



Colorado Department
of Public Health
and Environment

Colorado CERCLA Program

Annual Report:
The History, Status and Long-Term Funding Needs of the
Colorado CERCLA Program

December 2013



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**Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
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This Annual Report (2012-2013) by the Colorado Department of Public Health and Environment (the department) documents the status of cleanup at Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund) sites, and presents information about current and future funding needs for the program. Appendix A contains narratives for each of the Superfund sites, including information on the progress of cleanups, future state funding needs for construction and operation and maintenance, and schedules for deleting the sites from the National Priorities List.

Federal/State Statutory and Other Authority

The department possesses authority under the following statutes to participate in the cleanup of Superfund sites in Colorado:

- Comprehensive Environmental Response, Compensation and Liability Act 42, U.S.C. Secs. 9601 to 9675 (1988);

- Colorado Hazardous Waste Management Act, Secs. 25-15-301 to 313 (1998); State Hazardous Waste Sites, Secs. 25-16-101 to 201 (1998); other state and federal public health and environmental statutes.

The department's mission in this program is to protect public health and the environment by cleaning up sites that are contaminated with hazardous substances in a cost-effective and timely manner. This is accomplished through proper remedy selection and by recovering costs from responsible parties, whenever appropriate and possible. The department seeks out and values the opinions of local communities and public officials in the decision-making process ensuring that selected remedies are acceptable to the affected stakeholders.



Nelson Tunnel / Commodore Mine Superfund site.

SUPERFUND PROCESS & THE LONG BILL

The Superfund process is a multi-phased process. It begins with site characterization (the remedial investigation phase), to selecting and evaluating appropriate clean-up options (the feasibility study and record of decision), to design of the remedy and, finally, to construction of the remedy. After construction is complete, and the cleanup has achieved the desired goals, the site can be deleted from the National Priorities List. There may be a requirement for continuing operation and maintenance of the remedy after construction has been completed.

State and federal roles vary, depending on the type of site. For sites with viable responsible parties, the department generally acts as a support agency to the U.S. Environmental Protection Agency (EPA), overseeing the site cleanup. Cleanup costs are funded by the responsible parties whenever possible. If there is no viable responsible party, EPA and the department share cleanup costs under a 90 percent/10 percent cost-sharing arrangement. Sites where the government pays for the cleanup are called “fund-lead,” and portions of sites funded by the government (where the remainder of the cleanup is

funded by responsible parties) are called “orphan shares.” The department can take either a lead or support role on these sites.

For sites that the federal government owns, the department acts as a support agency providing regulatory oversight to either the Department of Energy or the Department of Defense, implementing site cleanup. The federal government pays for all of the cleanup and oversight costs. For the Rocky Mountain Arsenal, department oversight costs initially are paid by the state Hazardous Substance Response Fund and then are recovered from the U.S. Army and Shell Oil Company and returned to the fund.

For natural resource damage sites, the department acts as oversight agency to the responsible party. A similar process blueprint is followed. The responsible party pays for all cleanup and oversight costs. Natural resource damage sites may or may not be listed on the National Priorities List of Superfund sites.

Superfund and the Long Bill

The department’s Hazardous Materials and Waste Management Division (the division) is the implementing agency for the Superfund program within Colorado. Because of the multifaceted and long-term nature of Superfund cleanups, appropriations for the Superfund program appear in a variety of ways within the division’s annual appropriations bill.

Most operating budget expenditures are appropriated, using Hazardous Substance Response Fund cash funds and federal funds, within the Contaminated Site Cleanups line item group. There are also the Rocky Flats Agreement appropriations (non-matched federal funds) for the costs of oversight of the post-closure operations and monitoring at the former Rocky Flats Nuclear Weapons site.

Capital construction appropriations are requested to pay for site cleanup costs when the department must cost-share. These appropriations are normally financed 10 percent from Hazardous Substance Response Fund cash funds and 90 percent from EPA grant funds.

Whenever possible, court-approved settlement funds are obtained from responsible parties to finance all, or a portion, of cleanup costs. These custodial funds are accounted for within two separate funds: the Hazardous Substance Settlement Fund (COFRS fund 14X), and the Natural Resource Damage Recovery Fund (COFRS fund 127). Budgetary spending authority for these custodial funds expenditures is obtained from the Office of State Planning and Budgeting and the State Controller’s Office. Accordingly, these expenditures are not included within the department’s legislative budget requests. The following table (Table 1) summarizes the major funding components of the Superfund sites.

LONG-TERM FUNDING REQUIREMENTS

TABLE 1: SUMMARY OF THE MAJOR FUNDING COMPONENTS OF THE SUPERFUND SITES

| Superfund Site | Expenditures Included within Legislative Budget Requests | | | Custodial Fund Expenditures Not Included within Legislative Budget Requests | |
|--------------------------|--|--|------------------------------|---|---------------------------------------|
| | Operating Budgets | | Capital Construction Budgets | Hazardous Substance Settlement Fund | Natural Resource Damage Recovery Fund |
| | Contaminated Site Cleanups: Long Bill Group | Rocky Flats Cleanup Agreement: Long Bill Group | Superfund Site Cleanups | | |
| Broderick | X | | | | |
| California Gulch | X | | X | | X |
| Captain Jack Mill | X | | X | | |
| Clear Creek | X | | X | | |
| Chemical Sales | X | | X | | |
| Cotter (Lincoln Park) | | | | X | X |
| Denver Radium (Shattuck) | Completed | | | X | X |
| Eagle Mine | | | | X | X |
| Globeville Smelter | X | | | X | X |
| Idarado | | | | X | X |
| Lowry Landfill | X | | | | X |
| Marshall | X | | | | |
| Nelson Tunnel | X | | X | | |
| PJKS (Martin Marietta) | X | | | | |
| Rocky Flats | | X | | | |
| Rocky Mountain Arsenal | X | | | | X |
| Sand Creek | X | | | | |
| Smelertown | Completed | | | X | |
| Smuggler Mine | Completed | | | | |
| Standard Mine | X | | X | X | X |
| Summitville | X | | X | X | X |
| Uravan | | | | X | X |
| Vasquez/I-70 | X | | X | | |
| Woodbury | Completed | | | | |

About Superfund

CERCLA is short for “Comprehensive Environmental Response, Compensation and Liability Act,” also known as the Superfund law. The term “Superfund” refers to the fund accumulated in the U.S. Treasury by a tax on chemical manufacturers. This tax has been discontinued. EPA pays for cleanup, with a 10 percent state match requirement, at sites where there is no viable responsible party.

Long-term funding requirements fall into two categories, both of which are funded through the annual revenue and reserves in the Hazardous Substance Response Fund. Table 2 depicts future department obligations for Superfund capital construction and operations and maintenance costs. Detailed expenditure estimates by site, comprising these totals, can be found within Appendix B.

Table 2 does not include any cleanup costs funded by the responsible parties. The figures in the table are based on a department cost-share of 10 percent of actual construction costs at sites for which there is no responsible party to pay all or some of the costs. The federal government is responsible for 90 percent of these costs. When a remediation is publicly funded, Superfund requires that the department assume responsibility for 100 percent of the ongoing

TABLE 2: SUMMARY OF FUTURE HAZARDOUS SUBSTANCE RESPONSE FUND-FINANCED STATE MATCH OBLIGATIONS

(As of June 30, 2013)

| Site | Remedial Action Costs | | Operations & Maintenance Costs | |
|--------------------------|-----------------------|--------------------|--------------------------------|---------------------|
| | Future Value | NPV | Future Value | NPV |
| California Gulch | \$1,300,000 | \$1,012,688 | \$485,781 | \$242,126 |
| Captain Jack Mill | \$725,000 | \$611,012 | \$5,022,723 | \$1,989,037 |
| Chemical Sales | \$35,000 | \$30,280 | \$950,453 | \$517,214 |
| Clear Creek | \$2,820,404 | \$2,395,140 | \$44,624,887 | \$24,283,788 |
| Denver Radium—All Other | \$0 | \$0 | \$339,556 | \$184,778 |
| Denver Radium—Shattuck | \$0 | \$0 | | |
| Nelson Tunnel | \$1,673,472 | \$1,297,135 | \$23,158,272 | \$11,767,923 |
| Sand Creek | \$0 | \$0 | \$211,035 | \$83,709 |
| Summitville | \$0 | \$0 | \$66,670,770 | \$27,581,371 |
| Standard Mine | \$744,811 | \$622,433 | \$4,224,529 | \$2,088,709 |
| | | | | |
| Totals | \$7,298,687 | \$5,968,688 | \$145,688,006 | \$68,738,655 |
| | | | | |
| Grand Totals: | | | | |
| Future Value | \$152,986,693 | | | |
| Net Present Value | \$74,707,343 | | | |

LONG-TERM FUNDING REQUIREMENTS

operation and maintenance of the remedy. EPA has the ability to continue the 90/10 cost-share for the first 10 years of operation for groundwater restoration remedies, but after that, the department assumes all future responsibility. It must be noted that the EPA decision to cost-share for the first 10 years of operations and maintenance on some remedies is discretionary. EPA language in the regulations that implement Superfund (the National Contingency Plan or NCP) allows for some remedies to be classified as “long-term restoration activities.”

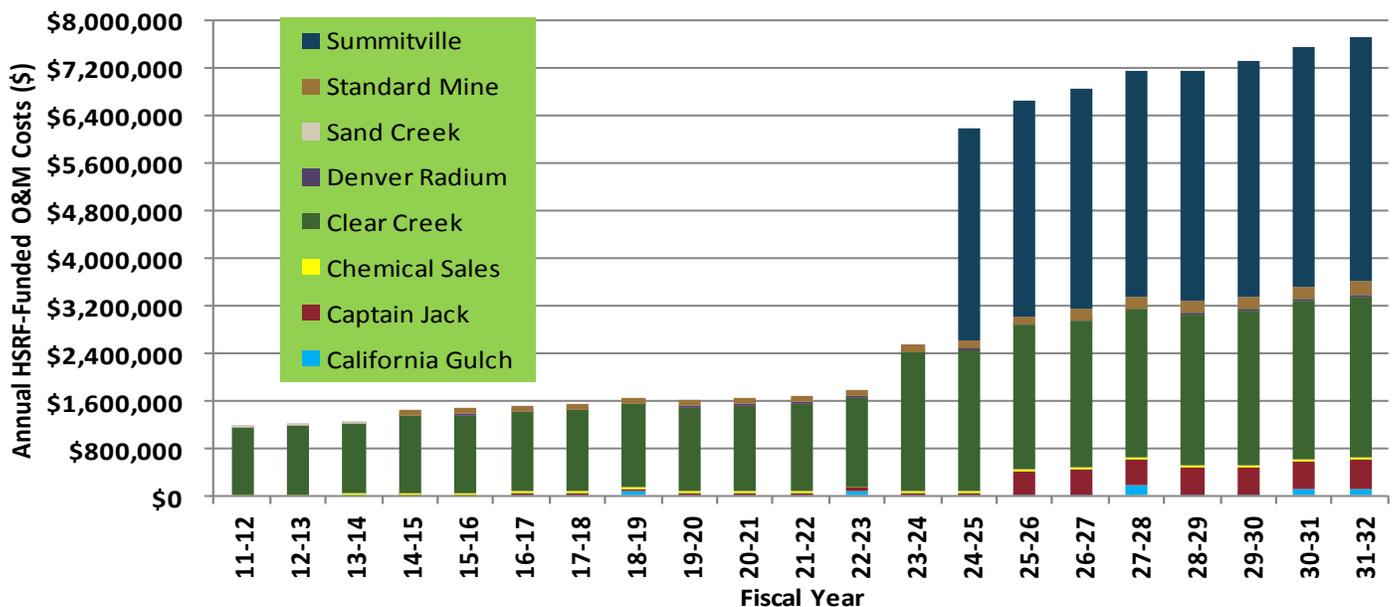
There has always been controversy regarding whether the treatment of acid mine drainage qualifies as one of these activities because the remedy does not provide source control. Therefore, the resource (i.e. the groundwater) is never “restored.” EPA Region 8 has historically included the treatment of acid mine drainage within the definition of a long-term restoration activity. But with increasing financial pressures, in 2005, EPA issued a draft policy to specifically exclude this activity. If the policy becomes final, EPA would no longer cost-share on the treatment plants operated by the department at Superfund sites. (There are currently two, with up to

three additional plants planned.) This would have significant consequences regarding solvency of the Hazardous Substance Response Fund. In December 2013, EPA Region 8 provided a letter to the department, which stated that EPA considered the next mine water treatment plant to be constructed in Colorado, the Central City/Clear Creek North Fork Mine Water Treatment Plant, to be a restoration activity and eligible for 10 years of operations and maintenance cost-share. However, any subsequent mine water treatment plants would be unlikely to be eligible for EPA cost share.

Figure 1 shows the department’s projections of future operation and maintenance estimates, with dramatic increase in 2025 after 10 years of operation and maintenance cost-share at the Summitville site. The department is currently funding 100 percent of the cost at the Clear Creek Argo Tunnel treatment plant. As evidenced by this table, the assumption of 100 percent of treatment costs by the department is the most significant action impacting the fund balance. Implementation of the EPA policy mentioned above would accelerate this impact.

FIGURE 1: LONG-TERM HAZARDOUS SUBSTANCE RESPONSE FUND-FUNDED OPERATIONS & MAINTENANCE COSTS

(As of June 30, 2013)



HAZARDOUS SUBSTANCE RESPONSE FUND

Funding for the department Superfund expenses comes from the Hazardous Substance Response Fund (the fund). This fund, legislatively authorized in 1986, receives income from a tipping fee (the Solid Waste Users Fee) collected at all solid waste landfills in the state. The fee amount has varied over the years, based on the projected needs of the fund. Over the years, the department had a goal of obtaining a fund balance equal to the net present value of all current and future Superfund obligations.

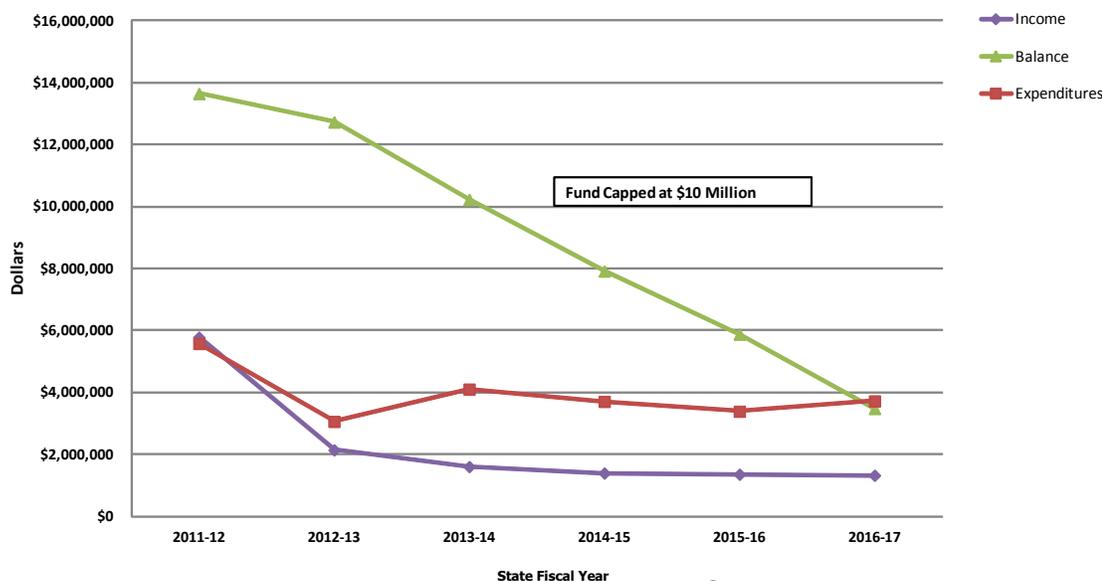
In 2009, the general assembly reallocated \$32.5 million from the Hazardous Substance Response Fund to balance the budget. The fund transfer did not include any payback provisions. In addition, an unexpected result of the economic recession was that landfill volumes decreased significantly, thus reducing the revenue to the fund. These two factors dramatically changed projections for the fund balance, and changed the projection of when the fund would become insolvent from 2025 to 2014. The legislature addressed this issue in 2010.

In 2010, in response to department concerns about fund viability, the General Assembly extended the Solid Waste User Fee (HB 10-1329, the fee), which supports the Solid Waste Program and related Department of Law support, and the Hazardous Substance Response Fund/Superfund. The legislation

also transferred fee-setting responsibility to the Hazardous and Solid Waste Commission, and capped the fee at 50 cents. In addition, the fee also set a cap on the Hazardous Substance Response Fund balance of \$10 million. With this greater flexibility to adjust the tipping fee, and given current estimated expenditures from the Hazardous Substance Response Fund, it is expected to remain solvent until approximately 2025. The major driver for when the Hazardous Substance Response Fund will become insolvent is when the department becomes responsible for 100 percent of operation and maintenance for the Summitville Mine treatment plant, currently estimated to be in FY2022.

The department's current Hazardous Substance Response Fund balance projections are graphically depicted in Figure 2 and summarized in Appendix C. In 2010, the Hazardous and Solid Waste Commission set the Hazardous Substance Response Fund fee at 16 cents. Due to higher than expected revenues and lower expenses resulting from multiple economic factors, it became apparent the fee needed to be reduced to maintain the fund below the required cap of \$10 million dollars. In November 2011, the Hazardous and Solid Waste Commission approved an adjustment to the fee to 5 cents per ton. Figure 2 is based on the revised fee of 5 cents that went into effect July 1, 2012.

FIGURE 2: HSRF PROJECTIONS SFY 2010 — 2016



Introduction

Superfund sites can be described in various ways. Most are on the National Priorities List, some are Natural Resource Damage sites (state claims under CERCLA brought in 1983, most of which have now been settled), and some are both. The funding for cleanup and oversight costs can be complex.

Oversight costs may be funded through grants provided by EPA, the Department of Defense and the Department of Energy, or by responsible party settlements: the proceeds of which are earmarked in the Hazardous Substance Response Fund for oversight at the particular site. Cleanup costs are funded by responsible parties, EPA, the state or a combination.

The goal at all sites is to require responsible parties to clean up the contamination. At many sites, some or all of the responsible parties no longer exist, or are not solvent. Cleanup then requires full or partial public funding. When federal dollars are needed, Superfund requires states to pay 10 percent of the cost of remedial action. Once a remedy that requires ongoing operation and maintenance is deemed operational, such as groundwater pump-and-treat, states pay 100 percent of future operation and maintenance costs. Colorado funding comes from a tipping fee at landfills that is deposited into the Hazardous Substance Response Fund.

BRODERICK WOOD PRODUCTS 5800 GALAPAGO STREET, ADAMS COUNTY

Description: Broderick Wood Products, Inc. operated the site as a wood treatment facility from 1946 to 1981. The operation consisted of treating railroad ties, telephone poles and similar products in unlined ponds. This activity resulted in the contamination of soils and groundwater with creosote, pentachlorophenol and related compounds.

Funding and Management: The site is managed by EPA with support from the department. All cleanup costs are borne by the responsible party, Broderick Investment Company (Broderick). Broderick is also responsible for operating the groundwater treatment system.

Cleanup Status: Wood treatment sludge was excavated and incinerated off-site. There is ongoing treatment of groundwater from the shallow aquifer, biological treatment of contaminated soils, and bioventing of soils in the former impoundment and process areas. Soil remediation was completed in 2010 but groundwater treatment is expected to continue for some time. Broderick expressed to EPA that lack of revenue leading to funding issues for remedial actions at the site has delayed progress. Brannon Sand and Gravel Company (Brannon) successfully purchased a portion of the property from Broderick in June 2012. This transaction infused

Broderick with funding to restart the groundwater pump-and-treat system. Broderick met with the department's Water Quality and Control Division (WQCD) regarding groundwater standards for iron and manganese related to Broderick's discharge permit. WQCD could not modify the permit to waive the standards. Broderick was forced to evaluate various technologies that would meet the standards. It selected a chlorine dioxide technology to address the iron and manganese issue. In addition, Brannon has verbally informed Broderick that it may wish to expand operations on the property and if so, Brannon would purchase additional acreage for the expansion.

Estimated State-Funded Costs: All remediation costs are funded by the responsible parties, including any future operation and maintenance. Union Pacific provided funding for the department to review changes to the cleanup plan that were required as a result of the realignment of the rail line.

Schedule for Deletion: The site cannot be deleted until all remedial activities are completed.

APPENDIX A: SITE DESCRIPTIONS

CALIFORNIA GULCH (LEADVILLE AREA) COUNTY ROAD 2 & VICINITY, LAKE COUNTY

Description: The site encompasses the City of Leadville, significant areas of the mining district east of town, and adjacent areas affected by the spread of contamination. Contamination of residential soils, groundwater and local surface waters has resulted from decades of historic mining activities. Contaminants of concern include arsenic, cadmium, lead, zinc and other heavy metals. Past and continuing releases of these contaminants pose threats to local residents, and fish and other biota in the Arkansas River.

Under a 1994 Consent Decree, the site was divided into 12 segments or Operable Units (OU), each of which addresses a separate source area.

Superfund activities at the site are managed by EPA with oversight provided by the department. A large percentage of cleanup costs has been funded by two

responsible parties: Resurrection/Newmont Mining Company (Newmont), and American Smelting and Refining Company (ASARCO). Work has been nearly completed for all areas of the site except for OU6 and OU12. Cost for OU6 cleanup will be shared by EPA and the department. OU12 cleanup will be funded with settlement monies received from Newmont and ASARCO.

Under a 2008 consent decree, Newmont continues to have responsibility for several operable units on the site. Settlement funds recovered from both Newmont and an ASARCO bankruptcy settlement will be used to help fund certain remedial actions and/or pay for long-term maintenance costs.

Cleanup Status: Since 1992, the responsible parties have completed most of the required cleanup work required. Some more notable accomplishments include

construction and continuing operation of the Yak Tunnel Treatment Facility, and capping of the Apache and Oregon Gulch tailings piles. In September 2010, partially in response to community concerns, EPA and the department revised the OU6 (Stray Horse Gulch) Record of Decision. EPA is currently preparing the remedial design for OU6, which is expected to be completed in 2015. OU12 was intended to address site-wide water quality issues remaining after work at other operable units had been completed. In September 2009, EPA selected a “No Action” remedy for OU12. Under this remedy, the department will continue to monitor site-wide water quality to see if there are continuing, long-term trends toward improving water quality, and to determine if Colorado water quality standards are being achieved in the Arkansas River. If not, additional work may be required in the future.



The new repository will be used to dispose of contaminated residential soil from Leadville.



The Pyrenees Waste Pile is located in OU6 of the California Gulch Superfund site. When rain or snowmelt percolates through mine waste piles heavy metals cause acid rock drainage that can get into waterways where it harms fish and other aquatic life. EPA is currently developing the design for this operable unit.

Estimated State-Funded Costs: Although substantial work has been completed at the site, work remains for OU6 and OU12.

The change in remedy for OU6 is currently estimated to cost about \$13 million, which would include the department's cost share of \$1.3 million.

Remedy costs for OU12 are an estimated \$200,000 per year for a duration of five to ten years. Settlement funds received from Newmont are expected to cover these costs. However, if monitoring determines that additional response actions are necessary, EPA and the department will share costs that exceed available settlement funds.

The department will also be responsible for long-term maintenance cost at OU6 and operable units for which ASARCO was responsible before declaring

bankruptcy. The ASARCO bankruptcy settlement included \$1.7 million of funds for long-term maintenance. Settlement funds are expected to cover these expenses for approximately 15 years. The department will be fully responsible for maintenance once these funds are expended.

Schedule for Deletion: OU2, OU8, OU9 and OU10 have been deleted, and EPA and the department are currently working to delete OU4, OU5 and OU7. The remedial action work required for OU1 and OU3 is complete, but implementation of institutional controls or completion of other administrative tasks is needed before deletion of these operable units can occur. Although OU11 remedy construction was completed in 2011, ongoing monitoring has yet to determine that the remedy is considered operational and functional. Institutional controls will also

need to be established for OU11. Deletion of OU6 is dependent on construction completion and implementation of institutional controls, while deletion of OU12 will be considered after completion of construction in OU6 and several years of additional water quality monitoring.

CAPTAIN JACK MILL SITE

1.5 MILES SOUTHEAST OF WARD, LEFTHAND CREEK WATERSHED, BOULDER COUNTY



An "after" photo of the mill site with remediation in place.

Description: This mining site is located at the headwaters of the Left Hand Creek Watershed. It's in a narrow valley approximately 1.5 miles southeast of Ward in the mountains west of Boulder. Mining for

gold and silver in the region began around 1860. The site consists of a horizontal mine entrance — an adit — to the Big Five Tunnel, which drains acidic mine water and several large waste rock piles including the Big Five, Cornucopia, Philadelphia and White Raven. Two tailings ponds were created during operations of the Captain Jack Mill. Heavy metals from mine waste piles and acid mine drainage impact the fishery of Left Hand Creek. In addition, the Left Hand Water District, which provides drinking water to about 15,000 people, has an intake approximately 15 miles below these abandoned mines and contaminant sources. Contaminants from historic mining affect wetlands downstream of the Captain Jack Mill along Left Hand Creek. The site was listed on the National Priorities List in September 2003.

Funding and Management: The department has implemented investigations and evaluations as the lead agency under a grant from EPA (100 percent federal funding), and a Record of Decision was issued in September 2008. Cleanup costs will be borne by EPA and the department in a 90/10 percent cost-share, because the mining impacts are from companies that no longer exist and no viable responsible parties have been identified at this time.

Cleanup Status: The remedy calls for plugging the tunnel and treating the Big Five mine pool, as well as consolidation and capping of mine waste piles. To facilitate design and construction, the two components of the remedy are being handled

separately. Design for the Big Five tunnel component of the remedy began in May 2011 and was completed in September 2013. The start of Big Five tunnel construction depends upon funding availability from EPA. The first phase of the Captain Jack Mill remedy, consolidation and capping of mining-related wastes, was completed in November 2012. Activities included the removal of four waste rock piles and a mill tailings impoundment to an on-site, engineered mine waste repository. In addition, the Big Five mine waste rock pile was consolidated, regraded and capped in place. Monitoring of the vegetated cover was conducted in 2013, along with six- and 11-month warranty inspections.

Estimated State-Funded Costs: The cost for construction of the waste pile portion of the remedy was about \$1.8 million. The engineering cost estimate for the construction of the Big Five tunnel remedy is approximately \$5 million. The department will be responsible for 10 percent of the cleanup construction cost, and 100 percent of any operation and maintenance required for the site.

Schedule for Deletion: At this time, no schedule has been developed for construction completion and deletion of the site. Estimates for construction schedules will be developed as part of the remedial design process. Based upon the following assumptions, the project will not be completed until at least 2019:

- Construction of the Big Five tunnel remedy.
- Two years of monitoring remedy performance.

If water quality standards are not met after construction of the bulkhead in the Big Five tunnel (Phase I), a biochemical reactor will be designed and constructed outside of the adit (Phase II). Phase II will require one year for design, one year for construction and one year to develop the deletion package. Therefore, the earliest the site could be considered for deletion would be roughly 2019.

CENTRAL CITY/CLEAR CREEK

CENTRAL CITY & IDAHO SPRINGS MINING DISTRICT, CLEAR CREEK & GILPIN COUNTIES

Description: The Central City/Clear Creek Superfund study area covers the 400-square-mile drainage basin of Clear Creek, which has been affected by a number of inactive precious metal mines. To date, the investigation has focused on six priority mine drainage tunnels and more than 40 priority mine waste piles. The most significant environmental impacts are on the Clear Creek stream system, including a reduced fishery and impacts to other aquatic life and habitat. Acidic water draining from many mines contains a variety of heavy metals, and mine wastes contribute to the non-point source impacts to the basin. Clear Creek is a drinking water source for more than 250,000 people living in the northern Denver metropolitan area, and is used for kayaking, rafting, fishing, wildlife watching and gold panning. Human health hazards at this site involve potential exposure to heavy metals — primarily lead, arsenic and cadmium — in surface water and soils.

Funding and Management: The department implements design and cleanup as the lead agency under several grants from EPA (both 100 percent federal and 90/10 percent federal/state funding). The cleanup costs are borne by EPA and the department, in a 90/10 percent cost-share, because the mining impacts in this basin are from companies that no longer exist. Argo Tunnel Water Treatment Plant operations and maintenance is fully funded by the department.

Cleanup Status: Cleanup accomplishments include capping or removal of more than 40 waste rock piles, construction of an on-site mine waste repository, closing mine openings, conducting domestic well sampling, constructing wetlands to filter metals and constructing sediment retention dams. The department operates a water treatment facility to treat the Argo and Big Five tunnel discharges and Virginia Canyon groundwater. The facility prevents approximately 900 pounds of metals per day from entering Clear Creek, thereby treating the single largest point source of metals in the basin. Modifications were recently completed at the Argo facility to improve efficiency. Future work plans include construction and installation of a flow-control



CDOT crews constructed the pad for the future North Fork water treatment plan as part of a curve-straightening project.

device in the Argo Tunnel and capping the Quartz Hill Waste Pile. Construction of a mine water treatment plant along the North Fork of Clear Creek to treat the Gregory Incline and National Tunnel discharges and Gregory Gulch surface water is expected to begin in 2014, pending EPA funding approval. In July 2012, the department completed construction of a pipeline to convey the discharges to the new plant site. Related work completed in 2013 included construction of a retaining wall to prepare the water treatment plant site, North Fork Clear Creek mill tailings removal and stream stabilization. Maintenance of mine waste pile erosion control structures and the mine waste repository are ongoing.

Estimated State-Funded Costs: Cleanup decision documents are complete and therefore, projected costs for completion of Superfund Remedial Action can be estimated. In addition to the significant remediation projects already completed, the department's share of constructing the North Fork Water Treatment Plant, tunnel bulkhead installation and Quartz Hill capping is estimated at \$2,090,650. (See Appendix C.) Currently, the major operation and maintenance component at Clear Creek is operation of the Argo Tunnel Water Treatment Plant. The treatment plant began full operation in April 1998 with an annual operating cost ([continued on pg. 14](#))

APPENDIX A: SITE DESCRIPTIONS

(Continued from pg. 13) of approximately \$1 million. Since October 2009, the department has been responsible for the full annual operating cost in perpetuity. The department is also responsible for the treatment of the Gregory Incline and National Tunnel discharges. Engineering estimates of construction costs are approximately \$18 million. The department will be responsible for 10 percent of the construction cost. The current cost estimate for operations and maintenance is \$926,000 per year. The department will be responsible for 10 percent of the annual costs, or approximately \$95,000 per year, for the first 10 years of operation, and the full annual cost beginning in 2025 and continuing in perpetuity. The department will also be responsible for 100 percent of the costs for operations and maintenance associated with maintaining covers and sediment control structures at several mine reclamation sites throughout the Clear Creek basin.

Schedule for Deletion: Construction completion for the entire site is currently estimated to occur by December 2015 with deletion to follow.



Paving in May 2012 marked completion of the pipeline that will convey contaminated water to the site of the new North Fork water treatment plant below the town of Black Hawk.

CHEMICAL SALES COMPANY 4661 MONACO PARKWAY, DENVER COUNTY

Description: The site extends from a facility at 4661 Monaco Street (Denver) to a point approximately five miles north. The site covers portions of the City and County of Denver, south Adams County and Commerce City. Soil and shallow groundwater at the facility are contaminated with chlorinated volatile organic compounds.

Funding and Management: Chemical Sales Company performed the study phase of the project for OU1. EPA managed the study phase of OU1 and funded the study phase of OU2, OU3 and OU4. EPA and the department jointly funded (90/10 percent) remedial actions at OU2 and OU3. There was no action taken for OU4. After Chemical Sales Company declared bankruptcy, EPA performed most of the remedial design for OU1, and then turned management of the remainder of design and construction over to the department. Department oversight and management costs are funded through EPA grants requiring department matching funds (90

percent federal, 10 percent state). Cleanup costs are shared between EPA and the department (90/10 percent). A portion of the cleanup costs was recovered through settlement consent decrees with Chemical Sales Company and Interstate Distribution Center Associates, and a prospective purchaser agreement with G.L. Bryan Investments, Inc.

Cleanup Status: The air sparging and soil vapor extraction treatment system was shut down in January 2007 because it was no longer cost effective in extracting contaminants from the groundwater. In-situ chemical oxidation was determined to be more cost effective. OU1 groundwater was treated by chemical oxidation and additional wells were added to treat a persistent source area. In the fall of 2011, the department's contractor, ISOTEC, used chemical oxidation to treat persistent source areas of groundwater contamination. In 2012, ISOTEC conducted another series of injections. Afterwards, both ISOTEC and department staff prepared

summary reports on the results of the injections over time to assess performance of the technology in treating the residual VOC contamination.

Estimated State-Funded Costs: In-situ treatment of the groundwater costs \$180,000 per year, with the department share being \$18,000. The department also incurs groundwater monitoring costs associated with OU2 of approximately \$17,000 per year as part

of ongoing operation and maintenance for a total of \$35,000 per year.

Schedule for Deletion: Chemical oxidation is anticipated to continue for at least two more years. Deletion is not expected before 2016.

DENVER RADIUM VARIOUS SITES, DENVER COUNTY

Description: The site includes 65 properties contaminated with radioactive soils and debris, which are organized into 11 operable units. Denver was the site of various radium processing operations during the early 1900s. When radium processing ended in the 1920s, the sites were forgotten. In 1979, EPA discovered the situation. The department, with help from numerous agencies, conducted studies to locate the properties. Soils at these sites were contaminated with radium, thorium and uranium. The radioactive decay of these elements produced radon gas. At some sites, groundwater was impacted.

Funding and Management: EPA was the lead agency for managing the sites, although the department managed portions of the Shattuck project. All but one site, Shattuck Chemical, were considered orphan shares, for which cleanup costs were funded by EPA and the department in a 90/10 cost share. Responsible parties paid for the original cleanup of the Shattuck site. However, with the revised decision to move the Shattuck waste, the department and EPA were responsible for most of the additional cost.

Cleanup Status: Aside from Shattuck, cleanup of all sites consisted of excavation of contaminated materials and disposal at licensed facilities in eastern Idaho and eastern Colorado. This cleanup is complete. Some residual contamination was originally left under streets in accordance with EPA standards, but those contaminants have since been removed. A five-year review, completed in September 2013, required additional groundwater monitoring for at least five more years. The next five-year review is scheduled to be completed by September 2018. The department

monitors Shattuck groundwater twice per year and at other locations as necessary.

Estimated State-Funded Costs: Due to increased contaminant volumes at the site, costs for the Shattuck site cleanup totaled \$58 million. The required department cost-share was \$5.28 million. Government costs were offset by recovery of \$5.2 million of the total cost from the responsible party. The department completed payments of its 10 percent cost share in 2006 and estimates that it may incur approximately \$15,000 per year for monitoring contaminated groundwater. It should be noted that the City and County of Denver has spent several million dollars over the past five years to remove contamination under city streets. Denver obtained funding for these activities by withholding Hazardous Substance Response Fund tipping fees collected at county landfills.

Schedule for Deletion: Except for Shattuck groundwater (OU8), the site was deleted in November 2010. Groundwater at Shattuck cannot be deleted until it meets department standards.



Robinson Brick Company,
500 S. Santa Fe Dr. —
CDOT construction

APPENDIX A: SITE DESCRIPTIONS

EAGLE MINE

SH 24 BETWEEN REDCLIFF & MINTURN, EAGLE COUNTY

Description: The Eagle Mine and associated mining wastes are located approximately eight miles southwest of Vail. Heavy metals, such as lead, zinc, cadmium, arsenic and manganese impact surface soils and local streams, including the Eagle River.

Funding and Management: The department is the lead agency under the consent decree between Colorado and the responsible party, CBS Operations, Inc. The responsible party bears the cost of cleanup. Department oversight is funded by the responsible party through the Hazardous Substance Response Fund Eagle Mine accounts.

Cleanup Status: In September 2001, EPA determined cleanup activities at the site to be complete. There has been dramatic improvement in water quality in the Eagle River and its aquatic life populations as a result of the cleanup. A biologically based standard for the Eagle River was proposed to the Colorado Water

Quality Control Commission (WQCC) in December 2005. However, this standard was not adopted because local residents wanted additional cleanup. In June 2008, the WQCC adopted new underlying standards for metals in the Eagle River, but these standards cannot be attained with the current remedy. Therefore, the responsible party will be required to conduct a feasibility study to determine what additional work can be performed to meet the new standards. A five-year review was completed in September 2008 and determined that the remedy is not fully protective because it does not meet the new water quality standards. The focused feasibility study was completed in July 2013 and published on the Eagle Mine website in August 2013. The department is currently preparing a proposed plan that selects the preferred remedy for additional work that includes additional groundwater treatment and the removal of waste rock. EPA completed the fourth five-year review in 2013.

Estimated State-Funded Costs: All cleanup, operation and maintenance, department oversight and department legal costs are borne by the responsible party.

Schedule for Deletion: A review of the site will be performed every five years to ensure that the waste repositories are still performing as expected. Deletion will be tied to completion of the additional work that is yet to be determined.



The site features various historic features including a trestle that once conveyed mine wastes. It now conveys contaminated water to the treatment plant.

GLOBEVILLE SMELTER

495 EAST 51ST AVENUE, ADAMS & DENVER COUNTIES

Description: This site consists of the plant and properties in the surrounding communities in north Denver and south Adams counties. The plant operated as a lead smelter. It also refined arsenic and cadmium, and produced gold and silver. The plant is no longer operating. ASARCO is required to clean up all contaminated media in and around the plant site, which includes the former neutralization

pond, groundwater and surface water, community soil and air emissions. Cadmium, arsenic and lead are present in the surrounding soils and in localized groundwater east of the plant.

Funding and Management: The department is the lead regulatory agency. Through settlement of the department's claims, the responsible party

funded cleanup and oversight costs until it declared bankruptcy. To settle the department's bankruptcy claim, ASARCO paid \$16 million into a settlement trust to complete the remediation work on the plant site and to fund the department's oversight. The settlement is also funding ongoing water treatment. In addition, the department received \$1.1 million from a national trust account to complete

(Continued from pg. 16) the cleanup of contaminated soils from commercial and industrial properties surrounding the plant site.

Cleanup Status: Construction activities have been completed at all off-site residential properties. Cleanup of the former sedimentation pond has been completed, and the groundwater extraction and treatment system is operating. Sampling and removal of off-site contaminated soils was completed in 2011. Additional work required includes closure of the former neutralization pond and capping of on-site contaminated soils. On-site cleanup work was ongoing until ASARCO filed for bankruptcy in 2005. The ASARCO bankruptcy case was settled in 2009. As a result of the court-ordered settlement, a multi-state custodial

trust was established to fund cleanup at ASARCO sites across the country. Remaining cleanup at this site will be funded from this trust. Remediation of the on-site soils and groundwater began in March 2012. The smelter stack and all buildings have been demolished. Materials that were found to be hazardous were sent off-site to the appropriate landfill, and most of the concrete has been pulverized for reuse on the property. The first phase of this project was completed on December 2012.

Estimated State-Funded Costs: The ASARCO bankruptcy settlement resulted in \$16 million for the cleanup of the site to be placed in a multi-state custodial trust. The department is working with the trustee and Globeville Inc., LLC to complete cleanup of the property. The cost of site

cleanup, including the department's oversight cost, will be funded by the trust. Due to cost overruns related to running the waste water treatment plant and larger areas of heavily contaminated arsenic soils, the department is currently at a deficit in funding the cleanup. The department is working with the trust and prospective purchasers of the property to come up the required funding necessary to complete remediation.

Schedule for Deletion: This site was proposed for listing on the National Priorities List, but EPA deferred final listing because the department was actively working with the potentially responsible party to complete cleanup. The department is currently working with EPA in attempt to depropose the site by early summer 2014.

IDARADO MINE

SH 145 & US 550, SAN MIGUEL & OURAY COUNTIES

Description: The mine extends beneath a mountain ridge between the towns of Telluride and Ouray. In the Telluride District are seven infiltration lagoons and six tailings ponds. The mine's western portal in the Telluride District is located three miles east of Telluride. In the Red Mountain District, there are five tailings ponds. The mine's eastern portal in the Red Mountain District is located about 11 miles south of Ouray. The major human health concern is possible exposure to heavy metals in the tailings, specifically lead and cadmium. High zinc concentrations adversely affect aquatic life in nearby rivers and

creeks. Farmers and ranchers downstream of the Red Mountain District also have concerns about contaminated irrigation water.

Funding and Management: The site is managed by the department through a natural resource damage settlement. Cleanup costs and department oversight costs are funded by the responsible party.

Cleanup Status: A majority of the cleanup activities has been completed on the site, and compliance monitoring in Red Mountain Creek and the San Miguel River is ongoing.

Remediation of Society Turn Tailings Pile Number 1 (in the Telluride District) remains. The results of compliance monitoring indicate that the current remedy will meet the standards agreed upon in the settlement between the department and Newmont Mining in the Telluride District. The department is in discussions with Newmont to identify additional remedial measures that may be necessary to meet standards in the Red Mountain District. Final remedy completion has been delayed by negotiations between the mining company and the town of Telluride, which owns property (continued on pg. 18)

APPENDIX A: SITE DESCRIPTIONS

(Continued from pg. 17) where contamination remains. The town of Telluride, the department and Newmont have entered into discussions on site access and identifying cleanup activities needed to address the remaining contamination.

Estimated State-Funded Costs: All cleanup, operation and

maintenance, and department oversight costs are borne by the responsible party.

Schedule for Deletion: This site is not on the National Priorities List and will not require deletion.



Idarado Mine site.

LINCOLN PARK (COTTER) 0502 FREMONT COUNTY ROAD 68, FREMONT COUNTY

Description: The site consisted of a uranium processing mill and tailings disposal cells located adjacent to the community of Lincoln Park, approximately 1.5 miles south of Cañon City. Operation of the mill since 1958 led to contamination of soils and groundwater on-site and groundwater contamination in the adjacent community of Lincoln Park. The contaminants of concern are molybdenum and uranium.

Funding and Management: This site is managed by the department through the radioactive materials license held by the operator, and a consent decree and court order issued in

1988. Most cleanup and oversight costs are borne by the responsible party. Cotter receives some monies from the U.S. Department of Energy for pre-1972 tailings disposal.

Cleanup Status: Soils in the Lincoln Park area have been remediated. Groundwater contamination still exists in the Lincoln Park area and is monitored for quality and use. Cotter has committed to performing additional water investigations, water cleanup studies and capital cost expenditures in the Lincoln Park area during the next year. A five-year review was performed in 2012

and site closure continues for the mill and impoundments. Soil and groundwater contamination still exist on the Cotter property. Major on-site soil remediation occurred in 2008, and water and air monitoring continues. Most of the mill buildings have been dismantled and

disposed in the primary impoundment. A new evaporation pond is under consideration. Additional soil and groundwater characterization is expected in 2014 as part of the remedial investigation / feasibility study.

Estimated State-Funded Costs: All cleanup, operation and maintenance, and department oversight costs are borne by the responsible party. There are no department-funded remaining operations and maintenance costs estimated.

Schedule for Deletion: Deleting the Lincoln Park Operable Unit site from the National Priorities List cannot occur until groundwater in the area meets standards and has met the CERCLA process requirements. The timeframe for achieving these standards is unknown at this time.



Cotter site, prior to dismantling.

LOWRY LANDFILL

3500 SOUTH GUN CLUB ROAD, ARAPAHOE COUNTY

Description: The site is located 15 miles southeast of the City and County of Denver, and less than a mile east of Aurora at the intersection of East Quincy Avenue and Gun Club Road. The site consists of 480 acres and is a portion of the Denver Arapahoe Disposal Site, owned by the City and County of Denver and operated by Waste Management of Colorado, Inc. From 1966 through 1980, the City and County of Denver operated a municipal solid waste landfill, which accepted liquid and solid municipal refuse and industrial wastes, including sewage sludge. Approximately 138 million gallons of liquid industrial wastes were co-disposed with solid industrial and municipal wastes in approximately 78 unlined pits over 400 acres. In addition, six million to 10 million tires were disposed on-site. Over time, the liquids seeped from the pits and mixed with surrounding refuse, contaminating groundwater and surface water with volatile and semi-volatile organic compounds.

Funding and Management: The site is managed by EPA and department oversight is funded by an EPA grant. All cleanup and oversight costs are borne by the responsible parties.

Cleanup Status: In 2005, EPA and the responsible parties entered a consent decree with the court, which settled remaining issues with cleanup components. All cleanup work required by the decree has been completed. However, contamination in groundwater was subsequently discovered more than two miles beyond the site boundary. EPA considers the associated investigation and remediation part of the site operations and maintenance. On-site and off-site remedial measures are currently under way.

Estimated State-Funded Costs: All cleanup, operation and maintenance, and department oversight costs are borne by the responsible parties.

Schedule for Deletion: Construction completion was achieved in 2006. Once site completion is achieved and all cleanup goals are met, the site will be eligible for deletion. It is unknown how the discovery of off-site contamination will affect the deletion schedule.

MARSHALL LANDFILL

66TH STREET & SH 170, BOULDER COUNTY

Description: The site covers 160 acres in southeast Boulder County. The inactive landfill has contaminated the Cowdrey Drainage and Community Ditch, the latter of which conveys raw drinking water for Louisville. The main chemicals found in the groundwater and surface water at the site include the volatile organic compounds benzene, trichloroethylene and tetrachloroethylene; heavy metals; and major ions such as chloride, nitrate and sulfate.

Funding and Management: The site is managed by EPA and department oversight is funded by an EPA grant. All cleanup and oversight costs are borne by the responsible party.

Cleanup Status: All cleanup work has been completed. The treatment plant has been shut down

and groundwater is being monitored to ensure that further treatment is not required.

Estimated State-Funded Costs: None.

Schedule for Deletion: The responsible party ended groundwater treatment in 2004 and was required to monitor for three years to assure that contaminant levels did not increase. This data indicated slightly elevated levels of arsenic in the on-site groundwater. A five-year review was completed in the summer of 2012. Although the department has determined there is a slight elevation for 1,4-Dioxane in the groundwater, in 2014, EPA is starting the process to determine if delisting can proceed.

APPENDIX A: SITE DESCRIPTIONS

NELSON TUNNEL/COMMODORE WASTE PILE ONE MILE NORTH OF CREEDE, MINERAL COUNTY

Description: The site is located outside of Creede, and consists of a large mine waste pile that impacts Willow Creek and a discharging tunnel. A large percentage of the zinc load delivered to the Rio Grande River via Willow Creek is attributed to the Nelson Tunnel discharge.

Funding and Management: The site is managed by EPA and department oversight is funded by an EPA grant (100 percent federal). It is anticipated that in the future, a 10 percent department cost-share will be required to continue to implement the remedy.

Cleanup Status: Stabilization of the Commodore Waste Pile was completed in 2009 as an EPA emergency response. The remedial investigation of the draining adit (Nelson Tunnel) was completed in 2011. Contractors continue to study the mine hydrology to determine if the flow into the tunnel can be reduced and/or if a passive treatment system can be used. Remedial options will be developed once the hydrology study is completed. A draft feasibility study for water treatment has been completed. However, EPA is waiting for the results of the hydrologic studies before issuing the final feasibility study. There is high likelihood that water treatment will be needed as part of the final remedy.

Estimated State-Funded Costs: The department will be responsible for 10 percent cost-sharing on the cleanup. Estimated cleanup costs assume active water treatment will be necessary. However, this conclusion is highly speculative because the feasibility study has not been completed. The costs are based on recent estimates developed for the Central City/Clear Creek Superfund Site. (See Table 2.)

Schedule for Deletion: Unknown at this time.



The mine features historic structures including ore bins.

PJKS AIR FORCE BASE 12500 SOUTH SH 75, JEFFERSON COUNTY

Description: The site is a 460-acre facility near Waterton Canyon, 20 miles southwest of Denver. The facility was used for missile/rocket manufacturing, research and development, and rocket fuels development. Contaminants in soil and groundwater include volatile organic compounds, hydrocarbons, rocket fuel, organic and inorganic compounds and some radionuclides. Some contaminant plumes have migrated off-site and possibly merged with plumes from the surrounding Lockheed Martin Astronautics Facility, which is not on the National Priorities List.

Funding and Management: The department is the lead regulator at the site in accordance with an

agreement with EPA. The department is handling the site through its Resource Conservation and Recovery Act (RCRA) program. The U.S. Air Force reimburses the department for its oversight through the Defense and State Memorandum of Agreement.

Cleanup Status: The Air Force completed the voluntary removal of seven underground storage tanks used to manage heating oil, and the bio-remediation of one hydrocarbon plume. The minor volume of thorium-contaminated soil has been excavated and disposed off-site. Clean closure was achieved for four of the five RCRA interim status units. Residential/unrestricted use cleanup levels

have been achieved at 32 of the RCRA corrective action Solid Waste Management Units (units) with soil contamination. The final remedies have been constructed for all 15 of the remaining units with soil contamination. Remedies consisted of asphalt covers and/or enforceable land-use controls to protect human health. The implementation of the Notice of Environmental Use Restriction to control future land use could be completed by the end of 2013. Groundwater investigations at the site are complete, and interim remedial measures are ongoing in all seven of the contaminant source areas using in-situ enhanced biological treatment to help reduce contaminant mass in the source areas. Additional interim remedial measures were initiated in April 2009 to treat the dissolved-phase contaminant plumes at the site boundary and beyond. The feasibility study/corrective measures study report describing the proposed final remedies for all contaminated groundwater at the site was approved by the department and EPA in December 2010. The proposed plan for a site-wide groundwater remedy went through public comment from January to February 2012, but no public comments were received that impacted the proposed final remedy. Negotiation of the language of the record of decision was conducted from the summer of 2012 through the summer of 2013. The final signature that signaled the effective date of the final record of decision was provided in August 2013. The construction completion report demonstrating that all remedies

specified in the final record of decision should be submitted and approved by the end of calendar year 2013. The Air Force base will then enter the long-term operation, maintenance and monitoring phase. The ultimate remediation of groundwater at the site is anticipated to take many years.

Estimated State-Funded Costs: None.

Schedule for Deletion: In March 2001, the U.S. government completed the sale of the plant to the Lockheed Martin Corporation. Lockheed Martin also owns the surrounding Lockheed Martin Astronautics Facility. Lockheed Martin has expressed a desire to have the site deleted from the National Priorities List. However, neither Lockheed Martin nor the Air Force has formally approached the department or EPA regarding deletion.



Research involving this rocket test stand resulted in soil and water contamination including volatile organic compounds, hydrocarbons, rocket fuel, organic and inorganic compounds and radionuclides.

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

SH 93, JEFFERSON COUNTY

Description: The site is located approximately 16 miles northwest of downtown Denver, about halfway between Boulder and Golden. Rocky Flats consisted of 6,241 acres with a central industrialized area of 384 acres where major plant structures were located. Rocky Flats produced components for nuclear weapons for about 40 years. Radionuclides such as plutonium and americium; metals; solvents and other organic compounds are present in soils, building foundations, surface water and groundwater. Releases off-site via surface water constitute the potential exposure route to the public.

Funding and Management: The site was managed by the U.S. Department of Energy and operated by contractors. The department and EPA jointly oversaw cleanup of the site under an agreement that divided lead regulatory responsibilities. The department is the post-closure lead regulatory agency, and oversees maintenance and environmental monitoring activities and data reporting. The Department of Energy was responsible for all cleanup costs and currently funds the department oversight costs through a grant (100 percent federal). (Continued on pg. 22)

APPENDIX A: SITE DESCRIPTIONS

(Continued from pg. 21) **Cleanup Status:** Remedial actions addressed contaminated soil, including source removal from several old disposal trenches and removal of plutonium-contaminated soil at and around the 903 Pad drum storage area. Over 800 buildings and structures were decontaminated, and either completely removed or demolished. Remaining below-grade structures were covered by at least three feet of clean fill. Four groundwater treatment systems were installed and two landfills were constructed. The shipment of all weapons-grade plutonium from Rocky Flats was completed in July 2003, and physical cleanup work was completed in October 2005. The remedy selected in the record of decision, signed in September 2006, is “no action” for the Peripheral Operable Unit. The selected remedy for the Central Operable Unit involves institutional and physical controls, and long-term monitoring and maintenance. A post-closure care agreement, the Rocky Flats Legacy Management Agreement, was

signed in March 2007. Most of the Peripheral Operable Unit (nearly 4,000 acres) was transferred to the U.S. Fish and Wildlife Service and became a national wildlife refuge in July 2007. Due to the presence of residual contamination and continued operation of groundwater treatment systems after site closure, management of the 1,308-acre Central Operable Unit has been retained by the Department of Energy. Offsite areas were investigated and determined to require no action in a 1997 record of decision.

Estimated State-Funded Costs: None.

Schedule for Deletion: The site was partially delisted in May 2007. The Peripheral Operable Unit and Operable Unit 3 (Offsite Areas) were delisted, while the Central Operable Unit remains on the National Priorities List.

ROCKY MOUNTAIN ARSENAL COMMERCE CITY, ADAMS COUNTY

Description: The site was originally a 27-square mile U.S. Army facility located approximately 10 miles northeast of downtown Denver, directly north of the former Stapleton International Airport and west of Denver International Airport. The site was used between 1942 and 1982 as a chemical agent/incendiary munitions plant. In addition, the property was the site of one of Shell Oil Company’s (Shell) pesticide manufacturing facilities. Soils, structures, surface water and groundwater became severely contaminated with pesticides, heavy metals, organic solvents and chemical-agent breakdown products. Unexploded ordnance, some containing nerve agent, was also discovered. During the 1950s, off-site groundwater contamination was discovered. As such, the site is addressed by two separate records of decision: one for the on-post cleanup and one for the off-post plume. Groundwater pump-and-treatment systems (covered by the on-post record of decision) were installed during the late 1970s to contain the groundwater to the site interior. Those systems have been operating ever since. Construction of the other remedy structures (caps, covers and all groundwater pump-and-treat/containment systems) has been completed. Intention of this remedy is to contain and encapsulate the contamination on-site, underground

in soils and groundwater and in landfills, with all pathways to the surface cut off. The majority has been transferred to U.S. Fish and Wildlife Service (USFWS) for a national wildlife refuge, with the exception of approximately 1,000 acres where the caps, covers and landfills are located. Those areas have been retained as Army property and will likely remain so in perpetuity. Groundwater under the Western Tier Parcel on the west side of the site has been deleted from the National Priorities List. Groundwater under the eastern section of the site has also been deleted. Groundwater in both of those areas was never contaminated from activities at the site, but had been included in the original site listing. The contaminated groundwater plume covered by the off-post record of decision remains on the National Priorities List and is expected to slowly attenuate over time. The Army maps these plumes annually and funds a sampling program through the Tri-County Health Department to monitor contaminant levels in private wells that still exist in the area. Warnings are attached to new well permits (issued by the State Engineer’s Office) in and around the contaminated area while both the Army and Shell are the primary responsible parties.

Funding and Management: The Army is the lead

agency and manages the cleanup directly. The department provides regulation of the cleanup in conjunction with the Tri-County Health Department.

Cleanup Status: Beginning in 1975, interim response actions were implemented to control some of the contamination. A record of decision was negotiated in 1996. The cleanup strategy was primarily containment-oriented and consisted of soil excavation, building demolition and on-site landfilling of 5.5 million cubic yards of contaminated soil and debris. The remedy also requires ongoing treatment and containment of contaminated groundwater. Groundwater monitoring and containment structure integrity assessment will continue in perpetuity. Institutional controls, including prohibitions against residential development, consumption of fish and game, and agricultural use are incorporated into the record of decision as an integral component of the cleanup, and cover for the need for post-remedy sampling and risk assessment. In 2010, the Army, USFWS and Shell approached the regulatory agencies with a proposal to re-evaluate the need for residential institutional controls at the site. A risk assessment was attempted in 2011 to support this effort, but there was not enough underlying site data to provide a clear and meaningful result about long-term risks that could be associated with unrestricted/residential use of the site. That effort was tabled, but the USFWS's immediate needs were accommodated by a compromise that allows short-term occupational use of on-site residential bunkhouses on a case-by-case basis, by written agreement with agencies. Currently, the USFWS states that institutional controls that remain on the site hamper ability to carry out refuge functions and in 2013, approached the regulatory agencies with the need for wholesale removal of all the institutional controls. The most pressing among these is the USFWS's need to lift the restriction on consumption of game on-site and the agricultural use restriction, as a bison herd currently housed on-site is over its carrying capacity. The USFWS would like to auction some animals off to the public. Currently, this issue is under analysis and review.

Estimated State-Funded Costs: All cleanup, operation and maintenance, and department oversight costs are borne by the Army and Shell.



A lysimeter measures moisture infiltration to ensure that landfilled waste stays dry.

Schedule for Deletion: In 2003, EPA deleted 940 acres along the western boundary of the site. In accordance with the National Wildlife Refuge Act, this property was sold to Commerce City for commercial and recreational development. In 2004, an additional 5,053 acres along the perimeter of the site was deleted to establish the national wildlife refuge. Also, 126 acres along 96th Avenue, 56th Avenue and Highway 2 were transferred to local and state governments for road improvements. In 2006, approximately 7,795 acres (12 square miles) were deleted and added to the refuge property. By October 2010, approximately 2,800 acres of cleaned-up property was deleted from the National Priorities List and added to the wildlife refuge. It is not known when the underlying groundwater on the central portion of the site, and in the off-site plumes migrating north and northwest of the site, will meet cleanup standards and permit groundwater deletion. It is generally expected to take at least a century. Most of the site's surface property has now been deleted from the National Priorities List with the caveat that the current institutional/land use controls must remain in place. In addition to the approximately 1,000 acres that will be retained by the Army, there is a minor amount of surface land that could be eligible for further deletion in the future, but it is unclear at this time when that effort will be undertaken.

APPENDIX A: SITE DESCRIPTIONS

SAND CREEK INDUSTRIAL **EAST 52ND AVENUE & DAHLIA STREET, AURORA COUNTY**

Description: The 350-acre site is located south of Sand Creek, north of 48th Avenue, east of Colorado Boulevard and west of Ivy Street in Aurora. It includes a closed landfill, a former pesticide manufacturer, a closed acid storage impoundment and a former oil refinery. The landfill at 48th Avenue and Holly Street accepted residential, commercial, agricultural and industrial solid waste from 1968 to 1975. The Colorado Organic Chemical Company, located at East 52nd Avenue and Dahlia Street, manufactured pesticides from the 1960s until 1984. The LC Corporation's acid neutralization impoundments operated from 1968 to 1972 for brines from the Shell Chemical Company production of herbicides at Rocky Mountain Arsenal. The Oriental Refinery operated at East 52nd Avenue and Dahlia Street until it was destroyed by fire in 1965, releasing up to 48,000 gallons of refined petroleum products. Volatile and semi-volatile organic compounds, petroleum products, pesticides, herbicides and metals contaminate soil, surface water and groundwater at the site.

Funding and Management: The site was managed by EPA and department oversight was funded by an EPA grant (100 percent federal). All cleanup and oversight costs were borne by the responsible party, EPA and the department. The department share of cleanup funding was approximately \$740,000.

Cleanup Status: Remedial action at all operable units was completed by late 1995.

Estimated State-Funded Costs: The department is responsible for continued site-wide groundwater monitoring, which costs approximately \$10,000 per year. The responsible parties are continuing to operate and maintain the landfill gas extraction system and flare at the 48th Avenue and Holly Street landfill at their cost.

Schedule for Deletion: The site was deleted in December 1996.

SMELTERTOWN **9000 COUNTY ROAD 152, CHAFFEE COUNTY**

Description: The site, located one mile northwest of Salida on the eastern bank of the Arkansas River, was proposed for inclusion on the National Priorities List in February 1992, but has not been listed. Past operations on the 125-acre site included metal smelting (gold, silver, copper and lead) from 1902 to 1920, and creosote treatment of railroad ties from 1926 to 1946. Contamination includes heavy metals in mining waste, soils and groundwater, and creosote-contaminated soils and groundwater.

Funding and Management: The site is managed by EPA. All cleanup and oversight costs are borne by the responsible parties and EPA in a removal action. The department does not share costs on this removal action, but oversees operations and maintenance, funded by the responsible parties.

Cleanup Status: Consolidation and capping of smelter wastes was completed in October 2003. Cleanup of the former wood-treating operation was completed in 2000, which comprised the installation of groundwater monitoring wells and fencing, and establishing restrictions to ensure gravel operations do not disturb contaminated soils.

Estimated State-Funded Costs: All cleanup, operation and maintenance, and department oversight costs are borne by the responsible party. The department currently incurs expenditures for oversight of OU1 and OU2, and bills the responsible parties annually under the terms of consent decrees for each operable unit.

Schedule for Deletion: This site was never listed on the National Priorities List.

SMUGGLER MINE
GIBSON AVENUE, PITKIN COUNTY

Description: This 116-acre site represents an area of inactive silver and lead mining. The site is located in the northeastern section of the city of Aspen. Housing units and recreational facilities have been constructed on the mine waste, including two trailer parks, condominiums, private homes and a tennis club. The health hazard from the site involves potential exposure to heavy metals in soils, primarily lead, arsenic and cadmium.

Funding and Management: The site was managed by EPA and department oversight was funded by an EPA grant (100 percent federal). All cleanup costs were borne by the responsible party.

Cleanup Status: All work has been completed. Ongoing materials management is overseen by the county.

Estimated State-Funded Costs: Pitkin County manages the remaining contaminated materials at the site, including supervising excavation and disposal at the county landfill by private owners. County costs are derived from the Hazardous Substance Response Fund fees, and therefore decrease the fund revenue by about \$50,000 per year.

Schedule for Deletion: The site was deleted from the National Priorities List in November 1999. The last five-year review was completed in June 2012.

STANDARD MINE
GUNNISON COUNTY

Description: The site is a 20-acre parcel outside of Crested Butte. The mine consists of several waste piles, a mill tailings impoundment and a discharging tunnel.

Funding and Management: The site is managed by EPA and department oversight is funded by an EPA grant (100 percent federal). Implementation of the remedy will require a 10 percent department cost-share: funds which will come from the Hazardous Substance Response Fund.

Cleanup Status: The remedial investigation and feasibility study has been completed. The record of decision was finalized in September 2011. The EPA Removal Program (the program) was mobilized to the site in 2007 to address concerns involving the tailings impoundment. The concern was failure of the impoundment and subsequent transport of the tailings to adjacent Elk Creek, and further transport to Coal Creek, which is the drinking water supply for Crested Butte. The program removed the impoundment and mine waste rock piles to an on-site mine waste repository. The program was mobilized to the site in July 2012 to start removal of a collapse within the drainage tunnel. The program is

responsible for the containment and treatment of the mine drainage as the removal of the collapse moves forward. The program contracted Environmental Restoration, an EPA remedial action contractor, to oversee the treatment, disposition of a bioreactor, and removal and disposition of the collapse material at the site's engineered repository. The program also contracted Harrision Western to rehabilitate the draining adit to address safety issues, and to remove the collapse. Harrision Western will continue assessing the adit to determine a potential location to construct a flow-through bulkhead to control mine drainage discharges. Department staff members met with EPA staff members and their design contractor, HDR, at the mine in September 2013. EPA and HDR sponsored a bid walk-through for companies interested in conducting the rehabilitation of the Level 1 and 3 mine workings, in preparation for future design implementation at these two levels. EPA, HDR and department staff members will review the proposals and rehabilitation approach, and a company will be selected to implement the rehabilitation in 2014. Design will follow after that task has been completed.

APPENDIX A: SITE DESCRIPTIONS

Estimated State-Funded Costs: The department will be responsible for cost-sharing on the cleanup (10 percent). Department cost estimates are based on the feasibility study. The remedy is structured to be two-phased. If the first phase is unsuccessful in reaching clean-up goals, passive treatment of the draining adit will be implemented. Assuming both phases are conducted, the department cost-share for remedy construction is estimated to be \$744,811.

Schedule for Deletion: Unknown at this time.



Standard Mine.

SUMMITVILLE MINE RIO GRANDE COUNTY

Description: This 1,231-acre site is in the San Juan Mountains at an elevation of 11,500 feet and surrounded by the Rio Grande National Forest. The Wightman Fork flows from the site then joins with the Alamosa River, which continues through forest and agricultural land in Rio Grande and Conejos counties, and past the San Luis Valley towns of Capulin and La Jara. The Terrace Reservoir, 18 miles downstream of the site on the Alamosa River, is used for irrigation. All of these surface water bodies and uses are impacted by heavy metals including copper and aluminum, and acid mine drainage coming from the mine and surrounding mineralized areas.

Funding and Management: EPA initiated lead management responsibilities at the site with its emergency response action in 1992. EPA performed several interim cleanup actions, which included the interim water treatment plant, heap leach pad and mine pits closure, and installation of adit bulkheads. The department has lead responsibility for the site-wide reclamation project, remedial investigation and feasibility study, site-wide record of decision and all projects associated with the 2001 record of decision, which includes the design and construction of a new water treatment plant. Department costs for these activities are funded through an EPA grant. The funding is 100 percent federal in the characterization and design phase, 90/10 federal-state for construction and 90/10 federal for the first 10 years of water treatment plant operation and maintenance. One hundred percent of the operation and maintenance

associated with other constructed site features (exclusive of the new water treatment plant) are borne by the department as soon as the construction phase for that element is complete. The department cost-share is partially funded through settlements with responsible parties, which are held in custodial accounts.

Cleanup Status: Site-wide reclamation of the surface disturbance was completed in 2002. Redesign of a new treatment plant occurred in 2009. Construction of the treatment plant began in September 2009, with the receipt of government stimulus funding, and was completed in September 2011. Additional projects, including increased contaminated storage impoundment capacity, improved surface water and groundwater collection systems and rehabilitation of abandoned adits, were completed between 2002 and 2012.

Estimated State-Funded Costs: In FY2001, the department and EPA settled with Robert M. Friedland, the principal responsible party. The settlement provides \$10 million for future response costs. The department also settled with five other responsible parties and received an additional \$1,335,000 from those parties. In addition, the department has recovered \$1.8 million from the Galactic Resources Ltd. bankruptcy. Settlement funds are used to pay for remedy implementation and to defray future operation and maintenance costs.

The major cost associated with the site is water treatment plant operation, and maintenance of engineered structures within the abandoned mine property, which includes revegetated slopes and erosion repair. The department share of these costs is estimated at \$38 million for 100 years. These costs continue essentially in perpetuity, and are detailed in Appendix B.

Schedule for Deletion: Construction completion for all structures and improvements identified in the Summitville Record of Decision 2001 were completed in September 2012. EPA will cost share at 90/10 federal/state until the year 2021. In year 2022, the department will assume 100 percent responsibility for the new water treatment plant. Settlement funds are expected to cover these costs until 2025, and then HSRF funds will be used.



The new water treatment plant treats 1,600 gallons per minute. A micro-hydroelectric plant generates supplemental electricity with annual cost savings between \$9,000 and \$15,000.

URAVAN MILL **SH 141, MONTROSE COUNTY**

Description: The site is located above the San Miguel River between the Uncompahgre Plateau and the Paradox Valley. Radium, uranium and vanadium ores located throughout the Colorado Plateau were processed at the site from the late 1800s until 1984. Soils, mill residues and mill structures contaminated from uranium mill tailings and other processing residues are disposed in secure repositories away from the San Miguel River. Contaminated groundwater was pumped and evaporated in a series of lined impoundments.

Funding and Management: The department is the lead management agency. All cleanup, operation and maintenance, and department oversight costs are funded by the responsible party, Umetco Minerals.

Cleanup Status: Soils cleanup and repository construction are complete. Groundwater pumping and evaporation in lined ponds is complete, and the

ponds have been decommissioned. EPA declared construction complete in September 2008. Alternate concentration limits for the groundwater are in place. EPA is preparing the record of decision.

Estimated State-Funded Costs: None.

Schedule for Deletion: Site deletion is anticipated to occur in 2015.



Today, nothing remains of the mill or the former town.

APPENDIX A: SITE DESCRIPTIONS

VASQUEZ BOULEVARD & I-70 (VB I-70) DENVER COUNTY

Description: The site is located in northeast Denver. Two smelters, Omaha and Grant, and Argo, operated at various times from the 1870s through the 1900s. They refined a variety of metals including gold, silver, copper, lead, zinc, arsenic and cadmium. The site consists of three OUs. OU1 includes residential soils in all or portions of the Swansea, Elyria, Clayton, Cole and West Globeville neighborhoods. OU2 includes the site of the former Omaha and Grant Smelter. OU3 includes the area in and around the site of the former Argo Smelter. Contaminants of concern are heavy metals, particularly arsenic and lead. Exposure to metals can occur through ingestion of contaminated soil particles and inhalation of contaminated airborne particles, or dust.

Cleanup Status: Residential cleanup (OU1) began in FY2004 and was completed in 2006, in which 761 homes were remediated. Based upon the last five-year review, EPA determined it must try to gain access to the roughly 190 property owners who denied access for sampling or remediation of their properties. EPA is in the process of getting access to these homes and will give all the owners one more chance at remediation. All homes whose owners grant access will be sampled and, if necessary, will be remediated. Twenty-three homes were tested and found to be elevated, and were remediated in 2013. Remedial investigation of the Omaha and Grant Smelter site

(OU2) is currently under review. EPA required four quarters of groundwater samples for volatile organic compounds from the site. The record of decision for the Argo Smelter site (OU3) was produced in 2009, but is currently under revision because EPA attorneys felt it did not properly explain why groundwater was not going to be treated.

Estimated State-Funded Costs: The department's 10-percent cost share on OU1 was \$2.6 million. Payment was completed in 2006. As a result of the five-year review recommendations, the department may incur approximately \$350,000 to cover the costs of future remediation. Costs for OU2 are unknown at this time. The feasibility study has been completed, but a record of decision has not been completed. Any further costs will be borne by the City and County of Denver, which will withhold payments to the Hazardous Substance Response Fund and fund the work directly. Department costs for OU3 are also unknown because no decision has been made regarding the need to remediate groundwater.

Schedule for Deletion: The department anticipates OU1 will be eligible for deletion in 2014. Timing of deletion of the other operable units is uncertain.

WOODBURY CHEMICAL GARFIELD STREET & 54TH AVENUE, ADAMS COUNTY

Description: The site consists of 11 acres located north of 54th Avenue between Harrison Street and Adams Street in Commerce City. Organochlorine pesticides were manufactured at the site from the 1950s until 1971. McKesson Corporation operated a chemical distributorship at the site from 1971 to 1986. Contamination at the site included construction rubble and debris from a 1965 fire, and bags of pesticides and contaminated soil at the facility and on an adjacent lot. The chemicals of concern are metals including arsenic and zinc; organochlorine pesticides including aldrin, chlordane, DDT, dieldrin and toxaphene; and volatile organic chemicals including tetrachloroethylene and trichloroethylene. Contamination at the site was restricted to the surface soils.

Funding and Management: The site was managed by EPA, with funding for department oversight through an EPA grant (100 percent federal). All cleanup costs were borne by the responsible party.

Cleanup Status: Cleanup of the site was completed in June 1992.

Estimated State-Funded Costs: None.

Schedule for Deletion: The site was deleted from the National Priorities List in March 1993.

APPENDIX B: ESTIMATED STATE MATCH LIABILITIES

| Appendix B | | | | |
|---|---|---------------------------|---|---|
| SUPERFUND SITES - EST. STATE MATCH LIABILITIES | | | | |
| THROUGH FY 2039-40 | | | | |
| CONTRACT/ ESTIMATE | SUPERFUND SITE | STATE MATCH BY OP UNIT | TOTAL FUTURE STATE MATCH OBLIGATIONS | NET PRESENT VALUE OF STATE MATCH OBLIGATIONS |
| | BRODERICK | \$1,069,554 | | |
| SSC-C878489 | OU #1 Sludges | \$399,634 | | |
| SSC-HAZ930973 | OU #2 Phase 1 | \$669,920 | | |
| NA | OU #2 Phase 2 | NO STATE MATCH | | |
| | DENVER RADIUM | \$6,683,832 | \$0 | \$0 |
| | Operation & Maintenance | \$184,778 | \$339,556 | \$184,778 |
| | CALIFORNIA GULCH | \$1,510,000 | \$1,300,000 | \$1,012,688 |
| ESTIMATE | OU 6 - StrayHorse Gulch | \$1,300,000 | \$1,300,000 | \$1,095,323 |
| | OU 9 - Residential Soils | \$0 | \$0 | \$0 |
| SSC09FEA0009 | OU 11 - Arkansas River Floodplain | \$420,000 | \$0 | \$0 |
| | OU 12 - Sitewide Ground & Surface Water -No Action ROD | \$78,061 | \$78,061 | \$69,395 |
| | OU 11 - Arkansas River O&M | \$259,401 | \$480,454 | \$266,675 |
| | OU 12 - Sitewide Ground & Surface Water O&M | \$92,820 | \$189,743 | \$133,176 |
| estimate | OU 6 - Stray Horse Gulch O&M | \$242,126 | \$485,781 | \$242,126 |
| | CLEAR CREEK | \$4,356,025 | \$2,820,404 | \$2,395,140 |
| | Lyon Ck | \$53,861 | | |
| SSC-C378406 | OU 2 - Argo Tailings (RA Complete) | \$129,914 | | |
| Coop. Agreement | OU 2 - Big 5 Waste Rock (RA Complete) | \$185,540 | | |
| Coop. Agreement | OU 3 - Argo Tunnel | \$532,685 | | |
| | Flow Control Bulkhead (Concept. Design) | \$100,000 | | |
| Coop. Agreement | OU 3 - Virginia Canyon GW/Big Five (RA Complete) | \$141,000 | | |
| Coop. Agreement | OU 3 - Chase Gulch #2 Tailings (RA Complete) | \$7,508 | | |
| Coop. Agreement | OU 3 - Argo Tunnel WTP Improvements (HDS) - In progress | \$244,748 | | |
| Coop. Agreement | OU 4 - Mine Waste Repository (RA Complete) | \$43,980 | | |
| Coop. Agreement | OU 4 - Quartz Hill Mine Waste Pile (95% design) | \$200,000 | | |
| Coop. Agreement | OU 4 - Golden Gilpin Mill (RA Complete) | \$14,629 | | |
| Coop. Agreement | OU4- Mine Drainage Pipeline (RA Complete) | \$188,076 | | |
| Coop. Agreement | OU 4 - New Active Treatment Plant (final design) | \$1,790,648 | | |
| Coop. Agreement | OU 4 - Mine Waste and Sediment Control (RA Complete) | \$450,644 | | |
| Coop. Agreement | OU 4 - CDOT IAG (Site Prep & NCC Stab.), BHCCSD wet. -fin | \$272,792 | | |
| estimate | O & M - New Water Treatment Plant | \$8,530,146 | \$19,594,921 | \$8,530,146 |
| estimate | O & M - Repository and waste piles (w/o sludge disp.) | \$462,237 | \$800,757 | \$462,237 |
| estimate | O & M - Argo Tunnel Water Treatment Plant | \$24,283,788 | \$44,624,887 | \$24,283,788 |
| | SAND CREEK | \$713,550 | \$0 | \$0 |
| estimate | O & M | \$83,709 | \$211,035 | \$83,709 |
| SSC-C379562 | SMUGGLER | \$44,000 | \$0 | \$0 |
| | CHEMICAL SALES | \$933,689 | \$35,000 | \$30,280 |
| Coop. Agreement | OU 1 | \$890,527 | | |
| SSC-920947 | OU 2&3 | \$43,162 | | |
| estimate | O and M | \$517,214 | \$950,453 | \$517,214 |
| | SUMMITVILLE | \$7,271,220 | \$1,400,000 | \$1,322,115 |
| Reclam. Bond | OU 2 - Cap Cropsy (SSC) | \$0 | | |
| Coop. Agreement | OU 4 - Reclamation/Reveg. | \$2,013,529 | | |
| Coop. Agreement | OU 4 - Exploration Benches | \$51,214 | | |
| SSC-9705364 | OU 1 - Heap | \$496,477 | | |
| estimate | OU 5- Water Treatment Plant | \$1,700,000 | | |
| | O&M - Water Treatment match & Reclamation | \$3,473,703 | \$4,329,443 | \$3,473,703 |
| | O&M - Water Treatment 100% State | \$50,706,630 | \$73,615,530 | \$50,706,630 |
| SSC- | old water treatment contract w/EPA | \$3,010,000 | \$0 | \$0 |
| | O&M Totals | \$35,144,915 | \$77,944,972 | \$35,144,915 |
| | VASQUEZ BLVD/I-70 | \$2,600,000 | \$0 | \$0 |
| estimate | OU 1 - Residential Soils | \$2,600,000 | | |
| | Denver Rad - SHATTUCK | \$5,389,381 | \$0 | \$0 |
| | credit for settlement | \$0 | | |
| estimate | Removal | \$5,389,381 | \$0 | \$0 |
| | CAPTAIN JACK MILL | \$1,035,492 | \$5,747,723 | \$2,576,549 |
| estimate | capping mine waste/tunnel plug | | \$725,000 | \$611,012 |
| | In-situ Treatment | \$1,035,492 | \$5,022,723 | \$1,989,037 |
| | STANDARD MINE | \$744,811 | \$0 | \$744,811 |
| ESTIMATE | Based on ROD (pg. 43). Assume Ph 2 is built. | \$744,811 | | |
| estimate | O&M | \$2,088,709 | \$240,644 | \$4,224,529 |
| | NELSON TUNNEL | | \$1,673,472 | \$1,297,135 |
| ESTIMATE | Assume Active Plant - no remedy decisions made yet | | | |
| ESTIMATE | O&M | | \$1,902,363 | \$23,158,272 |
| | TOTAL CONSTRUCTION COST | \$32,351,554 | \$11,303,127 | \$9,256,340 |
| | Less: Summitville settlements (Fund 14X) | (\$1,700,000) | (\$1,400,000) | (\$1,322,115) |
| | NET CONSTRUCTION COST | \$30,651,554 | \$9,903,127 | \$7,934,225 |
| | TOTAL OPERATION AND MAINTENANCE COST | \$181,183,555 | \$178,028,085 | \$104,729,850 |
| | Less: Summitville settlements (Fund 14X) | (\$12,837,919) | (\$11,274,203) | (\$7,563,543) |
| | NET OPERATIONS AND MAINTENANCE COST | \$168,345,636 | \$166,753,882 | \$97,166,307 |
| | Net Summitville HSRF-Funded O&M Costs | \$66,670,770 | \$66,670,770 | \$27,581,371 |

APPENDIX C: HAZARDOUS SUBSTANCE RESPONSE FUND: PROJECTED BALANCES

| HAZARDOUS SUBSTANCE RESPONSE FUND: PROJECTED BALANCES | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------|----------|--------|-------------|---------------------|--------------|--------------|-------------|-------------|--------------|----------------|-----------|-------------------|---------------|-------------|----------------------------|---------------|---------------------|---------------------------------|------------------|-----------------|
| Fund | Base HSRF fee of \$0.16/cubic yard (70% of \$0.17); SB 03-280 surcharge of \$0.02/yard for FY 2003-04 through FY 2005-06. | | | | | | | | | | | | | | | | | | | | | |
| SFY | Base HSRF fee of \$0.16/cubic yard, with decrease to \$0.05/cubic yard effective 7/01/12 | | | | | | | | | | | | | | | | | | | | | |
| | BEGINNING FUND BAL. | Cubic Yards | Fee | HSRF % | Net Rev* | Interfund Transfers | Damage Award | Other Income | Recoveries | RMA Cost | Interest | TOTAL REVENUES | OSM COSTS | HBO-1306 OPER EXP | CERCLA/COSTOP | Refinance | HMMMD Cost/Reconv/ Capital | Refinance DOL | RMA-NRDS/Divert To: | Restoration General Fund, TOTAL | ENDING FUND BAL. | |
| 2003 | \$8,046,260 | - | - | 100% | \$2,082,010 | | | | | \$0 | \$338,929 | \$2,439,256 | \$119,530 | \$732,891 | \$479,078 | \$415,000 | \$1,134,963 | | | | \$3,004,684 | \$7,460,822 |
| 2003-04 | \$7,480,822 | | \$0.1930 | 100% | \$0 | | | | \$980,253 | \$194,230 | \$3,940,332 | \$118,492 | \$726,906 | \$460,108 | \$415,000 | \$423,929 | | | | | \$2,790,029 | \$8,631,125 |
| 2004-05 | \$8,631,125 | | \$0.1930 | 100% | \$0 | | | | \$977,049 | \$222,863 | \$4,314,393 | \$140,691 | \$636,766 | \$439,243 | \$415,000 | \$2,325,012 | | | | | \$4,470,413 | \$8,475,104 |
| 2005-06 | \$8,475,104 | 18,557,447 | \$0.1930 | 100% | \$2,514,998 | | | | \$3,504,743 | \$821,798 | \$34,003,616 | \$136,902 | \$496,951 | \$951,551 | \$447,274 | \$425,000 | \$4,024,099 | | | | \$6,948,608 | \$35,530,112 |
| 2006-07 | \$35,530,112 | 18,928,995 | \$0.1190 | 100% | \$2,196,190 | | | | \$997,137 | \$1,705,452 | \$4,898,779 | \$102,674 | \$289,222 | \$699,318 | \$202,877 | \$425,000 | \$293,060 | | | | \$2,330,150 | \$38,098,741 |
| 2007-08 | \$37,755,224 | 19,307,167 | \$0.1190 | 100% | \$2,470,043 | | | | \$1,201,322 | \$1,676,967 | \$5,348,332 | \$117,516 | \$93,778 | \$949,037 | \$872,392 | \$425,000 | \$10,351 | | | | \$2,468,074 | \$40,635,482 |
| 2008-09 | \$40,635,482 | 16,147,520 | \$0.1190 | 100% | \$1,562,980 | | | | \$1,589,337 | \$1,155,880 | \$4,308,176 | \$132,984 | \$141,837 | \$1,266,779 | \$68,185 | \$425,000 | \$419,017 | | | | \$29,988,517 | \$32,442,319 |
| 2009-10 | \$12,501,339 | 15,799,936 | \$0.1190 | 100% | \$1,804,521 | | | | \$57,583 | \$513,212 | \$266,959 | \$3,818,513 | \$834,871 | \$202,649 | \$371,387 | \$368,698 | \$473,000 | | | | \$4,859,598 | \$11,260,254 |
| 2010-11 | \$12,260,254 | 16,083,570 | \$0.1190 | 100% | \$2,029,008 | \$225,253 | \$976,238 | | \$876,884 | \$1,372,206 | \$250,542 | \$4,753,874 | \$972,910 | \$29,820 | \$338,455 | \$302,812 | \$976,959 | | | | \$2,500,000 | \$4,859,598 |
| 2011-12 | \$13,445,911 | 15,027,385 | \$0.1600 | 100% | \$3,002,049 | \$156,419 | \$5,689 | | \$876,884 | \$1,372,206 | \$250,542 | \$4,753,874 | \$972,910 | \$29,820 | \$338,455 | \$302,812 | \$976,959 | | | | \$2,500,000 | \$4,859,598 |
| 2012-13 | \$13,650,465 | 15,445,210 | \$0.0600 | 100% | \$2,070,098 | \$128,524 | \$665,630 | | \$4,453,803 | \$394,876 | \$8,009,779 | \$1,075,866 | \$539,133 | \$219,012 | \$614,448 | \$4,788,423 | | | | | \$2,500,000 | \$4,859,598 |
| 2013-14 | \$14,072,703 | 15,599,662 | \$0.0600 | 100% | \$760,464 | \$155,000 | | | \$822,510 | \$249,389 | \$1,987,392 | \$1,206,594 | \$250,000 | \$368,111 | \$197,111 | \$26,000 | \$1,428,094 | | | | \$2,500,000 | \$13,445,911 |
| 2014-15 | \$12,594,184 | 15,833,657 | \$0.0600 | 100% | \$771,891 | \$160,000 | | | \$213,255 | \$211,805 | \$1,356,951 | \$1,318,476 | \$250,000 | \$360,749 | \$177,400 | \$26,000 | \$1,725,648 | | | | \$5,581,622 | \$13,082,862 |
| 2015-16 | \$10,082,862 | 16,160,331 | \$0.0600 | 100% | \$787,329 | \$170,000 | | | \$194,530 | \$165,555 | \$1,317,413 | \$1,474,846 | \$250,000 | \$353,534 | \$159,660 | \$26,000 | \$1,456,736 | | | | \$3,720,776 | \$7,679,489 |
| 2016-17 | \$7,679,489 | 16,554,089 | \$0.0600 | 100% | \$807,012 | \$180,000 | | | \$177,677 | \$119,679 | \$1,284,367 | \$1,597,842 | \$250,000 | \$346,464 | \$143,694 | \$26,000 | \$1,381,936 | | | | \$3,745,936 | \$5,217,930 |
| 2017-18 | \$5,217,930 | 16,967,941 | \$0.0600 | 100% | \$827,187 | \$190,000 | | | \$162,509 | \$82,042 | \$1,261,738 | \$1,634,719 | \$250,000 | \$339,534 | \$129,324 | \$26,000 | \$410,000 | | | | \$2,789,578 | \$3,690,090 |
| 2018-19 | \$3,690,090 | 17,392,140 | \$0.0600 | 100% | \$847,867 | \$200,000 | | | \$148,658 | \$66,272 | \$1,232,997 | \$1,688,394 | \$250,000 | \$332,744 | \$116,392 | \$26,000 | \$300,000 | | | | \$2,453,530 | \$2,489,557 |
| 2019-20 | \$2,489,557 | 17,826,943 | \$0.0600 | 100% | \$869,063 | \$70,905 | | | \$136,572 | \$33,192 | \$1,109,733 | \$1,753,372 | \$250,000 | \$26,089 | \$104,753 | \$26,000 | \$30,600 | | | | \$2,490,813 | \$1,108,477 |
| 2020-21 | \$1,108,477 | 18,272,617 | \$0.0600 | 100% | \$890,790 | \$1,636,101 | | | \$125,515 | \$7,060 | \$2,659,465 | \$1,769,079 | \$250,000 | \$19,587 | \$94,278 | \$26,000 | \$31,212 | | | | \$2,490,136 | \$1,277,806 |
| 2021-22 | \$1,277,806 | 18,729,432 | \$0.0600 | 100% | \$913,060 | | | | \$115,564 | \$9,717 | \$1,038,340 | \$1,855,532 | \$250,000 | \$13,176 | \$84,850 | \$26,000 | \$31,636 | | | | \$2,561,394 | (\$245,248) |
| 2022-23 | (\$245,248) | 19,197,668 | \$0.0600 | 100% | \$935,886 | | | | \$106,607 | \$0 | \$1,042,494 | \$1,863,643 | \$250,000 | \$306,912 | \$76,365 | \$26,000 | \$32,473 | | | | \$2,555,393 | (\$1,796,147) |
| 2023-24 | (\$1,796,147) | 19,677,610 | \$0.0600 | 100% | \$959,283 | | | | \$98,547 | \$0 | \$1,057,830 | \$1,878,476 | \$250,000 | \$300,774 | \$68,728 | \$26,000 | \$33,122 | | | | \$2,557,100 | (\$3,257,417) |
| 2024-25 | (\$3,257,417) | 20,169,550 | \$0.0600 | 100% | \$983,266 | | | | \$91,292 | \$0 | \$1,074,557 | \$5,547,941 | \$250,000 | \$294,796 | \$61,855 | \$26,000 | \$33,785 | | | | \$6,214,339 | (\$8,397,199) |
| 2025-26 | (\$8,397,199) | 20,673,789 | \$0.0600 | 100% | \$1,007,847 | | | | \$84,763 | \$0 | \$1,092,610 | \$6,593,390 | \$250,000 | \$288,863 | \$55,670 | \$26,000 | \$34,461 | | | | \$7,248,384 | (\$14,552,973) |
| 2026-27 | (\$14,552,973) | 21,190,633 | \$0.0600 | 100% | \$1,033,043 | | | | \$78,866 | \$0 | \$1,111,930 | \$6,764,769 | \$250,000 | \$283,086 | \$50,103 | \$26,000 | \$35,150 | | | | \$7,409,107 | (\$20,850,150) |
| 2027-28 | (\$20,850,150) | 21,720,399 | \$0.0600 | 100% | \$1,058,869 | | | | \$73,598 | \$0 | \$1,132,467 | \$8,344,308 | \$250,000 | \$271,424 | \$45,083 | \$26,000 | \$35,653 | | | | \$8,978,678 | (\$28,696,361) |
| 2028-29 | (\$28,696,361) | 22,263,409 | \$0.0600 | 100% | \$1,085,341 | | | | \$68,638 | \$0 | \$1,154,179 | \$8,789,535 | \$250,000 | \$271,876 | \$40,583 | \$26,000 | \$36,000 | | | | \$9,972,984 | (\$37,270,176) |
| 2029-30 | (\$37,270,176) | 22,819,994 | \$0.0600 | 100% | \$1,112,475 | | | | \$64,554 | \$0 | \$1,177,029 | \$8,938,173 | \$250,000 | \$266,438 | \$38,525 | \$26,000 | \$37,000 | | | | \$9,874,136 | (\$45,967,283) |
| 2030-31 | (\$45,967,283) | 23,390,494 | \$0.0600 | 100% | \$1,140,287 | | | | \$60,699 | \$0 | \$1,200,985 | \$9,183,487 | \$250,000 | \$261,109 | \$32,873 | \$26,000 | \$36,140 | | | | \$10,117,609 | (\$54,883,907) |
| 2031-32 | (\$54,883,907) | 23,975,256 | \$0.0600 | 100% | \$1,168,794 | | | | \$57,229 | \$0 | \$1,226,023 | \$9,328,557 | \$250,000 | \$255,887 | \$29,585 | \$26,000 | \$37,1423 | | | | \$10,261,453 | (\$63,919,337) |
| 2032-33 | (\$63,919,337) | 24,574,638 | \$0.0600 | 100% | \$1,188,014 | | | | \$54,106 | \$0 | \$1,252,120 | \$9,485,261 | \$250,000 | \$250,770 | \$26,627 | \$26,000 | \$37,851 | | | | \$10,417,508 | (\$73,084,725) |
| 2033-34 | (\$73,084,725) | 25,189,004 | \$0.0600 | 100% | \$1,227,964 | | | | \$51,295 | \$0 | \$1,279,259 | \$9,746,171 | \$250,000 | \$245,754 | \$23,984 | \$26,000 | \$38,6428 | | | | \$10,680,318 | (\$82,465,784) |
| 2034-35 | (\$82,465,784) | 25,818,729 | \$0.0600 | 100% | \$1,258,663 | | | | \$48,766 | \$0 | \$1,307,429 | \$9,900,676 | \$250,000 | \$240,839 | \$21,568 | \$26,000 | \$39,4157 | | | | \$10,833,239 | (\$92,011,594) |
| 2035-36 | (\$92,011,594) | 26,464,197 | \$0.0600 | 100% | \$1,290,130 | | | | \$46,489 | \$0 | \$1,336,619 | \$10,065,835 | \$250,000 | \$236,022 | \$19,411 | \$26,000 | \$40,2140 | | | | \$10,999,308 | (\$101,674,283) |
| 2036-37 | (\$101,674,283) | 27,125,802 | \$0.0600 | 100% | \$1,322,383 | | | | \$44,440 | \$0 | \$1,366,823 | \$10,347,677 | \$250,000 | \$231,302 | \$17,470 | \$26,000 | \$41,0181 | | | | \$11,282,529 | (\$111,589,989) |
| 2037-38 | (\$111,589,989) | 27,803,947 | \$0.0600 | 100% | \$1,355,442 | | | | \$42,596 | \$0 | \$1,398,039 | \$10,507,926 | \$250,000 | \$226,676 | \$15,723 | \$26,000 | \$41,8262 | | | | \$11,444,607 | (\$121,636,557) |
| 2038-39 | (\$121,636,557) | 28,499,046 | \$0.0600 | 100% | \$1,389,328 | | | | \$40,937 | \$0 | \$1,430,265 | \$10,681,944 | \$250,000 | \$222,142 | \$14,151 | \$26,000 | \$42,648 | | | | \$11,620,885 | (\$131,827,177) |
| 2039-40 | (\$131,827,177) | 29,211,522 | \$0.0600 | 100% | \$1,424,062 | | | | \$39,443 | \$0 | \$1,463,505 | \$10,965,583 | \$250,000 | \$217,699 | \$12,735 | \$26,000 | \$43,5181 | | | | \$11,937,189 | (\$142,300,871) |

