap and cover disturbed and metals-enriched soil materials in-situ
	Fisher and Miller Creek Dump Removals – first year construction	Glengarry, Gold Dust, Black Warrior, and Little Daisy dumps
	Selective Source Repository Expansion and Final Closure – first year construction	Fisher and Miller Creek Dumps
	Lulu Pass Road Reclamation – first year construction	To be done in conjunction with Como Basin Response Action
	Monitoring and Maintenance	Surface water, groundwater, revegetation monitoring; as necessary maintenance
2005 potential projects	McLaren Mill Site Removal	National Forest System Land only (cleanup funds outside Consent Decree)
	Republic Smelter Removal	National Forest System Land only (cleanup funds outside Consent Decree)
2006	Como Basin/Lulu Pass and Selective Source Repository – second year construction	Remaining construction
	Adit Discharge Response Action	Evaluation of cleanup alternatives for 25 remaining discharging adits in the District
	District-Wide Monitoring and Maintenance	Surface water, groundwater, revegetation monitoring; as necessary maintenance
2007	District-Wide Monitoring and Maintenance	Surface water, groundwater, revegetation monitoring; as necessary maintenance
Contingent	Remaining Non-District Property	Response Actions Following receipt of Notice of District Property Completion