

Award Nomination

Cottonwood Wash Reclamation Partnership Project

2005 National Abandoned Mine Land Reclamation Awards

Location

The Cottonwood Wash watershed is located 7 miles west of the town of Blanding (300 miles southeast of Salt Lake City), in San Juan County, Utah. Mine features are located in Townships 34, 35 and 36 South, Ranges 19, 20 and 21 East, SLBM.

Submitted By

Louis A. Amodt, Senior Reclamation Specialist and
Mark R. Mesch, Program Administrator
Utah Division of Oil, Gas & Mining
Abandoned Mine Reclamation Program
1594 West North Temple, Suite 1210
Salt Lake City, Utah 84114-5801
801-538-5360

Project Dates

Start: August 22, 1998
Completion: June 8, 2004

Project Cost

Construction:	\$ 803,925
Environmental Consultants:	\$ 124,898
Cultural/Historic:	<u>\$ 104,106</u>
Total Project Cost:	\$1,032,929

Date Submitted

March 14, 2005

Project Managers

Luci Malin
Louis A. Amodt

Contractors

Crowley Construction of Monticello, Utah
VCM Construction of Kamas, Utah
KSUE Corporation of Moab, Utah

Environmental/Cultural Consultants

SWCA, Inc. of Salt Lake City, Utah
Lone Mountain Archeological Consultants, Inc.
of Albuquerque, New Mexico
Woods Canyon Archeological Consultants of
Yellow Jacket, Colorado
San Juan County Historical Commission
Lee Bennett, LLC of Monticello, Utah

AMRP Administrator

Mark R. Mesch

AMRP Staff

Megan Southwick, Jan Morse, Ken Wyatt,
Chris Rohrer, Ari Menitove, Dick Rol

Preliminary Investigation

BLM Utah State Office
In-House

Engineering

In-House

Landowners

Bureau of Land Management
USDA Forest Service
Multiple Active Claimholders

Products

Total Maximum Daily Load—TMDL
Environmental Assessment
Cultural Survey and Inventory
Oral History Project
Blue Mountain Shadows magazine, 3 issues
Interpretive Kiosk
Interpretive Pamphlet

Introduction

The Cottonwood Wash Abandoned Mine Reclamation Partnership Project exemplifies how several government agencies can work together to achieve a shared goal of reclaiming abandoned mine lands. The project area, which consists of a 143,000-acre watershed in remote southeast Utah, is managed by multiple Federal, State, and Tribal entities as well as private claimholders. Reclamation construction, which took place from 2001 - 2004, was intended to mitigate both environmental and physical hazards posed by abandoned uranium and vanadium mines active during the 20th century. The Utah Abandoned Mine Reclamation Program partnered with the Utah Division of Drinking Water, the USDA Forest Service, and the US Bureau of Land Management in a pilot project for the Interagency Watershed Cleanup Initiative administered by the federal Clean Water Act. This partnership maximized the funding and scope of the reclamation. It also required that the members of each partnering agency reach a consensus on a variety of issues affecting the final reclamation design. Different agencies had different missions and regulatory requirements, which complicated the process of achieving consensus. Compliance with the National Environmental Policy Act (NEPA) was a challenge, as the project area had many sensitive cultural, environmental, and biological issues. Ultimately, the partnership was able to close hundreds of mine openings, remove thousands of cubic yards of radioactive mine dump debris from stream channels, and reclaim dozens of miles of abandoned roads.

Location and Setting

The Cottonwood Wash watershed is located in San Juan County, Utah west of the town of Blanding (see Project Area Location Map). Cottonwood Creek flows through USDA Forest Service (FS) administered land, Bureau of Land Management (BLM) administered land, Utah School and Institutional Trust Land, and Ute Mountain Ute Tribe land within the project area. The Wash drains the Abajo Mountains to the north and extends southward through red rock

desert to the San Juan River (see Figure 1).

People of the early Puebloan Culture were the first to inhabit the Cottonwood Wash area from 1000 to 1400 AD. Their remains, along with those of other groups of Native Americans, make this area one of the premier archeological areas in the Four Corners. Thousands of potsherds, abandoned dwellings, and other artifacts litter the landscape. Recreational sightseeing draws people to Cottonwood Wash from all over the world.

In addition to Native American artifacts, the project area is rich with relics of the 20th century. Madame Curie reportedly collected samples from this area for some of her initial radiation experiments. The uranium boom of the 1950s, fostered by the federal government, had a great impact on the entire Four Corners Area, including Cottonwood Wash. Abandoned mining equipment and structures remain, and reveal important information about the nation's mining heritage.

The watershed includes two mining areas, the Cottonwood Wash Mining

District on BLM land and the Elk Ridge Mining District on FS land. The Cottonwood Wash Mining District is centered at the junction of Cottonwood and Brushy Basin Washes. Although many claims were staked and a small amount of ore was mined in 1931, the claims remained idle until 1936 when production for vanadium commenced. A vanadium mill operated in the area from 1937 to 1943 (see Figure 2). Mining in the Cottonwood Wash District ceased in the mid-1970's. The Elk Ridge Mining District is located toward the upper portion of the Cottonwood Wash watershed. Drilling programs conducted in the early 1950s found rich uranium deposits in this area, and production continued through the mid 1970s.

Project Background

Mining activities within the Cottonwood Wash Watershed produced environmental impacts and public safety hazards. Each of the land management agencies active in the watershed had authority and funding for limited types of abandoned mine land (AML) reclamation, but no single entity had the means or the mandate to achieve complete reclamation. It was recognized, however, that the creation of an interagency partnership would



Figure 1. Overview of Cottonwood Wash Area



Figure 2 Vanadium mill site.

result in the most efficient way to reclaim the watershed.

The Cottonwood Wash Abandoned Mine Project was one of three pilot projects selected for the Interagency Watershed Cleanup Initiative administered by the Clean Water Act. The Utah Division of Oil, Gas & Mining's (DOGM's) Abandoned Mine Reclamation Program (AMRP), the USDA Forest Service (FS), the Bureau of Land Management (BLM), and the Utah State Department of Environmental Quality - Division of Drinking Water (DEQ) created a partnership that allowed each agency to pool their resources and expertise in a single reclamation project for the Cottonwood Wash Watershed.

Physical Hazards

The AMRP provided funding to reclaim priority one physical hazards, but was limited in addressing environmental hazards. The priority one physical hazards in Cottonwood Wash consisted of 239 mine adits and 66 mine shafts.

Environmental Impacts

The BLM and FS funds addressed environmental hazards. The environmental hazards included water

quality impacts (high levels of alpha radiation) to Cottonwood Creek. They also included increased erosion from mine dumps and abandoned mine/exploration roads. The project area contained 39 hazardous structures, 225 drill holes, 273 mine dumps, 9 miles of mine roads, and 64 miles of exploration roads. These roads were not part of the FS transportation system, and the FS wanted them closed.

Prior to reclamation activities, Cottonwood Creek was listed as an impaired watershed by the State of Utah for the following uses: drinking water, recreation, agriculture, and warm water game fish and other aquatic life. Sampling showed that state water quality standards for these uses were exceeded throughout Cottonwood Wash. As required by the Clean Water Act, Cottonwood Wash was listed on the State's 303(d) list of water bodies that do not support their beneficial uses. Listing of a stream on the 303(d) list requires that a Total Maximum Daily Load (TMDL) analysis be completed to address identified water quality concerns. The TMDL process was completed by the Cottonwood Wash Project partnership. The study confirmed that mine features contributed to high levels of gross

alpha radiation. Many mine dumps were located in the stream channel itself.

Project Organization

From its inception in 1998, the Cottonwood Wash Project was directed by both a Steering Committee and a Technical Committee comprised of members from each of the agencies involved in the partnership. The Steering Committee consisted of the following individuals, the:

- FS Region 4 Director,
- Director of DOGM, and
- Director of the Utah Division of Drinking Water.

The Steering Committee provided overall project guidance and delegated tasks among the various partners.

The Technical Committee was responsible for planning, inventorying, engineering, and overseeing reclamation construction. This committee consisted of twelve people:

- the Utah BLM State Office AML Coordinator,
- the USFS Region 4 AML Coordinator,
- the Administrator of the AMRP,
- the AMRP project manager,
- the Utah Division of Drinking Water project manager, and:
- two staff members from the FS Supervisor's office in Price,
- the FS District Ranger from Monticello
- one FS District-level staff person from Monticello,
- one person from the BLM Moab Field Office,
- the manager of the BLM Monticello Field Office, and
- an archeologist from the BLM Monticello Field Office.

Both the BLM and FS relied on additional resource specialists, such as hydrologists, archeologists, wildlife biologists, and mining engineers.

Once the steering committee was formed, the FS, BLM, and DOGM all participated in various aspects of the

inventory work. The inventory included mapping all mining related features and disturbances using geo-referenced coordinates. Radiation levels were measured at all mine openings, dumps and an abandoned vanadium millsite.

With the inventory in hand, the Technical Committee's major challenge was to design a reclamation strategy that would comply with the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and Endangered Species Act requirements in documents drafted for the project. The Committee was mandated to create achievable guidelines contained in the Environmental Assessment (EA), which served as the template for the on-the-ground work. The EA considered recommendations from environmental, cultural, biological, and archeological surveys. This proved difficult given the abundance of sensitive issues identified in each survey, the broad reclamation goals, and the variety of regulatory guidelines governing each partnering agency. Some of the hurdles encountered while designing the reclamation are presented below.

Cultural Issues

The Technical Committee agreed that in order to protect both prehistoric and historic significant sites to the

satisfaction of all partnering agencies, all reclamation near artifact locations would be conducted under the supervision of an on-site archeologist. The archeologist was responsible for recording all sites and providing project guidance to avoid disturbing archeological sites. Construction equipment access was also monitored to minimize its impact. All mine roads and exploration roads were evaluated before they were used by heavy equipment. During road reclamation, the equipment operator would lift the blade/shovel over zones containing potsherds or other artifacts deemed culturally significant by the archeologist. Mine structures and other debris considered to be culturally significant were avoided. Mine closures in sensitive areas were recessed in order to preserve their historic appearance.

Additionally, the Technical Committee selected several mitigative measures to reduce the impact of reclamation work. Three issues of Blue Mountain Shadows, published by the San Juan County Historical Commission, were dedicated to the importance of the uranium industry in San Juan County and to the nation as a whole. Extensive oral histories were recorded from local residents. The Committee also called for the construction of an informational

kiosk at the mill site explaining the history, pre-history and reclamation of Cottonwood Wash. Lastly, the Committee will publish a pamphlet about both the Watershed Remediation Project and the history of the area.

In addition to cultural concerns, the EA addressed wildlife issues. Bat gates were designed to allow bats ingress and egress in mines determined to be significant bat habitat. One-way doors were designed and installed to provide an escape route for ring-tailed cats trapped inside sealed mines.

Project Construction

Construction work was divided into seven phases over five years to allow for archeological clearance work and to keep the size of the construction crews manageable. The first three phases were awarded as one contract, and each successive phase was let as a separate contract. This allowed small, local contractors to bid the project. The increased competition minimized the total project cost. Three contractors performed the work as detailed in the table below: Crowley Construction, VCM Construction, and KSUE Corporation. The first phase began in September 2001 and the final phase was nearly completed in June 2004. Two remaining closures with claimholder issues will be completed in spring 2005

Dates	Project	Contractor	Adits	Shafts	Dumps	Structures	Drill Holes	Roads	Reveg	Cost (\$)
9/26-10/3/01	North Black	Crowley Construction	9	3	28	1	0	0	11.3	37,363.00
11/1-11/8/01	East Black Mesa	Crowley Construction	0	6	20	1	0	0	8.0	35,033.00
5/13-5/23/02	South Black	Crowley Construction	28	9	30	0	0	0	20.8	79,180.00
11/4-12/23/02	West Black Mesa	Crowley Construction	124	43	140	20	189	5.0 mi.	76.5	392,190.23
7/7-7/17/03	Mancos Jim Butte	VCM Construction	28	2	18	4	35	.22 mi.	12.5	35,490.03
9/15-9/25/03	Poison Canyon	KSUE Corporation	13	2	12	9	1	2.5 mi.	22.0	93,685.00
4/26-6/8/04	Chippewan Rocks	Crowley Construction	11	1	25	4	0	65 mi.	112.5	130,983.65
Totals	7	3	213	66	273	39	225	72.7 mi.	263.6 ac.	803,924.91

Table 1. Summary of Construction Phases

(see Table 1).

The BLM and FS funding contributed to the project was placed in an account managed by DOGM. This facilitated DOGM's role as the contracting agency, selected as such because of its greater level of experience with the contracting and procurement process.

Physical and environmental hazards were mitigated in one step by removing portions of mine dumps located in stream channels for use as backfill material for hazardous openings and face-up areas. This material was also incorporated into existing dumps to be regraded, or covered with topsoil to be seeded (see Figures 3 and 4). On FS land, 64 miles of exploration roads were reclaimed and all roads were seeded. Dry drill holes were backfilled with dirt and wet drill holes incorporated bentonite into the closure to contain the water. Overall, the following reclamation was completed:

- 219 Adits/Shafter backfilled,
- 14 Concrete Block Walls installed,
- 12 Native Stone Walls installed,
- 15 Bat Gates/Shaft Grates constructed,
- 39 Hazardous Structures removed, and
- 225 Drill Holes plugged

Summary

This pilot watershed cleanup project was a success. The combined efforts of all of the partnering agencies allowed for more reclamation to occur in Cottonwood Wash than could have been accomplished by any one agency alone. Each agency was able to achieve its goal while taking advantage of the synergy created by working together. This leveraging technique improved the efficiency of government and creates a better overall product on the ground. The project created a strong partnership that overcame several bureaucratic obstacles resulting from the involvement of so many government agencies. The relationships created during this partnership will facilitate many future cooperative projects because trust and friendships have developed. The

partnership found the most efficient way to accomplish all the steps needed before and during on-the-ground reclamation with a single EA and procurement process. Using the knowledge and experience gained during this pilot watershed partnershiping project as a

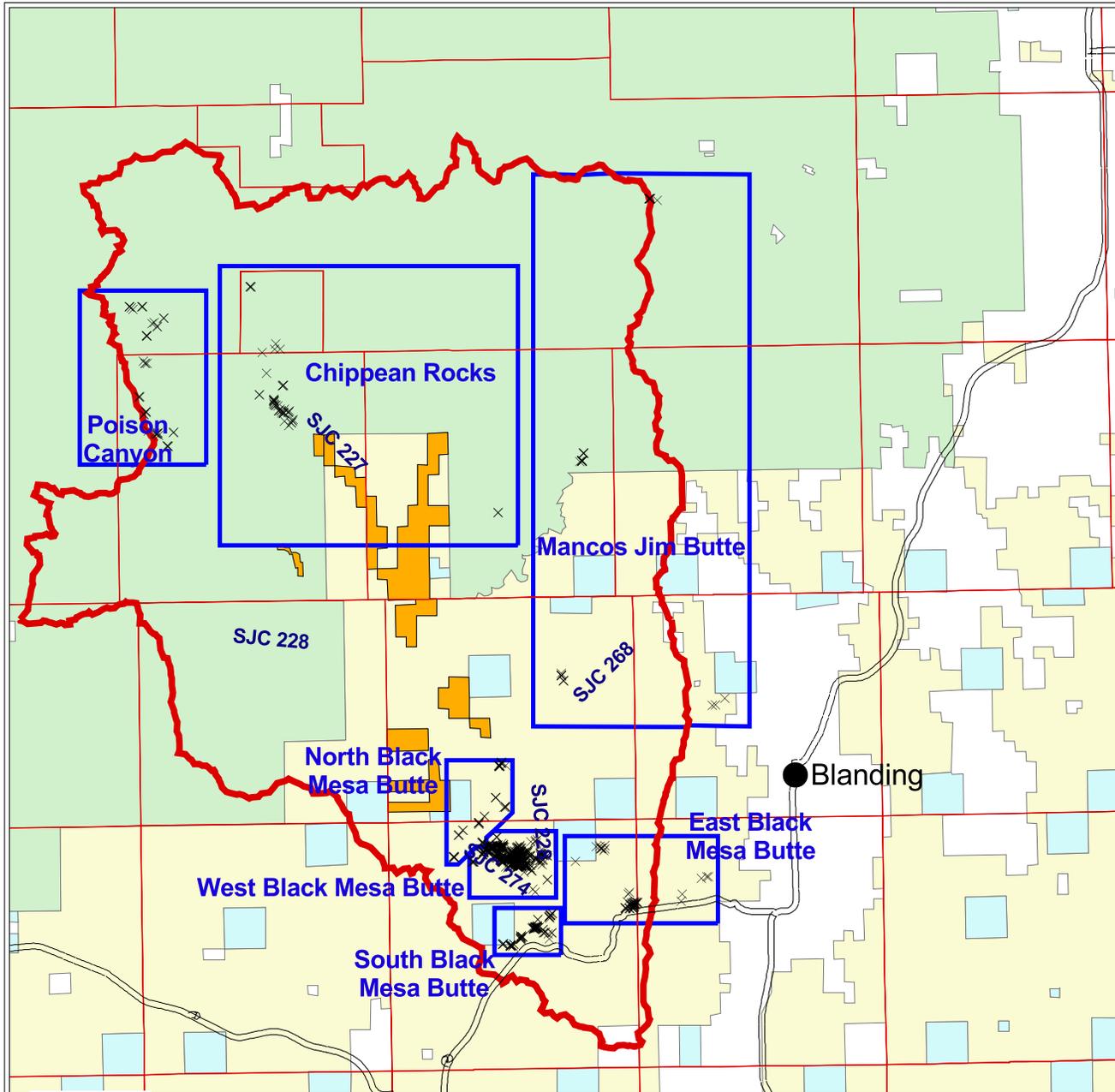
model, the AMRP looks forward to future opportunities in which it can pool resources with other organizations. Partnershiping will be increasingly common as the AMRP fulfills its mission to reclaim abandoned mine lands.



Figure 3. Before reclamation, uranium dump material is in the stream channel.



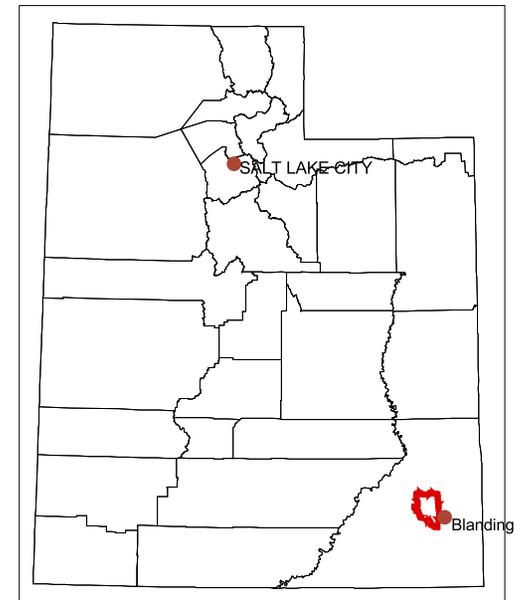
Figure 4 Completed reclamation, uranium dump material has been removed from stream channel and replaced with clean soil. Note the tree is much closer to the stream, showing how much material was removed.



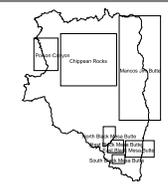
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T 35 S
T 36 S
T 37 S

LEGEND

- Highway
- Township and Range
- Project Area Boundary
- Manti-La Sal National Forest
- BLM Land
- State Land
- Ute Indian Land
- X Mine Site



Dept. of Natural Resources
Division of Oil, Gas & Mining
Utah Oil, Gas and Mining Abandoned Mine Reclamation Program



PROJECT AREA LOCATION MAP

COTTONWOOD WASH PROJECT
AMR/037/905

Drafted by MES
Approved by LAA

October 2001