

**Lower Bridge Mine Scope of Work for Public Health Assessment Relative to
Future Residents of Proposed Development on Eastern Portion of Property
July 13, 2009**

I. Introduction

In December 2008, the Deschutes County Planning Commission rezoned the Lower Bridge Mine property for residential development on condition that the developer obtains a certification of “no apparent public health hazard” from the Oregon Department of Human Services (DHS). The Environmental Health Assessment Program (EHAP), located within the Office of Environmental Public Health (OEPH), is the program tasked with determining the requirements for and issuance of the “no apparent public health hazard” certification. The “no apparent public health hazard” certification will be based on 1) submittal (by Daniels Group LLC) of appropriate data outlined in this document and 2) a public health evaluation (by DHS) of the data that concludes with a “no apparent public health hazard” determination. To that end, DHS, through EHAP, presents this Scope of Work (SOW) document to the Daniels Group, LLC, the potential developer of the Lower Bridge Mine property (referred to as Respondent throughout the remainder of this document). This SOW is intended to provide the Respondent with a framework and scope within which to develop a specific Plan of Work (POW) for the Lower Bridge Mine site that will meet DHS’s quality standards. The POW should be reviewed and approved by DHS prior to implementation of sampling.

II. Objectives

DHS’s overall objective is to provide the Respondent with guidance in formulating a POW that will ensure that the health of potential future residents of a proposed residential development on the eastern portion (east of Lower Bridge Way) of the Lower Bridge Mine site will not be harmed by current or historical environmental contaminants associated with any portion of the Lower Bridge Mine site. Work performed shall complement and incorporate existing site information with the following overall objectives:

- a. Determine whether soils on any portion of the property could serve as a significant source of harmful levels of respirable particles, asbestos, or crystalline silica in air.
- b. Ensure that air around homes currently surrounding the site and around potential future homes at site of proposed development on the eastern portion of the site is safe to breathe.
- c. Develop and implement long-term dust suppression plan.
- d. Develop and implement plan to monitor effectiveness of dust suppression plan.

- e. Ensure that groundwater to be used by potential future residents for domestic purposes is free of harmful contaminants associated with hazardous and radiological wastes historically stored on the western portion of the site.
- f. Identify hot spots of contamination.
- g. Develop the information necessary to evaluate remedial action alternatives and select a remedial action.
- h. Generate or use data of sufficient quality for site characterization, risk assessment, and the subsequent analysis and selection of remedial alternatives.

III. Plan of Work

The POW shall be developed in accordance with the guidelines outlined in this section. Existing data, reports or information, including data from any investigation activity conducted prior to the initiation of the POW may be used, if such data is consistent with the procedures and quality assurance/quality control criteria approved by DHS. The submitted POW shall include, but not be limited to the following items:

- a. **Project Management Plan-** The Project Management Plan shall indicate the following:
 - i. A proposed schedule for submittals and implementation of all proposed activities and phases pertaining to this SOW. These target dates may be revised by Respondent, in subsequent work plans or amendments, subject to DHS approval.
 - ii. A description of the personnel (including subcontractors if known) involved in the project and their respective roles in the project.
 - iii. A discussion of how proposed variations from the approved work plan will be managed.

- b. **Site Characterization Plan**

The Site Characterization Plan shall include, but not be limited to characterization of the hazardous substances, evaluation of information relevant to the identification of hot spots of contamination, and shall include the following:

i. **Soils**

Respondent should develop a sampling plan for soils that will determine whether soils anywhere on the property could serve as a significant source of respirable particulate, asbestos, or crystalline silica to the outdoor air inhaled by potential future residents of the proposed development on the eastern portion of the site. The contaminants of concern (COCs) are total respirable particulate (PM10 and PM2.5), respirable particulate composed of crystalline silica, and asbestos. The soil sampling plan should include for each sample:

1. Location

- a. Proposed sample locations should be clearly indicated on a map of the site (including reference sample locations).
- b. Sample number and spacing should be sufficient to provide a representative picture of what is on the surface of the site overall and available to become airborne in arid, windy conditions.
- c. Additional soil sample locations should be focused in areas historically used for diatomaceous earth processing and mixing and for storage, mixing, and dumping of by-product and finished product. These areas should include the mill site, former areas where process buildings historically stood, and Deep Canyon.

2. Sampling depth

- a. Zero to four inches is appropriate to characterize what is on the surface and available to become airborne.
- b. Other sampling depths, if warranted, should be explained by the Respondent.

3. Sampling procedures

4. Analytical parameters and methods should provide information regarding:

- a. Percent by weight of soil that is of respirable particle size (PM10 and PM2.5)
- b. Percent of PM10 and PM2.5 that is composed of crystalline silica (these data will be compared against data from reference sample locations)
- c. Friable and non-friable asbestos content

5. Justification for all of the above.

6. A method for determining background concentrations for COCs. Detection limits should be sufficiently sensitive to make a public health determination from the data.

7. QA/QC plan

ii. Air

Respondent should develop an air monitoring plan. The overall objective of air monitoring at the site is to ensure future residents of the development proposed for the eastern portion of the site would not be harmed by breathing unhealthy levels of air contaminants. There should be two components to the air monitoring plan.

1. **Air monitoring for COCs related to soil sampling**

The first component is a follow up to the soil sampling information from the plan outlined above. This part of the air monitoring plan should follow soil sampling temporally and be guided by the resulting soil sampling data.

Therefore, the respondent may wait to submit this portion of the air monitoring plan until after soil data have been analyzed. The plan should ultimately contain procedures for the collection of air samples including:

- a. Location.
 - i. Marked on a map of the site and surroundings as appropriate including reference sample locations
 - ii. Choose locations that are pertinent to the health of future residents of the proposed development on the eastern portion of the site and to current nearby residents
- b. Height.
- c. Sampling methodology.
- d. Sampling duration.
 - i. Should include multiple sampling events (24 hour periods) including all 4 seasons of the year with an attempt to assess “worst-case” conditions for each season
 - ii. Sampling would preferably occur during high-wind conditions (winds in excess of 15 mph)
- e. Analytical parameters and methods should allow for determination of COC concentrations, i.e. (subject to modification if indicated by results of soil sampling at concentrations appropriate that public health-based decisions can be made):

- i. Total respirable particulate
 - ii. Proportion of respirable particulate composed of crystalline silica
 - iii. Asbestos
- f. Procedures for monitoring ambient air conditions at time of sampling (e.g. wind speed and direction).
- g. A method for determining background concentrations for contaminants of concern.
- h. QA/QC plan

2. Monitoring the effectiveness of dust suppression efforts

The second component of the air monitoring plan is independent of soil sampling and should focus on monitoring and reporting on the effectiveness of dust suppression efforts that are ongoing and proposed (See Dust Suppression Plan section below). The intent of this monitoring is not to analyze the composition of what is in the dust, other than that necessary to determine the source of recovered wind-blown dust. This portion of the POW should be developed in consultation with DEQ's Eastern Region Air Quality Division. Elements of the monitoring program should enable the Respondent to:

- a. Quantify changes in blowing dust following implementation of changes in dust suppression strategies and activities
- b. Define, be alerted to and identify the source of acute dust-blowing events
- c. During excavation or other soil-disturbing work at the site, to conduct direct reading photometry (e.g. MiniRams) to evaluate particulate levels in near real-time at perimeter or between work areas and nearby residential units.
- d. Communicate to neighbors, DHS, and DEQ the source of acute dust-blowing events (within 48 hours) and measures planned to prevent them in the future (within 14 days)
- e. Provide quarterly reports on dust suppression successes and failures to neighbors, DHS, and DEQ.

iii. Groundwater

1. Objective: To ensure that groundwater to be used for domestic drinking water in proposed residential development on eastern portion of the site is not impacted by hazardous or radiological wastes formerly stored on site or by any alleged additional hazardous waste buried on any portion of the site.
2. Scope: The plan shall supplement previous groundwater sampling data collected at the site by Newton Consultants Inc. in March of 2008. Additional sampling shall determine whether groundwater remains clean over multiple rounds of sampling at different time points and in locations close to planned domestic wells at the proposed development.
3. Procedures: The plan shall include the proposed methodology for characterizing groundwater. Monitoring wells and other holes must be drilled, constructed and decommissioned, in accordance with OAR Chapter 690, Division 240 and DEQ "Ground Water Monitoring Well, Drilling, Construction and Decommissioning guidelines (1992). The plan shall include, but not be limited to the following:
 - a. **Proposed monitoring locations**
At minimum this should include the irrigation well on the western portion of the site, the spring in Deep Canyon, and two new wells to be drilled on the eastern portion of the site. The additional wells on the eastern portion of the site should tap the same aquifer that future residents will be drawing drinking water from and would ideally be co-located with actual planned domestic wells.
 - b. **Sampling methods.**
 - c. **A schedule**
A proposed schedule for sampling of monitoring wells - This schedule should include 4 samples per year for two years from each location. The objective is to collect samples during different seasons and different groundwater flow conditions. Other work at the site need not wait for all samples to come in, but if contamination is discovered in any of these rounds of sampling, neighbors currently tapping the same aquifer should be notified within 7 days and other work on the site should be halted until the

source of contamination is identified and remediated.

- d. Analytical parameters and methods - These should be identical to those in the Newton Consultants Inc. sampling report from March 2008.
- e. The justification for all of the above or deviations from the above
- f. QA/QC plan

c. Dust Suppression Plan

The overall objective of this plan is to minimize nuisance dust to future residents of the proposed development on the eastern portion of the site in the short- mid- and long-term and to minimize nuisance dust for current neighbors of the property during construction and other work phases on the site. EHAP recommends that developers consult with Oregon State University Extension Services regarding feasible vegetative covers for short and long term dust suppression. David Dalton¹, a botany professor at Reed College, has also offered consultative services free of charge to help with selection of plants that might work to keep dust down in the long term at the site. This dust suppression plan should anticipate and mitigate the following:

- i. Dust generated by planned work or other activities or events anywhere on the site that could reasonably be expected to disturb the soil
- ii. Dust blown by winds from the western portion of the site onto the eastern portion where future residents of the proposed development would live and onto the property of current nearby residents. This portion of the plan must include contingencies for the following phases of work at the site:
 - 1. Long-term if further development occurs on the western portion of the site
 - 2. Long-term if no further development occurs on the western portion of the site
 - 3. Mid-term while Respondent is deciding whether or not to do further development on the western portion of the site

¹ David Dalton can be reached at 503-517-7473 or david.dalton@reed.edu.

d. Contingency Plan

When digging at the site begins for construction or other purposes on the property, it is possible that buried objects or solid or chemical wastes could be discovered. This contingency plan should detail how such situations will be evaluated and resolved before work resumes at the site.

e. Data Reporting Plan

The POW should include a section outlining how and roughly when data will be summarized and reported to DHS, DEQ, and the community. The Data Report should include but not be limited to:

- i. Maps with sampling locations, matrices, and analytes clearly indicated
- ii. Date, location, matrix, units, limit of detection, and value for all analytes for each sample, including meteorological conditions and type/location of onsite work activity taking place during air sampling and monitoring
- iii. For each COC in a given medium
 1. Site-wide range
 2. Sample location and sample date of maximum detected
 3. Site-wide mean and upper 95th percentile confidence limit (where the number of detections are sufficient)
 4. Locations of any apparent hotspots and mean and upper 95th percentile confidence limit for hotspot areas
 5. Hotspot areas indicated clearly on map of site