

**Visible Smelter Material Cleanup Work Plan for the Supplemental Soil Program
Blackwell, Oklahoma
Revision 1 – 16 December 2009**

Background

This Visible Smelter Material Cleanup Work Plan is an addendum to the *Remedial Action Work Plan, Supplemental Soil Program, Blackwell, Oklahoma* (Shaw, 2008) (RAWP) and presents implementation details for activities to be performed by Blackwell Zinc Company, Inc. (Blackwell Zinc) as part of a Supplemental Soil Program (SSP) for residential, commercial, and public properties within the project area, which consists of properties located within one mile of the municipal boundaries of the City of Blackwell.

In 1996, the Oklahoma Department of Environmental Quality (ODEQ) approved a plan for sampling and cleaning up soils that may have been affected by waste from the smelter. The plan is set forth in the Record of Decision, Soil Remediation Unit, Blackwell Zinc Site (ODEQ, 1996) (Soil ROD). The soil sampling and cleanup plan is further described in the *Work Plan Blackwell Zinc Site Soil Remediation Unit Remedial Design* (PTI Environmental Services [PTI], 1996) and the *Final Remedial Design Report, Blackwell Zinc Site Soil Remediation Unit* (PTI, 1997) (FRDR).

In 2001, ODEQ accepted the *Final Remedial Action Completion Report, Blackwell Zinc Site Soil Remediation Unit, Blackwell, Oklahoma* (EMC², 2001). In 2007, Freeport-McMoRan Corporation implemented the SSP on behalf of Blackwell Zinc to give property owners an additional opportunity to have soils on the properties sampled and, if necessary, remediated.

Shaw Environmental, Inc. (Shaw) began soil sampling in Blackwell, Oklahoma in July 2007. Soil sampling is being performed in accordance with the *Final Supplemental Soil Sampling and Analysis Plan* (SAP) (Shaw, 2007), which was approved by ODEQ in June 2007, and the *Supplemental Soil Sampling and Analysis Plan, Property Sampling* (Shaw, 2008) which was approved by ODEQ in August 2008. The objective of the sampling and analysis is to identify areas within residential, commercial, and public properties where the average concentrations of arsenic, cadmium, and lead within surface soils are equal to or exceed cleanup levels established by ODEQ in the Soil ROD (ODEQ Cleanup Levels). Soil samples are collected and analyzed according to whether a property is classified as residential/recreational or commercial/industrial. Properties with soils that are found to exceed ODEQ Cleanup Levels are remediated in accordance with the RAWP. Since the existing RAWP does not explicitly address methods for addressing visible smelter waste, this Work Plan serves as an addendum to the existing RAWP.

Visible Smelter Material Program

The purpose of this Work Plan is to outline inspection, documentation, and removal procedures for addressing visible smelter material in Blackwell properties and is designed to be consistent with the objectives of the FRDR.

1.0 Inspection Approach

Prior to inspecting the property for visible smelter material, a member of the inspection team will interview and accompany the property owner to those specific locations where the property owner knows or suspects the placement of smelter material. Then members of the inspection team will inspect the remainder of the property in the following manner:

- Walk the entire border of the property scanning the ground for potential smelter material;
- Walk along the perimeter of manmade features or improvements such as driveways, parking areas, walkways, flowerbeds, and structures (house, garage, shed, etc.) scanning the ground for potential smelter material; and
- Walk each designated yard area of the property scanning the ground for potential smelter material.

The team will use a global positioning system (GPS) unit and notepad computer system to log the location of suspected smelter material. An electronic survey form, similar to a sample collection form, will be used with the field notepad computers to record the GPS coordinates for the general location of suspected smelter material. In addition to the computer form, observations will be included in narrative form in the field computer comment space and a field log book.

Photographs and GPS coordinates will be collected and described in the field log book. A map of each property will be provided to the field crews to mark approximate locations of suspected smelter material during the inspection. In some cases, overhead canopy or other structures may interfere with accurate GPS coordinate data. The field crews will be prepared, where possible, to use measuring tapes to triangulate the location of suspected smelter material to the location of a known feature.

Once the locations of the visible smelter material are documented, a property-specific cleanup work plan will be developed for the individual property as outlined in Section 3.1.1 of the RAWP.

2.0 Removal Approach

Properties with identified visible smelter material in yard areas that are also found to exceed ODEQ Cleanup Levels will be remediated in accordance with Section 3.0 of the RAWP. Both impacted soil and visible waste will be addressed concurrently at such a property. Properties which were previously remediated based upon soil concentrations exceeding ODEQ Cleanup

Levels and may contain visible smelter material in a separate yard area will be inspected, and removal, if necessary, will be performed in accordance with this Work Plan. In yard areas where visible smelter material is identified but soil is found not to exceed ODEQ Cleanup Levels, the visible smelter material will be removed in accordance with this Work Plan. Although sampling results suggest that smelter material is not contributing significant concentrations of metals to the soil in these areas, removal of such material is being undertaken to remove the presence of smelter material.

2.1 Access and Re-Inspection

The owners of properties where remediation is not required under Section 3.0 of the RAWP where visible smelter material has been identified in accordance with Section 1.0 of this Work Plan will be contacted by Blackwell Zinc. Blackwell Zinc will attempt to obtain access to the property to remove visible smelter material in accordance with the property access procedures outlined in Section 3.1.1 of the RAWP. Once access to the property is obtained, the entire property will be re-inspected for visible smelter material as outlined in Section 1.0. The location and type of visible smelter material will be documented and a cleanup work plan will be developed.

Property cleanup plans will be reviewed with the property owner and tenant during a pre-cleanup property inspection. The inspection will be attended by the property owner and tenant (if he/she requests to be present and is available) and the Construction Project Coordinator.

The property cleanup form will document all pertinent details of the cleanup construction activities, including items to be relocated for access, excavation areas, specific areas, or landscaping that the owner requests not to be excavated or removed, landscaping that will be removed and replaced, and plants that the owner requests to be replanted.

At the end of the inspection, the property owner and tenant will be asked to acknowledge the details of the cleanup by signing the property cleanup form.

2.2 Scope of Removal

The visible smelter material present in properties generally ranges between gravel- and brick-sized pieces of smelter material. The scope of work for removing the visible smelter material will vary for each location but will generally consist of either picking up individual pieces of smelter material by hand or using a combination of manual and mechanized equipment to remove the material from a property.

Where it is deemed necessary to remove gravel-like smelter material using mechanical equipment, the material will be excavated to a minimum depth of three inches below ground surface using a skid steer or mini excavator. The excavation bottom will be inspected for visible

smelter material. If additional material is identified, the material will be removed by either picking up individual pieces by hand or continuing the excavation in three-inch intervals as appropriate. If necessary and appropriate, clean backfill and/or topsoil will be used to restore the excavation area to pre-cleanup conditions. In addition, either gravel or sod will be placed per the property-specific cleanup details within disturbed areas depending on pre-construction conditions. Sod and replaced vegetation will be watered for 60 days as outlined in Section 3.0 of the RAWP. The smelter material removed during the cleanup activities will be transported by dump truck to an existing Staging Area at the Consolidation Area within the Blackwell Industrial Park where it will be staged prior to shipment for offsite disposal.

3.0 Additional Requirements

Inspection activities performed under this Work Plan will be conducted in accordance with the approved *Final Supplemental Soil Sampling and Analysis Plan, Property Sampling, Blackwell, Oklahoma, Rev. 1, July* (Shaw, 2008) including field methods, documentation, and data collection requirements. Inspection activities also will comply with the approved *Final Site-Specific Health and Safety Plan, Property Sampling, Blackwell Oklahoma* (Shaw, 2007). Cleanup activities performed under this Work Plan will be completed in accordance with the Cleanup Contractor's Health and Safety Plan.

4.0 Reporting

For each property remediated in accordance with this Work Plan, a summary report will be prepared after the completion of field activities. The summary report will include a figure, details of the inspection, locations of observed/suspected smelter material, and a description of the cleanup activities performed. The summary report for properties that have been cleaned up will be forwarded to the property owner once the ODEQ representative has reviewed and approved each report.