

Mine Site Remediation by Good Samaritans in the Animas Watershed

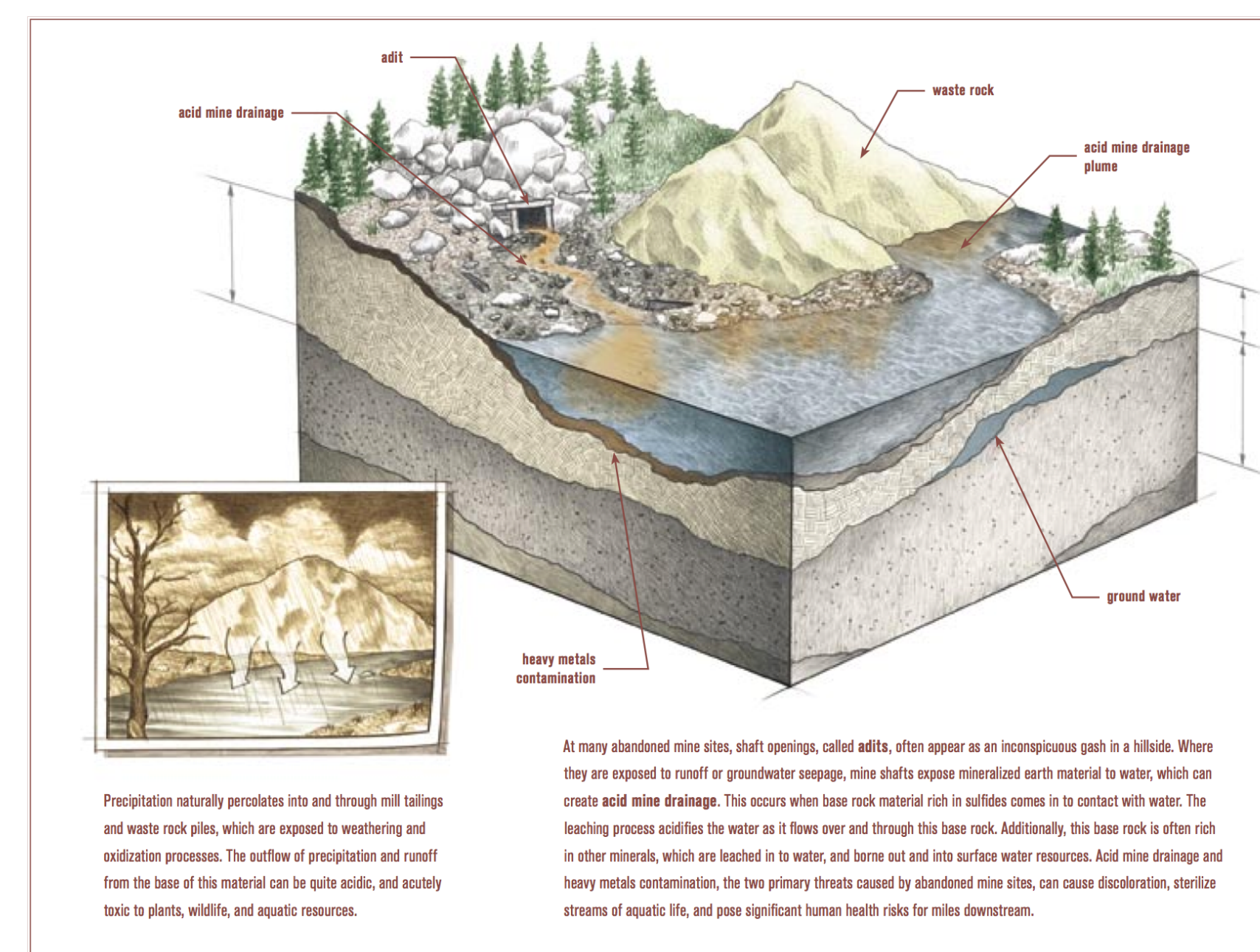
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INTRODUCTION

In Colorado's southern San Juan Mountains, the Animas watershed has been subject to substantial metal loading as a result of a 120-years of mining and milling practices. In response to an overall lack of potentially responsible parties for the remediation of these sites, the Animas River Stakeholders Group (ARSG) operates as a third-party volunteer group seeking to address the remediation of mine waste and acid mine drainage. Similar to property owners and operators of a mine site, Good Samaritans such as ARSG can incur environmental liabilities. As a result, the remediation of draining mines has been greatly impeded and mines throughout the region continue to discharge into the Animas watershed. In responding to this issue, certain advocates such as the ARSG have promoted an amendment to section 402 of the CWA. This amendment would serve as a means to create a new National Pollution Discharge Elimination System (NPDES) permit specifically for accomplishing the partial treatment of abandoned mines by Good Samaritans.

SILVERTON AND SAN JUAN COUNTY'S MINING LEGACY:

Due to the high mineralized content of the Silverton caldera, Southwest Colorado represented an ideal location for mineral extraction, and on September 13, 1873 when the Brunot Treaty was enacted a 5,400-mi² region of Ute territory in the heart of the San Juan Mountains was opened up to settlement by miners. For the next 120 years, Silverton and much of San Juan County depended on the fiscal income of the mining industry, and has thus created strong ties within the local community to its mining heritage. In 1991 when Sunnyside Mines closed the last major mine in Silverton the town became a federally designated National Historic Landmark District known as the Silverton Historic District. In its current state the Silverton economy primarily depends on seasonal tourism from recreational opportunities tied to the Animas River, surrounding mountains and its mining heritage.



HISTORY OF THE ANIMAS RIVER STAKEHOLDERS GROUP:

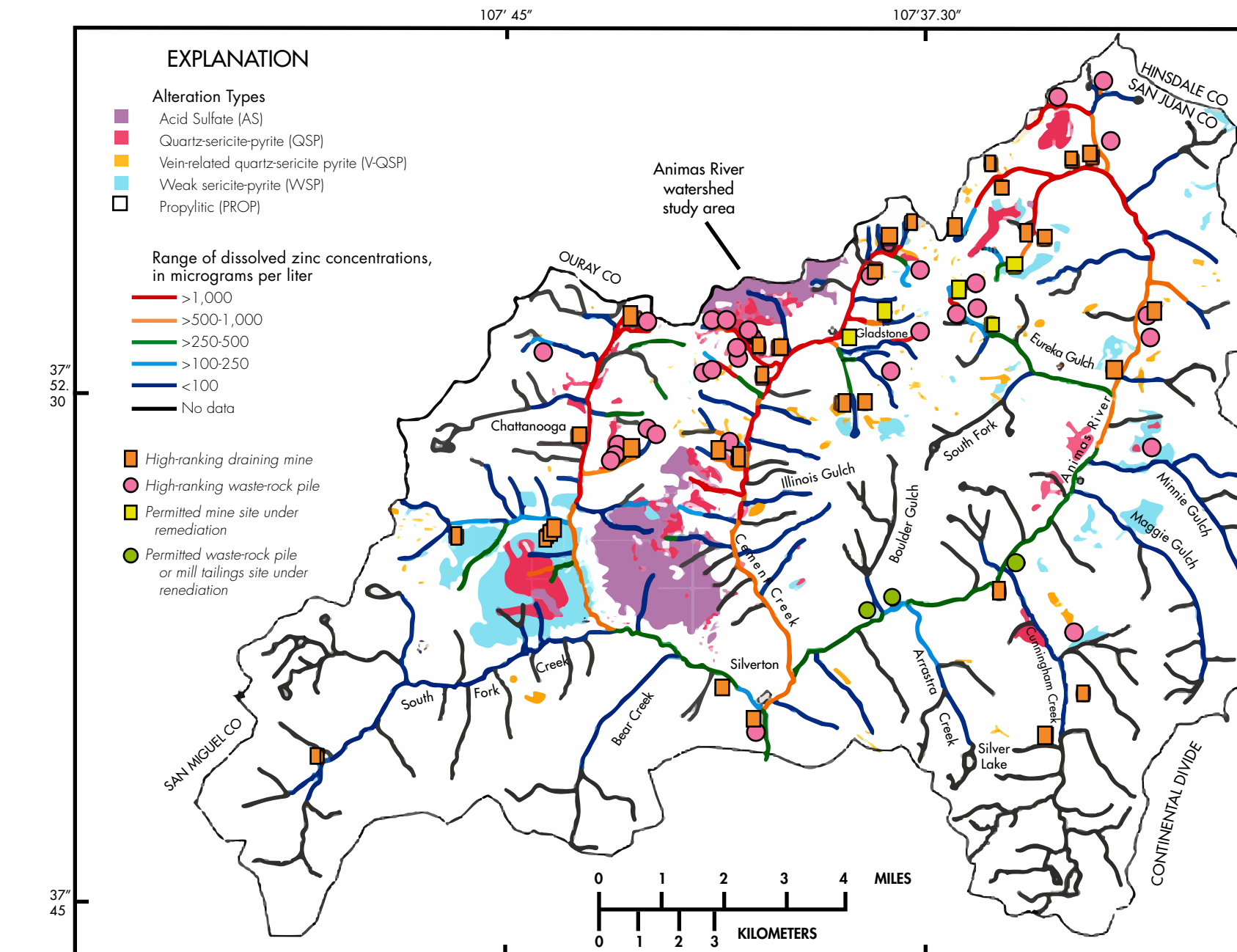
- The ARSG formed in 1994 at the urging of the Water Quality Control Division (WQCD) and in response to potential Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) designation by U.S. Environmental Protection Agency (EPA) of most of the Upper Animas River watershed.

- In 2000 the ARSG presented a Use Attainability Study (UAA) to the Water Quality Control Committee (WQCC) with recommendations for use classifications and water quality standards, which the WQCC adopted as a means to determine Total Maximum Daily Load's (TMDL's) for the release of toxic pollutants in the Animas River.

- Since, the ARSG in collaboration with various Federal agencies such as the U.S., BLM and Forest Service, and private organizations such as Sunnyside Gold Corp. have conducted various remediation projects in the basin with the goal to improve water quality in the Animas River Basin for its community members.

SUMMARY OF RECLAMATION PROJECTS BY THE ANIMAS RIVER STAKEHOLDERS GROUP

(1) Project Sponsor	(2) Project Site Name	(3) Location	(4) Type of Remediation	(5) Project Timeframe	(6) Funding (incl. in-kind match)	(7) Improvements (actual or anticipated)
San Juan RC & D (ARSG)	Carbon Lakes Mine Dump	Headwaters of Mineral Creek East of Red Mountain Pass	Removal of 1,900 cubic yards of waste rock from stream channel	Phase I - completed 1999	NPS 319 Funds: \$75,000 ARSG Match: \$62,800	Reduce loading of metals especially Cadmium, Copper, Iron, Lead, Manganese, and Zinc
San Juan RC&D (ARSG)	Galena Open-pit and Hercules	Prospect Gulch	Waste Removal, hydrologic controls, revegetation	2001	NPS 319 Funds: \$90,000 ARSG Match: \$80,000	Elimination of surface water leaching of toxic metals. Post remediation monitoring begins in 2002.
San Juan RC & D (ARSG)	Carbon Lakes Mine Waste Phase II Part I	Headwaters of Mineral Creek East of Red Mountain Pass	Complete removal of waste rock from stream channel	2001 season	NPS 319 Funds: \$38,000 ARSG Match: \$51,000	Reduce loading of metals to Animas River; restore stream channel, revegetate
San Juan RC & D (ARSG)	Carbon Lakes Phase II, Part 2	Headwaters of Mineral Creek East of Red Mountain Pass	Removal and disposal of 3000 tons of Congress Mine Dump wastes	2001 season	NPS 319 Funds: \$35,500 ARSG Match: \$42,500	Reduce loading of metals to Animas River by beginning the removal of mine wastes.
San Juan RC & D (ARSG)	Carbon Lakes Phase II, Part 2	San Antonio & Kohler Tunnel infiltration control	Infiltration Control. Purchased Carbon Lakes Tunnel. Abandoned diversion rights, abandoned ditch	2001 season	NPS 319 Funds: \$30,000 ARSG Match: \$33,333	Reduce water infiltration to the San Antonio and Kohler Mines; reduce AMD
San Juan RC & D (ARSG)	Red Min. Project	Carbon Lakes Ditch Restoration	Ditch, Wetland and Stream Restoration	2003	SWWCD: \$5,000 USFS: \$12,400	Return Mineral CVK headwaters to natural hydrology; restore cosmetic restoration of tributary diversion ditch; wetland restoration
San Juan RC & D (ARSG)	Red Min. Project	Congress Mine, Mineral CVK headwaters	Complete removal of Congress mine wastes	2003	NPS 319: \$13,000; July, 2003; St. Min. Severance Fee, 3	Reduce metal loading to Animas River by removal of mine wastes and backfilling.
San Juan RC & D (ARSG)	Red Min. Project	San Antonio Mine Water Control Project	Hydrological controls, remove wastes from stream, consolidation, revegetation	2004	CA: \$80,000; 80% match from Silver Wing Co. disposal fees	Reduce metal loading and acidity to Mineral Creek; stabilize site; restore streambed
San Juan RC & D (ARSG)	Harden Peak Project	Lucky Jack Mine wastes and drainage	Hydrological controls, remove wastes from fan, consolidation, revegetation, acid and shaft closures	2004	CA: \$75,000; match from Co. Mineral Severance	Reduce metal loading and acidity to Upper Animas River; uncover fan and restore
San Juan RC & D (ARSG)	Harden Peak Project	Upper Lucky Jack Mine waste dump	Consolidation, neutralization, & revegetation of waste dump, closure of shaft of water	2005	CA: \$13,000; match from Co. Mineral Severance	Reduce metal loading and acidity to Upper Animas River; from leaching mine waste partially residing in stream
San Juan RC & D (ARSG)	Infiltration Control Project	Pride of the West Mine Open Slope	Combined safety and infiltration closure of 2 large open slopes & 1 raise	2005	CA: 700,000; Min. Severance NPS: \$128K; Match: \$18K	Reduced surface water infiltration into mine to reduce metal loading at mine discharge
San Juan RC & D (ARSG)	Priority Waste Site	Kamun City #1, 2, and 3 mines	Safety closure, mine waste consolidation and backfill; revegetation, run-off controls	2006	CA: 175,000; Mineral Severance; NPS: DRAG safety grant	Reduced surface water leaching of mine wastes.
San Juan RC & D (ARSG)	Red Min. Project	Upper Brown Branch and mine	Mine waste consolidation and backfill; revegetation, run-off controls	2006	\$60,000 NPS \$41,333 match	Reduced surface water leaching of mine wastes
San Juan RC & D (ARSG)	Silver Edge Project	Mineral Creek	Remove mine wastes from creek, consolidation & backfill; revegetation, run-off controls, some excavated new ponds, rehabilitate mine drift	2010		
San Juan RC & D (ARSG)	Koehler Mine Fracture grouting	Mineral Creek	Pressure grout fractures around existing backfill	2011		



Tainted water in the American tunnel at Gladstone pours into the portal at Cement Creek in 2012

ENVIRONMENTAL LIABILITY

Similar to property owners and operators of a mine, Good Samaritans such as the ARSG can incur environmental liabilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Clean Water Act (CWA). Most Good Samaritans have limited potential liability under CERCLA through comfort letters, remedial action memorandums (RAM's) and administrative order on consent (AOC's). Unfortunately, Good Samaritans working on drainage mines face more pressing liability under the CWA. This is because in the current iteration of the CWA, EPA considers draining mines as point sources of pollution. If a citizen suit is brought upon Good Samaritans the EPA is required to issue a NPDES permit to Good Samaritans. Under these conditions, Good Samaritans become responsible for the construction of, and perpetual operation of an active treatment plant that meets NPDES requirement.



Acid mine drainage, North of Silverton 2013.

CONCLUSION

Citizens of San Juan and La Plata County are all stakeholders of the Animas River watershed, as individuals we depend on it for our daily needs and as a community we are tied to the decisions made pertaining to the watershed's quality. Studies conducted by the USGS on various aspects of water quality in the watershed (1996- 2000) showed that historical mining has resulted in water-quality degradation. As a community it is pertinent that we give greater attention to this correlation and the significance of work done thus far by the ARSG. By drafting a bill that addresses the concerns of various interest groups such as environmentalist, mining corporations, and state and local agencies, an amendment to section 402 of CWA could greatly help in the remediation of mine sites in Silverton and across the nation.

ACKNOWLEDGEMENTS

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