

ANALYSIS OF BROWNFIELD CLEANUP ALTERNATIVES

Silver City Waterworks

February 2014

The Town of Silver City was awarded a Brownfields Cleanup Grant from the Environmental Protection Agency in 2013. As part of the grant requirements, the Town must prepare an Analysis of Brownfields Cleanup Alternatives (ABCA) and obtain public comments on it before cleanup activities can begin.

The ABCA is a screening tool to document the selection of the appropriate type of cleanup for the Waterworks building. The preferred remedial action takes into account past studies and rehabilitation activities, the surrounding environment, potential reuse, and the building's listing on both the State Historic Register and the National Register of Historic Places.

I. Introduction and Background

- a. **Site Location:** The Silver City Waterworks, built in 1887, provided the Town's first municipal water supply. Located at 1721 Little Walnut Road next to the Jose Barrios Elementary School, the building is sometimes called the "Rock House," because it was constructed of local sandstone. A location map is attached at the end of this document.



- b. **Previous Site Use:** The Waterworks building has a one-story section that once housed steam-powered pumps and boilers, and a two-story section that was a residence for the engineer and his family. Water was collected from subsurface streams in a 500-foot long tunnel or "collection gallery" which drains to a well. Pumps in a 30-foot deep pit within the building boosted the water up to reservoirs on an adjacent hill, from which it flowed down into the Town's water system.

After deeper, more reliable wells were developed in the 1940's to the south and west of Silver City, the Waterworks was disconnected from the Town's water system. Non-potable water was available from the site until 2000. The building was used as a residence for city employees until 1967, and then used as a maintenance shop for the Utilities Department until about 1984. It is currently vacant and in a dilapidated condition.

- c. Site Assessments and Rehabilitation Efforts:** Many improvements have been made over the past several years. Several grants from the Freeport McMoRan Copper and Gold Foundation paid for updated engineering and architectural assessments, reconstruction of the historic front porch, educational outreach, and a highly successful volunteer service-learning project in masonry repair. Youth and adult volunteers have spent many additional hours weeding, creating native plant gardens, improving the drainage, painting historic-looking panels to cover boarded-up windows, and making other improvements. To date, community volunteers have contributed over 4,800 hours on rehabilitation efforts.

These activities have greatly increased awareness and visibility of the Waterworks project in the community, and have helped acquire additional funding from the National Trust for Historic Preservation and the Environmental Protection Agency (EPA), as well as private donations and many in-kind contributions of time and labor from Town of Silver City staff.

Grants from Freeport McMoRan also paid for updating the architectural and engineering assessments that were done in 2001. These reports have helped guide rehabilitation activities. The interior of the building is still in poor condition. A floor over the 30-foot deep pumping pit is collapsing, and many of the doors and windows are broken or missing. However, the seriously-dilapidated one-story roof was replaced in 2012-2013, with an anonymous donation and Town funds.

The Town was awarded a \$200,000 Brownfields Cleanup Grant from the EPA in 2013 with the goal of cleaning up hazardous materials and stabilizing the collapsing pump room floor. These are critical steps in rehabilitation. Of the grant total, \$51,000 has been budgeted for management, an environmental health consultant, and public outreach, leaving \$149,000 for stabilization of the floor and cleanup of hazardous materials.

Environmental studies completed to date include:

- Phase I Environmental Site Assessment by Engineers Inc. in 2002
- Phase II Site Investigation Report by INTERA in 2002
- Asbestos/Lead Base Paint Survey by Zia Engineering in 2002
- Phase II Arsenic Investigation (soils) by Azurite Consulting in 2011
- Lead-based Paint, Asbestos and Vermin/Bat Guano Investigation by ACME Environmental in 2012

Reports may be viewed at the Town of Silver City's engineering office.

- d. Hazardous Materials:** An EPA Brownfields Site Assessment Pilot Project Grant was awarded to the Town of Silver City in 2000, which paid for Phase I and II Assessments at the 26-acre Waterworks property. A follow-up assessment funded by the New Mexico Environment Department (NMED) was conducted in 2012. Contaminants found in the Waterworks building include lead-based paint (LBP) and asbestos. Lead-based paint was

found in many materials in the building, including exterior trim boards, windows, doors, wainscoting, and baseboards. The floor tile and mastic and roof sealant were found to contain asbestos. More recently, a roosting colony of bats and deposits of bat guano were discovered in the two-story residential section.

The disturbance of asbestos-containing materials (ACBMs) may cause asbestos fibers to be released into the atmosphere, creating a potential health hazard to workers and building occupants. Exposure to airborne asbestos fibers is associated with asbestosis, lung cancer, and mesothelioma.

Lead was commonly added to paint until 1978. Lead can be absorbed through ingestion of lead-based paint or inhalation of lead dust. Excessive blood-lead levels can damage the brain and central nervous system. Exposure to lead can cause reproductive problems, high blood pressure, nerve disorders, muscle and joint pain, and memory and concentration problems. Lead is especially hazardous for children.

Bat guano can provide a medium for growing certain types of fungi, the spores of which can cause histoplasmosis if inhaled. Bats can also carry rabies, and can harbor bat bugs that are in the same family as bed bugs. The bats found in the Waterworks building overwinter there, although recent efforts to install netting have kept them out over the past winter.

A survey conducted by ACME in November, 2012 revealed the following quantities of hazardous materials:

Asbestos-Containing Materials:

- 350 square feet of vinyl floor tile and associated mastic
- 200 linear feet of window caulking/glazing (based on one sample; confirmatory sampling will be conducted on all windows/doors with caulking)
- 300 linear feet of roofing sealant (removed in 2013 during roof renovation)

Lead-Based Paint:

- 18 double-hung windows
- 300 linear feet of baseboards
- 7 doors with 10 door frames (5 with transoms)
- 60 linear feet of pump room railings and columns
- 200 linear feet of exterior trim/fascia
- 200 square feet of stair components (treads, risers, baseboards)
- 240 square feet of wainscoting in the kitchen

Bat guano:

- 2,000 square feet on walls and doors (some removed by volunteers in 2014)

- e. **Project Goal (site reuse plan):** The planned reuse for the site is a nature center/water museum, possibly a “living museum” with a resident caretaker. Cleanup standards are more stringent for reuse as housing or other “child-occupied facility” than if it is used as a nature center and museum or other commercial purpose.

II. Applicable Regulations and Cleanup Standards

- a. Cleanup Oversight Responsibilities:** The cleanup will be conducted in accordance with US Environmental Protection Agency (EPA) and New Mexico Environment Department (NMED) regulations, with the Town conducting general project oversight. In addition, cleanup will be protective of historical features in the Waterworks, requiring consultation with the New Mexico Historic Preservation Division.

The Brownfields Cleanup Program Manager (BPM) has primary responsibility for implementation of the cleanup. The Quality Assurance Manager (QAM) is responsible for assuring that all environmental data collection activities are conducted in accordance with the regulations.

An environmental health consultant will be hired to develop specifications for cleanup of lead-based paint, asbestos and bat guano, and to oversee and monitor cleanup activities. Cleanup will be carried out by a qualified contractor with appropriate certifications in the handling of materials containing lead and asbestos. General cleanup of dirt and debris will also be needed. Volunteers may assist with painting to encapsulate lead-based paint as appropriate, and re-plastering.

- b. Laws and Regulations Applicable to the Cleanup:** The cleanup of asbestos-containing material and lead-based paint is regulated by various federal, state and local laws and regulations, including EPA and NMED. Appropriate industry practices must also be followed. OSHA and other regulations apply to protection of workers exposed to lead-based paint and asbestos-containing materials. A confined space entry permit may be required for removal of debris from the 30-foot deep pumping pit.

Laws and regulations that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act, HUD, EPA and OSHA regulations on cleanup of lead and asbestos, state environmental laws, and Town of Silver City's Charter and Code of Ordinances. Federal, state, and local regulations regarding procurement of contractors will also be followed.

Two basic approaches to cleanup are possible:

- **Abatement**, which is the total removal of hazardous materials, or
- **Encapsulation**, to cover and seal up the hazardous material to prevent its escape. In this case, monitoring and maintenance are required to make sure the protective coating remains intact.

Asbestos:

Encapsulation: The vinyl tile/mastic in the bathroom and kitchen could possibly be covered up using a sealant and/or by gluing new vinyl or vinyl tile over it, so long as the original tile is not disturbed (e.g. by drilling, sanding, scraping, etc.)

Abatement: A licensed asbestos abatement contractor must remove asbestos-containing materials (ACM) containing more than 1% asbestos. NMED Solid Waste Bureau regulations require that waste ACM must be disposed of at an asbestos-approved landfill.

Air monitoring may or may not be required during abatement of asbestos since the vinyl floor tile and mastic were identified as containing non-friable ACM.

Lead: Paint with lead content of over 0.5% is considered lead-based paint (LBP)

Encapsulation (Renovation, Repair and Painting): EPA implemented regulations in 2010 that apply to housing and “child-occupied facilities” built pre-1978 and require contractors to follow specific work practices to prevent lead contamination. Renovation must be done by a certified *lead paint renovation* contractor.

Abatement: Abatement requires a higher level of cleanup to permanently eliminate existing lead-based paint hazards. It must be done by a certified *lead abatement professional*.

With either option, LBP must be disposed as hazardous waste if ≥ 5.0 ppm of lead can be leached from the material using TCLP. Some of the paint in the Waterworks has a very high lead content and will probably require disposal as hazardous waste unless the painted wood is removed and disposed of as bulk waste.

Bat guano: Total removal is the only practical option for cleanup. Exposure to airborne dust associated with bat guano is potentially dangerous. Workers in proximity to areas where dust may be entrained into the air should use proper personal protective equipment and use wet methods to minimize airborne dust generation.

III. Evaluation of Cleanup Alternatives

a. Cleanup Alternatives Considered:

To address lead/asbestos/bat guano contamination at the site, six alternatives were considered:

1. No action;
2. Cleanup to “mothball” status;
3. Cleanup of hazardous materials followed by demolition;
4. Renovation and encapsulation of hazardous materials followed by rehabilitation;
5. Abatement of hazardous materials followed by rehabilitation;
6. The most cost-effective, efficient combination of renovation, abatement and replacement that meets cleanup standards and rehabilitation goals.

Evaluation criteria considered in developing the alternatives included:

- Effectiveness: Short-term and long-term protection of public health and the environment
- Feasibility of the alternative, including ability to implement
- Compatibility with future reuse of the property and historic significance of the Waterworks building, including its listing on the National Register of Historic Places
- Cost

b. Summary of Basic Approaches By Alternative:

Alternative #1. No action: No actions would be taken. The “no action” alternative is used as a baseline against which others can be compared.

Alternative #2. Cleanup to “mothball” status: When all means of finding a productive use for a historic building have been exhausted or when funds are not currently available to put a deteriorating structure into a useable condition, it may be necessary to close up the building temporarily to protect it from the weather as well as to secure it from vandalism. The process involves stabilization of the exterior, ventilation, pest control, securing the building, and continued maintenance and monitoring. Cleanup of LBP on the exterior fascia boards would be needed, as well as additional actions to prevent entry.

Alternative #3: Cleanup of hazardous materials followed by demolition: Under this alternative, materials with lead paint and asbestos including vinyl tile, painted wood on moldings, exterior fascia, railings, stairs, windows and doors, etc., would be removed and taken to an appropriate landfill. Containment would be required to keep hazardous materials from migrating off-site. The building would be demolished, the pumping pit filled with dirt and sandstone from the walls, and the land reclaimed.

Alternative #4: Encapsulation of hazardous materials, followed by rehabilitation: The pump room floor would be rebuilt or stabilized. Vinyl tile would be sealed and covered with a new layer of historically-compatible flooring. Wood with lead paint would be renovated by a certified lead paint renovation contractor. Some window sashes in poor condition may be totally replaced¹. Bat guano and other dirt and debris would be removed by steam cleaning. Continued monitoring and maintenance would be required.

Alternative #5: Abatement of hazardous materials, followed by rehabilitation: The pump room floor would be rebuilt or stabilized. Vinyl tile/mastic would be removed by a licensed asbestos abatement contractor and disposed of in a special wastes landfill. Lead-based paint would be totally removed from all painted wood by a certified lead paint abatement professional, except for windows to be replaced. Bat guano and general cleanup would be as for Alt. #4.

Alternative #6: Most efficient, cost-effective approach towards rehabilitation: Pump room floor would be rebuilt. Removal and disposal of vinyl tile/mastic by licensed asbestos abatement contractor. Replacement of dilapidated features (e.g. window sashes, exterior fascia) with “in kind” units¹. Renovation of windows and doors in good condition and of other wood with lead paint (stairs, moldings, railings, etc.) by certified lead paint renovation contractor. General cleanup as for Alt. #4. Continued monitoring and maintenance would be required.

A matrix was developed to compare the alternatives, and is presented on the following pages. Preliminary cost estimates are intended solely for planning purposes and should be used only for relative comparisons. **Alternative #6** is the preferred alternative as the most cost-effective approach to rehabilitating the Waterworks and protecting human health and the environment.

¹ Approval for replacement of historic features must be obtained from the New Mexico Historic Preservation Division.

Alternative	Effectiveness	Feasibility	Compatibililty w/reuse	Costs
1. No Action	Not effective in controlling or preventing contamination at the site. Potential risk to human health and environment is high.	Easy to implement.	Does not meet reuse goals of planning studies for the Waterworks or Town's Comprehensive Plan.	\$0.00
2. Mothball	Effective in controlling and preventing contamination at the site, as long as there is continued maintenance and monitoring.	Easy to implement. Continued maintenance and monitoring needed. Not an effective use of EPA grant.	Could be an interim step in rehabilitation. Boarding up windows and doors needed until building is put to use.	\$10,000 + \$2,000/yr for O&M
3. Cleanup followed by demolition	Effective in mitigating the public hazard; however, it would destroy a historic building.	Listing on National Register means EPA grant would not cover; Town would bear costs of cleanup and demolition.	Community and NMHPD would not approve. Not compatible with plans for reuse.	\$5,000 for asbestos abatement, + demolition cost ²
4. Renovation, encapsulation of hazardous materials	Encapsulation eliminates exposure to hazardous materials; does not totally remove them. Repainting of windows, some moldings, may not be possible without first removing old paint.	Costs would be covered by the EPA grant. Continued maintenance and monitoring needed. Lead paint renovation contractor could be procured locally.	Moves project towards rehabilitation and future reuse. If 2-story section to be used as residence for a "living museum," abatement may be preferable.	\$40,000 for rebuilding floor; \$65,000 cleanup, \$2,000/yr O&M+ rehabilitation cost ²
5. Abatement of hazardous materials	Abatement of lead-based paint, asbestos-containing materials and cleanup of bat guano totally removes risk of exposure to hazardous materials.	Costs may not be totally covered by the EPA Brownfields grant. A licensed abatement contractor would need to be procured (none are based in Silver City).	Moves project towards rehabilitation and future reuse. Total elimination of lead paint and asbestos hazards may be preferable if 2-story section is to be used as a residence.	\$40,000 for rebuilding floor; \$150,000 for cleanup + rehabilitation cost ²
6. Cost-effective cleanup	Most cost-effective combination of replacement, renovation, and abatement to contain hazardous materials.	Most efficient use of funds to keep costs within EPA grant amount. Continued monitoring and maintenance needed.	Moves project towards rehabilitation and future reuse, within limits of grant funds.	\$40,000 for rebuilding floor; \$109,000 cleanup, \$2,000/yr O&M + rehabilitation cost ²

² Note: demolition of old Hillcrest Hospital cost about \$400,000. Estimate for total rehabilitation of Waterworks building is \$1 million.

IV. References

ACME Environmental, Inc. 2012. "Lead-based Paint, Asbestos and Vermin/Guano Investigation, Historic Former Waterworks Silver City, NM." December, 2012.

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WATERWORKS BUILDING

