

December 16, 2005

Mr. Phillip Stoffey

Colorado Department of Public Health and Environment  
Hazardous Materials and Waste Management Division  
4300 Cherry Creek Drive South  
Denver, CO. 80246-1530

# Terracon

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**Re: City of Boulder's Proposed Actions  
Valmont Butte/Allied Piles Site  
Boulder, Colorado  
Terracon Project No. 22057004**

Dear Mr. Stoffey:

This letter presents the City of Boulder's (City's) proposed actions in relation to the subject site.

## **BACKGROUND**

The site is a historic mill site and contains defunct precious metals, mill buildings and former tailings ponds (primary and secondary). The former tailings ponds are the subject of an Agreement and Declaration of Covenants (Covenants) between the landowner and Colorado Department of Public Health and Environment (CDPHE). A copy of the Covenants document is attached to this letter.

The City proposes to conduct wildlife management and cap restoration activities on the tailings ponds and general site housekeeping activities at the site. This letter describes the City's proposed actions.

## **WILDLIFE MANAGEMENT**

The City proposes to manage and control prairie dog and other wildlife burrowing activities that have disturbed portions of the tailings ponds in accordance with paragraph 1(C)(vi) of the Covenants. Also, in accordance with paragraph 1(C)(viii) of the Covenants, this letter serves as the 30-day notice to CDPHE of the City's intent to commence work (i.e. the work associated with prairie dog and burrowing wildlife management) within the tailings ponds.

## City of Boulder's Proposed Actions

The City has retained a certified wildlife biologist, Chris Roe of Roe Ecological Services, LLC, to provide specialized expertise and field services associated with wildlife management. Wildlife management will generally consist of the following steps:

- Inventory of prairie dogs, ground squirrels, rabbits, and other wildlife to estimate the number of terrestrial burrowing animals currently residing on the tailings ponds caps.
- Collection of a select number of prairie dogs, ground squirrels and rabbits for tissue sampling and analysis.
- Observation and delineation of prairie dog mounds and other burrow mounds within the tailings ponds area.
- Sampling and analysis of select prairie dog and other burrow mounds to assess whether the mound materials are tailings (assessment will be through comparison with "background" soil samples collected from undisturbed soils on the site distant from the tailings ponds).
- Based on the results of the soil and biological samples, Roe Ecological Services, LLC will provide recommendations for an appropriate prairie dog and other wildlife removal effort that will work within the guidelines of the City's wildlife ordinance for relocation and/or lethal control, should relocation not be feasible: (Note: Currently there are no available City of Boulder receiving sites.)
- Upon removal of burrowing animals, closure of prairie dog and other wildlife burrow openings with mound material and a 2-foot deep surface plug of clean imported fill material up to existing grade.
- Construction of a prairie dog barrier at a distance greater than 5 feet outside of and surrounding the tailings ponds perimeter. The prairie dog barrier will be constructed in a manner best suited for the site, soils and particular prairie dog movement behavior so as to provide the greatest potential for long-term effectiveness as possible. A tribal monitor will be on site for all soil disturbance activities.

## CAP RESTORATION

The City proposes to conduct a surface survey of the current condition of the tailings ponds caps and place clean fill material in areas where radiation readings appear to exceed three-times background. The survey and restoration work will be conducted similar to the survey and restoration work conducted by CDPHE in 1998 and 1999, as reported in CDPHE's "Technical Evaluation of Surface Gamma Radiation Survey," July 27, 1999..

CDPHE's 1998 and 1999 survey consisted of surveying the tailings ponds' caps on a 500-foot by 500-foot grid using a Ludlum Model 19 Micro R Meter. Restoration consisted of placing 18 inches to 24 inches of clean fill material over areas exceeding the established clean-up level and resurveying the restored area.

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The City proposes to conduct a survey on a 100-foot by 100-foot grid (resulting in approximately 46 points or nodes) and measuring radiation using a Ludlum Model 3 survey meter with a Ludlum Model 44-2 probe. The clean-up level will be 60  $\mu\text{R/hr}$  (approximately three times the measured background level of 19  $\mu\text{R/hr}$ ), as established during EPA's 2004 survey.

Areas of the tailings ponds caps exhibiting greater than 60  $\mu\text{R/hr}$  will be restored by placing 18 to 24 inches of clean imported fill material over the area, and the area will be resurveyed. Clean imported fill material will be transported to the site as it becomes available to the City, and all areas requiring fill material will be covered before Sept. 1, 2006. A security fence will be placed in early 2006 and will help to preclude access by humans, thereby reducing the potential for human exposure to radioactivity from the ponds until the cap restoration is complete.

## HOUSEKEEPING ACTIVITIES

In addition to the actions described above, the City proposes to manage impacted surface soil areas and dispose of wastes from other portions of the site. The following paragraphs summarize the City's proposed actions.

### **Surface Soil Areas Management – Radiation-Impacted Soil**

Five surface soil areas outside the tailings ponds have been documented as having higher radiation levels compared to measured background levels during previous assessments of the site<sup>1</sup>. The soil areas are:

- Area 1, located north of the primary tailings pond dike dam, was observed at 44, 50, 75 and 75  $\mu\text{R/hr}$ ; area extent approximately 3,600 square feet.
- Area 2, located along the old slurry line, was observed at 52  $\mu\text{R/hr}$ ; area extent approximately 65 square feet.
- Area 3, located in front of the wood shed and around the tree stump, was observed at 38, 170, 28 and 300  $\mu\text{R/hr}$ ; area extent approximately 65 square feet.
- Area 4, located around the mill, was observed at 150  $\mu\text{R/hr}$ ; area extent approximately 350 square feet.
- Area 5, located at the ore storage area, was observed at 80 and 60  $\mu\text{R/hr}$ ; area extent approximately 1,820 square feet.

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<sup>1</sup> During the 1980s and 1990s, EPA, CDPHE and Boulder County personnel conducted inspections and assessments of radiological conditions at the site. In 2004 the EPA, using its contractor URS, conducted a re-assessment of the site. In April 2005, Terracon conducted additional delineation of the five soil areas and calculated the approximate areal extent of each area.

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The management objective for the five radiation-impacted soil areas is to reduce the radiation levels to less than 60  $\mu\text{R/hr}$  (approximately three times the measured background level of 19  $\mu\text{R/hr}$ ) by either excavating and moving soil to the Primary Tailings Pond, or by capping the soil in place. Although Area 2 is below the 60  $\mu\text{R/hr}$  level, the City thinks it prudent to attempt to lower radiation levels in this area at this time while resources are mobilized on site.

Soil areas 1, 2, 3 and 5 will be removed (excavated) down to soil exhibiting readings of less than 60  $\mu\text{R/hr}$  and the excavated soil moved to the tailings ponds.

Each area will be initially excavated to a depth of approximately six inches below ground surface (bgs) and surveyed with a Ludlum Model 3 survey meter with a Ludlum Model 44-2 probe to assess  $\mu\text{R/hr}$  levels. If portions of the excavation floor exhibit readings of greater than 60  $\mu\text{R/hr}$ , then those portions will be excavated an additional six inches and reassessed with the Ludlum meter and probe. The excavation and reassessment will continue at six-inch increments until the bottom of the excavation is observed to be less than 60  $\mu\text{R/hr}$ . The excavated areas from where soil has been removed will be graded to blend with existing contours or backfilled with clean imported fill material. A tribal monitor will be on site for all soil excavation activities.

The excavated soil will be moved and placed on an area of the primary tailings pond documented as having little to no existing soil cover material or on an area of the tailings ponds considered appropriate after disturbance by wildlife management activities. The relocated soil from areas 1, 2, 3 and 5 will be covered with approximately 18 to 24 inches of clean imported fill, in accordance with the cap restoration activities described above.

Because Soil in Area 4 is in close proximity to an existing structure and excavation could represent a structural and safety hazard, it will be capped in place with at least two feet of clean imported fill material. Clean imported fill material will be added until the radiation levels are less than 60  $\mu\text{R/hr}$ .

### **Surface Soil Areas Management – Lead and Arsenic-Impacted Soil**

Twelve additional surface soil samples outside the tailings ponds exhibited elevated lead and/or arsenic concentrations compared to EPA industrial-use risk-based screening levels. These impacted soil areas are assumed to be discrete and relatively small (i.e. can be remediated by excavation with one or two excavator bucket-loads).

The City proposes to excavate each area to a depth of 12 inches bgs and collect one soil sample for laboratory analysis of lead and arsenic from the bottom of each excavation. Excavation locations exhibiting a lead concentration greater than 800 mg/Kg or an arsenic concentration greater than 1.9 mg/Kg will be excavated an additional 12-inches and re-sampled. Excavation and reassessment will continue at 12-inch

## City of Boulder's Proposed Actions

increments until the excavation area is observed to be below the 800 mg/Kg and 1.9 mg/Kg lead and arsenic concentrations. The excavated areas from where soil has been removed will be graded to blend with existing contours, or backfilled with clean imported fill material.

The excavated soil will be moved and placed on an area of the primary tailings pond documented as having little to no existing soil cover material, or on an area of the tailings ponds considered appropriate after disturbance by wildlife management activities. The relocated soil will be covered with approximately 18 to 24 inches of clean imported fill, in accordance with the cap restoration activities described above.

### **Transformers**

Six electrical transformers having oil containing 50 ppm or more polychlorinated biphenyls (PCBs) will be drained and disposed of off-site in accordance with applicable provisions of 40 CFR 761.

In accordance with Section 1(D) of the Covenants, the exterior of the each transformer will be field-surveyed for radioactivity prior to handling for disposal. The survey will be conducted using a Ludlum Model 3 survey meter with a Ludlum Model 44-2 probe to assess  $\mu\text{R/hr}$  levels. If the exterior surface of a transformer exhibits readings of greater than 60  $\mu\text{R/hr}$ , then the transformer will be decontaminated by wiping to remove visible soil particles or washed using a high-pressure low volume washer and potable water. Decontamination residues will be captured and disposed of at the Primary Tailings Pond and capped. The transformers' contents will be managed as PCB-wastes, the contents disposed of by incineration and the transformers decontaminated in accordance with 40 CFR 761 Subpart S "Double Wash/Rinse Method for Decontaminating Non-Porous Surfaces."

The City will contract with a qualified waste disposal contractor to remove the transformers from the site and dispose of the transformers and contents in accordance with the applicable regulations.

### **Drums, Used Oil and Other Wastes**

The City proposes to retain a qualified waste management company to overpack, transport and dispose of drums, used oil and other wastes present at the mill buildings and other areas in accordance with applicable state and federal regulatory requirements.

Identified wastes include: eight steel drums containing hazardous wastes, one fiberboard drum containing phosphorus pentasulfide, 10 drums containing industrial waste or oil, seven empty drums, 15 five-gallon buckets of motor oil, five one-gallon containers of oil, a box of grease, and one automotive battery.

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Hazardous wastes will be manifested and disposed of as hazardous wastes; industrial wastes will be disposed of, with permission from the landfill, at an off-site solid waste landfill as non-hazardous industrial wastes; and used oil will be disposed at the City's used oil recycling center for off-site recycling. The battery will be transported off-site to a battery recycling facility.

Soil from beneath drums containing hazardous wastes and located outside will be excavated to approximately six inches bgs, overpacked with the associated hazardous waste drum and disposed as hazardous waste.

In accordance with Section 1(D) of the Covenants and prior to removal from the site, the exterior of the each drum and container will be field-surveyed and decontaminated as described in the "Transformers" section above.

### **Rancid Vegetable Oil**

One 6,000-gallon steel, above-ground storage tank (AST) exists outside and west of the boiler building. According to a previous characterization, the AST contains approximately 3,500 gallons of rancid vegetable oil. The City will retain a qualified contractor to remove the vegetable oil from the AST. The vegetable oil will be recycled at a licensed off-site oil recycling facility.

### **Used Parts Area Wastes**

A used parts area exists on the site east of the mill buildings. Items in the used parts area include: electrical parts, switches, motors, gas cylinder, and switch cabinet. These items will be removed from the site and disposed of at off-site disposal facilities. Fluid in the electrical parts, switches, motors and switch cabinet will be tested for PCBs and hazardous waste characteristics (ignitibility and reactivity). If fluid is found to have PCB contamination, the contaminated fluid and the piece of the equipment from which the fluid originated will be disposed of according to 40 CFR 761. If the fluid is found to have hazardous characteristics, then the fluid will be disposed of as hazardous waste through incineration or disposal at a hazardous waste landfill. Fluids that are non-PCB and do not exhibit hazardous waste characteristics will be drained and handled as used oil. The electrical parts, switches and motor that do not contain liquid or if there is liquid, is non-PCB and non-hazardous will either be sent to a metal scrap yard for recycling or to a municipal solid waste landfill. A compressed gas distributor will be contracted to remove the cylinder from the site and to dispose or recycle according to applicable regulations.

In accordance with Section 1(D) of the Covenants and prior to removal from the site, the exterior of each used part will be field-surveyed and decontaminated as described in the "Transformers" section above.

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**SCHEDULE**

The City intends to develop and distribute bid documents to qualified contractors for the work described in this letter. The City will select and pay qualified contractors to execute the work in general accordance with this letter, applicable bid documents and applicable regulations.

The City would like to select and authorize contractors to proceed during the first quarter of 2006. In accordance with Sections 1(C)(viii) and 1(D) of the Covenants, this letter serves as a 30-day notice to CDPHE of the City's planned activities at the tailings ponds and mill buildings. Please review this information and respond to Mr. Bill Boyes, City of Boulder, 303-884-4128 or at PO Box 791, Boulder, CO 80306 with your comments at your earliest convenience.

Please call if you have questions or need further information.

Sincerely,  
**Terracon**



Susanne A. Cordery-Cotter, P.E.  
Senior Project Engineer



Bob Bonner  
Environmental Scientist

Cc: Bill Boyes, City of Boulder, Facilities and Asset Management, Public Works  
Douglas Sullivan, P.E., City of Boulder, Utilities Division Project Management  
Sue Ellen Harrison, City of Boulder, City Attorney's Office  
Chris Roe, Roe Ecological Services, LLC, PO Box 1168, Berthoud, CO 80513

Attachments: Agreement and Declaration of Covenants