

**REMEDIATION WORK PLAN  
MAZEPPAH MINE WASTE SITE  
EMPIRE CANYON**

Prepared for


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## REMEDATION WORK PLAN MAZEPPAH MINE WASTE SITE EMPIRE CANYON

### 1.0 INTRODUCTION

This Remediation Work Plan (Work Plan) describes proposed removal action activities for the parcel described as Mazeppah Mine Waste Site (Site). The Site is located at approximately north latitude 40.614 and west longitude 111.508. The Site consists of approximately 9.2 acres and approximately 7.5 acres is proposed for residential development. The Site is within the developable area of the Empire Canyon CERCLA Site with EPA ID No. 0002005981 (Empire Canyon). An Administrative Order on Consent (AOC) dated December 2003 and the Action Memorandum dated November 2003 direct remediation activities as a Non Time Critical Removal Action (Action Memo) for Empire Canyon. This Work Plan accounts for modifications to the Action Memorandum specific to the Site (Mazeppah Mine Waste Site).

In addition to the AOC and Action Memo, the scope of work in this Work Plan follows the Technical Memorandum dated October 6, 2003, titled “Flagstaff Mountain Resort – Pod B2 East – Remediation” and the “April 2008 Update and Addendum to the Mine Soil Hazard Mitigation Plan” dated April 30, 2008. The scope of work for this Work Plan includes removal of approximately 5,600 cubic yards (cy) of mine-related waste material from the Site.

### 1.1 SITE DESCRIPTION

The Site is located east of the Montage Resort and Empire Day Lodge. It is bounded on the south by the Ruby Lift, to the east by a private road, to the north by Utah State Highway 224 (SR224), also known as Marsac Avenue, and to the west by Deer Valley’s Empire Canyon Lodge beyond which is the Montage Resort. The Site is relatively flat with a parking lot, real estate office, and a wooded, west facing slope on the east portion of the Site. The Site is accessed by a round-about on SR224 that is adjacent to the Empire Day Lodge. **Figure 1** depicts the Site boundaries.

The Site is comprised of portions of soil sample parcels that were defined during the Empire Canyon sampling event completed in the fall of 2000. The sample parcels were not defined for future development areas because they could change during the course of planning. Contaminated soil in the Site was identified in Parcel D-10 and DW-11 and a mine feature, Mazeppah Shaft with associated waste pile, was identified in Parcel P6. The Site also includes a portion of C3 which was designated as “clean”.

### 1.2 TARGET CLEANUP LEVELS

EPA has established that the acceptable levels for soil concentrations in Empire Canyon Flagstaff Development areas are 500 parts per million (ppm) lead and 100 ppm arsenic (USEPA 2003). The target cleanup levels for the Site are 500 ppm lead and 100 ppm arsenic. A list of applicable or relevant and appropriate (ARARs) relevant to the Site are included in **Appendix A**.

## 2.0 REMEDIATION ACTIVITIES

The scope of this Work Plan includes removal of mine-impacted soils and associated mine waste near the Mazeppah Shaft. Construction of residential improvements and associated infrastructure is not part of this Work Plan.

## **2.1 REMEDIATION OF MINE IMPACTED SOILS**

Two areas of mine impacted soils are present at the Site: the mine waste pile associated with the Mazeppah Shaft and surface soil in Parcel DW-10 and DW-11.

Sampling of the mine waste pile was completed during the fall of 2000 as part of a larger investigation of Empire Canyon. Lead concentrations of the mine waste pile were 10,000 parts per million (ppm). It is estimated that approximately 3,000 cy of mine waste material and material from widening the shaft will require removal.

Soil samples were collected from Parcel DW-10 and DW-11 during the fall of 2000. The soil lead concentration was 799 and 892 ppm. Based on previous remediation work in Empire Canyon, it is estimated that approximately 2,600 cy of impacted material is present in this parcel.

The contaminated material will be excavated until field sampling with X-ray fluorescence (XRF) indicates concentrations are below acceptable levels. The exact volume of impacted soil and mine waste material will be determined during remediation activities. Two portions of Parcel DW-10 were remediated in 2003 and 2007 to accommodate a fill area used to cross a small topographical depression and for construction of a parking lot. These areas will be scanned with the XRF to ensure cleanup is complete.

## **2.2 DISPOSAL**

Final disposal of mine waste material excavated during removal actions will be at Wasatch Regional Landfill, Inc. located approximately six miles north of Interstate 80 and five miles south of Rowley in Tooele County, Utah. Wasatch Regional Landfill is a Department of Environmental Quality (DEQ) permitted Subtitle D landfill and accepts Bevill Exempt waste.

## **3.0 REMEDIATION PROCEDURES**

The following are procedures to ensure control of the Site and worker health and safety.

### **3.1 SITE CONTROL AND ACCESS**

A Site access control plan will be followed to assure strict access control is maintained at all times. The plan will address designated points of ingress and egress, parking, staging of remediation equipment, and haul vehicles.

### **3.2 HEALTH AND SAFETY**

The protection of human health and the environment is of major concern and importance during all phases of removal activities. A Site Health and Safety Plan (SHSP) will be prepared to address anticipated work conditions and potential contaminants.

### **3.3 DUST CONTROL**

Fugitive dusts will be controlled at the Site. Best management practices (BMPs) will be employed to control fugitive dust. The following BMPs may be used to control fugitive dust:

1. Apply water spray, with or without additives, during excavation, loading, and dumping operations, and to disturbed areas in general as site conditions warrant.
2. Apply dust control measures, including coverings, to the soil piles as necessary.
3. Cover haul trucks prior to leaving the Site.

### **3.4 STORM WATER CONTROL**

Necessary storm water permits for construction activities will be obtained from the appropriate agencies prior to implementation of remediation activities. The permits will address BMPs for storm water run-off to and from the Site associated with remediation activities.

### **3.5 DECONTAMINATION**

Mine waste loads will be covered prior to leaving the Site. Trucks will be inspected and mine waste will be removed from the outside of the vehicle, if present, prior to vehicles leaving the Site. Remediation equipment will remain on-site, inspected, and cleaned prior to leaving the Site.

### **4.0 SOIL SAMPLING PLAN**

An XRF will be used in the field to monitor lead concentrations to determine when removal of mine waste has reached acceptable levels. Confirmation samples will be collected during excavation to determine that acceptable concentrations have been achieved. Soil samples will be collected of the mine waste material during excavation. In addition, soil samples will be collected of the cover material to determine that the material has acceptable concentrations.

The following samples will be collected and analyzed by a Utah-certified laboratory for total lead and arsenic.

- Composite confirmation samples will be collected approximately every 2,500 square feet (50 feet by 50 feet) of excavation.
- A soil sample of the cover material will be collected for approximately every 2,500 cy of material.
- A trip blank will be collected for analysis at a ratio of 1 trip blank per 20 samples analyzed.
- Equipment blanks, if equipment decontamination is necessary, will be collected at one equipment blank per day.
- Duplicate split samples will be collected as a measure of the field and laboratory quality assurance and quality control (QA/QC) of 1 duplicate per 20 samples analyzed.

### **5.0 COVER AND REVEGETATION**

The Site will be rough graded prior to placement of cover materials. Imported cover material, if needed, may consist of clay, cover soil, and topsoil. Reseeding will be conducted on areas receiving topsoil.

### **6.0 SCHEDULE OF ACTIVITIES**

The following is the general schedule of activities after appropriate approvals, permits, and disposal options are procured. Work will begin the week of August 15, 2016 and proceed to completion of field work by October 31, 2016. The final report will be prepared and submitted within 60 days of completion of field work.

Removal of contaminated material will proceed from the area furthest from the Site access point to the nearest access point to the Site to minimize cross contamination.

1. Prepare staging areas.
2. Install limit of disturbance fencing.
3. Grub and clear access to Mazeppah Shaft.
4. Clear opening of mine shaft, geotechnical evaluation of shaft, and fill shaft following design strategy.
5. Excavate and remove contaminated material near the mine shaft and associated waste pile.
6. Collect confirmation samples.
7. Excavate and remove contaminated material from Parcel DW-10 and DW-11.
8. Collect confirmation samples.
9. Complete capping and reseedling if concurrent development does not occur.
10. Prepare final report.

## **7.0 MONITORING**

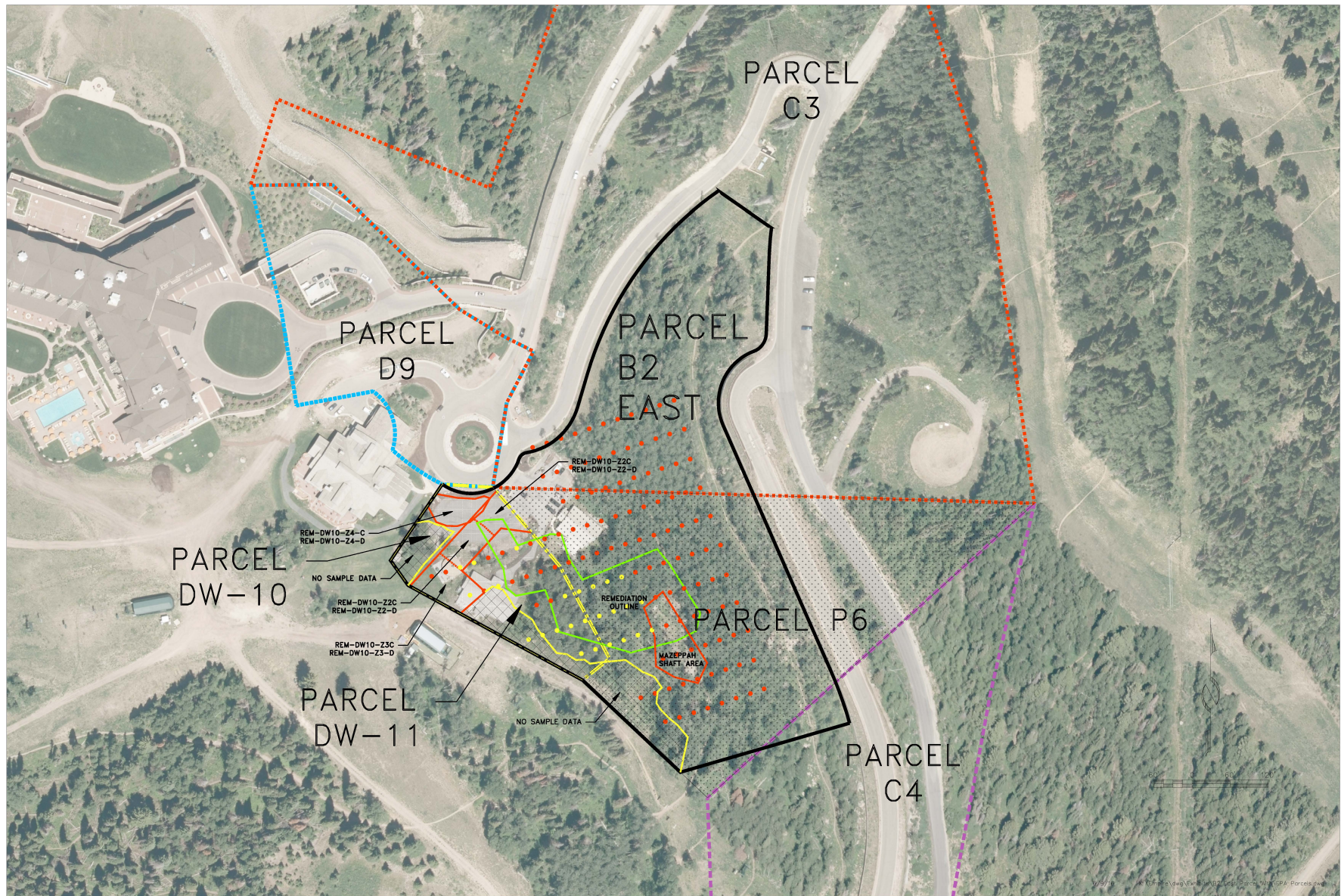
Monitoring will be conducted during remediation to ensure compliance with health and safety, the Work Plan and that fugitive dust from contaminated materials is controlled, storm water is controlled, and the Site remains in compliance with applicable local, state and federal permits and requirements.

## **8.0 REFERENCES**

- AGEC, December, 11, 2003, revised October 28, 2004. Geotechnical Investigation proposed Hotel Development Near Empire Canyon Day Lodge Flagstaff Mountain Resort Park City, Utah.
- RMC, 2003. Engineering Evaluation/Cost Analysis (EE/CA), Empire Canyon Site, Utah EPA ID NO. 002005981.
- RMC, January 15, 2002, Flagstaff Mountain Resort Report of Sampling Activities within the Property Proposed for Development.
- RMC, October 6, 2003. Technical Memorandum, Flagstaff Mountain Resort – Pod B2 East – Remediation.
- UPCMC, October 2003. Update to the Mine Soil and Physical Mine Hazard Mitigation Plan.
- UPCMC, April 2008 Update and Addendum to the Mine Soil Hazard Mitigation Plan” dated April 30, 2008.
- USEPA, June 5, 2003. EPA approval of cleanup values in United Park City Mines voluntary characterization of the Flagstaff Development Project.

## FIGURE





- Lead XRF less than 500 ppm
- Lead XRF greater than 500 ppm

**Figure 1**  
**Site Map**

Mazeppah Mine Waste Site  
 Empire Canyon

## APPENDIX A

**ARARs**

<b>Requirement</b>	<b>Citation</b>	<b>Description</b>	<b>Determination</b>	<b>Comment</b>
Utah Water Quality - Storm Water Rules	UAC* R317-8-3.9	Defines UPDES permit requirements for storm water discharges associated with a small construction activity and ensures storm water discharges from the site do not pollute waters of the state.	Applicable	Requires implementation of best management practices to address storm water management at the site. Applicable if construction activities (clearing, grading, or excavating) that results in a disturbance of 1 acre or more.
Utah Water Quality - Storm Water Rules	UAC R317-8-7	Requires permits for the discharge of pollutants from any point source into Waters of the State. Substantive requirements, including implementing Best Management Practices to prevent discharge of pollutants such as sediment to storm water, would be required for remedial activities such as land clearing or soil excavation, particularly where one acre or more of soil would be disturbed.	Applicable	Remedial action includes soil excavation and off-site disposal, and should be designed using best management practices to prevent discharge of pollutants to any nearby bodies of water to the extent practical.
Air Quality Rules	UAC R307-101 & 102	Establishes emissions standards for excavation and disposal operations to ensure compliance with National Ambient Air Quality Standards (NAAQS).	Applicable	Remedial action of contaminated soils should be designed for dust control and help to control or reduce air pollution to the extent practical.
Air Quality Rules	UAC R307-201	Establishes emissions standards for all areas of the state. Applicable to air emissions from remedial activities.	Applicable	Remedial action should be designed to control or reduce air pollution to the extent practical.
Air Quality Rules	UAC R307-205	Establishes the requirement that fugitive dust must be controlled during ground disturbing activities such as excavation, disposal and soil covering.	Applicable	Remedial action should be designed to control fugitive dust to the extent practical.
Air Quality Rules	UAC R307-214	Defines and establishes requirements for Hazardous Air Pollutants (HAPs).	Applicable	Establishes requirements for HAPs.

\*UAC = Utah Administrative Code