Colorado Department of Public Health and Environment
U.S. Environmental Protection Agency

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News & Information About the Summitville Mine Superfund Site

Summitville Update

Inside this issue:

A Watershed Event

Summitville's New Water Treatment Plant

Summitville's old water treatment plant is outdated and will be replaced. The design and location of the new water treatment plant has been the source of much interest over the 2003 season.

As part of the final Site-Wide Record of Decision, the Colorado Department of Public Health and Environment (CDPHE) and the Environmental Protection Agency (EPA) agreed that replacing the existing water treatment plant was necessary in order to stabilize Summitville Mine Superfund Site operations. Active management of acid mine drainage will always be required because the acid-generating sources are infinite. It is possible that at some point in the distant future, another technology may be discovered that can reduce the "active" part of contaminated water management; but for the present, the agencies have chosen to invest in a reliable technology that is capable of obtaining the treatment rate and metals removal efficiency that meet stream standards at the discharge end of the treatment plant. That point is often called 'end-of-pipe.'

The Colorado Department of Public Health and Environment, with close involvement and funding from the EPA, has embarked on the design of a new water treatment system, including the influent and effluent conveyances and other infrastructure. Resource Technologies Group has been hired as the design contractor.

The design effort requires the expertise of a myriad of disciplines and subspecialties, such as architectural, structural, electrical and civil engineering; computer and communications technologies; and water treatment chemists and code specialists; all of which must be pulled

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Colorado Department of Public Health and Environment

Reweaving the River: Farmers and Ranchers - Not 'yuppie environmentalists' - Work on a Colorado Restoration.

By Hal Clifford

The following story appeared in the High Country News on September 29, 2003. Published here with the permission of High Country News.

CAPULIN, COLORADO - The San Luis Valley is a high desert that attracts waterfowl, with table-flat farmland surrounded by mountains. It's a slice of Colorado that feels like New Mexico, and almost everyone here is bilingual. Many locals trace their roots back to when this was part of Mexico's northern borderlands, before the Mexican-American War of 1848.

But this remote area entered headlines just over a decade ago, when cyanide holding ponds at the Summitville gold mine failed spectacularly and poisoned the Alamosa River, which runs through the village of Capulin. The 1990 spill killed everything living in a 17-mile stretch of the river — and turned a national media spotlight on the dangers of modern mining.

Here in Conejos County, the spill also forced residents to recognize that they had mismanaged the river for a generation. Summitville was the final insult. Now, more than a hundred local people are rebuilding the Alamosa into a river that, while not pristine, will look and act much more like the river their grandparents knew. "We're farmers and ranchers," says fifth-generation farmer Alan Miller, 42, from beneath a sweat-stained hat. "It's not a bunch of 30-something yuppie environmentalists."

A sorry past

The Alamosa River's problems began in 1970, when heavy rain blew out an upstream dam that was under repair, filling the river with a cascade of channel-clogging silt. That winter, ice dams created floods that inundated Capulin. The U.S. Army Corps of Engineers responded by doing what the Corps did best back then, and turned much of the river into a ditch. The flooding subsided, but new problems arose. The channelized river carved into the alluvial soils, slicing 10 feet down in places. The water table dropped, drying up the streamside riparian areas and adjacent fields. As the river ate into the earth, dozens of ditch companies that drew from the Alamosa found their headgates - which direct river water into irrigation ditches - perched high above the river.

In the late 1970s, Miller's uncle tried to create a coalition to restore the river. But his effort foundered, and a decade later he died. Nothing changed until the Summitville holding ponds, which were full of heavy metals and cyanide used in the heap-leach gold mine, failed. The mining company declared bankruptcy in 1992, and the area became a Superfund site.

"Summitville really kicked us in the pants," says Miller. While the state and the Environmental Protection Agency tackled the pollution generated by the spill (a cleanup that has cost $160 million to date), Miller and other county residents revived the effort to restore the river's channel and natural functions.

They formed the Alamosa River Watershed Foundation in 1999, a nonprofit that can apply for and accept grants. It's the outgrowth of the Alamosa River Watershed Project, which was set up in 1995 by the local office of the federal Natural Resources Conservation Service and the Alamosa-La Jara Water Conservancy District. By last spring, Miller, the foundation field coordinator, found himself in charge of a $1.1 million budget dedicated to river restoration.

The funds came in the form of $759,000 in grants from the EPA, Colorado Water Conservation Board, Ducks Unlimited and the North American Wetlands Conservation Act, and the water conservancy district. Another $355,000 in in-kind contributions is coming from landowners, the Natural Resources Conservation Service and the Conejos County government.

The foundation completed a small demonstration project near Ignacio Rodriguez's horse ranch in 2000, and this spring, tiny cottonwood seedlings were sprouting. Rodriguez, 76, used to catch his limit of brown and rainbow trout in the river here. Restoration, Rodriguez says, "would very definitely give the community a sense of constructive involvement. They would have accomplished something."

Alan Miller at a restoration test area along the Alamosa River.

In Conejos County, the second-poorest county in Colorado, that would count for a lot.

Aikido engineering

"My interest is to fix the river," says John Shawcroft, 78, who ranches on the meadows at its eastern end and heads up the Alamosa-La Jara Water Conservancy District. Better songbird habitat isn't at the top of Shawcroft's wish list, but a river that gets farmers more water will also benefit the other creatures that depend on it.

People may not agree precisely on what they want for the river, but they know that "they don't like the way it is," says Ben Rizzi, with the La Jara field office of the Natural Resources Conservation Service.

Miller intends to place 9,000 refrigerator-sized boulders in

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Operable Unit 4: Going Where No Contamination has Gone Before

In 2003, work on the Operable Unit 4 (OU4) was all about collecting contaminated water and separating it from uncontaminated water.

As part of the remaining contaminant source control to be implemented at Summitville, OU4 construction work included ground water interceptor drains, seep collection drains at the North Waste Dump, the Chandler and the Missionary Seeps area, and the Dike 1 area downstream of the Heap Leach Pad; as well as pipelines from the Highwall and the Reynolds Adit.

This season's OU4 work includes improvements to Summitville's water management systems and the removal of sediment from the Summitville Dam Impoundment (far left).

All of these various above ground and below ground pipes are routed to a single point called the impact basin. From there the concentrated contaminated water is directed to the storage impoundment.

Collectively, the purpose of these actions is to separate the contaminated water from the uncontaminated water. When uncontaminated water flows across a restored, revegetated slope, the water can be diverted directly off site without treatment. Meanwhile, the contaminated water from sources such as the exposed surface of the Highwall, and the discharge from the adits and the seeps, will always exist and need to be collected.

The collection system will reduce the volume of water routed to the Summitville Dam Impoundment (SDI), where it is then treated to adjust the pH and remove the metals. The entire system, which includes routing, storing and treating contaminated water, results in a more efficient and effective management of water at the site.

The Colorado Department of Public Health and Environment (CDPHE) has contracted with the engineering design firm Knight Piesold for the OU 4 work. Subsequently, SLV Earthmovers of Monte Vista was hired to conduct the actual construction of the Knight Piesold design, which was completed in March 2003.

OU4 site-wide reclamation, completed in 2001, is designed to create stable ground surfaces and a vegetative cap so that clean water stays clean as it leaves the site.

During the earthmoving and construction of drains in the vicinity of the pumphouse fault seep, a persistent source of contamination that has historically discharged directly into Wightman Fork, a new adit was discovered. The adit, previously unknown and not shown on any historical map, is below the elevation of the Reynolds Adit by 45 feet and appears from the unearthed timbers to have been driven in the early 1900s. This was an exciting discovery, but also required that a specific structure be built that would funnel contaminant flow into the already implemented collection system. The adit was named "Little Stella Adit," and the discharge is now directed to the SDI, rather than Wightman Fork (*see page 8*).

Utilities at the Summitville Mine are not only antiquated, but also have been cut and spliced so many times that they fail to operate reliably. The location of these buried pipelines and wires are often unknown and unmarked. In preparation for updating and replacing the water treatment plant, new utilities and transformers were installed to bring the site up to required building codes. A new subsurface utility corridor has been constructed, surveyed and

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Water Treatment Plant

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together into a plan that fits together internally. It is a massive coordination and technical effort that will take at least a year and a half to complete. It is a keystone element of final remedy success, and both CDPHE and EPA project managers are committed to developing this most important component of the cleanup.

The effluent standard for the water treatment plant is defined as the assigned numeric standard for the first receiving stream segment. In this case, that is Alamosa River Segment 3b. The water as it exits the water treatment plant at the point where it discharges to Wightman Fork must meet the standards defined in CDPHE/Water Quality Commission Regulation No. 36 "Classifications and Numeric Standards for Rio Grande Basin." This is the most stringent standard that can be applied and does not assume any dilution or mixing of effluent water with downstream waters. This is because there is no assimilative capacity in the Alamosa River and the best that can be achieved is to meet the in-place standards.

Water treatment plant design began with detailed analysis of on-site contaminant chemistry, evaluating various treatment scenarios. During this evaluation, it was found that adequate aluminum removal could not be achieved with a single-stage high-density sludge (HDS) process. After many discussions with the Summitville technical team and the water quality divisions of both CDPHE and the EPA, it was determined that in order to meet aquatic life-sustainment tests, also referred to as Whole Effluent Toxicity (WET) tests, and to meet effluent standards at the end-of-pipe, a two-stage HDS treatment system would be required. In the first stage the pH will be raised to 5.5 to precipitate aluminum, then in the second stage it will be raised again to a pH of 10 to remove the remaining metals, primarily copper, zinc, manganese and iron.

Pre-Design Analysis	Summer 2003
Schematic Design Phase (30% complete)	September 2003
Design Development Phase (60% complete	November 2003
Final Design Phase (90% complete)	February 2003
Bid Document (100% complete)	March 2004
Bidding Phase	April 2004
Begin Construction	June 2004
Complete Construction	September 2005
Operating New Water Treatment Plant	2006

The projected schedule for completing the design and construction for the new water treatment plant, pending funding.

We hope to pursue an ambitious schedule, yet it will largely depend upon receiving all of the funding needed. At this point the project is funded through the Final Design Phase. The Colorado Department of Public Health and Environment and the EPA are working on obtaining the funding required to construct the new water treatment plant.

However, the chance of funding is very uncertain. On a national level, there are many other environmental remedial projects that have a higher priority because of their impacts to human health. Therefore, though the agencies intend to have the new water treatment plant design ready for construction next spring, if the funding is not provided, the design will sit on the shelf pending available funding. Of course the existing water treatment plant will continue to operate until a new plant is constructed and brought on line.

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Technical Notes from the Field

Site work at Summitville for the 2003 season began on April 1. At that time, the Natural Resources Conservation Service (NRCS) reported snow pack at 53% of average for the Lily Pond Snowpack Telemetry (SNOTEL) site, and 65% of average at the Wolf Creek SNOTEL site.

Treatment of water stored at the Summitville Dam Impoundment (SDI) began on April 17, when the SDI water elevation was recorded at 11,203 feet. The elevation of the SDI last year at shutdown was 11,188 feet, which indicates an increase of around 15 feet of water over the winter. This is an estimated accumulation of 24.6 million gallons, or approximately 100 gallons per minute (gpm) flow, from all sources entering the SDI over the winter.

On April 19, the Water Treatment Plant began discharging clean effluent to Wightman Fork Creek.

The Water Treatment Plant operated for 4,150 hours out of a total of 4,235 hours in the 2003 season. Operating efficiency for the 2003 season was therefore around 98.0 percent. Of the 2.0 percent downtime, 1.4 percent was for scheduled shutdowns, while the other 0.6 percent, or around 25 hours, was from unexpected disruptions of power or mechanical failures.

The average rate of treatment at the plant for 2003 was approximately 748 gpm, and the total water treated and discharged to Wightman Fork was 186,341,597 million gallons. The good news - there were no untreated releases of water to Wightman Fork from the SDI during 2003 season.

Peak runoff on Wightman Fork occurred during the last week in May. Typical peak runoff in an average snow precipitation year is the first week of June. The SDI peaked on June 7, 2003, at an elevation of 11,215 feet, while the SDI spillway crest is at an elevation of 11,221 feet. Operations of the Water Treatment Plant stopped on October 10, 2003, when the SDI elevation reached 11,188 feet.

Sediment was removed from the SDI during low water conditions, increasing the SDI's capacity. A total of around 15,000 cubic yards of sediment was removed. This increased the storage volume by 2.63 million gallons, or roughly 3

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New Water Treatment Plant Design Continues - Locations Evaluated

Summitville's Site Wide Record of Decision (ROD) calls for a new, gravity-fed water treatment plant to be located downstream of the Summitville Dam Impoundment (SDI). However, as a result of the information collected over the last two years, the recently released Explanation of Significant Difference (ESD) proposes a change in location, so that the new plant would be located near the existing water treatment plant. Contaminated water would be pumped to the plant.

An extensive evaluation of the water treatment plant location began in 2002 and continued into 2003. The evaluation is an iterative process in which data is collected and analyzed, leading to interim decisions. Additional data is then collected and analyzed, finally leading to a well supported technical decision.

Part of the design of the new water treatment plant is to evaluate the land on which the building will be constructed. Many factors, which are collectively referred to here as *site development factor*s, are considered during this investigation. They include drainage characteristics, road access, snow accumulation, site security and relationship to the flood plain, utility routing, power demands, cost of water pumping and transporting sludge, location of pipelines, property ownership, requirements to blast rock, use fill material and build retaining walls and compliance with the State and Federal regulations.

In 2002, the EPA's contractor performed a comparative cost analysis of five water treatment plant locations based on the site development factors. The sites were 1.) located downstream of the storage impoundment, 2.) located southeast of the storage impoundment, 3.) located near the entrance security trailer, 4a.) located adjacent to and east of the existing water treatment plant and 4b.) located adjacent to and west of the existing water treatment plant.

The costs were reevaluated for sites 1, 4a and 4b based on the size of the 2-stage high-density sludge (HDS) water treatment process, which has a significant impact on the capital cost for site development. A summary of this final analysis, including the site development and the annual pumping and sludge transportation costs assuming a 100-year life, is provided in the table below.

Based on these site development factors and analyses, the Colorado Department of Public Health and Environment and the EPA believe that the best site to construct a new water treatment plant is 4b, to the west of the existing plant (*see page 7 for map*). The change in location results in a savings of $900,000 in capital construction costs and in long-term operation and maintenance costs. Other benefits realized include a more secure building, since it will be situated within the mine site boundary, and greater accessibility during winter operations.

The ESD proposes to move the new water treatment plant to the 4b location as the best overall site when evaluating all factors.

Regardless of the location, the new water treatment plant will operate more efficiently and remove more metals than the existing water treatment plant. All other aspects of the remedy as described in the ROD shall remain the same, and the Colorado Department of Public Health and Environment and the EPA remain committed to eliminating untreated releases from the storage impoundment. This top-priority remedial goal is essential to restoring the aquatic life to the Alamosa River.

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Summitville Site Development Cost Comparison

Item	Site 1 Downstream of SDI	Site 4a East Existing WTP	Site 4b West Existing WTP
Subtotal, clearing and grubbing	$ 27,625	$ 18,900	$ 18,900
Subtotal, building demolition	$ 2,508	$ 45,374	$ ---
Subtotal, site preparation earthwork	$ 704,592	$ 193,917	$ 193,917
Subtotal, access road	$ 33,600	$ 6,000	$ 6,000
Subtotal, utilities	$ 453,880	$ 329,300	$ 293,600
Subtotal, concrete	$ 1,554,000	$ 1,647,600	$ 1,599,600
Subtotal, miscellaneous costs	$ 220,628	$ 182,921	$ 174,531
Construction Management	$ 457,775	$ 365,102	$ 344,482
Subtotal, construction	$ 3,509,608	$ 2,799,114	$ 2,641,030
Subtotal, O&M, present worth	$ 948,530	$ 1,109,546	$ 1,036,357
Subtotal, total present worth	$ 4,458,138	$ 3,908,660	$ 3,677,387
Contingency	$ 668,721	$ 586,299	$ 551,608
Grand total	$ 5,126,859	$ 4,494,959	$ 4,228,995
Savings	$ ---	$ 631,901	$ 897,864

Inside Summitville's Adits

Historic mining operations at Summitville were predominantly what is known as hard rock mining. Tunnels, or adits, were dug deep into the mountain, often by hand, and the gold-containing ore was removed mechanically and transported to the surface for processing. At Summitville at least eight adits have been discovered, their mine workings boring deep inside South Mountain.

The two largest adits are the Chandler and the Reynolds. In 1897, the Reynolds Adit was driven into the Tewksbury Vein, located below the central portion of the Summitville mine pit. The Reynolds was completed in 1906 and acidic water was soon exiting the adit. In 1938, the Reynolds Adit was connected to the Iowa Adit, 540 vertical feet above the Reynolds, so that Iowa ores could be dropped down to the Reynolds level for hauling. The Reynolds Adit and the Iowa Adit provided the drainage for the mine workings.

The Chandler Adit was driven to connect and access some of the underground workings at the north end of the ore deposit. There is not much information available about the Chandler prior to 1993, at which time the portal location evidenced a cave-in, preventing access to the interior.

In 1994 and 1995, in an effort to control acid mine drainage from the mine workings, bulkheads were placed in these lower most adits to prevent uncontrolled acid mine drainage. Since the Chandler Adit was located 180 feet above the Reynolds adit, it was speculated that when the Reynolds was plugged, the ground water level in the mountain would rise to eventually find its way out the portal. Hence, the Chandler Adit was targeted for plugging in conjunction with the Reynolds Adit program. The Reynolds Adit bulkhead was placed approximately 1,265 feet from the portal and is an 8-foot thick concrete wall anchored into the surrounding rock. The Chandler Adit bulkhead, which is 6.5 feet thick, is located approxiamtely 300 feet from the portal. In addition to placing the bulkheads, the water level is managed and water from inside the mine workings, or "mine pool," is discharged to the

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Life-Cycle Cost Analysis Used to Evaluate Plant Alternatives

One of the final remedial actions at Summitville as outlined in the Record of Decision is the design, construction and operation of a new water treatment plant. In designing a water treatment plant, many technical design issues are considered and the costs are evaluated among the different design alternatives and locations.

Remedial action projects typically involve construction costs that are spent at the beginning of a project and costs in subsequent years that are required to implement and maintain the remedy after the initial construction period (e.g., annual operation and maintenance costs).

This is the case at Summitville, where each water treatment plant location alternative generates a different mix of up-front and long-term costs. For example, the initial downstream location would require a significantly greater outlay in construction costs, while the upstream location would require greater long-term pumping costs.

Present value analysis is a method that economists and design firms use to evaluate these expenditures, both in capital and operation and maintenance costs, which occur over different time periods. This standard methodology allows for cost comparisons of different remedial alternatives on the basis of a single cost figure for each alternative.

This single cost figure, also called the present value, is the amount needed to be set aside at the initial point in time to assure that funds will be available in the future when they are needed, assuming certain economic conditions. URS Operating Services, the pre-design consultant for the treatment plant, calculated the present value for five individual Summitville water treatment plant locations; that is, they converted all cash flows (occurring in the first year through the 30^{th} or 100^{th} year) to a common point in time – the present.

The key in generating a single cost figure for cost comparisons is that a dollar today is worth more than a dollar in the future. Inflation reduces the buying power of future money, while money available today can be invested and earn a rate of return. Future costs must therefore be adjusted, or discounted, to present-day values. Economists use an interest rate or discount rate to do this.

The value of this discount rate can be the rate of return that one can earn from investing the money. Alternatively, it can also be the rate that you will be charged if you had to borrow the money. Public and private entities have various methods for generating a discount rate.

For Summitville, and all other Superfund projects, the EPA provides guidance for determining a discount rate. The guidance is spelled out in a document titled "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study." This guidance further utilizes the Office of Management and Budget's (OMB) guidance for discount rates called "Revisions to OMB Circular A-94 on Guidelines and

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The EPA Site Funding Allocation Process

Several times each year the Environmental Protection Agency's nationwide Risk-based Priority Panel meets to review proposed new construction projects under design at Superfund sites across the country. This story would normally be of only passing interest to the community members of the San Luis Valley. However, this year in October, the new water treatment plant design was brought to the panel for review.

Ten representatives from all 10 EPA regional offices and Headquarters jointly set priorities for over 20 new project proposals during the meeting. The projects were evaluated and scored by the panelists according to four risk ranking factors and one program management factor. The overall scores are used to place each project in a national, ranked list, that in part determines whether the work will receive funding this year.

The risk ranking factors include the following concerns with the proposed sites:

1) The characteristics of the contaminants

2) The stability of the contaminants

3) The risk to the human population posed by the contaminants

4) The threat to the environment posed by the contaminants

5) Program management factors such as:

   a. pending natural resource damage claims,
   b. the reuse potential for the cleaned-up site,
   c. an application or transfer of new or innovative technology,
   d. the potential to reach a construction completion program milestone,
   e. the potential for economic redevelopment,
   f. any environmental justice issues.

Sites are funded throughout the year as funds become available and as site management teams demonstrate readiness to receive them and award contracts for new work.

Final decisions on which sites will receive funding in federal fiscal year 2005 (October-September) will not be made until next summer. The Summitville site management team has completed all the process steps required to get the work prioritized for funding.

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The location of the new water treatment plant as proposed in the Explanation of Significant Difference is just to the west of the existing plant. In the Record of Decision, the proposed location was downstream of the SDI.

Previously Unknown Adit Discovered at Summitville

In August 2003, a new adit was discovered at Summitville. The 1890s vintage adit was discovered 100 feet west of the main entrance to the site and south of Wightman Fork.

The adit, discovered as the source of seepage along the bank of the creek previously referred to as the Pumphouse Fault, was traced southward approximately 20 feet with an excavator. Suddenly the ground collapsed and old rough-hewn timbers were exposed. After removing the overburden, a gapping hole with water rushing out and jumble of timbers was discovered. This was quite a surprise, because none of the old maps or publications indicated an adit in this area. It is possible that the adit drains the Missionary Workings, or perhaps it was an exploratory hole of limited extent.

The Little Stella Adit as it appeared upon its discovery.

The adit, which was given the name "Little Stella," is believed to have been active around the turn of the century. Upon inspection, the mine workings were in poor condition and continued at least 25 yards into South Mountain. The timbers used to support the mine working were smaller and cruder than those found today in the Reynolds and Chandler Adits. In fact, bark still covered some of the timbers.

Following the design of a collection system, which directs its drainage to the Summitville Dam Impoundment, the Little Stella was closed with a 2-foot thick wall of concrete in October 2003. Contaminated water from the mine workings will now be collected and treated.

Crews plug the adit above. Left, the finished wall at the "Little Stella Adit."

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Reweaving River

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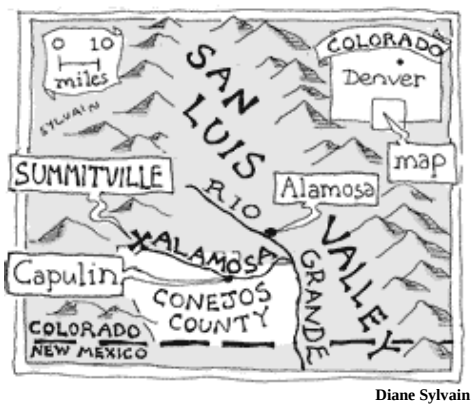
4.5 miles of river this year. The rocks won't be used as riprap along the banks; rather, they'll be placed in the river to direct the flow of the river upon itself, to slow and pool its waters. It is the aikido form of civil engineering.

"We plan to shorten the stream's evolution by a hundred years," says Miller, who adds that the foundation will plant grasses and trees to stabilize the river's banks. In places, the river will return to its old meanders. Sediment will pile up where there is only cobble now, and willows and cottonwoods are likely to sprout soon. The water table will rise. Ranchers will move their cattle out of the riparian zone for two years, while people see what the new river looks like and decide what happens next.



Diane Sylvain

Miller's project covers less than 10 percent of the river's length. But it has taken a generation to get this far. As Miller strolls the bank near Rodriguez's ranch, he recognizes that he is building not only a river, but also a community of people who are invested in the waterway.

"This is what the river is about," he says, pointing to a headgate. "We're using it. But we can use it wisely. You've got to give the resource back to the people. They've got to manage it. Who else is going to take care of it in the future?

"If we do that," he adds, "there probably won't be another Summitville."

Technical Notes

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percent.

The first sample point downstream of the mine site is located on Wightman Fork 5.5 miles from the confluence with the Alamosa River. At this location the average pH for 2003 was 5.00 and the average copper concentration was 0.56 mg/L. The highest copper concentration was measured at 1.14 mg/L and the lowest was 0.25 mg/L. The source of metals contamination that caused the high concentration event, a release from the Little Stella Adit, was immediately captured and was channeled to the SDI. By comparison, the average copper concentration discharged from the Water Treatment Plant to Wightman Fork was 0.046 mg/L during the 2003 season.

NRCS' precipitation graphs show average moisture for the months of April thru September 2003. The Wolf Creek SNOTEL site showed an average of 15.0 inches of precipitation for those months. Lily Pond SNOTEL site showed 14.0 inches of precipitation and the Summitville weather station recorded 13.82 inches of precipitation for the same period.

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Life-Cycle Cost

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Discount Rates for Benefit-Cost Analysis." This guidance document is updated every year with newly adjusted discount rates.

Guidance provides a default discount rate of 7% for developing present value cost estimates for remedial action alternatives. These rates found in the OMB Circular A-94, which are also used in the President's annual budget submission to Congress, are based on interest rates from Treasury notes and bonds.

Rates in the OMG Circular A-94 are based in part upon the duration of the project, and since the water treatment plant at Summitville will have over a 30-year life, a 4.2% discount rate was used. This rate is specified in the Summitville Record of Decision.

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The documents referenced in this article can be found online:
A Guide to Developing and Documenting Cost Estimates During the Feasibility Study
http://www.epa.gov/superfund/resources/remedy/finaldoc.pdf
Circular No. A-94
http://www.whitehouse.gov/omb/circulars/a094/a094.html
Summitville Record of Decision
http://www.cdphe.state.co.us/hm/Summitville_ROD.pdf

Austin Buckingham gives a tour of Summitville to visitors from the Rio Grande County Museum in July.

Adits

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Summitville Dam Impoundment and then treated.

Beyond water management, long-term management of the closed adits at Summitville includes monitoring. Each year the Reynolds and Chandler Adits are inspected to make sure that they are structurally sound and that the bulkheads are in good condition. On July 17, 2003, this year's inspection took place. No significant changes were seen in either of the two adits and both bulkheads appeared as they had in previous years. No leaking was observed from the face or from around the contact zone with the surrounding rock.

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Operational Unit 4

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marked so that it can be easily located in the future.

That final construction item of 2003 was the removal of sediment from the SDI. Over the years, sediment has been accumulating and reducing the storage capacity of the impoundment. SLV Earthmovers, were tasked to remove approximately 15,000 cubic yards of contaminated sediment, which was ultimately disposed in the on-site sludge disposal area. The capacity of the SDI has thus increased by approximately 3%.

Construction activities were completed by October 31, 2003, prior to shutdown of the site for the winter.

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Need More Information?

Visit our website:

http://www.cdphe.state.co.us/hm/summitville.asp

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Information Repositories

U.S. Department of Agriculture
Conejos County Natural Resources
Conservation Service Center
15 Spruce
La Jara, CO 81140

Del Norte Public Library
790 Grand Ave.
Del Norte, CO 81132

Records Center
Colorado Department of Public Health & Environment
Hazardous Materials & Waste Management Division
4300 Cherry Creek Drive South, Room B-215
Denver, CO 80246-1530

Superfund Records Center
U.S. Environmental Protection Agency, Region 8
999 18th St., Suite 500
Denver, CO 80202

Colorado Department of Public Health
and Environment
HMWMD-RP-B2 (SMV) 2900
4300 Cherry Creek Drive South
Denver, CO 80246-1530

ADDRESS SERVICE REQUESTED