

**MANAGEMENT PLAN FOR  
MISCELLANEOUS MILL-RELATED WASTES  
IDARADO LEGACY PROJECT  
TELLURIDE, COLORADO**

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**May 14, 2004**

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## **1.0 INTRODUCTION**

This Management Plan has been prepared for Idarado Mining Company (IMC) by MFG, Inc. to describe the identification and mitigation of miscellaneous mill-related wastes occurring within the Idarado Legacy Development Project property (Property) located near Telluride, Colorado in San Miguel County. The Idarado Legacy Development Project consists of a planned single-family housing development to be constructed on 37 tracts within the 120-acre Property by Idarado Legacy, LLC (ILC) within the upper San Miguel River valley. Housing development is planned in three contiguous areas referred to as Liberty Bell (9 home lots), Pandora (24 home lots), and Bridal Veil (4 home lots).

As described in the Environmental Site Assessment Summary (MFG, 2003a), mill-related wastes were visually identified within the Pandora and Liberty Bell areas of the Property. No mill-related wastes were visually observed in the Bridal Veil Area. Mill-related wastes may include tailings, remnant ore piles, used processing materials (coal and coke cinders), and/or mill demolition debris (brick, scrap metal, wire, wood, remains of rock foundations, and fill materials) that resulted from the historic milling and processing of mineral ores in the upper San Miguel River valley. The presence of the mill-related wastes at specific areas within the Property was confirmed by the collection and analysis of surface and subsurface samples. Metal concentrations of some of the samples exceeded the preliminary remediation goals (PRGs) for soil established by the EPA (2002) and State of Colorado (1997) for residential land use. Metal concentrations exceeding the PRGs indicate a potential risk to human health for residential use and the environment and that some form of corrective action may be required to reduce direct exposure to the mill wastes.

Deposits of mill-related wastes may also exist on the Property in areas that have not been currently identified or that may be encountered in the future during excavation and grading activities associated with site development and home construction. Tailings are suspected to have been used in the past as bedding for installation of utility lines in the Pandora and Liberty Bells Areas. Subsurface excavations near the old underground utilities may encounter and expose tailings that have not been identified or are not currently discernable. Elevated concentrations of metals, particularly lead, can be associated with the tailings.

The measures described in this Management Plan apply to both the currently identified mill-related wastes in the areas planned for residential development and to mill-related wastes that may be identified

or encountered in the future during site development and home construction activities within the Property. This management plan:

1. describes the procedures to identify mill-related wastes;
2. defines the measures to mitigate potential risks from mill-related wastes; and
3. defines the property-specific soil remediation goal for planned residential use of the Property.

## **2.0 MANAGEMENT PLAN**

As previously discussed, mill-related wastes have been identified in the Pandora and Liberty Bell areas of the Property that are currently scheduled for residential development. The following sections describe plans and procedures to remove the mill-related wastes in those specific areas. In addition, procedures to identify and remove mill-related wastes that may be identified or encountered within the Property during future site development or home construction activities are described.

This Management Plan will be implemented consistent with Resolution No. 4.2 of the Board of County Commissioners of San Miguel County for the Idarado Legacy Development Project (Resolution #2003-30A). Resolution No. 4.2 requires that should deposits of mill tailings be visibly identified on the ground surface or encountered during excavations, IMC will perform the following:

- remove the tailings material and transport the material to the IMC repository located at the Pandora Mill site; and
- collect and analyze additional surface samples as necessary to confirm material removal.

All inspections and sampling activities specified in this Management Plan will be performed by the Resident Environmental Specialist. The Resident Environmental Specialist will be an engineer, soil scientist, environmental technician, or similar professional with training and skills necessary to identify soil and mill-related waste properties, and experience in performing soil sampling and testing. The Resident Environmental Specialist will be responsible for visually identifying and documenting the presence of mill-related wastes prior to and during excavation and grading activities associated with site development and home construction, performing sampling and field testing of soils, and confirming that mill-wastes have been mitigated as described in this Management Plan. The Resident Environmental Specialist will be present at the Property to perform visual observations during grading and excavation activities associated with site development activities, during removal of mill-related wastes, and will perform visual observations following excavations (e.g. foundation excavations and on-site wastewater system installation) associated with home construction prior to backfilling.

## **2.1 Objectives and Performance Criteria**

The objective of this Management Plan is to mitigate mill-related wastes in order to achieve environmental conditions that are compatible with the planned residential use of the Property. Mitigation measures will be implemented to eliminate direct human exposures to metal concentrations associated with tailings and other mill-related wastes, while minimizing physical disturbance to currently vegetated and surrounding areas.

The following performance criteria are established to confirm that the mill-related wastes are mitigated to levels that are protective for residential use:

1. visual presence/absence of mill-related wastes; and
2. lead concentrations of soil less than 400 mg/Kg, as prescribed by the PRG established by the EPA and State of Colorado.

Tailings can be visually distinguished from native soils based on their distinct physical characteristics (i.e., grain size and color) and location with respect to the historic milling operations. Tailings consist of uniform sand or silt that is yellow-red when oxidized or gray when unoxidized. Mill-related demolition debris and fill can also be visually differentiated from native soils due to the presence of brick, coal and/or coke cinders, scrap metal (iron, pipe, and wire), wood, or other indicators of fill materials. These visual characteristics will be used to indicate the presence or absence of tailings or other mill-related debris. Visual inspections will be performed by the Resident Environmental Specialist to identify the presence of mill-related wastes within the Property prior to and during excavation and grading activities associated with site development and home construction. Visual inspections will also be performed by the Resident Environmental Specialist to confirm that all mill-related wastes have been mitigated as specified in this Management Plan.

Based on the analytical results of samples previously collected at the Property, elevated lead concentrations are commonly associated with the tailings and other mill-related wastes. Lead is a distinct and accepted indicator of the presence of tailings and other mill-related wastes. The residential PRG defined by the EPA and State of Colorado for lead of 400 mg/Kg in soils will be used as a performance criterion to confirm adequate mitigation. The EPA and the State consider the lead PRG to be protective of human health for residential land use. Resolution No. 4.2 of the Board of County Commissioners of San Miguel County for the Idarado Legacy Development Project also designates that the lead PRG established by the EPA will be used as the indicator element for remediation purposes. Absent a site-specific human health risk assessment, the lead PRG of 400 mg/Kg has commonly been used as a soil

action level for remediation of metal related contamination in residential settings at other sites in Colorado.

## **2.2 Mitigation Procedures**

The mitigation procedures consist of excavating mill related wastes and underlying soils as required, transporting the excavated material to an off-site repository, and performing soil testing to confirm that the lead performance criterion has been achieved. Visual inspections will be performed by the Resident Environmental Specialist prior to and during all excavations or grading activities associated with site development, utility construction, or home construction (e.g. foundation excavations, on-site wastewater system installation, or home site grading) within the Property to identify the potential presence of mill-related wastes. The Resident Environmental Specialist will document the location and extent of any visually identified mill-related wastes by staking or by other means in the field, will record the approximate coordinates of the mill-related wastes using a hand-held GPS, and will delineate the area on the project drawings. Sampling of the suspected mill-related wastes would be performed only to the extent necessary to verify that the materials are mill-related wastes and have lead concentrations that exceed the lead performance criterion of 400 mg/Kg. Also, test trenches or other investigations may be performed, as directed by the Resident Environmental Specialist to delineate the spatial extent of mill-related wastes to be removed.

The mill-related wastes debris will be excavated with conventional excavating equipment (loaders, backhoes, etc.) based on visual identification of mill-related wastes by the Resident Environmental Specialist. The removal activities may require the removal of vegetation presently existing in the area. Dust and stormwater runoff controls will be implemented, as determined appropriate by the Resident Environmental Specialist, in accordance with the Erosion Control and Construction Stormwater Management Plan for the Idarado Legacy Development Project (MFG, 2003b) to prevent emission of fugitive dusts and stormwater runoff from disturbed areas during excavation.

The excavated materials will be transported by end-dump truck or similar equipment and placed in the repository located outside of the Property on property controlled by IMC. It is anticipated that the repository will be located in the Pandora Mill yard area located east of the Property. The excavated mill-related wastes will not be used as backfill, site grading, or any other purpose within the Property.

Following excavation, the Resident Environmental Specialist will confirm that all mill-related wastes have been removed by visual inspection. Further excavation will be performed, as directed by the

Resident Environmental Specialist, until all visible mill-related wastes are removed. The Resident Environmental Specialist will also collect samples of the underlying soils for laboratory analysis of the lead concentration or perform in-situ lead concentration testing of the underlying soils using a portable XRF instrument to confirm that the lead PRG of 400 mg/Kg has been achieved. Procedures for collection and analysis of the samples are described in Appendix A. If the lead concentrations of the native soil samples are less than 400 mg/Kg, no further removal action will be required. If the lead concentrations of the soil samples exceed 400 mg/Kg, then additional soil removal will be performed, as directed by the Resident Environmental Specialist, until the lead concentrations of samples demonstrate that the lead performance criterion has been achieved.

Following confirmation by the Resident Environmental Specialist that all visible mill-related wastes have been removed and that the soil lead performance criterion has been met, regrading or backfilling of the excavated area with clean soil and any adjacent disturbed areas will be performed to achieve the elevations and grades specified by the development project plans. If backfilling of the excavated area is required, the backfill will consist of clean soils that are verified by the Resident Environmental Specialist to have a lead concentration less than 400 mg/Kg. The disturbed area will be revegetated according to the Landscape Plan for the Idarado Legacy Development Project.

### **3.0 DOCUMENTATION**

The Resident Environmental Specialist will record all field inspections, visual inspections, notes, and observations on a daily basis in a field logbook. Field logbooks shall be bound with consecutively numbered pages and shall be written with permanent ink only. The field logbook will be signed daily by the Resident Environmental Specialist. At a minimum, the following information will be recorded:

- visual observations of the presence, type (e.g. color, texture, type of debris), location, and extent of any identified mill-related wastes relative to individual lots;
- excavation and or regrading activities inspected and location of activities relative to individual lots;
- location coordinates of mill-related wastes determined by a hand-held GPS;
- location, extent, and description of mill-related wastes that are removed;
- description of mill-related waste removal procedures; and
- soil sampling locations and conditions, including visual description of samples.

All drawings, maps, and photographs, other field observations, and sampling results will also be compiled by the Resident Environmental Specialist. The records will be maintained by IMC separately for each lot and will be transferred to ILC for perspective future owners. Following completion of home construction, the records will be transferred to the homeowners group and a copy will be provided to San Miguel County.

#### **4.0 REFERENCES**

MFG, Inc. 2003a. *Idarado Legacy Development Project – Environmental Site Assessment Summary*. Prepared for Idarado Legacy, LLC. August.

MFG, Inc. 2003b. *Idarado Legacy Development Project – Erosion Control/Construction Stormwater Management Plan*. Prepared for Idarado Legacy, LLC. July.

State of Colorado. 1997. *Proposed Soil Remediation Objectives Policy Document*. Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division. December.

U.S. Environmental Protection Agency. 2002. Preliminary Remediation Goals (PRGs). EPA Region 9.

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## Appendix A

### Soil Sampling and Analysis Procedures

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## **A. SOIL TESTING PROCEDURES**

As described in the Management Plan, soil testing will be performed to confirm that mill-related wastes and underlying soils have been adequately removed to achieve the lead performance criterion. Following removal of the mill-related wastes, the lead concentrations of the underlying soils will be determined by either collecting soil samples for laboratory analysis or in the field using a portable XRF instrument. The following sections describe the procedures for determination of lead concentrations by soil sample collection and analysis, or by XRF field measurement.

### **A.1 Soil Sampling and Analysis**

#### **A.1.1 Sampling Locations and Methods**

In each area where mill-related wastes have been removed, the removal area will be divided into sub-areas with a maximum area of approximately 0.2 acres (approximately 100 feet by 100 feet). The sub-areas will be delineated in the field based on similarities in topography, extent or occurrence of mill waste and soil removal, or similar soil types. Sub-area locations will be sketched on site drawings in the field. If mill-related wastes are removed from a linear trench, such as utility trench, a composite sample will be collected from the base of the trench excavation at 50 foot intervals or less along the length of the trench in the area from which the mill-related wastes were removed, or as determined by the Resident Environmental Specialist to be representative of the trench conditions.

A minimum of one composite soil sample will be collected from each of the sub-areas or at minimum 50 foot intervals in a linear trench. Each soil sample will be composited from a minimum of three sub-samples collected within each sub-area or at a trench sampling location. The sub-samples will be collected from a depth of zero to 6 inches using a stainless steel or plastic sampling spoon. Organic material (sticks, roots, leaves etc) and rocks larger than approximately 1/2 inch in diameter will be removed from the sample. The three sub-samples will be composited by approximately equal volumes to form a single soil sample for each sub-area. The composited soil will be placed in double-bagged zip-lock type bag. Prior to collection, soil to be sampled may be loosened with mild-steel tools such as shovels, bars, or picks, if necessary. Sampling equipment will be decontaminated between each sub-area sample by removing all visible soil particles from the tool. Following sample collection, the location of the composite sample will be staked and the coordinates will be determined using a hand-held GPS.

### **A.1.2 Sample Handling, Documentation and Analysis**

Sample bags will be labeled with sample identification, date and time, and sampler's initials. Samples will remain sealed and be stored at room temperature in a cooler prior to shipping to the designated analytical laboratory. Field personnel will keep a field book documenting sampling activities. Documentation for each sample collected will include:

1. sample identification;
2. sample date and time;
3. sample location description; and
4. visual description of soil sample (color, texture, etc.).

The soil samples will be shipped in a cooler using chain-of-custody procedures to SVL Laboratory in Kellog, Idaho for analysis. Prior to analysis, the laboratory will screen the samples to minus 60 mesh. The soil samples will be analyzed for total lead using EPA SW-846, Method 6010 with a detection level of 2 mg/kg.

### **A.2 XRF Measurement**

If lead concentrations of soils are determined in the field using a portable XRF instrument, the XRF instrument will be operated in accordance with the manufacturer's procedures. The XRF instrument will be calibrated over the anticipated range of soil lead concentrations based on correlation of laboratory analysis of soil samples and XRF measurements at each soil sampling location. Following calibration, XRF measurements will be performed at the locations described in Section A.1.1. Field personnel will keep a field book documenting XRF field measurement activities. Documentation for each field measurement will include:

1. measurement identification;
2. measurement date and time;
3. location of measurement;
4. visual description of soil (color, texture, etc.); and
5. lead concentration.