


VOLUNTARY REMEDIATION PROGRAM WORK PLAN



SEDIMENT REMOVAL CONSTRUCTED PASSIVE TREATMENT WETLAND SYSTEM ASARCO JANUARY ADIT (NORTON MINE) SANTA CRUZ COUNTY, ARIZONA

April 2019

 **NewFields**



**Voluntary Remediation Program Work Plan
ASARCO January Adit (Norton Mine)
Site Code: 505143-02**

**Sediment Removal –
Constructed Passive Treatment Wetland System
Santa Cruz County, Arizona**

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April 2019
Project 350.0300.002



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1.0 INTRODUCTION

NewFields Companies LLC (NewFields) prepared this work plan on behalf of Arizona Minerals Inc. (AMI) to propose remediation of the impacted sediment containing elevated concentrations of lead and arsenic in the constructed passive treatment wetlands system (the Site and Sediment Removal Area) formerly used to treat mine drainage from the January Adit (see **Drawings L000, L010, and L100**). The purpose of the proposed remediation would be to eliminate human health risk and ensure that the material does not impact Alum Gulch. This work plan was completed in compliance with the Arizona Department of Environmental Quality (ADEQ) Voluntary Remediation Program (VRP). The VRP Work Plan Checklist is presented in **Appendix A**.

1.1 OBJECTIVES AND DOCUMENT ORGANIZATION

In order to accomplish the overall goal of eliminating human health risk and protecting Alum Gulch from high concentrations of lead and arsenic in sediment, AMI has identified the following objectives:

1. During the summer of 2019, remove sediment containing elevated lead and arsenic concentrations from the area that formerly received mine drainage from the January Adit.
2. Transport the sediment and place it in a secure, engineered tailing storage facility located approximately 0.5 miles from the sediment removal area.
3. Reclaim the sediment removal area by importing clean backfill material, growth media, and seeding with an approved Forest Service seed mix.

After this introduction and project objectives, the work plan contains the following sections:

- Project Background (**Section 1.2**);
- Cleanup Approach (**Section 2.0**);
- Cleanup Specifications (**Section 3.0**);
- Sampling & Analysis Plan for post-excavation confirmation (**Section 4.0**); and
- Sections regarding Health & Safety (**5.0**), Schedule (**6.0**), Community Involvement (**7.0**), then cited References (**8.0**).

1.2 BACKGROUND

1.2.1 Site Setting

The Site is located in Santa Cruz County, Arizona near the Harshaw town site, adjacent to the proposed Hermosa Project (Latitude 31.472171, Longitude: -110.730563) (**Drawing L000**), and crosses the border between AMI land and the Coronado National Forest (**Drawing L010**). The Site is an oval shaped depression approximately 240 feet (ft.) long by 70 ft. wide. It covers an area of roughly 16,800 square feet (ft.²) and sits an elevation of 4,860 ft. above mean sea level (AMSL) (**Drawing L100**). The surrounding terrain is steep and rocky, with washes carving out relatively narrow valleys through native material (Arizona Minerals Inc., 2016). Vegetation across the Site is a mix of Western Wheatgrass (20%),



Reed grass and great bulrush (20%), Cattails (50%), Sphagnum moss (5%), and trees (5%) (Sovereign Consulting Inc., 2016).

To the south and west of the Site is a Forest Service road that ends near the Hermosa Project boundary (**Drawing L010**). The Alum Gulch drainage lies beyond the Forest Service road. The Alum Gulch drainage eventually joins Sonoita Creek. The portion of the Alum Gulch Stream adjacent to the Site has been deemed impaired by ADEQ (2003 and 2007).

Due south 0.5 miles from the Site is the VRP Tailings Storage Facility (TSF) (**Drawing L010**). The TSF is a lined permanent storage area with a lined underdrain collection pond and active Water Treatment Plant (WTP). The TSF is designed to securely store reclaimed material from historical mining.

1.2.2 Site History and Previous Investigations

The Site is an artificial wetland cell constructed by ASARCO in the 1990's. The Site was designed to capture and passively treat mine drainage emanating from the January Adit before it reached Alum Gulch. Mine water from the January Adit discharged to the Site at an estimated rate of seven to ten gallons per minute (Arizona Minerals Inc., 2016). From 1997 to 2000, ADEQ monitored drainage from the Site as part of the Alum Gulch Total Maximum Daily Load (TMDL) study (ADEQ, 2003). Results from the TMDL study showed Site drainage entering Alum Gulch contained cadmium, copper, and zinc, and had low pH. These findings resulted in ASARCO (the responsible party) receiving a discharge violation notice for the Site. Upon receiving the violation, ASARCO proposed an alternative treatment solution and conducted a pilot test project to resolve the discharge violation. Despite ASARCO's efforts, low pH water containing high concentrations of metals continued to enter Alum Gulch until 2016, when Arizona Minerals Inc. (AMI) began addressing the adit discharge. Under ADEQ oversight (VRP Site Code 505143-2), AMI implemented interim treatment. AMI's interim treatment met provisions of the 2007 Alum Gulch TMDL Implementation Plan, and stopped drainage from the Site into Alum Gulch (Arizona Minerals Inc., 2016).

In 2016, after interim treatment was implemented by AMI and the Site was no longer receiving adit discharge, AMI evaluated the extent of contaminants of concern (COCs) in Site sediment. AMI sampled sediment in four locations at three depth intervals (top, middle, and bottom) to 36 inches below ground surface (bgs), and also collected a background soil sample north of the Site. The historical sampling locations are shown on **Drawing L100**. Sediment results (Sovereign Consulting Inc., 2016) showed total arsenic concentrations ranged from 19 to 150 milligrams per kilogram (mg/kg), and were above the Arizona Non-Residential Soil Remediation Level (NR-SRL) of 10 mg/kg (**Table 1**), although it should be noted that the arsenic NR-SRL is not a risk-based standard but rather is based on the arithmetic average of background soil arsenic concentrations collected throughout Arizona. Total lead concentrations ranged from 80 to 29,000 mg/kg, and 8 of 12 results were above the NR-SRL of 800 mg/kg (**Table 1**); in addition, 11 of the 12 samples were above the default minimum groundwater protection level (GPL) of 290 mg/kg for lead (ADEQ 1996, Table 4). The sediment samples were also analyzed for leachable metals by the Toxicity Characteristic Leaching Procedure (TCLP). Concentrations of leachable lead determined by TCLP ranged from non-detect to 200 milligrams per liter (mg/L). Five of 12 leachable lead results were above the regulatory standard of 5 mg/L established under RCRA (40 CFR 261.24) (**Table 1**). All other leachable metals results were below TCLP thresholds.



In 2018, AMI replaced the interim treatment system with an active WTP as part of the ASARCO January Adit (Norton Mine) Voluntary Remediation Work Plan. The WTP (AZPDES Permit No. AZ0026387 and APP Permit NO. P-512235) was approved and constructed to treat mine drainage from the January Adit and solutions captured in the lined underdrain collection pond from the historic tailings, waste rock, and precipitation that falls within the lined tailings storage facility. The TSF, underdrain collection pond, and WTP comply with ADEQ's Aquifer Protection Program (APP) Permit No. P-512235. The locations of the WTP, TSF underdrain collection pond, and TSF are presented on **Drawing L010**.

Presently, the Site does not receive adit discharge. The Site is not considered to be a jurisdictional Water of the United States, as discussed in Section 3.1 below. As mentioned above, some sediment at the Site contains levels of lead and arsenic above certain regulatory or default cleanup levels. Under ADEQ VRP oversight, AMI plans to remediate the Site.



2.0 CLEANUP APPROACH

This section presents the goals (i.e. Remediation Levels) for remediation of the Site, and evaluation of alternatives to meet the goals. The remedial alternatives evaluation is brief, due to the unique presence of a lined TSF with seepage collection and treatment in close proximity to the Site.

2.1 REMEDIATION LEVELS

The proposed lead and arsenic Soil Remediation Levels for this project (**Table 2**) were established in accordance with Arizona Administrative Code (**Appendix C**), which was adopted pursuant to Arizona Revised Statute § 48-282.06, Item 4(a). The default Soil Remediation Levels determined by ADEQ are:

- Arizona Non Residential Soil Remediation Level (NR-SRL) for arsenic of 10 milligrams per kilogram (mg/kg) (based on average state background levels); and
- GPL for lead of 290 mg/kg. Note that the GPL is more stringent than the lead NR-SRL of 800 mg/kg.

Sediment excavated from the Site is not considered to be RCRA-regulated hazardous waste, pursuant to the Bevill Amendment exemption for extraction and beneficiation waste codified at 40 C.F.R. § 261.4(b)(7). EPA has recognized that sediment which fails TCLP regulatory standards due to the presence of Bevill-exempt materials is not hazardous waste.

EPA clearly included acidic mine water as one of the extraction and beneficiation wastes studied in the December 1985 Report to Congress (RTC) on extraction and beneficiation wastes from mining (EPA/530-SW-85-033) that was required under 42 U.S.C. §§ 6921(B)(3)(A) & 6982(f). Mine water (water that infiltrates a mine during the extraction process) was one of the four primary waste types studied by the RTC, and acid formation was identified in the RTC as a risk from mining operations. Nevertheless, EPA's 1986 regulatory determination excluded all extraction and beneficiation wastes from RCRA Subtitle C (hazardous waste) regulation, despite again acknowledging the risk of acid mine drainage. See 51 Fed. Reg. 24496 (July 3, 1986).

Subsequent to the 1986 regulatory determination, EPA has confirmed that seepage from a closed underground mine is covered by the Bevill Amendment exclusion. In a November 2000 letter to the Mineral Policy Center, EPA specifically noted that closed underground mines could fill with groundwater or rainwater and in turn generate liquid wastes that could be toxic. EPA nevertheless concluded that such liquid wastes were Bevill-exempt because to regulate them would frustrate congressional intent. This conclusion is consistent with judicial precedent. See *Friends of Santa Fe County v. LAC Minerals*, 892 F. Supp. 1333, 1341-42 (D.N.M. 1995) (acid mine drainage covered by Bevill amendment).

EPA has also clarified (in a June 1993 memorandum entitled *Clarification of RCRA Regulatory Application to Soils Contaminated by Cement Kiln Dust*) that soils contaminated by constituents from a Bevill-exempt waste, and which as a result fail the TCLP test solely because of the presence of Bevill-exempt materials, are covered by the Bevill amendment.



For these reasons, AMI believes that even if some of the excavated soil fail the TCLP test, that soil is covered by the Bevill Amendment and thus does not constitute hazardous waste under RCRA.

2.2 ALTERNATIVES EVALUATION

Based on the information available about the Site, and experience with remedies for other similar facilities, three remedial alternatives were identified prior to preparation of this work plan. A summary of each alternative is provided below.

- Alternative 1: No Action would involve maintaining fencing around the Site, but no action to remove the sediment, prevent sediment contact by humans or animals that enter the enclosed area, and no evaluation of potential leaching of metals from the sediment. Alternative 1 is not effective, because it would leave elevated concentrations of lead and arsenic un-remediated and uncontrolled. In some locations, lead concentrations in Site sediment are multiple orders of magnitude above the NR-SRL, and lack of action under this alternative would not provide long-term protection of human health.
- Alternative 2: Cover Contaminated Sediment would cover the contaminated sediment with approximately two feet of clean soil in order to prevent contact of humans and animals with the sediment under most scenarios. This alternative would involve ongoing monitoring and maintenance costs, would not completely address potential leaching of metals from the sediment, and would place restrictions on use of the Site permanently. Alternative 2 is not preferred, due to maintenance and monitoring costs, the potential for untreated metals leaching from the sediment to impact off-Site areas, and the need for restrictions that would encumber the Site.
- Alternative 3: Remove All Contaminated Sediment to a TSF would involve excavation and hauling of the metals-impacted sediment to the Hermosa VRP TSF located approximately 0.5 miles from the Site, soil sampling to confirm effective removal, backfill, and revegetation of the Site with an approved Forest Service seed mix. Under Alternative 3, the contaminated material would be removed permanently, and there would be no risk of metals leaching beneath the Site, and no contaminant-related use restrictions for the Site. Alternative 3 is a standard excavation and disposal action that is readily implementable, and would have no ongoing monitoring or maintenance costs that are not already part of requirements for the TSF. Alternative 3 achieves cleanup requirements by removing the material from an accessible area, and securing it in a lined facility with leachate collection and treatment.
- Alternative 4: Remove Contaminated Sediment to a Landfill is similar to Alternative 3, but would be extremely expensive, due to long-distance haulage and disposal costs. Furthermore, even though the material is exempt from hazardous waste listing under the Bevill Amendment (see discussion above), due to the elevated concentrations of lead in the sediment there are no known non-hazardous waste landfills that would accept the material.



Alternative 3 is the preferred approach, because it offers the highest level of protection (advantage over Alternatives 1 and 2) and has no ongoing monitoring or maintenance costs (advantage over Alternative 2), other than water treatment already required for the TSF. Alternative 3 is implementable and would involve relatively moderate cost, unlike Alternative 4. Excavation and disposal has been the approach approved under previous work plans accepted by the ADEQ VRP (e.g. Remedial Action Work Plan for Smelter Affected Soil in the Industrial Area South, West Plant Site, Superior, AZ, March 2016). Alternative 3 is facilitated in part by willingness of AMI to allow space in its lined TSF to securely store the contaminated sediment.



3.0 CLEANUP SPECIFICATIONS

This section describes procedures to implement the preferred remediation alternative, including excavation of sediment containing lead and arsenic at concentrations above Arizona NR-SRLs or GPLs (if the GPL is more stringent than the NR-SRL), and placement in the Hermosa VRP TSF. The proposed action meets the requirements of the ADEQ VRP Checklist (**Appendix A**). All remediation activities will be completed in accordance with a Site Specific Health and Safety Plan (**Appendix F**). Proposed excavation area and samplings points are shown on **Drawing L100**. Tasks for this work plan include:

- Sampling clean backfill prior to use;
- Building an access road for haul truck traffic;
- Removing vegetation and former water treatment infrastructure;
- Excavating contaminated sediment;
- Confirmation sampling from the final excavation surface;
- Disposing of contaminated sediment in the VRP TSF;
- Backfilling and revegetation.

Alum Gulch will not be disturbed. The extent of sediment excavation will be defined using field observations and sampling of native soil beneath the sediment, as described below, and excavation will extend at least 1 ft. into native material beneath the sediment. Sediment will be transported in haul trucks to the nearby VRP TSF and the excavation areas will be backfilled with clean material. Specifications for remediation activities are provided below.

3.1 PERMITS AND REVIEW

For the VRP related activities, AMI has obtained APP Permit No. P-512235 and AZPDES Permit No. AZ0026387. AMI also has an AZPDES General Permit for Stormwater Discharges Associated with Industrial Activity - Mineral Industry and a State Mine Inspector Site ID No. 13-03295 and Reclamation Plan.

Additionally, AMI requested an approved Department of Army jurisdictional determination (JD) on whether or not the constructed passive treatment wetland system, used to treat mine drainage from the January Adit, was Waters of the United States. The Los Angeles District Office of the US Army Corps of Engineers determined in correspondence dated April 9, 2018 that the January Adit passive treatment wetland system is not Waters of the United States. The Corps determination can be found in **Appendix B**.

A portion of the Site is located on Coronado National Forest (USFS) land, therefore a copy of this work plan will be submitted to the Coronado National Forest Supervisor's Office at address 300 W. Congress St, Tucson, AZ 85701 for review.



3.2 SAMPLING BACKFILL

One five-point composite sample of the proposed backfill material will be collected and analyzed for COCs to ensure that backfill material does not contain COCs above Arizona NR-SRLs. The sample will be collected in accordance with SOP-13 (**Appendix D**), and will be packaged and shipped under chain-of-custody to ACZ Laboratories Inc. of Steamboat, Colorado for lead and arsenic analysis by EPA Method 6010B.

3.3 PREPARATION FOR EXCAVATION

High-visibility markers and/or concrete barriers will be placed near existing aboveground utilities to protect them from damage during excavation and hauling. To prevent movement of potentially-contaminated sediment into Alum Gulch, a silt fence will be installed around the perimeter of the Site, except where access is needed for hauling.

The access road leading to the Site is located on AMI property. As part of this work plan, the existing haul road may need to be modified to provide a turnaround area and to reduce some grades. The exact configuration of the road and turnaround area will be determined by field engineers. A silt fence will be established around any road modification activities to prevent disturbance to Alum Gulch.

3.4 EXCAVATION

The Site will be excavated to a depth of one ft. into native material underlying the sediment. Depth of sediment will be determined in the field based on observations such as color, texture, and moisture content. During excavation, all haul trucks will be loaded directly by the excavator, and no stockpiling of the contaminated sediment will occur. The excavation sidewalls will be no steeper than an overall slope angle of 1:1 (horizontal:vertical). Confirmation samples will be collected from native soil under the sediment, as described in **Section 4.0**. Additional excavation will be performed until lead and arsenic concentrations in confirmation samples are below remediation levels, or until bedrock/refusal is encountered. Because the lead GPL of 290 mg/kg is more stringent than the lead NR-SRL of 800 mg/kg, the GPL of 290 mg/kg will be used as the remediation level for lead.

The final excavation surface will be measured in the field using both a measuring wheel accurate to the nearest 0.1 ft. and a GPS device with actual field precision of approximately one ft. for individual points. Excavation depths will be measured using a laser level and survey rod accurate to within 0.2 ft.

During excavation, dust will be abated to prevent emissions beyond the Site boundary. Should visible dust occur, dust abatement measures will be implemented including watering or application of a dust palliative on the haul truck route, and spot watering of sediment during excavation.

To prevent misplacement of contaminated sediment during transport, the wheels on each truck will be dry-decontaminated in a designated area prior to leaving the Site. The excavator tracks and bucket will also be dry-decontaminated prior to movement away from the excavation area. If dry-decontamination is not effective due to wet conditions or caking of material on the truck tires, a wet decontamination will be performed on six millimeter plastic sheeting, and the rinse water will be collected. To dispose of the



rinse water (if used), it will be periodically pumped onto sediment in the haul truck prior to leaving the Site, and will be deposited in the TSF.

3.5 PLACEMENT

Sediment and other debris or vegetation from the excavation will be hauled by truck to the TSF. A map of the transportation route to the TSF is provided on **Drawing L010**. The sediment will be placed in an approximately 250 ft. by 250 ft. area in the southeast corner of the TSF (**Drawing L010**). As mentioned in **Section 1.2.2**, the TSF was designed under ADEQ oversight (VRP Site Code 505143-2) for the purpose of handling and storing (*inter alia*) historic mine tailings containing elevated concentrations of some metals. All seepage generated from the excavated sediment will be treated by the VRP WTP and reused by AMI or discharged to Alum Gulch under ADEQ Permit No. AZ0026387. This means of placement ensures that seepage from the sediment will not contribute to an exceedance of groundwater or surface water quality standards.

3.6 BACKFILL AND REVEGETATION

The excavation areas will not be backfilled with clean materials until confirmation sampling results show remediation levels have been met. If results are not below remediation levels, additional excavation will continue until confirmation sampling indicates lead and arsenic concentrations in sediment are below remediation levels (**Table 2**), or until bedrock/refusal is encountered. The excavation area will be backfilled with suitable growth media shown not to contain elevated concentrations of lead or arsenic. Once backfill has been placed and graded, the area will be hydromulched with a Forest Service approved noxious weed-free seed mix.



4.0 SAMPLING AND ANALYSIS PLAN

This section presents Data Quality Objectives (DQOs), incorporates the basic elements of a Quality Assurance Project Plan and a Field Sampling Plan, and serves as the Sampling and Analysis Plan (SAP) for the remediation project.

4.1 DATA QUALITY OBJECTIVES

Table 3 presents the DQOs for confirmation sampling after removal of sediment from the Site. EPA's Seven-Step Planning Approach (EPA, 2006) was used to create the project DQOs. This approach includes identifying a problem statement, decision related to the problem, inputs that will be used to make the decision, sampling boundaries, rules for making the decision, quality control procedures, and means to optimize the sampling design. As shown in **Table 3**, the post-excavation confirmation sample results from within the sediment footprint shown in **Drawing L100** will be compared to Arizona NR-SRLs for arsenic and lead in order to verify if threats to human health have successfully been removed.

4.2 SAMPLING PROCEDURES

This section describes layout and procedures for soil confirmation sampling after sediment removal. The sediment removal area will be divided up into four Confirmation Sampling Areas (Areas A through D on **Drawing L100**) that are less than 5,000 ft.² each. One five-point composite sample will be collected from the pit bottom and another from the sidewall in each Confirmation Sampling Area. This design was selected based ADEQ guidance (ADEQ 2014), which recommends that decision units (DU) be less than 5,000 ft.², and at least one five-point composite sample should be collected from each DU.

Each pit bottom composite sample will consist of five sub-samples collected following the pattern shown in **Drawing L100**. Sub-samples for the sidewall composite samples will be evenly spaced along the outer edge of each Confirmation Sampling Area. Each composite sample will be labeled with the type (Pit Bottom or Sidewall), the Confirmation Sampling Area code from **Drawing L100**, and the approximate depth in feet. An example sample name following this pattern would be *Pit Bottom A, 4.5 feet*.

All composite samples will be collected from 0-6 inches below the excavation surface using a stainless steel trowel or excavator bucket. Field equipment and procedures for sample collection are detailed in SOP-13 (**Appendix D**). Standard procedures (**Appendix D**) will be followed for chain of custody (SOP-3) and packaging/shipping (SOP-4). Each sub-sample will be transferred to a laboratory-provided 8-ounce jar, stored in a cooler with ice, and then shipped under chain of custody to ACZ Laboratories Inc. in Steamboat, Colorado. The confirmation samples will be composited by the laboratory and analyzed for Metals by EPA Method 6010B. Requirements for containers, sample preservation, and hold times are shown in **Table 4**. All samples submitted for laboratory analysis will be analyzed using standard turnaround times.



4.3 DECONTAMINATION AND HANDLING OF INVESTIGATION-DERIVED WASTE (IDW)

Decontamination of field equipment will be completed in accordance with SOP-2 (**Appendix D**) in order to prevent cross-contamination between Confirmation Sampling Areas. To perform decontamination, all visible sediment will be removed using stiff bristle brush, and then the equipment will be washed with an environmentally-benign detergent solution such as Alconox™. After the detergent wash, the equipment will be rinsed once with dilute nitric acid then three times with distilled water. Similar decontamination will be conducted on all reusable (non-disposable) sampling equipment that may contact the sample. IDW produced during decontamination procedures will be spread across sediment, loaded into trucks, and placed in the TSF.

4.4 QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

To assure high-quality, verifiable and repeatable procedures, NewFields' SOPs will be followed during cleanup oversight activities and sample collection. The field Quality Control (QC) samples collected in accordance with SOP-24 (**Appendix D**) will consist of one equipment rinse blank (ERB) and one field duplicate (FD) for every 20 parent samples. Two additional sets of containers will also be collected to allow site-specific Matrix Spike/Matrix Spike Duplicate (MS/MSD) testing by the laboratory. Data validation will be performed on all laboratory results consistent with EPA National Functional Guidelines (EPA 2014).

4.5 FIELD DOCUMENTATION

NewFields personnel will document all activities in accordance with SOP-1 (**Appendix D**). A daily field record will be completed, as well as to-scale field drawings showing excavation and sampling locations, and a log of photographs. Example forms for daily field record, photograph log, incident report, chain of custody record, and field investigation planning form are provided in **Appendix E**.

4.6 REPORTING

Following receipt of the confirmation sample results, NewFields will prepare a Cleanup Completion Report summarizing remedial actions and sampling activities, and comparing post-cleanup laboratory results to appropriate remediation levels (**Table 2**). The report will include the following:

- Figures depicting excavation limits and sampling locations;
- Tables summarizing laboratory results;
- Summary of QC findings and data validation results;
- Appendices that contain field notes, photographs, and laboratory reports.

An electronic version and hard copy of the Cleanup Completion Report will be provided to AMI, who will provide the Report to ADEQ and USFS. Following review and finalization of the report, AMI will request that the ADEQ issue a No Further Action letter or similar.



5.0 HEALTH AND SAFETY

NewFields Staff overseeing excavation and collecting samples will complete work in accordance with the Site Specific Health & Safety Plan (HASP, **Appendix F**). The HASP will be complemented by a Job Hazard Analysis (JHA) worksheet to address safety concerns related specifically to overseeing excavation and collection of sediment samples. Field engineers will conduct daily staff safety meetings guided by the HASP and JHA at the beginning of each work day. The daily safety meetings will be documented on the daily field report.



6.0 SCHEDULE

Field activities will be initiated upon review and approval of this work plan by ADEQ, which is anticipated to be in June 2019. The proposed work plan schedule outlining submission dates for progress reports and work plan completion is provided in **Appendix G**. The Cleanup Completion Report will be prepared within three weeks of receipt and validation of all laboratory analytical results.



7.0 COMMUNITY INVOLVEMENT

Community involvement will consist of a public notice published in the local newspaper. A copy of the public notice is provided in **Appendix H**. The public notice will be submitted following ADEQ approval of this work plan.



8.0 REFERENCES

- ADEQ, 1996.** *A Screening Method to Determine Soil Concentrations Protective of Groundwater Quality* (September 1996).
- ADEQ, 2003.** *Total Maximum Daily Load for Upper Alum Gulch, Sonoita Creek Basin, Santa Cruz River Watershed, Coronado National Forest near Patagonia, Santa Cruz County Arizona. HUC 15050301-561A, Parameters Calcium, Copper, Zinc, and Acidity.* Publication No. OFR 07-08. June 2003.
- ADEQ, 2007.** *TMDL Implementation Plan for Cadmium, Copper, Zinc and Acidity, Alum Gulch, HUC #15050301-561A & B.* Publication No. OFR 07-03. March 2007.
- ADEQ, 2014.** *Voluntary Remediation Program Orientation Package.* April 2014.
- Arizona Mineral Inc., 2016.** *January, Norton and Trench Camp Mine Claims. VRP Work Plan, Santa Cruz County, AZ.* 2016.
- Sovereign Consulting Inc., 2016.** *Wetland Soil Sampling Report, January Adit, Santa Cruz County, AZ.* October 2016.
- EPA, 2006.** *Guidance on Systematic Planning Using the Data Quality Objectives Process.* EPA QA/G-4. February 2006.
- EPA, 2014.** *National Functional Guidelines for Superfund Inorganic Methods Data Review.* Publication USEPA-540-R-013-001. June 2013. Available at <http://www.epa.gov/clp/contract-laboratory-program-national-functional-guidelines-data-review>



TABLES

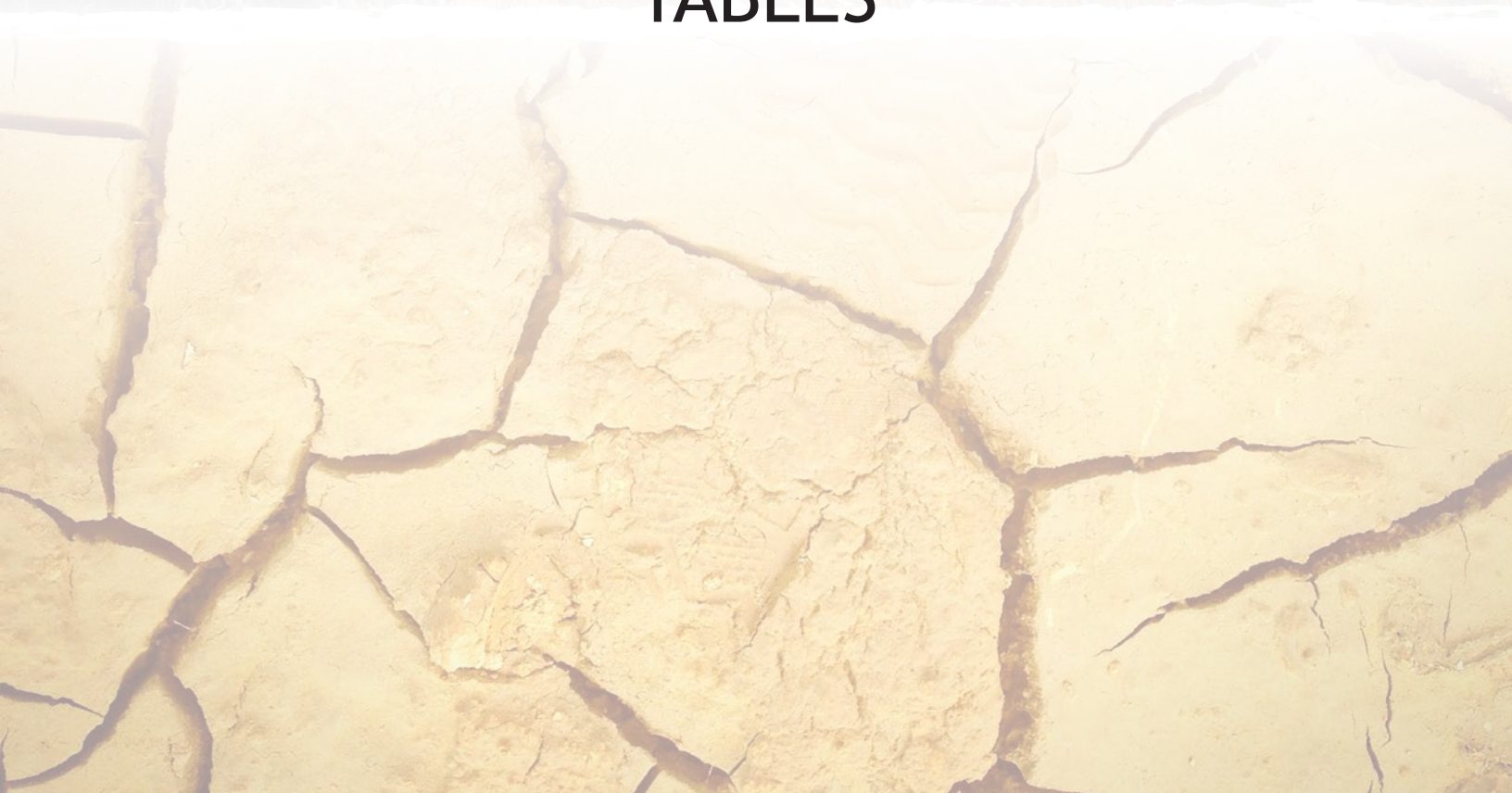


Table 1
Historical Laboratory Results (2016)
January Adit Sediment Removal Area
Santa Cruz County, Arizona

Type of Analysis	Sample Name	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
Total Metals	NR-SRL	10	170,000	510	4500	800	5,100	5100	310
	Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	01_Top	21	41	3.8	25	1,800	ND	4	0.2
	01_Mid	19	37	2.3	20	550	ND	ND	0.09
	01_Bottom	56	43	4.3	18	5,300	ND	5.2	0.17
	02_Top	36	32	5.8	13	10,000	ND	16	1.1
	02_Mid	36	29	9.3	9.8	27,000	ND	34	1.3
	02_Mid (duplicate)	47	60	11	17	30,000	ND	48	0.88
	02_Bottom	31	40	3.5	14	1,600	ND	1.1	ND
	03_Top	21	26	4.3	13	500	ND	5.2	0.071
	03_Mid	32	38	5.9	14	2,200	ND	2.1	0.11
	03_Bottom	38	31	3.7	22	530	ND	0.99	0.17
	04_Top	150	16	15	7.8	80	ND	3.9	ND
	04_Mid	44	31	6.3	11	29,000	ND	3.5	0.18
	04_Bottom	26	22	4.3	11	340	ND	ND	0.21
05_CONTROL	5.1	59	3.1	26	38	ND	ND	ND	
Leachable Metals by the Toxicity Characteristic Leaching Procedure (TCLP)	TCLP Regulatory Levels ¹	5.0	100.0	1.0	5.0	5.0	1.0	5.0	0.2
	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	01_Top	ND	ND	0.029	ND	ND	ND	ND	ND
	01_Mid	ND	ND	ND	ND	ND	ND	ND	ND
	01_Bottom	ND	ND	ND	ND	83	ND	ND	ND
	02_Top	ND	ND	ND	ND	7.6	ND	ND	ND
	02_Mid	ND	ND	ND	ND	200	ND	ND	ND
	02_Mid (duplicate)	ND	ND	ND	ND	190	ND	ND	ND
	02_Bottom	ND	ND	ND	ND	0.6	ND	ND	ND
	03_Top	ND	ND	ND	ND	ND	ND	ND	ND
	03_Mid	ND	ND	0.023	ND	25	ND	ND	ND
	03_Bottom	ND	ND	ND	ND	5.5	ND	ND	ND
	04_Top	ND	ND	ND	ND	ND	ND	ND	ND
	04_Mid	ND	ND	ND	ND	4.2	ND	ND	ND
	04_Bottom	ND	ND	ND	ND	ND	ND	ND	ND
05_CONTROL	ND	ND	ND	ND	ND	ND	ND	ND	

Notes:

NR-RSL = Non-Residential Soil Remediation Levels. 2009 Arizona Administrative Code Title 18, Chapter 7, Article 2.

mg/kg = micrograms per kilogram

ND = Non-Detection

mg/L = milligrams per liter

¹EPA 40 CFR 261.24 - Maximum concentration of Contaminants for the Toxicity Characteristic

Results presented are from 2016 Wetland Sampling Report - Sovereign Consulting Inc., 2016

Bold = Detection

Yellow Highlighting = Exceeds Non-Residential Soil Remediation Levels

Pink Highlighting = Exceeds TCLP Regulatory Levels

Table 2
Proposed Soil Remediation Levels
January Adit Sediment Removal Area
Santa Cruz County, Arizona

Contaminants of Concern (COCs)	Proposed Soil Remediation Levels (mg/kg)
Arsenic	10*
Lead	290**

Notes:

mg/kg = milligrams per kilogram

*Non-Residential Soil Remediation Level (March 2009) compliant with Arizona Revised Statutes (ARS) § 49-152

**Arizona Groundwater Protection Level (GPL)

TABLE 3
Data Quality Objectives - Confirmation Sampling
January Adit Sediment Removal Area, Santa Cruz County, Arizona

Step 1: Problem Statement	Step 2: Identifying the Decisions	Step 3: Decision Inputs	Step 4: Study Boundaries	Step 5: Decision Rules	Step 6: Tolerance Limits on Errors	Step 7: Optimization of Sample Design
<p>Historical effluent from the January Adit has resulted in collection of sediment with high concentrations of lead and arsenic in a artificial wetland cell west of the adit.</p> <p>Excavation is proposed to remove the metals-impacted material.</p> <p>Post-excavation data is needed to verify whether excavation was effective.</p>	<p>Have sediment removal efforts in the January Adit historical discharge area eliminated lead and arsenic impacts to soil so they no longer pose a threat to human health?</p>	<p>Concentrations of lead and arsenic in confirmation soil samples collected from the pit bottom and sidewalls of the excavation area.</p> <p>Contaminants of Concern (COCs) are lead and arsenic.</p>	<p>Soil sampling will be performed from the pit bottom and sidewalls of the proposed excavation.</p>	<p>Removal will be deemed effective when lead and arsenic concentrations in soil are below cleanup levels.</p> <p>Proposed cleanup levels are the Arizona Non-Residential Soil Remediation Levels (NR-SRLs).</p>	<p>Quality Control samples will be collected in accordance with Section 4.4 of the Work Plan. As specified in EPA Data Validation guidelines, precision of field duplicate soil samples will be acceptable at 100% Relative Percent Difference (RPD) or less. Detections (if any) in the Rinse Blank will be addressed by flagging any concentrations less than 10 times the blank detection as estimated (J qualifier), and changing any concentrations less than the blank detection to Not Detected with reporting limit as the concentration in the blank.</p>	<p>The site was divided in 4 decision units (DUs) that each have an area of 5,000 square feet or less, in accordance with Soil Sampling Design instructions in the ADEQ Site Investigation Guidance Manual (October 2014).</p> <p>For each DU, one 5-point composite confirmation soil sample will be collected from the pit bottom, and one 5-point composite will be collected from the sidewall.</p>

Table 4
Laboratory Methods, Containers, and Preservatives
January Adit Sediment Removal Area
Santa Cruz County, Arizona

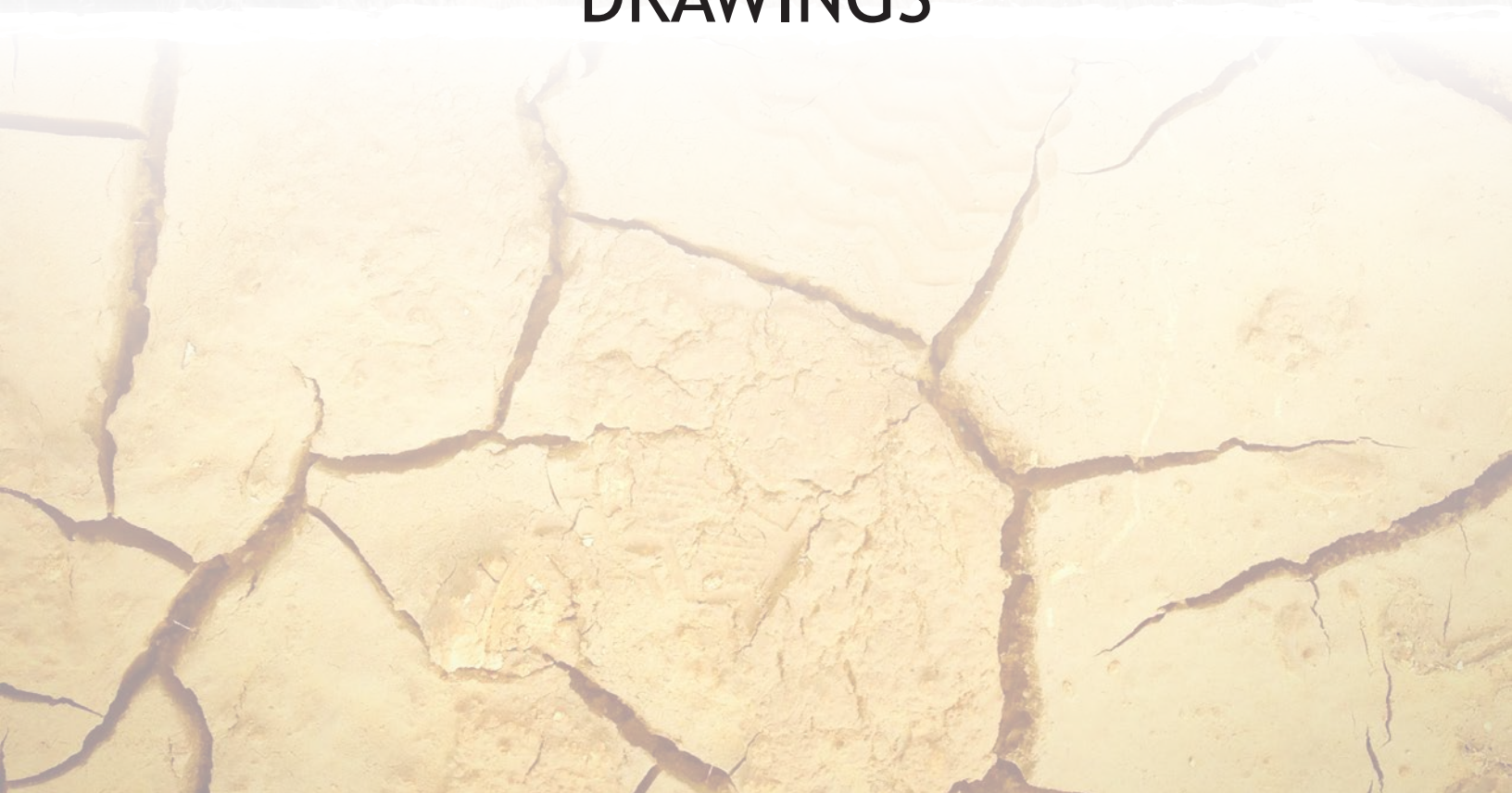
Parameter Group	Analytical Method & Parameters	Number of Containers	Container Type	Preservation	Hold Time
Metals (Solid)	EPA 6010B for Arsenic, Lead	8 Confirmation Samples + 1 Field Duplicate + 1 Rinsate Blank + 2 Site-Specific Matrix Spike Samples = 12 Total	8 ounce jar	Cool to between 0°C and 6°C	Extract within 6 months of sample collection.

Notes:

°C = degrees celsius



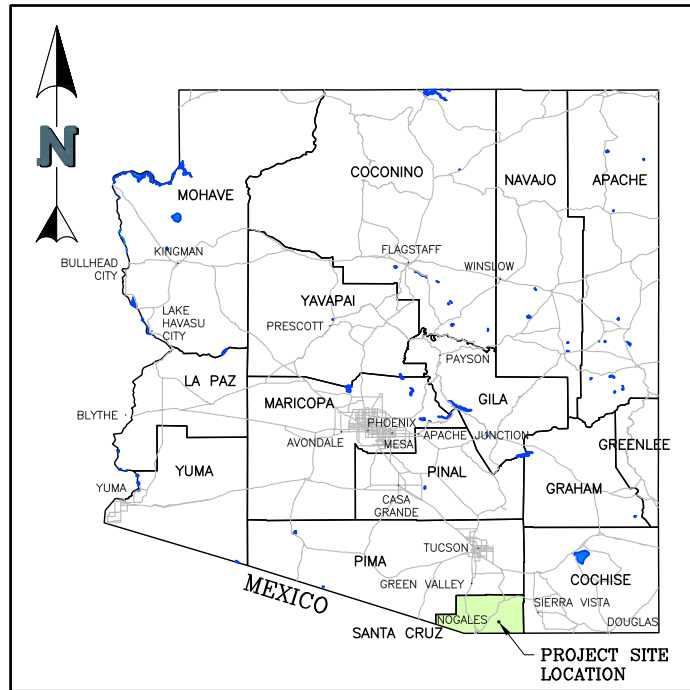
DRAWINGS



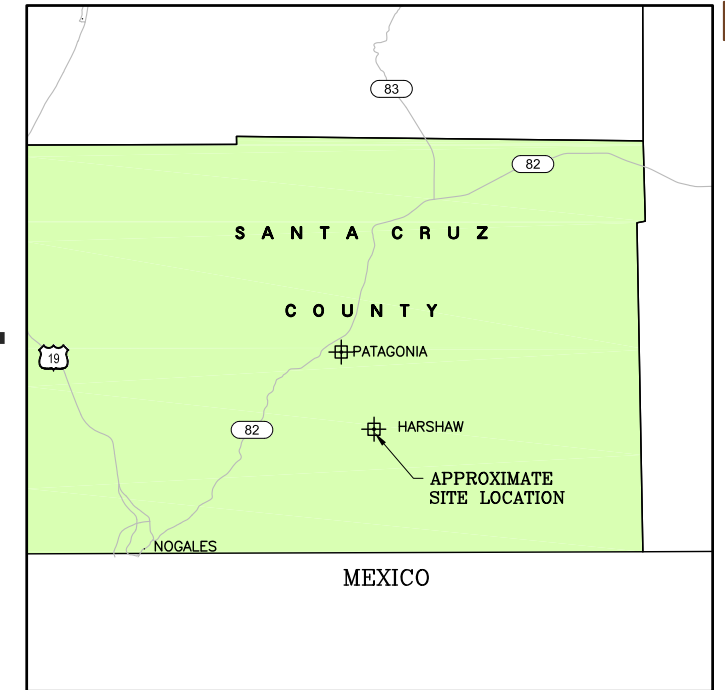
ARIZONA MINERALS INC

JANUARY ADIT PASSIVE TREATMENT WETLAND SYSTEM SEDIMENT REMOVAL

ISSUED FOR PERMITTING MARCH 13, 2019



COUNTY MAP



LOCATION MAP

DRAWING LIST		
REV	DRAWING TITLE	DWG NO.
0	COVER SHEET WITH COUNTY MAP AND LOCATION MAP	L000
0	VICINITY MAP	L010
0	SEDIMENT REMOVAL AREA PLAN VIEW	L100

TEXT ABBREVIATIONS:

TSF – TAILINGS STORAGE FACILITY

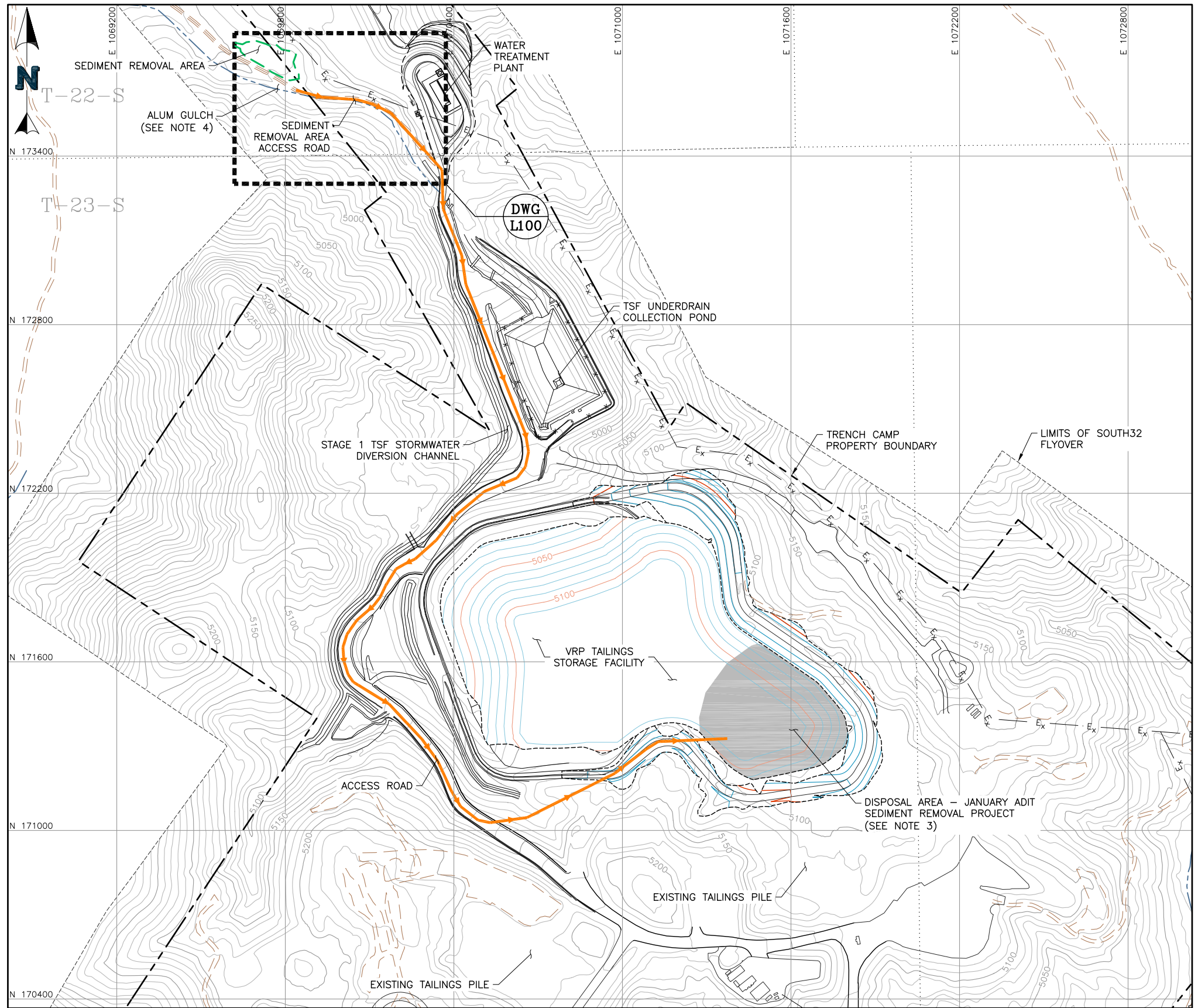
OWNER:



**2210 East Fort Lowell Road
Tucson, AZ 85719**



**9400 Station Street, Suite 300, Lone Tree, CO 80124
Phone: (720) 508.3300 www.newfields.com**



LEGEND:

- EXISTING GROUND CONTOURS
- PROPOSED GROUND CONTOURS
- EXISTING ROADS/TRAILS
- EXISTING DRAINAGES
- PROJECT BOUNDARY
- SECTION LINES
- TOWNSHIP NUMBER
- EXISTING POWER LINE
- APPROXIMATE TRAFFIC PATTERN FROM SEDIMENT REMOVAL AREA REMEDIATION ACCESS ROAD TO VRP TSF
- APPROXIMATE SEDIMENT REMOVAL AREA LIMITS
- DISPOSAL AREA - JANUARY ADIT SEDIMENT REMOVAL PROJECT (SEE NOTE 3)

0 200 400 FEET

- NOTES:**
- PROPOSED GROUND CONTOURS REPRESENT TOP OF FINISHED GRADE.
 - POST CONSTRUCTION CUT AND FILL SLOPES TO BE RESEED, WORK TO BE PERFORMED BY OTHERS.
 - MATERIAL EXCAVATED FROM THE SEDIMENT REMOVAL AREA SHALL BE PLACED IN THE SPECIFIED DISPOSAL AREA OF THE VRP TSF. THE ACCESS ROUTE INTO THE TSF WILL BE DETERMINED DURING REMOVAL ACTIVITIES.
 - ALUM GULCH SHALL NOT BE DISTURBED.

TEXT ABBREVIATIONS:
 TSF - TAILINGS STORAGE FACILITY

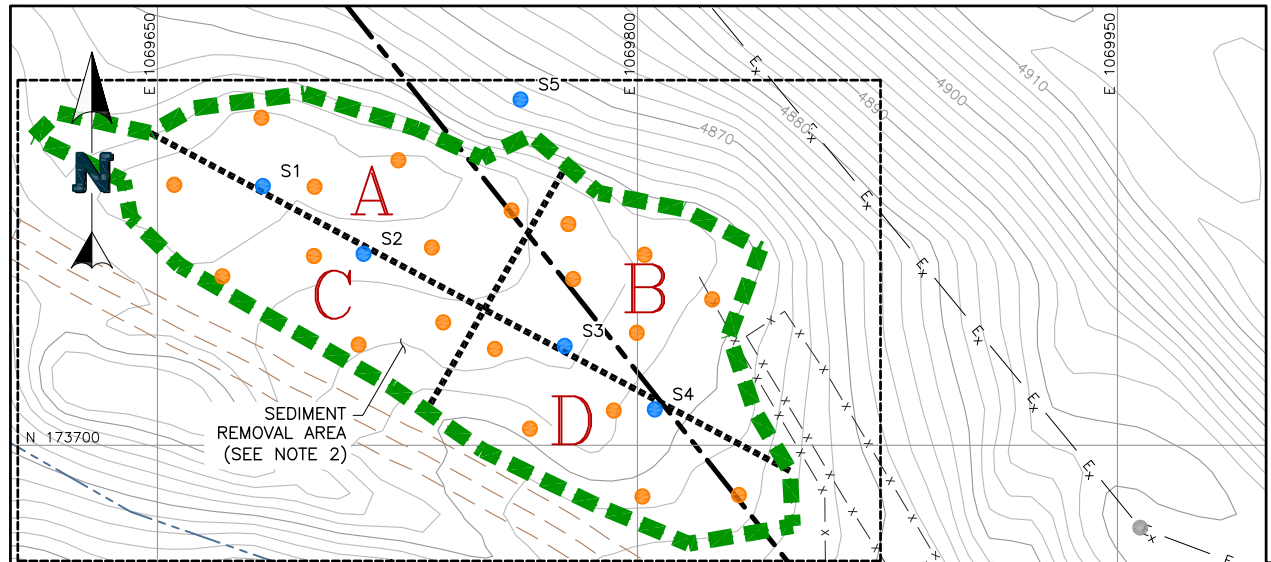
P:\Projects\0014.013 Hermosa Engineering Support - Stage 1 Construction\A-CAD\DWGS\14.013.051M.dwg-3/11/2019 12:40 PM

REFERENCE:
 EXISTING GROUND TOPOGRAPHY DEVELOPED FROM DECEMBER 2018 FLYOVER DATA PROVIDED BY SOUTH32. DATA PROJECTED TO STATE PLANE ARIZONA CENTRAL NAD 83 FEET, NAVD88.

REV	DATE	DESCRIPTION	TECH	ENG
0	03/13/19	ISSUED FOR PERMITTING	ACH	CMT

APPROVED BY:	RMS	DISCLAIMER NEWFIELDS PRODUCED THE INFORMATION PRESENTED ON THIS DRAWING THROUGH THE USE OF AVAILABLE TECHNICAL INFORMATION AND EXPERIENCE. RECEIVING THIS DRAWING DOES NOT GUARANTEE ANY RIGHTS TO EITHER SUCH TECHNICAL INFORMATION OR EXPERIENCE. ANY MODIFICATION OR ADAPTATION OF THE DATA OR DRAWING SHALL BE AT USER'S RISK AND WITHOUT ANY LIABILITY OR LEGAL RESPONSIBILITY TO NEWFIELDS.
CHECKED BY:	CMT	
DESIGNED BY:	ACH	
DRAWN BY:	ACH	

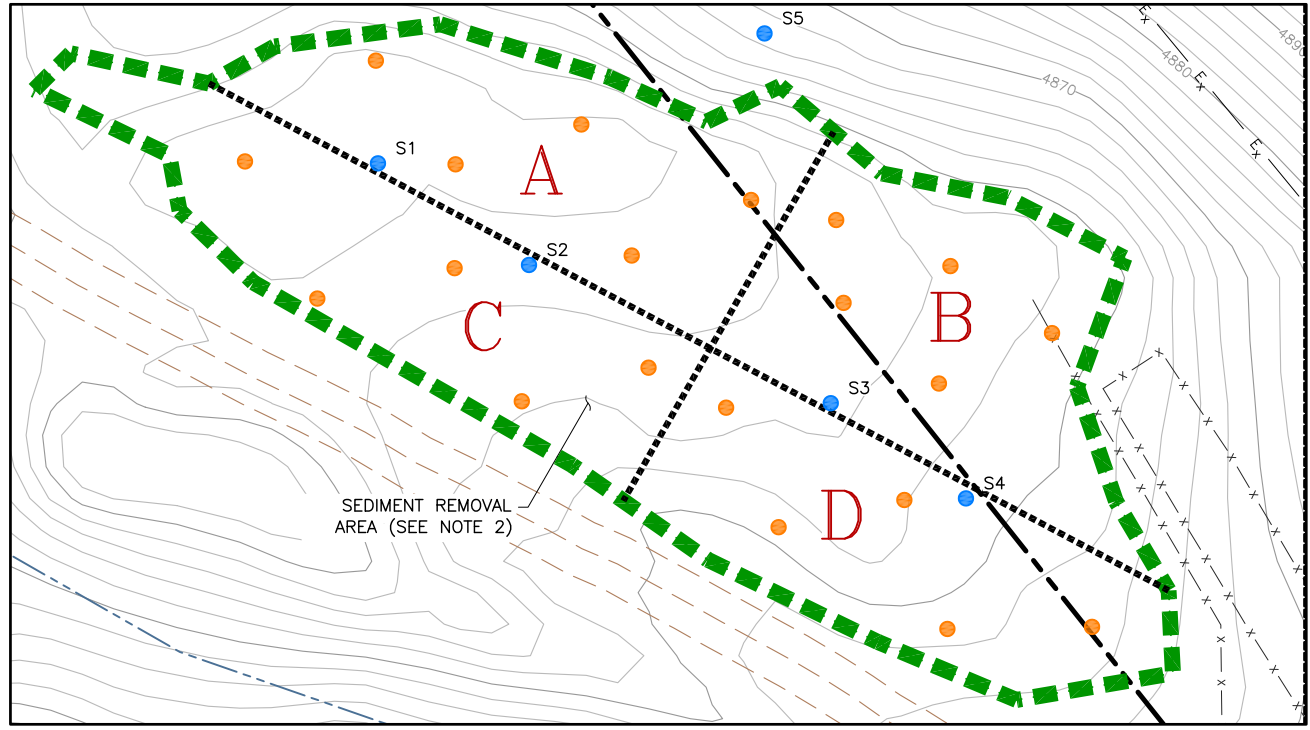
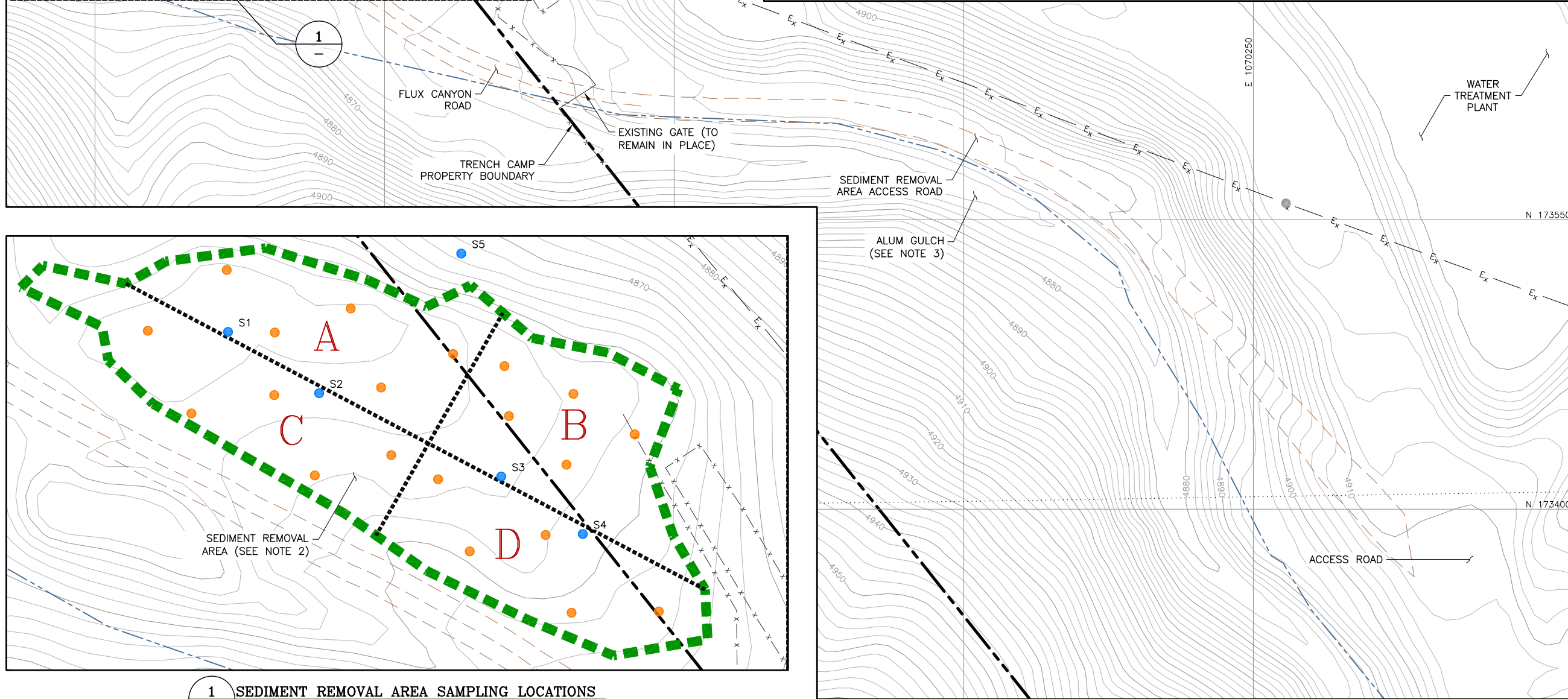
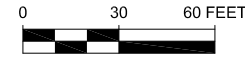
	CLIENT	ARIZONA MINERALS INC
	PROJECT	JANUARY ADIT PASSIVE TREATMENT WETLAND SYSTEM SEDIMENT REMOVAL
TITLE	VICINITY MAP	FILENAME 14.013.051M DRAWING NO. L010 REVISION 0



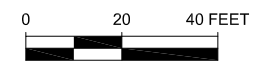
- LEGEND:**
- EXISTING GROUND CONTOURS
 - EXISTING ROADS/TRAILS
 - EXISTING DRAINAGES
 - PROJECT BOUNDARY
 - SECTION LINES
 - EXISTING FENCE
 - EXISTING POWER LINE
 - APPROXIMATE SEDIMENT REMOVAL AREA LIMITS
 - EDGE OF PIT BOTTOM SAMPLING AREA
 - PROPOSED CONFIRMATION SAMPLING AREA
 - S1 HISTORICAL SAMPLING LOCATIONS (SEE NOTE 4)
 - PROPOSED CONFIRMATION SAMPLING LOCATIONS (SUB-SAMPLES FOR 5-POINT COMPOSITE)

- NOTES:**
1. POST CONSTRUCTION CUT AND FILL SLOPES TO BE RESEED, WORK TO BE PERFORMED BY OTHERS.
 2. SEDIMENT REMOVAL AREA TO BE REMEDIATED. EXTENTS OF SEDIMENT REMOVAL AREA TO BE DEFINED USING FIELD OBSERVATIONS.
 3. ALUM GULCH SHALL NOT BE DISTURBED.
 4. HISTORICAL SAMPLING LOCATIONS ARE APPROXIMATE.

HISTORICAL SAMPLING LOCATIONS			
POINT	NORTHING	EASTING	ELEVATION
S1	173,780.99	1,069,682.91	4,851.11
S2	173,759.83	1,069,714.37	4,853.09
S3	173,731.03	1,069,777.23	4,855.65
S4	173,711.19	1,069,805.40	4,859.04
S5	173,808.05	1,069,763.44	4,866.77



1 SEDIMENT REMOVAL AREA SAMPLING LOCATIONS



REV	DATE	DESCRIPTION	TECH	ENG
0	03/13/19	ISSUED FOR PERMITTING	ACH	CMT

APPROVED BY:	DISCLAIMER
RMS	NEWFIELDS PRODUCED THE INFORMATION PRESENTED ON THIS DRAWING THROUGH THE USE OF AVAILABLE TECHNICAL INFORMATION AND EXPERIENCE. RECEIVING THIS DRAWING DOES NOT GUARANTEE ANY RIGHTS TO EITHER SUCH TECHNICAL INFORMATION OR EXPERIENCE. ANY MODIFICATION OR ADAPTATION OF THE DATA OR DRAWING SHALL BE AT USER'S RISK AND WITHOUT ANY LIABILITY OR LEGAL RESPONSIBILITY TO NEWFIELDS.
CHECKED BY:	
CMT	
DESIGNED BY:	
ACH	
DRAWN BY:	ACH

	CLIENT	ARIZONA MINERALS INC
	PROJECT	JANUARY ADIT PASSIVE TREATMENT WETLAND SYSTEM SEDIMENT REMOVAL
TITLE	SEDIMENT REMOVAL AREA PLAN VIEW	FILENAME 14.013.052M DRAWING NO. L100 REVISION 0

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REFERENCE:
EXISTING GROUND TOPOGRAPHY DEVELOPED FROM DECEMBER 2018 FLYOVER DATA PROVIDED BY SOUTH32. DATA PROJECTED TO STATE PLANE ARIZONA CENTRAL NAD 83 FEET, NAVD88.



APPENDIX A

VOLUNTARY REMEDIATION PROGRAM WORK PLAN CHECKLIST



Voluntary Remediation Program Work Plan Checklist

Complete Shaded Areas and Submit with Work Plan

Site Name: _____ VRP Site Code: _____

Volunteer/Applicant Name: _____

Volunteer/Applicant Email Address and Phone: _____

Authorized Agent (AA)/Consulting Company: _____

AA/Consultant Email Address and Phone: _____

Reference	Summary of Statutory Requirement	Page(s) Where Addressed in Work Plan	VRP Use Only
	<small>(please review all statutes in their entirety to ensure compliance)</small>	<small>(write N/A if not applicable)</small>	
§49-175A.1	Summary of existing site characterization and assessment information; information regarding any remediation previously conducted; copies of referenced reports not previously submitted;		<input type="checkbox"/>
§49-175A.2	If the site has not been characterized, a plan to conduct site characterization and a schedule for completion.		<input type="checkbox"/>
§49-175A.3.a	If site characterization is completed, a description of how the remediation will comply with §49-175B ("Work Plans") and how the completion of remediation will be verified. A schedule for completion must be included.		<input type="checkbox"/>
§49-175A.3.b	If site characterization is completed, the work plan may provide for the remediation to be conducted in phases or tasks. A schedule for completion must be included.		<input type="checkbox"/>
§49-175A.4	Schedule for submission of progress reports.		<input type="checkbox"/>
§49-175A.5	A proposal for community involvement as prescribed by §49-176 ("Community Involvement Requirements")		<input type="checkbox"/>
§49-175A.6	If known, a list of institutional or engineering controls necessary during remediation and after completion of the proposed remediation to control exposure to contaminants.		<input type="checkbox"/>
§49-175A.7	A proposal for monitoring during remediation and after the remediation if necessary to verify whether the approved remediation levels or controls have been attained and will be maintained.		<input type="checkbox"/>
§49-175A.8	A list of any permits or legal requirements known to apply to the work or already performed by the applicant.		<input type="checkbox"/>
§49-175A.9	If requested by the department, information regarding the financial capability of the applicant to conduct the work identified in the application. <i>(IF APPLICABLE)</i>		<input type="checkbox"/>

Voluntary Remediation Program Work Plan Checklist

Complete Shaded Areas and Submit with Work Plan

Site Name: _____ VRP Site Code: _____

Reference	Summary of Statutory Requirement	Page(s) Where Addressed in Work Plan	VRP Use Only
	(please review all statutes in their entirety to ensure compliance)	(write N/A if not applicable)	
§49-175B	Remediation levels or controls for remediation conducted pursuant to this article shall be established in accordance with rules adopted pursuant to §49-282.06 unless one or more of the following applies: see §49-175B.1 through §49-175B.4, below.		<input type="checkbox"/>
§49-175B.1	The applicant demonstrates that remediation levels, institutional controls, or engineering controls for remediation of contaminated soil comply with §49-152 and the rules adopted.		<input type="checkbox"/>
§49-175B.2	The applicant demonstrates that remediation levels, institutional controls, or engineering controls for remediation of landfills or other facilities that contain materials that are not subject to §49-152 (i.e.: asbestos) do not exceed a cumulative excess lifetime cancer risk between 1×10^{-4} to 1×10^{-6} , and a hazard index of no greater than 1.		<input type="checkbox"/>
§49-175B.3	The applicant demonstrates that on achieving remediation levels or controls for a source or potential source of contamination to a navigable water, the source of contamination will not cause or contribute to an exceedance of surface water quality standards, or if a permit is required pursuant to 33 United States Code §1342 for any discharge from the source, that any discharges from the source will comply with the permit.		<input type="checkbox"/>
§49-175B.4	The applicant demonstrates that, on achieving remediation levels or controls for a source of contamination to an aquifer, the source will not cause or contribute to an exceedance of aquifer water quality standards (AWQS) beyond the boundary of the facility where the source is located.		<input type="checkbox"/>
§49-175C	The VRP may waive any work plan requirement under this section that it determines to be unnecessary to make any of the determinations required under §49-177 . <i>If any waivers are requested in the Work Plan or have been previously requested and approved by the VRP, cite them in the Work Plan, including a citation of the statute for which the waiver applies.</i>		<input type="checkbox"/>

Voluntary Remediation Program Work Plan Checklist

Complete Shaded Areas and Submit with Work Plan

Site Name: _____ VRP Site Code: _____

To support the prerequisites established by A.R.S. §49-177 and §49-180, the VRP expects certain documentation to accompany a Work Plan. The following provides a list of attachments/exhibits which are recommended for submittal with a Work Plan to provide the information required by the statutes.

Work Plan Information	Title of Figure/Table/Attachment/Exhibit Where Requested Information is Cited <small>(write N/A if not applicable)</small>	Figure/Table/ Attachment or Report Page Number <small>(write N/A if not applicable)</small>	VRP Use Only
Site Location Map <i>(topographic or aerial)</i>			<input type="checkbox"/>
Site Map <i>(to scale)</i>			<input type="checkbox"/>
Historical Sampling Data Table			<input type="checkbox"/>
Historical Sample Location Map <i>(to scale)</i>			<input type="checkbox"/>
Proposed Sample Location Map <i>(to scale)</i>			<input type="checkbox"/>
Sampling and Analysis Plan <i>(includes Field Sampling Plan & Quality Assurance Plan)</i>			<input type="checkbox"/>
Proposed Remediation System Location Map			<input type="checkbox"/>
Proposed Remediation System Layout <i>(Design Drawings)</i>			<input type="checkbox"/>
Schedule for Implementation of Project Activities* <i>(Gantt Style Chart)</i>			<input type="checkbox"/>
<small>*Project Activities are defined in A.R.S. §§49-175A.2 through 49-175A.4, and 49-176A.2 (Community Involvement).</small>			
Proposed Language for Public Notification of Remediation <i>(i.e.: example signage)</i>			<input type="checkbox"/>
Plan for Investigative Derived Waste (IDW)			<input type="checkbox"/>
Evaluation of Remedial Alternatives <i>(i.e: for Feasibility Study Work Plan)</i>			<input type="checkbox"/>

DOES THE WORK PLAN PROPOSE IMPLEMENTING SITE-SPECIFIC REMEDIATION LEVELS?

Yes No

DOES THE WORK PLAN PROPOSE EVALUATION OF BACKGROUND LEVELS?

Yes No

NOTE: When reports are submitted which document any type of sampling activity, the submittal of Electronic Data per ADEQ's [Groundwater Data Submittal Guidance \(V3.4\)](#) is strongly recommended.



APPENDIX B

PREVIOUS SITE INVESTIGATIONS & CORRESPONDENCE





SOVEREIGN CONSULTING INC.

JANUARY ADIT, SANTA CRUZ COUNTY, AZ

WETLAND

SOIL SAMPLING REPORT

October 05, 2016

CPE CONSULTANTS

DV020.005

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- Attachment B Soil Laboratory Results
- Attachment C Vegetation Laboratory Results

1. INTRODUCTION

Sovereign Consulting Inc. (Sovereign) was contracted to sample the soil and vegetation in the existing January Adit Wetland as per the Wetland Sampling and Characterization Plan (Sovereign, 9/25/15). The main focus was to evaluate if the wetland has sequestered selected contaminants of concern (COCs) that may have been present in the January Adit mine influenced water (MIW) feeding the wetland for many years.

The wetland is located in Santa Cruz County, AZ, along Flux Canyon Rd about 3.5 road miles west of Harshaw, (31.472171, -110.730563). The wetland is approximately 200 ft long and 50 ft wide, with a total area of about 2 acres. See Figure 1. The inlet to the wetland is just downstream of the January Adit portal on the south eastern end. The water flows northwest toward the opposite end where it discharges under Flux Canyon road toward Alum Gulch in one or more unidentified discharge points. Part of the wetland is on Coronado National Forest property (the northwest side), encompassing two of the wetland soil sample locations.

The objective of the sampling was to obtain screening information that can be used to inform further evaluations or actions for the wetland and to assist in determining zones where selected contaminants of concern (COCs) are found. This involved taking soil samples at three depths in four different locations, one background soil sample, and one wetland vegetation sample.



Figure 1. Wetland Soil Sample Location

This report presents the laboratory results for the wetland soil samples, including total metals and toxicity characteristic leaching procedure (TCLP) metals. The data are discussed in comparison with the Non-Residential Soil Remediation Levels (NR-SRL) and EPA TCLP regulatory levels. The soil samples were evaluated pursuant to the Resource Conservation and Recovery Act (RCRA) eight metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver).

Sovereign performed TCLP testing, as suggested by ADEQ. The TCLP test simulates leaching in a municipal solid waste landfill context by using an organic acid in the test, and may be over representative of the leaching that would occur in different contexts, especially in an arid environment. TCLP is a fairly aggressive procedure compared to what many Arizona programs use, the synthetic precipitation leaching procedure (SPLP – EPA Method 1312) or the meteoric water mobility procedure developed by the State of Nevada, to simulate leaching that will occur in Arizona's arid areas. The acceptability of using these other procedures is demonstrated in Appendix B to ADEQ's Mining BADCT Guidance Manual identifies the SPLP test as the "preferred approach" for performing leach testing on mining-related materials.

Arizona Minerals takes the position that any soil excavated from the wetlands is exempt from hazardous waste regulation regardless of TCLP test results, pursuant to the Bevill Amendment exemption for extraction and beneficiation waste codified at 40 C.F.R. § 261.4(b)(7).

EPA clearly included acidic mine water as one of the extraction and beneficiation wastes studied in the December 1985 Report to Congress (RTC) on extraction and beneficiation wastes from mining (EPA/530-SW-85-033) that was required under 42 U.S.C. §§ 6921(B)(3)(A) & 6982(f). Mine water (water that infiltrates a mine during the extraction process) was one of the four primary waste types studied in the RTC, and acid formation was identified in the RTC as a risk from mining operations. Nevertheless, EPA's 1986 regulatory determination excluded all extraction and beneficiation wastes from RCRA Subtitle C (hazardous waste) regulation, despite again acknowledging the risk of acid mine drainage. See 51 Fed. Reg. 24496 (July 3, 1986).

Subsequent to the 1986 regulatory determination, EPA has confirmed that seepage from a closed underground mine is covered by the Bevill Amendment exclusion. In a November 2000 letter to the Mineral Policy Center, EPA specifically noted that closed underground mines could fill with groundwater or rainwater and in turn generate liquid wastes that could be toxic. EPA nevertheless concluded that such liquid wastes were Bevill-exempt because to regulate them would frustrate congressional intent. This conclusion is consistent with judicial precedent. See Friends of Santa Fe County v. LAC Minerals, 892 F. Supp. 1333, 1341-42 (D.N.M. 1995) (acid mine drainage covered by Bevill amendment).

EPA has also clarified (in a June 1993 memorandum) that soils contaminated by constituents from a Bevill-exempt waste, and which as a result fail the TCLP test solely because of the presence of the Bevill-exempt materials, are covered by the Bevill amendment.

For these reasons, Arizona Mining believes that even if wetland soils fail the TCLP test, they are covered by the Bevill Amendment and are thus do not constitute hazardous waste under RCRA.

2. SAMPLING

With the assistance of Arizona Mining and CPE, on June 28th, 2016, the following 14 samples were collected: See Figure 1.

- Twelve (12) wetland soil samples – Three depth intervals (top, middle, and bottom) from four separate locations. The four locations were spread along the approximate centerline of the wetland from the southeast inlet end to the northwest end (S1, S2, S3, S4).
- One control samples (native soil) – Sample point S5.
- One wetland vegetation sample – Composite taken near S1, S2, S3, S4

Table 1 shows the samples collected and the depth intervals. Figure 1 shows the sample locations. It was assumed that potential contamination levels would be the more-elevated closest to the end of the wetland that receives January Mine MIW. Consequently, the sampling order was from the furthest to the closest location to the MIW influent. This added a measure of protection against sample cross contamination.

Table 1. Samples ID and Analysis

Sample ID	Sample Description	Map Sample Point	Analysis	
			ICP (Method 6020B)	TCLP (Method 1311)
Jan062816WET01_T	01_Top	S1	X	X
Jan062816WET01_M	01_Mid		X	X
Jan062816WET01_B	01_Bottom		X	X
Jan062816WET02_T	02_Top	S2	X	X
Jan062816WET02_M	02_Mid		X	X
Jan062816WET02_MD	02_Mid (Duplicate)		X	X
Jan062816WET02_B	02_Bottom		X	X
Jan062816WET03_T	03_Top	S3	X	X
Jan062816WET03_M	03_Mid		X	X
Jan062816WET03_B	03_Bottom		X	X
Jan062816WET04_T	04_Top	S4	X	X
Jan062816WET04_M	04_Mid		X	X
Jan062816WET04_B	04_Bottom		X	X
Jan062816CON	05_CONTROL	S5	X	X
Jan Wet VEG	VEG	Composite nearby S1, S2, S3, S4	X	-

The samples were collected using an AMS Replaceable Tip San/Loose Sediment Probe with a 1” diameter by 36” long probe body. The soil probe is equipped with a core catcher (liner) which ensures full sample recovery in the proper soil conditions. The disposal plastic liner also serves as a contamination barrier between samples. A fresh liner was used for each sample. Photos of the liners containing the samples are found in Attachment A. The probe body was advanced 36” into the wetland soil using a slide hammer and then retracted for sample recovery.

The control sample (native soil) was a composite from the excavated soil of one foot deep hole located outside the north wetland boundary and slightly up gradient to stay away from any impacts by the wetland or roadway to the south.

The vegetation sample was taken from the stems and leaves of the vegetation nearby each wetland soil sample point. Three quart size bags of vegetation were collected in total.

3. TESTING/RESULTS

3.1. Soil Samples

The wetland and control soil samples were analyzed for both ICP total metals and toxicity characteristic leaching procedure (TCLP) metals.

3.1.1. ICP Total Metals

Samples were subjected to a whole rock analysis using Aqua Regia Digestion followed by analysis using inductively couple plasma (ICP Method 6010B) to determine trace metals in solution. The results for ICP metals are summarized in Table 2 below. The laboratory results are presented in Attachment B.

ICP results from the wetland soil samples indicate that barium, cadmium, chromium, mercury, selenium, and silver were below the NR-SRL. All the arsenic results were above the NR-SRL. (It should be noted that the arsenic NR-SRL is not a risk-based standard but is based on statewide average background levels.) Seven samples out of 12 were above the NR-SRL for lead. One middle sample (Wet02) was a duplicate.

The control sample (Jan062816CON) was below the NR-SRL for all the RCRA metals.

Table 2. ICP Total Metals Results

Parameter	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
NR-SRL ¹	10	170,000	510	4500	800	310	5100	5100
01_Top	21	41	3.8	25	1,800	0.2	ND	4
01_Mid	19	37	2.3	20	550	0.09	ND	ND
01_Bottom	56	43	4.3	18	5,300	0.17	ND	5.2
02_Top	36	32	5.8	13	10,000	1.1	ND	16
02_Mid	36	29	9.3	9.8	27,000	1.3	ND	34
02_Mid (duplicate)	47	60	11	17	30,000	0.88	ND	48
02_Bottom	31	40	3.5	14	1,600	ND	ND	1.1
03_Top	21	26	4.3	13	500	0.071	ND	5.2
03_Mid	32	38	5.9	14	2,200	0.11	ND	2.1
03_Bottom	38	31	3.7	22	530	0.17	ND	0.99
04_Top	150	16	15	7.8	80	ND	ND	3.9
04_Mid	44	31	6.3	11	29,000	0.18	ND	3.5
04_Bottom	26	22	4.3	11	340	0.21	ND	ND
05_CONTROL	5.1	59	3.1	26	38	ND	ND	ND

Notes: ND – Non Detect

Values in **bold** and *italic* are above the Non-Residential Soil Remediation Levels NR- SRL

¹ Arizona Administrative Code, Title18, Ch. 7

3.1.2. Toxicity Characteristic Leaching Procedure (TCLP)

Samples were subjected to the toxicity characteristic leaching procedure (TCLP, EPA Method 1311). The results for TCLP are summarized in Table 3 and the laboratory results are presented in Attachment B.

TCLP results from the 12 wetland soil samples indicate that arsenic, barium, cadmium, chromium, mercury, selenium, and silver were below the TCLP regulatory levels. Five samples out of twelve were above the TCLP regulatory level for lead. However, for the reasons discussed above, these levels would not result in the soil being considered hazardous waste under RCRA because of the Bevill Amendment exclusion.

Table 3. TCLP Results

Parameter	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TCLP Regulatory Levels	5.0	100.0	1.0	5.0	5.0	0.2	1.0	5.0
01_Top	ND	ND	0.029	ND	ND	ND	ND	ND
01_Mid	ND	ND	ND	ND	ND	ND	ND	ND
01_Bottom	ND	ND	ND	ND	83	ND	ND	ND
02_Top	ND	ND	ND	ND	7.6	ND	ND	ND
02_Mid	ND	ND	ND	ND	200	ND	ND	ND
02_Mid (duplicate)	ND	ND	ND	ND	190	ND	ND	ND
02_Bottom	ND	ND	ND	ND	0.6	ND	ND	ND
03_Top	ND	ND	ND	ND	ND	ND	ND	ND
03_Mid	ND	ND	0.023	ND	25	ND	ND	ND
03_Bottom	ND	ND	ND	ND	5.5	ND	ND	ND
04_Top	ND	ND	ND	ND	ND	ND	ND	ND
04_Mid	ND	ND	ND	ND	4.2	ND	ND	ND
04_Bottom	ND	ND	ND	ND	ND	ND	ND	ND
05_CONTROL	ND	ND	ND	ND	ND	ND	ND	ND

Note: ND – Non Detect

Values in **bold** and *italic* are above the TCLP Regulatory Levels

¹40 CFR 261, Appendix II, 1993d ed., as amended by 58 FR 46040, August 31, 1993

3.2. Vegetation Sample

This sample was collected to screen the types of plants that are in the wetland and determine the extent that COC may have bio-accumulated into the plant tissue. This will help determine characteristics of the local wetland vegetation and provide more information to assess if the plants can be transplanted into the planned full scale water treatment system.

A visual inspection of the vegetation was performed to identify different vegetation species and to roughly assess the relative abundance of each species. The results of this screening inspection were:

- Cattails – 50%
- Western wheatgrass – 20%
- Reed grass and great bulrush – 20%
- Trees (Arizona ash or Mexican elderberry, black willow, and juniper), limber pine – 5%
- Sphagnum moss – 5%

The entire vegetation sample collected in the field was provided to the laboratory for pulverization, drying, Aqua Regia Digestion, and analysis using inductively couple plasma (ICP Method 6010B) to determine trace metals content in the plant tissue. The results are shown in Table 4 below and in Appendix C.

ICP results from the wetland vegetation samples indicate that all RCRA metals concentrations were below the NR-SRL. Other metals (aluminum, copper, iron, manganese, and zinc) were also analyzed to determine if the existing wetland plants can be used in the full scale wetland.

Table 4. Plant Tissue Results

Parameter	Al	As	Ba	Cd	Cr	Cu	Fe	Pb	Mn	Hg	Se	Ag	Zn
Units	mg/Kg												
NR-SRL ¹		10	170,000	510	4500			800		310	5100	5100	
VEG	24	ND	0.9	ND	ND	10	60	ND	1090	14.1	ND	ND	157

Notes: ND – Non Detect

¹ Arizona Administrative Code, Title18, Ch. 7

4. SUMMARY/RECOMMENDATIONS

4.1. Soils

The purpose of the soil characterization was to obtain information that can be used to evaluate the wetland soils and precipitated materials for levels of contaminants of concern and to determine the approximate zones where COC may be located. In addition, the information would be used to decide if the soil could be used as a “seed” inoculant for the full scale passive treatment system (PTS).

Below are zone profiles showing the concentrations results for Arsenic (ICP Metals only) and Lead (ICP Metals and TCLP) relative to the sample locations where they were detected. The color shade in each zone gets darker as the concentration increases to help visually illustrate where the more concentrated samples results were found. Arsenic and lead were the only COCs above the given regulatory levels and thus the only ones illustrated. Sample point S1 is closer to the effluent end of the wetland (northwest corner) and point S4 is closer to the influent end (southeast corner).

Arsenic Concentration by Sample Zone (ICP Total Metals Results in mg/Kg)

Depth\Area	S1	S2	S3	S4
Top	21	36	21	150
Mid	19	36/47	32	44
Bottom	56	47	38	26

Note: The Non-Residential Soil Remediation Levels (NR- SRL) for Arsenic is 10 mg/KG

Lead Concentration by Sample Zone (ICP Total Metals Results in mg/Kg)

Depth\Area	S1	S2	S3	S4
Top	1,800	10,000	500	80
Mid	550	27,000/30,000	2,200	29,000
Bottom	5,300	1,600	530	340

Note: The Non-Residential Soil Remediation Levels (NR- SRL) for lead is 800 mg/KG

Lead Concentration by Sample Zone (TCLP Results in mg/l)

Depth\Area	S1	S2	S3	S4
Top	ND	7.6	ND	ND
Mid	ND	200/190	25	4.2
Bottom	83	0.6	5.5	ND

Note: The TCLP Regulatory Level for Lead is 5.0 mg/l

These results (elevated lead levels) are consistent with the geology of the local bedrock which is being evaluated as a prospective zinc, lead, and silver deposit (Arizona Mining Website, 2016). The wetland soils could potentially be managed/comingled with tailings from the future ore processing mill or disposed of in either of two managed tailings storage facilities developed during previous mining & milling operations at the site.

4.2. Vegetation

Based on the wetland vegetation sample results, the plants could most likely be used in the full scale wetland.

5. REFERENCES

Sovereign (2015) Wetland Sampling and Characterization Plan. Prepared for Arizona Mining and CPE. September 25, 2015

40 CFR 261, Appendix II, 1993 ed., as amended by FR 46040, August 31, 1993.

Arizona Administrative Code, Title 18, Ch. 7. Department of Environmental Quality – Remedial Action. March 31, 2019.

Arizona Mining Website, accessed July, 2016.

ATTACHMENT A
SAMPLE PHOTOS



Photo 1. January Adit Wetland



Photo 2: Sample Location



Photo 3: Sampling using AMS Replaceable Tip San/Loose Sediment Probe and Existing Soil Grab Sample



Photo 4: Samples S1, S2, S3, S4 in a liner



Photo 5: S1 Sample Soil Layers

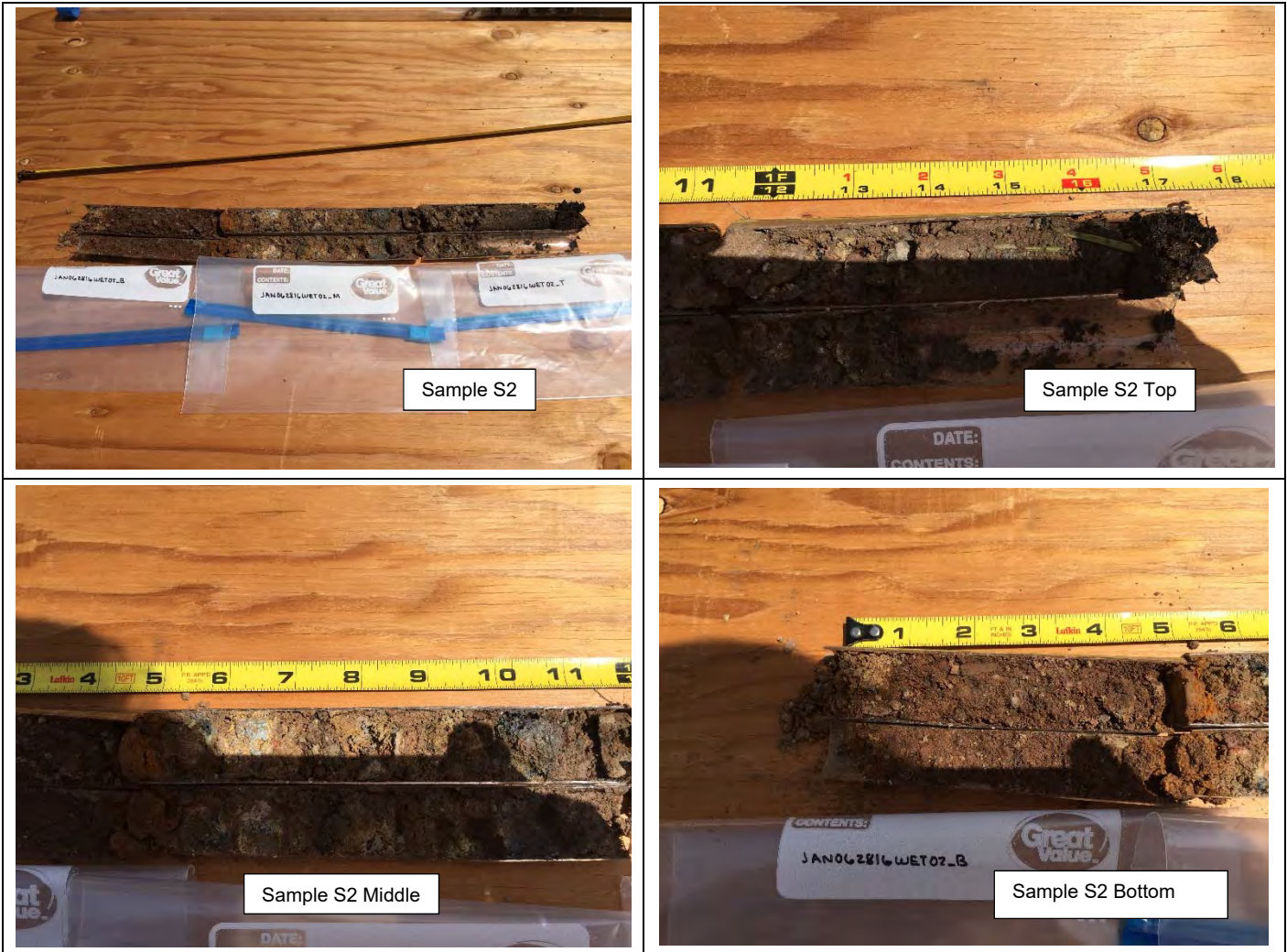


Photo 6: S2 Sample Soil Layers



Photo 7: S3 Sample Soil Layers



Photo 8: S4 and S5 Soil Sample Layers

ATTACHMENT B
SOIL LABORATORY RESULTS



July 14, 2016

Guadalupe Fattore
Sovereign Consulting, Inc.
12687 West Cedar Drive, #305
Lakewood, CO 80228

TEL (720) 524-4908
FAX

Work Order No.: 16F0831
Order Name: Pilot Plant

RE: Pilot Plant

Dear Guadalupe Fattore,

Turner Laboratories, Inc. received 14 sample(s) on 06/29/2016 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Max DiSante
Technical Director

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Date Received: 06/29/2016

Order: Pilot Plant

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
16F0831-01	Jan062816WET01_T	Soil	06/28/2016 1000
16F0831-02	Jan062816WET01_M	Soil	06/28/2016 1000
16F0831-03	Jan062816WET01_B	Soil	06/28/2016 1000
16F0831-04	Jan062816WET02_T	Soil	06/28/2016 1030
16F0831-05	Jan062816WET02_M	Soil	06/28/2016 1030
16F0831-06	Jan062816WET02_MD	Soil	06/28/2016 1030
16F0831-07	Jan062816WET02_B	Soil	06/28/2016 1030
16F0831-08	Jan062816WET03_T	Soil	06/28/2016 1100
16F0831-09	Jan062816WET03_M	Soil	06/28/2016 1100
16F0831-10	Jan062816WET03_B	Soil	06/28/2016 1100
16F0831-11	Jan062816WET04_T	Soil	06/28/2016 1130
16F0831-12	Jan062816WET04_M	Soil	06/28/2016 1130
16F0831-13	Jan062816WET04_B	Soil	06/28/2016 1130
16F0831-14	Jan062816CON	Soil	06/28/2016 0930

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Date Received: 06/29/2016

Case Narrative

- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.
 - M7 Matrix spike recovery was low. Data reported per ADEQ policy 0154.000. Matrix interference was confirmed.
 - R13 MS/MSD RPD exceeded method acceptance limit. Matrix spike recovery was outside acceptance criteria. Batch precision and accuracy were demonstrated.
- All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.
- ND Not Detected at or above the PQL
 - PQL Practical Quantitation Limit
 - DF Dilution Factor

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-01

Client Sample ID: Jan062816WET01_T
Collection Date/Time: 06/28/2016 1000
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Mercury, TCLP Leached by SW 1311-SW 1311/7471A									
Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1311	MR
ICP Metals, TCLP Leached by SW 1311-SW 6010B									
Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1729	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1729	MR
Cadmium	0.029		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1729	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1729	MR
Lead	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1729	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1608	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1729	MR
CVAA Total Mercury-SW 7471A									
Mercury	0.20		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1557	MR
ICP Total Metals-SW6010B									
Arsenic	21		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1517	MR
Barium	41		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1517	MR
Cadmium	3.8		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1517	MR
Chromium	25		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1517	MR
Lead	1800		10		mg/Kg	10	07/01/2016 0910	07/05/2016 1234	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1517	MR
Silver	4.0		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 1940	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-02

Client Sample ID: Jan062816WET01_M
Collection Date/Time: 06/28/2016 1000
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1314	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1733	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1733	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1733	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1733	MR
Lead	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1733	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1612	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1733	MR

CVAA Total Mercury-SW 7471A

Mercury	0.090		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1525	MR
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ICP Total Metals-SW6010B

Arsenic	19		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1436	MR
Barium	37		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1436	MR
Cadmium	2.3		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1436	MR
Chromium	20		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1436	MR
Lead	550		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1436	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1436	MR
Silver	ND		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 1859	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-03

Client Sample ID: Jan062816WET01_B
Collection Date/Time: 06/28/2016 1000
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1316	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1737	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1737	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1737	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1737	MR
Lead	83		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1737	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1615	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1737	MR

CVAA Total Mercury-SW 7471A

Mercury	0.17		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1559	MR
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ICP Total Metals-SW6010B

Arsenic	56		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1520	MR
Barium	43		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1520	MR
Cadmium	4.3		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1520	MR
Chromium	18		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1520	MR
Lead	5300		10		mg/Kg	10	07/01/2016 0910	07/05/2016 1238	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1520	MR
Silver	5.2		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 1943	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-04

Client Sample ID: Jan062816WET02_T
Collection Date/Time: 06/28/2016 1030
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1319	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1740	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1740	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1740	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1740	MR
Lead	7.6		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1740	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1619	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1740	MR

CVAA Total Mercury-SW 7471A

Mercury	1.1		0.25		mg/Kg	5	07/05/2016 1320	07/06/2016 1612	MR
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ICP Total Metals-SW6010B

Arsenic	36		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1524	MR
Barium	32		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1524	MR
Cadmium	5.8		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1524	MR
Chromium	13		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1524	MR
Lead	10000		50		mg/Kg	50	07/01/2016 0910	07/05/2016 1331	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1524	MR
Silver	16		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 1946	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-05

Client Sample ID: Jan062816WET02_M
Collection Date/Time: 06/28/2016 1030
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1321	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1744	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1744	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1744	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1744	MR
Lead	200		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1744	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1623	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1744	MR

CVAA Total Mercury-SW 7471A

Mercury	1.3		0.25		mg/Kg	5	07/05/2016 1320	07/06/2016 1617	MR
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ICP Total Metals-SW6010B

Arsenic	36		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1527	MR
Barium	29		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1527	MR
Cadmium	9.3		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1527	MR
Chromium	9.8		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1527	MR
Lead	27000		100		mg/Kg	100	07/01/2016 0910	07/05/2016 1334	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1527	MR
Silver	34		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 1950	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-06

Client Sample ID: Jan062816WET02_MD
Collection Date/Time: 06/28/2016 1030
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1329	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1708	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1708	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1708	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1708	MR
Lead	190		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1708	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1547	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1708	MR

CVAA Total Mercury-SW 7471A

Mercury	0.88		0.25		mg/Kg	5	07/05/2016 1320	07/06/2016 1620	MR
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ICP Total Metals-SW6010B

Arsenic	47		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1619	MR
Barium	60		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1619	MR
Cadmium	11		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1619	MR
Chromium	17		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1619	MR
Lead	30000		100		mg/Kg	100	07/01/2016 0910	07/05/2016 1612	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1619	MR
Silver	48		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 1953	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-07

Client Sample ID: Jan062816WET02_B
Collection Date/Time: 06/28/2016 1030
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1243	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1719	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1719	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1719	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1719	MR
Lead	0.60		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1719	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1557	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1719	MR

CVAA Total Mercury-SW 7471A

Mercury	ND		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1622	MR
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ICP Total Metals-SW6010B

Arsenic	31		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1623	MR
Barium	40		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1623	MR
Cadmium	3.5		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1623	MR
Chromium	14		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1623	MR
Lead	1600		10		mg/Kg	10	07/01/2016 0910	07/05/2016 1342	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1623	MR
Silver	1.1		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 2007	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-08

Client Sample ID: Jan062816WET03_T
Collection Date/Time: 06/28/2016 1100
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1332	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1805	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1805	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1805	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1805	MR
Lead	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1805	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1632	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1805	MR

CVAA Total Mercury-SW 7471A

Mercury	0.071		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1625	MR
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ICP Total Metals-SW6010B

Arsenic	21		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1626	MR
Barium	26		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1626	MR
Cadmium	4.3		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1626	MR
Chromium	13		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1626	MR
Lead	500		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1626	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1626	MR
Silver	5.2		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 2011	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-09

Client Sample ID: Jan062816WET03_M
Collection Date/Time: 06/28/2016 1100
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1334	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1809	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1809	MR
Cadmium	0.023		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1809	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1809	MR
Lead	25		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1809	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1656	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1809	MR

CVAA Total Mercury-SW 7471A

Mercury	0.11		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1627	MR
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ICP Total Metals-SW6010B

Arsenic	32		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1629	MR
Barium	38		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1629	MR
Cadmium	5.9		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1629	MR
Chromium	14		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1629	MR
Lead	2200		10		mg/Kg	10	07/01/2016 0910	07/05/2016 1350	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1629	MR
Silver	2.1		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 2014	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-10

Client Sample ID: Jan062816WET03_B
Collection Date/Time: 06/28/2016 1100
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1337	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1812	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1812	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1812	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1812	MR
Lead	5.5		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1812	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1700	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1812	MR

CVAA Total Mercury-SW 7471A

Mercury	0.17		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1630	MR
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ICP Total Metals-SW6010B

Arsenic	38		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1633	MR
Barium	31		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1633	MR
Cadmium	3.7		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1633	MR
Chromium	22		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1633	MR
Lead	530		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1633	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1633	MR
Silver	0.99		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 2017	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-11

Client Sample ID: Jan062816WET04_T
Collection Date/Time: 06/28/2016 1130
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1339	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1816	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1816	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1816	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1816	MR
Lead	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1816	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1704	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1816	MR

CVAA Total Mercury-SW 7471A

Mercury	ND		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1645	MR
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ICP Total Metals-SW6010B

Arsenic	150		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1636	MR
Barium	16		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1636	MR
Cadmium	15		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1636	MR
Chromium	7.8		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1636	MR
Lead	80		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1636	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1636	MR
Silver	3.9		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 2021	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-12

Client Sample ID: Jan062816WET04_M
Collection Date/Time: 06/28/2016 1130
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1257	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1820	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1820	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1820	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1820	MR
Lead	4.2		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1820	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1707	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1820	MR

CVAA Total Mercury-SW 7471A

Mercury	0.18		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1635	MR
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ICP Total Metals-SW6010B

Arsenic	44		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1640	MR
Barium	31		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1640	MR
Cadmium	6.3		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1640	MR
Chromium	11		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1640	MR
Lead	29000		100		mg/Kg	100	07/01/2016 0910	07/05/2016 1616	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1640	MR
Silver	3.5		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 2024	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-13

Client Sample ID: Jan062816WET04_B
Collection Date/Time: 06/28/2016 1130
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1342	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1823	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1823	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1823	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1823	MR
Lead	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1823	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1711	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1823	MR

CVAA Total Mercury-SW 7471A

Mercury	0.21		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1642	MR
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ICP Total Metals-SW6010B

Arsenic	26		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1643	MR
Barium	22		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1643	MR
Cadmium	4.3		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1643	MR
Chromium	11		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1643	MR
Lead	340		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1643	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1643	MR
Silver	ND		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 2028	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Lab Sample ID: 16F0831-14

Client Sample ID: Jan062816CON
Collection Date/Time: 06/28/2016 0930
Matrix: Soil
Order Name: Pilot Plant

Analyses	Result	MDL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
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Mercury, TCLP Leached by SW 1311-SW 1311/7471A

Mercury	ND		0.0010		mg/L	1	07/07/2016 1300	07/08/2016 1344	MR
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ICP Metals, TCLP Leached by SW 1311-SW 6010B

Arsenic	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1827	MR
Barium	ND		0.50		mg/L	10	07/06/2016 1150	07/08/2016 1827	MR
Cadmium	ND		0.020		mg/L	10	07/06/2016 1150	07/08/2016 1827	MR
Chromium	ND		0.30		mg/L	10	07/06/2016 1150	07/08/2016 1827	MR
Lead	ND		0.40		mg/L	10	07/06/2016 1150	07/08/2016 1827	MR
Selenium	ND		0.40		mg/L	10	07/06/2016 1150	07/11/2016 1714	MR
Silver	ND		0.10		mg/L	10	07/06/2016 1150	07/08/2016 1827	MR

CVAA Total Mercury-SW 7471A

Mercury	ND		0.050		mg/Kg	1	07/05/2016 1320	07/06/2016 1538	MR
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ICP Total Metals-SW6010B

Arsenic	5.1		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1456	MR
Barium	59		1.3		mg/Kg	1	07/01/2016 0910	07/05/2016 1456	MR
Cadmium	3.1		0.050		mg/Kg	1	07/01/2016 0910	07/05/2016 1456	MR
Chromium	26		0.75		mg/Kg	1	07/01/2016 0910	07/05/2016 1456	MR
Lead	38		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1456	MR
Selenium	ND		1.0		mg/Kg	1	07/01/2016 0910	07/05/2016 1456	MR
Silver	ND		0.25		mg/Kg	1	07/01/2016 0910	07/08/2016 1919	MR

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Date Received: 06/29/2016

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Qual
Batch 1607014 - SW6010B										
Blank (1607014-BLK1)				Prepared: 07/01/2016 Analyzed: 07/05/2016						
Arsenic	ND	1.0	mg/Kg							
Barium	ND	1.3	mg/Kg							
Cadmium	ND	0.050	mg/Kg							
Chromium	ND	0.75	mg/Kg							
Lead	ND	1.0	mg/Kg							
Selenium	ND	1.0	mg/Kg							
Silver	ND	0.25	mg/Kg							
LCS (1607014-BS1)				Prepared: 07/01/2016 Analyzed: 07/05/2016						
Arsenic	45	1.0	mg/Kg	50.00		91	80-120			
Barium	47	1.3	mg/Kg	50.00		93	80-120			
Cadmium	44	0.050	mg/Kg	50.00		87	80-120			
Chromium	47	0.75	mg/Kg	50.00		94	80-120			
Lead	44	1.0	mg/Kg	50.00		87	80-120			
Selenium	40	1.0	mg/Kg	50.00		80	80-120			
Silver	21	0.25	mg/Kg	25.00		85	80-120			
LCS Dup (1607014-BSD1)				Prepared: 07/01/2016 Analyzed: 07/05/2016						
Arsenic	46	1.0	mg/Kg	50.00		91	80-120	0.5	20	
Barium	47	1.3	mg/Kg	50.00		94	80-120	0.8	20	
Cadmium	44	0.050	mg/Kg	50.00		88	80-120	1	20	
Chromium	47	0.75	mg/Kg	50.00		95	80-120	0.9	20	
Lead	44	1.0	mg/Kg	50.00		88	80-120	1	20	
Selenium	40	1.0	mg/Kg	50.00		80	80-120	0.2	20	
Silver	21	0.25	mg/Kg	25.00		85	80-120	0.04	20	
Matrix Spike (1607014-MS1)				Source: 16F0831-02		Prepared: 07/01/2016 Analyzed: 07/05/2016				
Arsenic	55	1.0	mg/Kg	50.00	19	72	75-125			M7
Barium	76	1.3	mg/Kg	50.00	37	78	75-125			
Cadmium	31	0.050	mg/Kg	50.00	2.3	57	75-125			M7
Chromium	55	0.75	mg/Kg	50.00	20	70	75-125			M7
Lead	480	1.0	mg/Kg	50.00	550	NR	75-125			M3
Selenium	25	1.0	mg/Kg	50.00	ND	49	75-125			M7
Silver	19	0.25	mg/Kg	25.00	ND	75	75-125			
Matrix Spike (1607014-MS2)				Source: 16F0831-14		Prepared: 07/01/2016 Analyzed: 07/05/2016				
Arsenic	38	1.0	mg/Kg	50.00	5.1	66	75-125			M7
Barium	93	1.3	mg/Kg	50.00	59	68	75-125			M7
Cadmium	28	0.050	mg/Kg	50.00	3.1	50	75-125			M7
Chromium	56	0.75	mg/Kg	50.00	26	60	75-125			M7
Lead	64	1.0	mg/Kg	50.00	38	52	75-125			M7
Selenium	9.0	1.0	mg/Kg	50.00	ND	18	75-125			M7
Silver	15	0.25	mg/Kg	25.00	ND	59	75-125			M7

Client: Sovereign Consulting, Inc.
Project: Pilot Plant
Work Order: 16F0831
Date Received: 06/29/2016

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1607014 - SW6010B										
Matrix Spike Dup (1607014-MSD1)		Source: 16F0831-02			Prepared: 07/01/2016 Analyzed: 07/05/2016					
Arsenic	60	1.0	mg/Kg	50.00	19	81	75-125	7	20	
Barium	80	1.3	mg/Kg	50.00	37	86	75-125	5	20	
Cadmium	29	0.050	mg/Kg	50.00	2.3	53	75-125	6	20	M7
Chromium	54	0.75	mg/Kg	50.00	20	67	75-125	2	20	M7
Lead	830	1.0	mg/Kg	50.00	550	564	75-125	52	20	M3, R13
Selenium	24	1.0	mg/Kg	50.00	ND	47	75-125	4	20	M7
Silver	19	0.25	mg/Kg	25.00	ND	77	75-125	2	20	
Matrix Spike Dup (1607014-MSD2)		Source: 16F0831-14			Prepared: 07/01/2016 Analyzed: 07/05/2016					
Arsenic	38	1.0	mg/Kg	50.00	5.1	66	75-125	0.4	20	M7
Barium	89	1.3	mg/Kg	50.00	59	60	75-125	4	20	M7
Cadmium	28	0.050	mg/Kg	50.00	3.1	49	75-125	0.8	20	M7
Chromium	55	0.75	mg/Kg	50.00	26	58	75-125	2	20	M7
Lead	61	1.0	mg/Kg	50.00	38	46	75-125	5	20	M7
Selenium	9.0	1.0	mg/Kg	50.00	ND	18	75-125	0.08	20	M7
Silver	15	0.25	mg/Kg	25.00	ND	60	75-125	1	20	M7, R13
Batch 1607035 - SW 7471A										
Blank (1607035-BLK1)		Prepared: 07/05/2016 Analyzed: 07/06/2016								
Mercury	ND	0.050	mg/Kg							
LCS (1607035-BS1)		Prepared: 07/05/2016 Analyzed: 07/06/2016								
Mercury	0.24	0.050	mg/Kg	0.2500		94	85-115			
LCS Dup (1607035-BSD1)		Prepared: 07/05/2016 Analyzed: 07/06/2016								
Mercury	0.23	0.050	mg/Kg	0.2500		94	85-115	0.2	20	
Matrix Spike (1607035-MS1)		Source: 16F0831-02			Prepared: 07/05/2016 Analyzed: 07/06/2016					
Mercury	0.29	0.050	mg/Kg	0.2500	0.090	81	85-115			M7
Matrix Spike (1607035-MS2)		Source: 16F0831-14			Prepared: 07/05/2016 Analyzed: 07/06/2016					
Mercury	0.23	0.050	mg/Kg	0.2500	0.020	86	85-115			
Matrix Spike Dup (1607035-MSD1)		Source: 16F0831-02			Prepared: 07/05/2016 Analyzed: 07/06/2016					
Mercury	0.31	0.050	mg/Kg	0.2500	0.090	90	85-115	7	20	
Matrix Spike Dup (1607035-MSD2)		Source: 16F0831-14			Prepared: 07/05/2016 Analyzed: 07/06/2016					
Mercury	0.24	0.050	mg/Kg	0.2500	0.020	86	85-115	0.5	20	
Batch 1607059 - SW 6010B										
Blank (1607059-BLK1)		Prepared: 07/06/2016 Analyzed: 07/08/2016								
Arsenic	ND	0.40	mg/L							
Barium	ND	0.50	mg/L							
Cadmium	ND	0.020	mg/L							
Chromium	ND	0.30	mg/L							
Lead	ND	0.40	mg/L							
Selenium	ND	0.40	mg/L							
Silver	ND	0.10	mg/L							

Client: Sovereign Consulting, Inc.
 Project: Pilot Plant
 Work Order: 16F0831
 Date Received: 06/29/2016

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1607059 - SW 6010B										
LCS (1607059-BS1)				Prepared: 07/06/2016 Analyzed: 07/08/2016						
Arsenic	2.1	0.40	mg/L	2.000		103	80-120			
Barium	2.0	0.50	mg/L	2.000		100	80-120			
Cadmium	2.1	0.020	mg/L	2.000		103	80-120			
Chromium	2.0	0.30	mg/L	2.000		99	80-120			
Lead	1.9	0.40	mg/L	2.000		94	80-120			
Selenium	2.1	0.40	mg/L	2.000		105	80-120			
Silver	0.92	0.10	mg/L	1.000		92	80-120			
LCS Dup (1607059-BSD1)				Prepared: 07/06/2016 Analyzed: 07/08/2016						
Arsenic	2.1	0.40	mg/L	2.000		104	80-120	0.5	20	
Barium	2.0	0.50	mg/L	2.000		102	80-120	2	20	
Cadmium	2.1	0.020	mg/L	2.000		104	80-120	1	20	
Chromium	2.0	0.30	mg/L	2.000		101	80-120	2	20	
Lead	1.9	0.40	mg/L	2.000		95	80-120	1	20	
Selenium	2.1	0.40	mg/L	2.000		106	80-120	0.5	20	
Silver	0.93	0.10	mg/L	1.000		93	80-120	0.8	20	
Matrix Spike (1607059-MS1)				Source: 16F0831-06		Prepared: 07/06/2016 Analyzed: 07/08/2016				
Arsenic	2.1	0.40	mg/L	2.000	ND	103	75-125			
Barium	2.1	0.50	mg/L	2.000	0.15	99	75-125			
Cadmium	2.1	0.020	mg/L	2.000	ND	103	75-125			
Chromium	2.0	0.30	mg/L	2.000	0.030	100	75-125			
Lead	180	0.40	mg/L	2.000	190	NR	75-125			M3
Selenium	2.1	0.40	mg/L	2.000	ND	103	75-125			
Silver	0.94	0.10	mg/L	1.000	ND	94	75-125			
Matrix Spike (1607059-MS2)				Source: 16F0831-07		Prepared: 07/06/2016 Analyzed: 07/08/2016				
Arsenic	2.1	0.40	mg/L	2.000	ND	105	75-125			
Barium	2.1	0.50	mg/L	2.000	0.076	100	75-125			
Cadmium	2.1	0.020	mg/L	2.000	ND	103	75-125			
Chromium	2.0	0.30	mg/L	2.000	0.028	99	75-125			
Lead	2.1	0.40	mg/L	2.000	0.60	77	75-125			
Selenium	2.0	0.40	mg/L	2.000	ND	101	75-125			
Silver	0.96	0.10	mg/L	1.000	ND	96	75-125			
Matrix Spike Dup (1607059-MSD1)				Source: 16F0831-06		Prepared: 07/06/2016 Analyzed: 07/08/2016				
Arsenic	2.1	0.40	mg/L	2.000	ND	105	75-125	2	20	
Barium	2.2	0.50	mg/L	2.000	0.15	102	75-125	3	20	
Cadmium	2.1	0.020	mg/L	2.000	ND	105	75-125	2	20	
Chromium	2.1	0.30	mg/L	2.000	0.030	102	75-125	3	20	
Lead	180	0.40	mg/L	2.000	190	NR	75-125	2	20	M3
Selenium	2.0	0.40	mg/L	2.000	ND	101	75-125	1	20	
Silver	0.97	0.10	mg/L	1.000	ND	97	75-125	3	20	

Client: Sovereign Consulting, Inc.
 Project: Pilot Plant
 Work Order: 16F0831
 Date Received: 06/29/2016

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1607059 - SW 6010B										
Matrix Spike Dup (1607059-MSD2)		Source: 16F0831-07			Prepared: 07/06/2016 Analyzed: 07/08/2016					
Arsenic	2.1	0.40	mg/L	2.000	ND	104	75-125	0.9	20	
Barium	2.1	0.50	mg/L	2.000	0.076	101	75-125	1	20	
Cadmium	2.1	0.020	mg/L	2.000	ND	104	75-125	0.5	20	
Chromium	2.0	0.30	mg/L	2.000	0.028	101	75-125	2	20	
Lead	2.1	0.40	mg/L	2.000	0.60	76	75-125	1	20	
Selenium	2.0	0.40	mg/L	2.000	ND	99	75-125	1	20	
Silver	0.97	0.10	mg/L	1.000	ND	97	75-125	0.5	20	
Batch 1607067 - SW 1311/7471A										
Blank (1607067-BLK1)				Prepared & Analyzed: 07/08/2016						
Mercury	ND	0.0010	mg/L							
LCS (1607067-BS1)				Prepared & Analyzed: 07/08/2016						
Mercury	0.0052	0.0010	mg/L	0.005000		104	85-115			
LCS Dup (1607067-BSD1)				Prepared & Analyzed: 07/08/2016						
Mercury	0.0051	0.0010	mg/L	0.005000		103	85-115	1	20	
Matrix Spike (1607067-MS1)		Source: 16F0831-07			Prepared & Analyzed: 07/08/2016					
Mercury	0.0024	0.0010	mg/L	0.005000	0.00010	47	85-115			M7
Matrix Spike (1607067-MS2)		Source: 16F0831-12			Prepared & Analyzed: 07/08/2016					
Mercury	0.0046	0.0010	mg/L	0.005000	ND	93	85-115			
Matrix Spike Dup (1607067-MSD1)		Source: 16F0831-07			Prepared & Analyzed: 07/08/2016					
Mercury	0.0025	0.0010	mg/L	0.005000	0.00010	49	85-115	4	20	M7
Matrix Spike Dup (1607067-MSD2)		Source: 16F0831-12			Prepared & Analyzed: 07/08/2016					
Mercury	ND	0.0010	mg/L	0.005000	ND		85-115		20	M7, R13

2445 N. Coyote Drive, Suite 104
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 Fax: (520) 882-9788
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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 16F0831 DATE 6/28/16 PAGE 1 OF 1

PROJECT NAME <u>January Adit</u> # <u>DV020</u>		CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX					
CONTACT NAME <u>Guadalupe Fattore</u>							
COMPANY NAME <u>Sovereign Consulting Inc</u>							
ADDRESS <u>12687 W Cedar Dr. Ste 305</u>							
CITY <u>Lakewood</u> STATE <u>CO</u> ZIP CODE <u>80228</u>							
PHONE <u>720-524-4908</u> FAX _____							
SAMPLER'S SIGNATURE							
SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	TCLP As,Ba,Cd,Cr,Pb,Hg,Se,Ag	ICP-E200.7 As,Ba,Cd,Cr,Pb,Hg,Se,Ag
Jan062816WET01_T		10:00		SG/SL	1	X	X
Jan062816WET01_M				SG/SL	1	X	X
Jan062816WET01_B				SG/SL	1	X	X
Jan062816WET02_T		10:30		SG/SL	1	X	X
Jan062816WET02_M				SG/SL	1	X	X
Jan062816WET02_MD				SG/SL	1	X	X
Jan062816WET02_B				SG/SL	1	X	X
Jan062816WET03_T	6/28/2016	11:00		SG/SL	1	X	X
Jan062816WET03_M				SG/SL	1	X	X
Jan062816WET03_B				SG/SL	1	X	X
Jan062816WET04_T		11:30		SG/SL	1	X	X
Jan062816WET04_M				SG/SL	1	X	X
Jan062816WET04_B				SG/SL	1	X	X
Jan062816CON		9:30		SL	1	X	X
1. RELINQUISHED BY: Signature <u>Guadalupe Fattore</u> Printed Name <u>Sovereign Consulting</u> Firm <u>6/29/16</u> Date/Time <u>13:10</u>		2. RECEIVED BY: Signature _____ Printed Name _____ Firm _____ Date/Time _____		3. RELINQUISHED BY: Signature _____ Printed Name _____ Firm _____ Date/Time _____		4. RECEIVED BY: Signature Printed Name <u>6-6</u> Firm <u>TURNER LABORATORIES, INC.</u> Date/Time <u>6/29/16 13:10</u>	
REPORT REQUIREMENTS: I. Routine Report <input checked="" type="checkbox"/> X. II. Report (includes DUP,MS,MSD, as required, may be charged as samples) III. Date Validation Report (includes All Raw Data) Add 10% to invoice		INVOICE INFORMATION: Account ___ Y ___ N P.O. # <u>DW020</u> Bill to: <u>Sovereign Consulting</u>		SPECIAL INSTRUCTIONS/COMMENTS: Compliance Analysis: <input type="checkbox"/> Yes <input type="checkbox"/> No ADEQ Forms: <input type="checkbox"/> Yes <input type="checkbox"/> No Mail ADEQ Forms: <input type="checkbox"/> Yes <input type="checkbox"/> No		SPECIAL INSTRUCTIONS/COMMENTS: Custody Seals <input type="checkbox"/> No Container Intact <input checked="" type="checkbox"/> Yes COC/Labels Agree <input checked="" type="checkbox"/> Yes Preservation Confirmation <input checked="" type="checkbox"/> No Appropriate Head Space <input checked="" type="checkbox"/> Yes Received Within Hold Time <input checked="" type="checkbox"/> Yes	
TURNAROUND REQUIREMENTS: X. Standard (approx. 10 days)* Next day ___ 2 Day ___ 5 Day* Email Preliminary Results To: _____ * Working Days		SAMPLE RECEIPT: Total Containers <u>14</u> Temperature <u>33.1</u> <input type="checkbox"/> Wet Ice <input type="checkbox"/> Blue Ice <u>NO</u>					

ATTACHMENT C
VEGETATION LABORATORY RESULTS

August 24, 2016

Report to:
Guadalupe Fattore
Sovereign Consulting Inc.
12687 W. Cedar Dr.
Ste 305
Lakewood, CO 80228

Bill to:
Lee Josselyn
Sovereign Consulting Inc
12687 W. Cedar Dr
Ste 305
Lakewood, CO 80228

cc: Jim Gusek

Project ID: DV020
ACZ Project ID: L31934

Guadalupe Fattore:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 25, 2016. This project has been assigned to ACZ's project number, L31934. Please reference this number in all future inquiries.

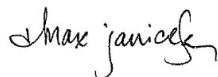
All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L31934. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 23, 2016. If the samples are determined to be hazardous, additional charges apply for disposal (typically \$11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.



Max Janicek has reviewed and approved this report.



Sovereign Consulting Inc.

Project ID: DV020
Sample ID: JANWET_VEG

ACZ Sample ID: **L31934-01**
Date Sampled: 07/25/16 16:00
Date Received: 07/25/16
Sample Matrix: *Plant Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6010B ICP	106	24		*	mg/Kg	3	20	08/22/16 12:48	aeb
Arsenic, total (3050)	M6010B ICP	106		U	*	mg/Kg	4	20	08/22/16 12:48	aeb
Barium, total (3050)	M6010B ICP	106	0.9	B	*	mg/Kg	0.3	2	08/22/16 12:48	aeb
Cadmium, total (3050)	M6010B ICP	106		U	*	mg/Kg	0.5	2	08/22/16 12:48	aeb
Chromium, total (3050)	M6010B ICP	106		U	*	mg/Kg	1	5	08/22/16 12:48	aeb
Copper, total (3050)	M6010B ICP	106	10		*	mg/Kg	1	5	08/22/16 12:48	aeb
Iron, total (3050)	M6010B ICP	106	60		*	mg/Kg	2	5	08/22/16 12:48	aeb
Lead, total (3050)	M6010B ICP	106		U	*	mg/Kg	3	20	08/22/16 12:48	aeb
Manganese, total (3050)	M6010B ICP	106	1090		*	mg/Kg	0.5	3	08/22/16 12:48	aeb
Mercury by Direct Combustion AA	M7473	1	14.1	B	*	ng/g	6.66	33.3	08/16/16 10:28	pta
Selenium, total (3050)	M6010B ICP	106		U	*	mg/Kg	5	30	08/22/16 12:48	aeb
Silver, total (3050)	M6010B ICP	106		U	*	mg/Kg	1	3	08/22/16 12:48	aeb
Zinc, total (3050)	M6010B ICP	106	157		*	mg/Kg	1	5	08/22/16 12:48	aeb

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	79.3		*	%	0.1	0.5	08/03/16 12:30	arc/bcc

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				08/03/16 8:00	arc
Digestion - Hot Plate	M3050B ICP				*				08/16/16 23:02	bcc
Plant Tissue Pulverization	USDA #60, Method 53				*				08/15/16 9:20	arc

Arizona license number: AZ0102



Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (4) EPA SW-846. Test Methods for Evaluating Solid Waste.
- (5) Standard Methods for the Examination of Water and Wastewater.

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
- (4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
- (5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:

<http://www.acz.com/public/extquallist.pdf>

Sovereign Consulting Inc.

ACZ Project ID: **L31934**

Aluminum, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	2		2.012	mg/L	101	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.09	0.09			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-9	9			
WG408234LCSS1	LCSS	08/22/16 12:38	PCN50816	598		190.5	mg/Kg		179	239			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	1.0013		1.034	mg/Kg	103	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	1.0013		1.03	mg/Kg	103	80	120	0	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	106.1378	24	162.9	mg/Kg	131	75	125			M1
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	106.1378	24	160.7	mg/Kg	129	75	125	1	20	M1

Arsenic, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	4		4.014	mg/L	100	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.12	0.12			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-12	12			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	1.0018		1.009	mg/Kg	101	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	1.0018		.993	mg/Kg	99	80	120	2	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	106.1908	U	104.2	mg/Kg	98	75	125			
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	106.1908	U	108.2	mg/Kg	102	75	125	4	20	

Barium, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	2		1.989	mg/L	99	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.009	0.009			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-0.9	0.9			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	.5005		.4886	mg/Kg	98	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	.5005		.487	mg/Kg	97	80	120	0	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	53.053	.9	52.45	mg/Kg	97	75	125			
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	53.053	.9	51.51	mg/Kg	95	75	125	2	20	

Cadmium, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	2		1.977	mg/L	99	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.015	0.015			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-1.5	1.5			
WG408234LCSS1	LCSS	08/22/16 12:38	PCN50816	1.52		1.22	mg/Kg		1.22	1.82			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	.502		.4838	mg/Kg	96	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	.502		.478	mg/Kg	95	80	120	1	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	53.212	U	51.15	mg/Kg	96	75	125			
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	53.212	U	51.01	mg/Kg	96	75	125	0	20	

Sovereign Consulting Inc.

ACZ Project ID: **L31934**

Chromium, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	2		1.976	mg/L	99	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.03	0.03			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-3	3			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	.5005		.496	mg/Kg	99	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	.5005		.492	mg/Kg	98	80	120	1	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	53.053	U	52.1	mg/Kg	98	75	125			
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	53.053	U	52.4	mg/Kg	99	75	125	1	20	

Copper, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	2		1.983	mg/L	99	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.03	0.03			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-3	3			
WG408234LCSS1	LCSS	08/22/16 12:38	PCN50816	4.7		4.4	mg/Kg		3.8	5.6			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	.501		.491	mg/Kg	98	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	.501		.493	mg/Kg	98	80	120	0	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	53.106	10	62.6	mg/Kg	99	75	125			
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	53.106	10	62	mg/Kg	98	75	125	1	20	

Iron, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	2		1.993	mg/L	100	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.06	0.06			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-6	6			
WG408234LCSS1	LCSS	08/22/16 12:38	PCN50816	368		296.1	mg/Kg		294	442			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	1.0017		.981	mg/Kg	98	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	1.0017		1.005	mg/Kg	100	80	120	2	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	106.1802	60	176.7	mg/Kg	110	75	125			
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	106.1802	60	172.1	mg/Kg	106	75	125	3	20	

Lead, total (3050) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	4		3.875	mg/L	97	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.09	0.09			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-9	9			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	1.001		.968	mg/Kg	97	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	1.001		.944	mg/Kg	94	80	120	3	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	106.106	U	103.3	mg/Kg	97	75	125			
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	106.106	U	102.6	mg/Kg	97	75	125	1	20	

Sovereign Consulting Inc.

ACZ Project ID: **L31934**

Manganese, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	2		1.963	mg/L	98	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.015	0.015			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-1.5	1.5			
WG408234LCSS1	LCSS	08/22/16 12:38	PCN50816	246		222.7	mg/Kg		197	295			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	.5		.503	mg/Kg	101	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	.5		.5001	mg/Kg	100	80	120	1	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	53	1090	1192.5	mg/Kg	193	75	125			M3
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	53	1090	1217.94	mg/Kg	241	75	125	2	20	M3

Mercury by Direct Combustion AA

M7473

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG406800													
WG406800ICV1	ICV	07/26/16 9:46	HG160713-1	100		103	ng/g	103	90	110			
WG406800ICV2	ICV	07/26/16 9:54	HG160713-2	100		94.1	ng/g	94	90	110			
WG406800ICV3	ICV	07/26/16 10:07	HG160713-3	1000		952	ng/g	95	90	110			
WG406800ICV4	ICV	07/26/16 10:13	HG160713-3	1000		944	ng/g	94	90	110			
WG408241													
WG408241ICV1	ICV	08/16/16 8:33	HG160811-3	100		99.1	ng/g	99	90	110			
WG408241ICV2	ICV	08/16/16 8:50	HG160811-4	100		91.3	ng/g	91	90	110			
WG408241ICV3	ICV	08/16/16 9:06	HG160811-5	1000		971	ng/g	97	90	110			
WG408241ICV4	ICV	08/16/16 9:15	HG160811-5	1000		937	ng/g	94	90	110			
WG408241PBS	PBS	08/16/16 9:55				U	ng/g		-6	6			
WG408241LCSS	LCSS	08/16/16 10:03	PCN50816	34		34.3	ng/g		80	120			
WG408241LCSSD	LCSSD	08/16/16 10:16	PCN50816	34		31.7	ng/g		80	120	8	20	
L31934-01DUP	DUP	08/16/16 10:40			14.1	15.4	ng/g				9	20	RA
L31934-01MS	MS	08/16/16 10:57	HG160811-3				ng/g	93	80	120			

Moisture Content

D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG407565													
WG407565PBS	PBS	08/03/16 12:30				100	%		99.9	100.1			

Selenium, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	4		3.913	mg/L	98	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.15	0.15			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-15	15			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	.999		.996	mg/Kg	100	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	.999		.954	mg/Kg	95	80	120	4	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	105.894	U	108.2	mg/Kg	102	75	125			
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	105.894	U	111.4	mg/Kg	105	75	125	3	20	

Sovereign Consulting Inc.

ACZ Project ID: **L31934**

Silver, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	1.001		1.029	mg/L	103	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.03	0.03			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-3	3			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	.501		.45	mg/Kg	90	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	.501		.471	mg/Kg	94	80	120	5	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	53.106	U	48.4	mg/Kg	91	75	125			
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	53.106	U	48.1	mg/Kg	91	75	125	1	20	

Zinc, total (3050)

M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG408521													
WG408521ICV	ICV	08/22/16 12:19	II160805-2	2		2.017	mg/L	101	90	110			
WG408521ICB	ICB	08/22/16 12:22				U	mg/L		-0.03	0.03			
WG408234PBS	PBS	08/22/16 12:35				U	mg/Kg		-3	3			
WG408234LCSS1	LCSS	08/22/16 12:38	PCN50816	30.9		28.8	mg/Kg		24.7	37.1			
WG408234LFB1	LFB	08/22/16 12:41	II160802-3	.4995		.499	mg/Kg	100	80	120			
WG408234LFBD1	LFBD	08/22/16 12:44	II160802-3	.4995		.491	mg/Kg	98	80	120	2	20	
L31934-01MS	MS	08/22/16 12:51	II160802-3	52.947	157	226.1	mg/Kg	131	75	125			M3
L31934-01MSD	MSD	08/22/16 12:54	II160802-3	52.947	157	229.4	mg/Kg	137	75	125	1	20	M3

Sovereign Consulting Inc.

ACZ Project ID: **L31934**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L31934-01	WG408521	Aluminum, total (3050)	M6010B ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Cadmium, total (3050)	M6010B ICP	ZG	The ICP Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Manganese, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG408241	Mercury by Direct Combustion AA	M7473	Q6	Sample was received above recommended temperature.
			M7473	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG408521	Zinc, total (3050)	M6010B ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Sovereign Consulting Inc.ACZ Project ID: **L31934****Metals Analysis****The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.**

Aluminum, total (3050)	M6010B ICP
Arsenic, total (3050)	M6010B ICP
Barium, total (3050)	M6010B ICP
Cadmium, total (3050)	M6010B ICP
Chromium, total (3050)	M6010B ICP
Copper, total (3050)	M6010B ICP
Iron, total (3050)	M6010B ICP
Lead, total (3050)	M6010B ICP
Manganese, total (3050)	M6010B ICP
Mercury by Direct Combustion AA	M7473
Selenium, total (3050)	M6010B ICP
Silver, total (3050)	M6010B ICP
Zinc, total (3050)	M6010B ICP

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Mercury by Direct Combustion AA	M7473
Selenium, total (3050)	M6010B ICP

Soil Analysis**The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.**

Moisture Content	D2216-80
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The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Moisture Content	D2216-80
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Sovereign Consulting Inc.
 DV020

ACZ Project ID: L31934
 Date Received: 07/25/2016 16:19
 Received By: kmo
 Date Printed: 7/26/2016

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate? <small>The Date:Time was not present on the sample containers or the Relinquished section. Sample logged in for receive date.</small>		X	
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? ¹			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

The 'Relinquished By' field on the COC was not completed. The project manager is contacting the client.

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Temp Criteria (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA24397	27.6	NA	14	N/A

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Sovereign Consulting Inc.
DV020

ACZ Project ID: L31934
Date Received: 07/25/2016 16:19
Received By: kmo
Date Printed: 7/26/2016

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

¹ The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

Report to:

Name: Guadalupe Fattore
 Company: Sovereign Consulting Inc.
 E-mail: gfattore@sovcon.com

Address: 12687 W Cedar Dr. Ste 305
Lakewood, CO 80228
 Telephone: 720-524-4908

Copy of Report to:

Name: Jim Gusek
 Company: Sovereign Consulting Inc.

E-mail: jpgusek@sovcon.com
 Telephone: 720-524-4908

Invoice to:

Name: Lee Josselyn
 Company: Sovereign Consulting Inc.
 E-mail: josselynl@sovcon.com

Address: 12687 W Cedar Dr. Ste 305
Lakewood, CO 80228
 Telephone: 720-524-4908

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes No

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Guadalupe Sampler's Site Information State Arizona Zip code _____ Time Zone _____

*Sampler's Signature: Guadalupe Fattore *I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: Metals-ICP-Plant
 PO#: DV020
 Reporting state for compliance testing: Arizona
 Check box if samples include NRC licensed material?

SAMPLE IDENTIFICATION	DATE-TIME	Matrix	# of Containers	ANALYSES REQUESTED														
				Metals-ICP-Plant														
JanWet_Veg		Veg	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

 Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE-TIME	RECEIVED BY:	DATE-TIME
		<i>[Signature]</i>	<u>7/15/16</u>

L31934 Chain of Custody



DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
3636 N CENTRAL AVENUE, SUITE 900
PHOENIX, ARIZONA 85012-1939

April 9, 2018

SUBJECT: Determination of Need for Department of the Army Permit

Tom Klimas
WestLand Resources, Inc.
1750 South Woodlands Village Blvd.
Flagstaff, Arizona 86001

Dear Mr. Klimas:

I am responding to your request (File No. SPL-2016-00387) dated March 12, 2018, for clarification whether a Department of the Army Permit is required for the abandoned constructed wetlands constructed as a part of the January Adit (Trench Camp) project (31.472203°N, - 110.730616°W) located near the Town of Patagonia, Santa Cruz County, Arizona.

The Corps' evaluation process for determining if you need a permit is based on whether or not the proposed project is located within or contains a water of the United States, and whether or not the proposed project includes an activity potentially regulated under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act. If both conditions are met, a permit would be required.

The constructed wetlands were constructed to treat the January Adit waters required by an Arizona Pollutant Discharge Elimination System Permit (AZ0025054). The constructed wetland was constructed in uplands and did not discharge surface water into Alum Gulch. This was verified by the Corps at the site visit on April 2, 2018. The constructed wetlands are not considered jurisdictional waters of the United States, therefore any proposed work in the constructed wetlands boundary would not be regulated under Section 404 of the Clean Water Act. Notwithstanding this determination, your proposed project may be regulated under other Federal, State, and local laws.

If you have any questions, please contact me at (602) 230-6956 or via e-mail at Kathleen.A.Tucker@usace.army.mil. Thank you for participating in the Regulatory Program. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

A handwritten signature in blue ink that reads "Sallie Diebolt". The signature is written in a cursive, flowing style.

Sallie Diebolt
Chief, Arizona Branch
Regulatory Division

CF:
Johnny Pappas, AMI
Jerry Helton, ADEQ



APPENDIX C

STATE SCREENING LEVELS FROM ARIZONA ADMINISTRATIVE CODE



Appendix A. Soil Remediation Levels (SRLs)

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Acephate	30560-19-1	ca, nc	63	630	240	2,000
Acetaldehyde	75-07-0	ca, nc	11	110	50	160
Acetochlor	34256-82-1	nc			1,200	12,000
Acetone	67-64-1	nc			14,000	54,000
Acetone cyanohydrin	75-86-5	nc			49	490
Acetonitrile	75-05-8	nc			420	1,800
Acrolein	107-02-8	nc			0.10	0.34
Acrylamide	79-06-1	ca, nc	0.12	1.2		3.8
Acrylic acid	79-10-7	nc			29,000	270,000
Acrylonitrile	107-13-1	ca, nc	0.21	2.1		4.9
Alachlor	15972-60-8	ca, nc	6.8	68		210
Alar	1596-84-5	nc			9,200	92,000
Aldicarb	116-06-3	nc			61	620
Aldicarb sulfone	1646-88-4	nc			61	620
Aldrin	309-00-2	ca, nc	0.032	0.32		1.0
Ally	74223-64-6	nc			15,000	150,000
Allyl alcohol	107-18-6	nc			310	3,100
Allyl chloride	107-05-1	nc			18	180
Aluminum	7429-90-5	nc			76,000	920,000
Aluminum phosphide	20859-73-8	nc			31	410
Amdro	67485-29-4	nc			18	180
Ametryn	834-12-8	nc			550	5,500
Aminodinitrotoluene	1321-12-6	nc			12	120
m-Aminophenol	591-27-5	nc			4,300	43,000
4-Aminopyridine	504-24-5	nc			1.2	12
Amitraz	33089-61-1	nc			150	1,500
Ammonium sulfamate	7773-06-0	nc			12,000	120,000
Aniline	62-53-3	ca, nc	96	960	430	3,000
Antimony and compounds	7440-36-0	nc			31	410
Apollo	74115-24-5	nc			790	8,000
Aramite	140-57-8	ca, nc	22	220		690
Arsenic¹	7440-38-2	ca, nc	10	10	10	10
Assure	76578-12-6	nc			550	5,500

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Asulam	3337-71-1	nc			3,100	31,000
Atrazine	1912-24-9	ca, nc	2.5	25		78
Avermectin B1	71751-41-2	nc			24	250
Azobenzene	103-33-3	ca	5.0	50		160
Barium and compounds	7440-39-3	nc			15,000	170,000
Baygon	114-26-1	nc			240	2,500
Bayleton	43121-43-3	nc			1,800	18,000
Baythroid	68359-37-5	nc			1,500	15,000
Benefin	1861-40-1	nc			18,000	180,000
Benomyl	17804-35-2	nc			3,100	31,000
Bentazon	25057-89-0	nc			1,800	18,000
Benzaldehyde	100-52-7	nc			6,100	62,000
Benzene	71-43-2	ca, nc	0.65	NA		1.4
Benzidine	92-87-5	ca, nc	0.0024	NA		0.0075
Benzoic acid	65-85-0	nc			240,000	1,000,000 **
Benzotrichloride	98-07-7	ca	0.042	0.42		1.3
Benzyl alcohol	100-51-6	nc			18,000	180,000
Benzyl chloride	100-44-7	ca, nc	0.92	9.2		22
Beryllium and compounds	7440-41-7	ca, nc			150	1,900
Bidrin	141-66-2	nc			6.1	62
Biphenthrin (Talstar)	82657-04-3	nc			920	9,200
1,1-Biphenyl	92-52-4	nc			350 *	350 *
Bis(2-chloroethyl)ether	111-44-4	ca	0.23	2.3		5.8
Bis(2-chloroisopropyl)ether	39638-32-9	nc			790 *	790 *
Bis(chloromethyl)ether	542-88-1	ca	0.00020	NA		0.00043
Bis(2-chloro-1-methylethyl)ether	108-60-1	ca, nc	3.0	30		74
Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	ca, nc	39	390		1200
Bisphenol A	80-05-7	nc			3,100	31,000
Boron	7440-42-8	nc			16,000	200,000
Bromate	15541-45-4	ca, nc	0.78	7.8		25
Bromobenzene	108-86-1	nc			28	92
Bromodichloromethane	75-27-4	ca, nc	0.83	8.3		18
Bromoform (tribromomethane)	75-25-2	ca, nc	69	690		2,200
Bromomethane (methyl bromide)	74-83-9	nc			3.9	13
Bromophos	2104-96-3	nc			310	3,100

Department of Environmental Quality – Remedial Action

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Bromoxynil	1689-84-5	nc			1,200	12,000
Bromoxynil octanoate	1689-99-2	nc			1,200	12,000
1,3-Butadiene	106-99-0	ca, nc	0.058	0.58		1.2
1-Butanol	71-36-3	nc			6,100	61,000
Butylate	2008-41-5	nc			3,100	31,000
n-Butylbenzene	104-51-8	nc			240 *	240 *
sec-Butylbenzene	135-98-8	nc			220 *	220 *
tert-Butylbenzene	98-06-6	nc			390 *	390 *
Butyl benzyl phthalate	85-68-7	nc			12,000	120,000
Butylphthalyl butylglycolate	85-70-1	nc			61,000	620,000
Cadmium and compounds	7440-43-9	ca, nc			39	510
Caprolactam	105-60-2	nc			31,000	310,000
Captafol	2425-06-1	ca, nc	64	640	120	1,200
Captan	133-06-2	ca, nc	160	1,600		4,900
Carbaryl	63-25-2	nc			6,100	62,000
Carbazole	86-74-8	ca	27	270		860
Carbofuran	1563-66-2	nc			310	3,100
Carbon disulfide	75-15-0	nc			360	720 *
Carbon tetrachloride	56-23-5	ca, nc	0.25	2.5	2.2	5.5
Carbosulfan	55285-14-8	nc			610	6,200
Carboxin	5234-68-4	nc			6,100	62,000
Chloral hydrate	302-17-0	nc			6,100	62,000
Chloramben	133-90-4	nc			920	9,200
Chloranil	118-75-2	ca	1.4	14		43
Chlordane	12789-03-6	ca, nc	1.9	19		65
Chlorimuron-ethyl	90982-32-4	nc			1,200	12,000
Chloroacetic acid	79-11-8	nc			120	1,200
2-Chloroacetophenone	532-27-4	nc			0.033	0.11
4-Chloroaniline	106-47-8	nc			240	2,500
Chlorobenzene	108-90-7	nc			150	530
Chlorobenzilate	510-15-6	ca, nc	2.0	20		64
p-Chlorobenzoic acid	74-11-3	nc			12,000	120,000
4-Chlorobenzotrifluoride	98-56-6	nc			1,200	12,000
2-Chloro-1,3-butadiene	126-99-8	nc			3.6	12
1-Chlorobutane	109-69-3	nc			480 *	480 *

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
1-Chloro-1,1-difluoroethane	75-68-3	nc			340 *	340 *
Chlorodifluoromethane	75-45-6	nc			340 *	340 *
Chloroethane	75-00-3	ca, nc	3.0	30		65
Chloroform	67-66-3	ca, nc	0.94	9.4		20
Chloromethane	74-87-3	nc			48	160
4-Chloro-2-methylaniline	95-69-2	ca	0.94	9.4		30
4-Chloro-2-methylaniline hydrochloride	3165-93-3	ca	1.2	12		37
beta-Chloronaphthalene	91-58-7	nc			110 *	110 *
o-Chloronitrobenzene	88-73-3	ca, nc			1.4	4.5
p-Chloronitrobenzene	100-00-5	ca, nc			10	37
2-Chlorophenol	95-57-8	nc			63	240
2-Chloropropane	75-29-6	nc			170	590
Chlorothalonil	1897-45-6	ca, nc	50	500		1600
o-Chlorotoluene	95-49-8	nc			160	510 *
Chlorpropham	101-21-3	nc			12,000	120,000
Chlorpyrifos	2921-88-2	nc			180	1,800
Chlorpyrifos-methyl	5598-13-0	nc			610	6,200
Chlorsulfuron	64902-72-3	nc			3,100	31,000
Chlorthiophos	60238-56-4	nc			49	490
Chromium III	16065-83-1	nc			120,000	1,000,000 **
Chromium VI	18540-29-9	ca, nc	30	NA		65
Cobalt	7440-48-4	ca, nc	900	9,000	1,400	13,000
Copper and compounds	7440-50-8	nc			3,100	41,000
Crotonaldehyde	123-73-9	ca	0.0053	0.053		0.11
Cumene (isopropylbenzene)	98-82-8	nc			92 *	92 *
Cyanazine	21725-46-2	ca, nc	0.65	6.5		21
Cyanide (free) ²	57-12-5	nc			1,200	12,000
Cyanide (hydrogen) ³	74-90-8	nc			11	35
Cyanogen	460-19-5	nc			130	430
Cyanogen bromide	506-68-3	nc			290	970
Cyanogen chloride	506-77-4	nc			160	540
Cyclohexane	110-82-7	nc			140 *	140 *
Cyclohexanone	108-94-1	nc			310,000	1,000,000 **
Cyclohexylamine	108-91-8	nc			12,000	120,000
Cyhalothrin/Karate	68085-85-8	nc			310	3,100

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CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Cypermethrin	52315-07-8	nc			610	6,200
Cyromazine	66215-27-8	nc			460	4,600
Dacthal	1861-32-1	nc			610	6,200
Dalapon	75-99-0	nc			1,800	18,000
Danitol	39515-41-8	nc			1,500	15,000
DDD	72-54-8	ca	2.8	28		100
DDE	72-55-9	ca	2.0	20		70
DDT	50-29-3	ca, nc	2.0	20		70
Decabromodiphenyl ether	1163-19-5	nc			610	6,200
Demeton	8065-48-3	nc			2.4	25
Diallate	2303-16-4	ca	9.0	90		280
Diazinon	333-41-5	nc			55	550
Dibenzofuran	132-64-9	nc			140 *	140 *
1,4-Dibromobenzene	106-37-6	nc			610	6,200
Dibromochloromethane	124-48-1	ca, nc	1.1	11		26
1,2-Dibromo-3-chloropropane	96-12-8	ca, nc	0.53	5.3	1.5	6.5
1,2-Dibromoethane	106-93-4	ca, nc	0.029	0.29		0.63
Dibutyl phthalate	84-74-2	nc			6,100	62,000
Dicamba	1918-00-9	nc			1,800	18,000
1,2-Dichlorobenzene	95-50-1	nc			600 *	600 *
1,3-Dichlorobenzene	541-73-1	nc			530	600 *
1,4-Dichlorobenzene	106-46-7	ca, nc	3.5	35		79
3,3-Dichlorobenzidine	91-94-1	ca	1.2	12		38
4,4'-Dichlorobenzophenone	90-98-2	nc			1,800	18,000
1,4-Dichloro-2-butene	764-41-0	ca	0.0080	0.080		0.18
Dichlorodifluoromethane	75-71-8	nc			94	310
1,1-Dichloroethane	75-34-3	nc			510	1,700 *
1,2-Dichloroethane (DCA)	107-06-2	ca, nc	0.28	2.8		6.0
1,1-Dichloroethylene (DCE)	75-35-4	nc			120	410
1,2-Dichloroethylene (cis)	156-59-2	nc			43	150
1,2-Dichloroethylene (trans)	156-60-5	nc			69	230
2,4-Dichlorophenol	120-83-2	nc			180	1,800
4-(2,4-Dichlorophenoxy)butyric acid	94-82-6	nc			490	4,900
2,4-Dichlorophenoxyacetic Acid (2,4-D)	94-75-7	nc			690	7,700
1,2-Dichloropropane	78-87-5	ca, nc	0.34	3.4		7.4

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
1,3-Dichloropropane	142-28-9	nc			100	360
1,3-Dichloropropene	542-75-6	ca, nc	0.79	7.9		18
2,3-Dichloropropanol	616-23-9	nc			180	1,800
Dichlorvos	62-73-7	ca, nc	1.9	19		59
Dicofol	115-32-2	ca	1.2	12		39
Dicyclopentadiene	77-73-6	nc			0.54	1.8
Dieldrin	60-57-1	ca, nc	0.034	0.34		1.1
Diethylene glycol, monobutyl ether	112-34-5	nc			610	6,200
Diethylene glycol, monomethyl ether	111-90-0	nc			3,700	37,000
Diethylformamide	617-84-5	nc			24	250
Di(2-ethylhexyl)adipate	103-23-1	ca, nc	460	4,600		14,000
Diethyl phthalate	84-66-2	nc			49,000	490,000
Diethylstilbestrol	56-53-1	ca	0.00012	NA		0.0037
Difenzoquat (Avenge)	43222-48-6	nc			4,900	49,000
Diflubenzuron	35367-38-5	nc			1,200	12,000
Diisononyl phthalate	28553-12-0	nc			1,200	12,000
Diisopropyl methylphosphonate	1445-75-6	nc			4,900	49,000
Dimethipin	55290-64-7	nc			1,200	12,000
Dimethoate	60-51-5	nc			12	120
3,3'-Dimethoxybenzidine	119-90-4	ca	39	390		1,200
Dimethylamine	124-40-3	nc			0.067	0.25
N-N-Dimethylaniline	121-69-7	nc			120	1,200
2,4-Dimethylaniline	95-68-1	ca	0.73	7.3		23
2,4-Dimethylaniline hydrochloride	21436-96-4	ca	0.94	9.4		30
3,3'-Dimethylbenzidine	119-93-7	ca	0.24	2.4		7.5
N,N-Dimethylformamide	68-12-2	nc			6,100	62,000
Dimethylphenethylamine	122-09-8	nc			61	620
2,4-Dimethylphenol	105-67-9	nc			1,200	12,000
2,6-Dimethylphenol	576-26-1	nc			37	370
3,4-Dimethylphenol	95-65-8	nc			61	620
Dimethyl phthalate	131-11-3	nc			610,000	1,000,000 **
Dimethyl terephthalate	120-61-6	nc			6,100	62,000
4,6-Dinitro-o-cyclohexyl phenol	131-89-5	nc			120	1,200
1,2-Dinitrobenzene	528-29-0	nc			6.1	62
1,3-Dinitrobenzene	99-65-0	nc			6.1	62

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CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
1,4-Dinitrobenzene	100-25-4	nc			6.1	62
2,4-Dinitrophenol	51-28-5	nc			120	1,200
Dinitrotoluene mixture	25321-14-6	ca	0.81	8.1		25
2,4-Dinitrotoluene	121-14-2	nc			120	1,200
2,6-Dinitrotoluene	606-20-2	nc			61	620
Dinoseb	88-85-7	nc			61	620
di-n-Octyl phthalate	117-84-0	nc			2,400	25,000
1,4-Dioxane	123-91-1	ca	50	500		1,600
Dioxin (2,3,7,8-TCDD)	1746-01-6	ca	0.0000045	0.000045		0.00016
Diphenamid	957-51-7	nc			1,800	18,000
Diphenylamine	122-39-4	nc			1,500	15,000
N,N-Diphenyl-1,4 benzenediamine (DPPD)	74-31-7	nc			18	180
1,2-Diphenylhydrazine	122-66-7	ca	0.68	6.8		22
Diphenyl sulfone	127-63-9	nc			180	1,800
Diquat	85-00-7	nc			130	1,400
Direct black 38	1937-37-7	ca	0.064	NA		0.20
Direct blue 6	2602-46-2	ca	0.068	NA		0.21
Direct brown 95	16071-86-6	ca	0.059	NA		0.19
Disulfoton	298-04-4	nc			2.4	25
1,4-Dithiane	505-29-3	nc			610	6,200
Diuron	330-54-1	nc			120	1,200
Dodine	2439-10-3	nc			240	2,500
Dysprosium	7429-91-6	nc			7,800	102,000
Endosulfan	115-29-7	nc			370	3,700
Endothall	145-73-3	nc			1,200	12,000
Endrin	72-20-8	nc			18	180
Epichlorohydrin	106-89-8	ca, nc			7.6	26
1,2-Epoxybutane	106-88-7	nc			350	3,500
EPTC (S-Ethyl dipropylthiocarbamate)	759-94-4	nc			1,500	15,000
Ethephon (2-chloroethyl phosphonic acid)	16672-87-0	nc			310	3,100
Ethion	563-12-2	nc			31	310
2-Ethoxyethanol	110-80-5	nc			24,000	250,000
2-Ethoxyethanol acetate	111-15-9	nc			18,000	180,000
Ethyl acetate	141-78-6	nc			19,000	37,000 *
Ethyl acrylate	140-88-5	ca	0.21	2.1		4.5

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Ethylbenzene	100-41-4	nc			400 *	400 *
Ethyl chloride	75-00-3	ca, nc	3.0	30		65
Ethylene cyanohydrin	109-78-4	nc			18,000	180,000
Ethylene diamine	107-15-3	nc			5,500	55,000
Ethylene glycol	107-21-1	nc			120,000	1,000,000 **
Ethylene glycol, monobutyl ether	111-76-2	nc			31,000	310,000
Ethylene oxide	75-21-8	ca	0.14	1.4		3.4
Ethylene thiourea (ETU)	96-45-7	ca, nc			4.9	49
Ethyl ether	60-29-7	nc			1,800 *	1,800 *
Ethyl methacrylate	97-63-2	nc			140 *	140 *
Ethyl p-nitrophenyl phenylphosphorothioate	2104-64-5	nc			0.61	6.2
Ethylphthalyl ethyl glycolate	84-72-0	nc			180,000	1,000,000 **
Express	101200-48-0	nc			490	4,900
Fenamiphos	22224-92-6	nc			15	150
Fluometuron	2164-17-2	nc			790	8,000
Fluoride	16984-48-8	nc			3,700	37,000
Fluoridone	59756-60-4	nc			4,900	49,000
Flurprimidol	56425-91-3	nc			1,200	12,000
Flutolanil	66332-96-5	nc			3,700	37,000
Fluvalinate	69409-94-5	nc			610	6,200
Folpet	133-07-3	ca, nc	160	1,600		4,900
Fomesafen	72178-02-0	ca	2.9	29		91
Fonofos	944-22-9	nc			120	1,200
Formaldehyde	50-00-0	ca, nc			9,200	92,000
Formic Acid	64-18-6	nc			110,000	1,000,000 **
Fosetyl-al	39148-24-8	nc			180,000	1,000,000 **
Furan	110-00-9	nc			2.5	8.5
Furazolidone	67-45-8	ca	0.14	1.4		4.5
Furfural	98-01-1	nc			180	1,800
Furium	531-82-8	ca	0.011	0.11		0.34
Furmecyclox	60568-05-0	ca	18	180		570
Glufosinate-ammonium	77182-82-2	nc			24	250
Glycidaldehyde	765-34-4	nc			24	250
Glyphosate	1071-83-6	nc			6,100	62,000
Haloxypop-methyl	69806-40-2	nc			3.1	31

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CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Harmony	79277-27-3	nc			790	8,003
Heptachlor	76-44-8	ca, nc	0.12	1.2		3.8
Heptachlor epoxide	1024-57-3	ca, nc	0.060	0.60		1.9
Hexabromobenzene	87-82-1	nc			120	1,200
Hexachlorobenzene	118-74-1	ca, nc	0.34	3.4		11
Hexachlorobutadiene	87-68-3	ca, nc	7.0	70	18	180
HCH (alpha)	319-84-6	ca, nc	0.10	1.0		3.6
HCH (beta)	319-85-7	ca, nc	0.36	3.6		13
HCH (gamma) Lindane	58-89-9	ca, nc	0.50	5.0		17
HCH-technical	608-73-1	ca	0.36	3.6		13
Hexachlorocyclopentadiene	77-47-4	nc			370	3,700
Hexachloroethane	67-72-1	ca, nc	39	390	61	620
Hexachlorophene	70-30-4	nc			18	180
Hexahydro-1,3,5-trinitro-1,3,5-triazine	121-82-4	ca, nc	5.0	50		160
1,6-Hexamethylene diisocyanate	822-06-0	nc			0.17	1.8
n-Hexane	110-54-3	nc			110 *	110 *
Hexazinone	51235-04-2	nc			2,020	20,000
Hydrazine, hydrazine sulfate	302-01-2	ca	0.18	1.8		5.7
Hydrazine, monomethyl	60-34-4	ca	0.18	1.8		5.7
Hydrazine, dimethyl	57-14-7	ca	0.18	1.8		5.7
p-Hydroquinone	123-31-9	ca, nc	9.8	98		310
Imazalil	35554-44-0	nc			790	8,000
Imazaquin	81335-37-7	nc			15,000	150,000
Iprodione	36734-19-7	nc			2,400	25,000
Isobutanol	78-83-1	nc			13,000	40,000 *
Isophorone	78-59-1	ca, nc	580	5,800		18,000
Isopropalin	33820-53-0	nc			920	9,200
Isopropyl methyl phosphonic acid	1832-54-8	nc			6,100	62,000
Isoxaben	82558-50-7	nc			3,100	31,000
Kepone	143-50-0	ca, nc	0.068	0.68		2.2
Lactofen	77501-63-4	nc			120	1,200
Lead	7439-92-1	ca, nc			400	800
Lead (tetraethyl)	78-00-2	nc			0.0061	0.062
Linuron	330-55-2	nc			120	1,200
Lithium	7439-93-2	nc			1,600	20,000

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Londax	83055-99-6	nc			12,000	120,000
Malathion	121-75-5	nc			1,200	12,000
Maleic anhydride	108-31-6	nc			6,100	62,000
Maleic hydrazide	123-33-1	nc			1,700	2,400 *
Malononitrile	109-77-3	nc			6.1	62
Mancozeb	8018-01-7	nc			1,800	18,000
Maneb	12427-38-2	ca, nc	9.1	91		290
Manganese	7439-96-5	nc			3,300	32,000
Mephosfolan	950-10-7	nc			5.5	55
Mepiquat	24307-26-4	nc			1,800	18,000
2-Mercaptobenzothiazole	149-30-4	ca, nc	19	190		590
Mercury and compounds	7487-94-7	nc			23	310
Mercury (methyl)	22967-92-6	nc			6.1	62
Merphos	150-50-5	nc			1.8	18
Merphos oxide	78-48-8	nc			1.8	18
Metalaxyl	57837-19-1	nc			3,700	37,000
Methacrylonitrile	126-98-7	nc			2.1	8.4
Methamidophos	10265-92-6	nc			3.1	31
Methanol	67-56-1	nc			31,000	310,000
Methidathion	950-37-8	nc			61	620
Methomyl	16752-77-5	nc			44	150
Methoxychlor	72-43-5	nc			310	3,100
2-Methoxyethanol	109-86-4	nc			61	620
2-Methoxyethanol acetate	110-49-6	nc			120	1,200
2-Methoxy-5-nitroaniline	99-59-2	ca	12	120		370
Methyl acetate	79-20-9	nc			22,000	92,000
Methyl acrylate	96-33-3	nc			70	230
2-Methylaniline (o-toluidine)	95-53-4	ca	2.3	23		72
2-Methylaniline hydrochloride	636-21-5	ca	3.0	30		96
2-Methyl-4-chlorophenoxyacetic acid	94-74-6	nc			31	310
4-(2-Methyl-4-chlorophenoxy) butyric acid (MCPB)	94-81-5	nc			610	6,200
2-(2-Methyl-4-chlorophenoxy) propionic acid	93-65-2	nc			61	620
2-(2-Methyl-1,4-chlorophenoxy) propionic acid (MCPP)	16484-77-8	nc			61	620

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CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Methylcyclohexane	108-87-2	nc			230 *	230 *
4,4'-Methylenebisbenzeneamine	101-77-9	ca	2.2	22		69
4,4'-Methylene bis(2-chloroaniline)	101-14-4	ca, nc	4.2	42		130
4,4'-Methylene bis(N,N'-dimethyl) aniline	101-61-1	ca	12	120		370
Methylene bromide	74-95-3	nc			67	230
Methylene chloride	75-09-2	ca, nc	9.3	93		210
4,4'-Methylenediphenyl diisocyanate	101-68-8	nc			10	110
Methyl ethyl ketone (MEK)	78-93-3	nc			23,000	34,000 *
Methyl isobutyl ketone (MIBK)	108-10-1	nc			5,300	17,000 *
Methyl mercaptan	74-93-1	nc			35	350
Methyl methacrylate	80-62-6	nc			2,200	2,700 *
2-Methyl-5-nitroaniline	99-55-8	ca	17	170		520
Methyl parathion	298-00-0	nc			15	150
2-Methylphenol	95-48-7	nc			3,100	31,000
3-Methylphenol	108-39-4	nc			3,100	31,000
4-Methylphenol	106-44-5	nc			310	3,100
Methyl phosphonic acid	993-13-5	nc			1,200	12,000
Methyl styrene (mixture)	25013-15-4	nc			130	540
Methyl styrene (alpha)	98-83-9	nc			680 *	680 *
Methyl tertbutyl ether (MTBE)	1634-04-4	ca, nc	32	320		710
Metolaclo (Dual)	51218-45-2	nc			9,200	92,000
Metribuzin	21087-64-9	nc			1,500	15,000
Mirex	2385-85-5	ca, nc	0.30	3.0		9.6
Molinate	2212-67-1	nc			120	1,200
Molybdenum	7439-98-7	nc			390	5,100
Monochloramine	10599-90-3	nc			6,100	62,000
Naled	300-76-5	nc			120	1,200
Napropamide	15299-99-7	nc			6,100	62,000
Nickel and compounds	7440-02-0	nc			1,600	20,000
Nickel subsulfide	12035-72-2	ca	5,200	NA		11,000
2-Nitroaniline	88-74-4	nc			180	1,800
3-Nitroaniline	99-09-2	ca, nc			18	180
4-Nitroaniline	100-01-6	ca, nc	26	260	180	820
Nitrobenzene	98-95-3	nc			20	100
Nitrofurantoin	67-20-9	nc			4,300	43,000

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Nitrofurazone	59-87-0	ca	0.37	3.7		11
Nitroglycerin	55-63-0	ca	39	390		1,200
Nitroguanidine	556-88-7	nc			6,100	62,000
2-Nitropropane	79-46-9	ca, nc	0.0028	0.028		0.061
N-Nitrosodi-n-butylamine	924-16-3	ca	0.025	0.25		0.58
N-Nitrosodiethanolamine	1116-54-7	ca	0.20	2.0		6.2
N-Nitrosodiethylamine	55-18-5	ca	0.0037	0.037		0.11
N-Nitrosodimethylamine	62-75-9	ca, nc	0.011	0.11		0.34
N-Nitrosodiphenylamine	86-30-6	ca, nc	110	1,100		3,500
N-Nitroso di-n-propylamine	621-64-7	ca	0.078	0.78		2.5
N-Nitroso-N-methylethylamine	10595-95-6	ca	0.025	0.25		0.78
N-Nitrosopyrrolidine	930-55-2	ca	0.26	2.6		8.2
m-Nitrotoluene	99-08-1	nc			730	1,000 *
o-Nitrotoluene	88-72-2	ca, nc	0.93	9.3		22
p-Nitrotoluene	99-99-0	ca, nc	13	130		300
Norflurazon	27314-13-2	nc			2,400	25,000
NuStar	85509-19-9	nc			43	430
Octabromodiphenyl ether	32536-52-0	nc			180	1,800
Octahydro-1357-tetranitro-1357-tetrazocine (HMX)	2691-41-0	nc			3,100	31,000
Octamethylpyrophosphoramidate	152-16-9	nc			120	1,200
Oryzalin	19044-88-3	nc			3,100	31,000
Oxadiazon	19666-30-9	nc			310	3,100
Oxamyl	23135-22-0	nc			1,500	15,000
Oxyfluorfen	42874-03-3	nc			180	1,800
Paclobutrazol	76738-62-0	nc			790	8,000
Paraquat	4685-14-7	nc			270	2,800
Parathion	56-38-2	nc			370	3,700
Pebulate	1114-71-2	nc			3,100	31,000
Pendimethalin	40487-42-1	nc			2,400	25,000
Pentabromo-6-chloro cyclohexane	87-84-3	ca	24	240		750
Pentabromodiphenyl ether	32534-81-9	nc			120	1,200
Pentachlorobenzene	608-93-5	nc			49	490
Pentachloronitrobenzene	82-68-8	ca, nc	2.1	21		66
Pentachlorophenol	87-86-5	ca, nc	3.2	32		90
Perchlorate	7601-90-3	nc			55	720

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CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Permethrin	52645-53-1	nc			3,100	31,000
Phenmedipham	13684-63-4	nc			15,000	150,000
Phenol	108-95-2	nc			18,000	180,000
Phenothiazine	92-84-2	nc			120	1,200
m-Phenylenediamine	108-45-2	nc			370	3,700
o-Phenylenediamine	95-54-5	ca	12	120		370
p-Phenylenediamine	106-50-3	nc			12,000	120,000
Phenylmercuric acetate	62-38-4	nc			4.9	49
2-Phenylphenol	90-43-7	ca	280	2,800		8,900
Phorate	298-02-2	nc			12	120
Phosmet	732-11-6	nc			1,200	12,000
Phosphine	7803-51-2	nc			18	180
Phosphorus (white)	7723-14-0	nc			1.6	20
p-Phthalic acid	100-21-0	nc			61,000	620,000
Phthalic anhydride	85-44-9	nc			120,000	1,000,000 **
Picloram	1918-02-1	nc			4,300	43,000
Pirimiphos-methyl	29232-93-7	nc			610	6,200
Polybrominated biphenyls (PBBs)	NA	ca, nc	0.062	0.62	0.43	1.9
Polychlorinated biphenyls (PCBs), low-risk mixture ⁴	12674-11-2	ca, nc			3.9	37
Polychlorinated biphenyls (PCBs), high-risk mixture ⁵	11097-69-1	ca, nc	0.25	2.5	1.1	7.4
Polychlorinated terphenyls	61788-33-8	ca	0.12	1.2		3.8
Polynuclear aromatic hydrocarbons						
Acenaphthene	83-32-9	nc			3,700	29,000
Anthracene	120-12-7	nc			22,000	240,000
Benz[a]anthracene	56-55-3	ca	0.69	6.9		21
Benzo[b]fluoranthene	205-99-2	ca	0.69	6.9		21
Benzo[k]fluoranthene	207-08-9	ca	6.9	69		210
Benzo[a]pyrene	50-32-8	ca	0.069	0.69		2.1
Chrysene	218-01-9	ca	68	680		2,000
Dibenz[ah]anthracene	53-70-3	ca	0.069	0.69		2.1
Fluoranthene	206-44-0	nc			2,300	22,000
Fluorene	86-73-7	nc			2,700	26,000
Indeno[1,2,3-cd]pyrene	193-39-5	ca	0.69	6.9		21
Naphthalene	91-20-3	nc			56	190

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Pyrene	129-00-0	nc			2,300	29,000
Prochloraz	67747-09-5	ca, nc	3.7	37		110
Profluralin	26399-36-0	nc			370	3,700
Prometon	1610-18-0	nc			920	9,200
Prometryn	7287-19-6	nc			240	2,500
Pronamide	23950-58-5	nc			4,600	46,000
Propachlor	1918-16-7	nc			790	8,000
Propanil	709-98-8	nc			310	3,100
Propargite	2312-35-8	nc			1,200	12,000
Propargyl alcohol	107-19-7	nc			120	1,200
Propazine	139-40-2	nc			1,200	12,000
Propham	122-42-9	nc			1,200	12,000
Propiconazole	60207-90-1	nc			790	8,000
n-Propylbenzene	103-65-1	nc			240 *	240 *
Propylene glycol	57-55-6	nc			30,000	290,000
Propylene glycol, monoethyl ether	52125-53-8	nc			43,000	430,000
Propylene glycol, monomethyl ether	107-98-2	nc			43,000	430,000
Propylene oxide	75-56-9	ca, nc	2.2	22		66
Pursuit	81335-77-5	nc			15,000	150,000
Pydrin	51630-58-1	nc			1,500	15,000
Pyridine	110-86-1	nc			61	620
Quinalphos	13593-03-8	nc			31	310
Quinoline	91-22-5	ca	0.18	1.8		5.7
RDX (Cyclonite)	121-82-4	ca, nc	5.0	50		160
Resmethrin	10453-86-8	nc			1,800	18,000
Ronnel	299-84-3	nc			3,100	31,000
Rotenone	83-79-4	nc			240	2,500
Savey	78587-05-0	nc			1,500	15,000
Selenious Acid	7783-00-8	nc			310	3,100
Selenium	7782-49-2	nc			390	5,100
Selenourea	630-10-4	nc			310	3,100
Sethoxydim	74051-80-2	nc			5,500	55,000
Silver and compounds	7440-22-4	nc			390	5,100
Simazine	122-34-9	ca, nc	4.6	46		140
Sodium azide	26628-22-8	nc			310	4,100

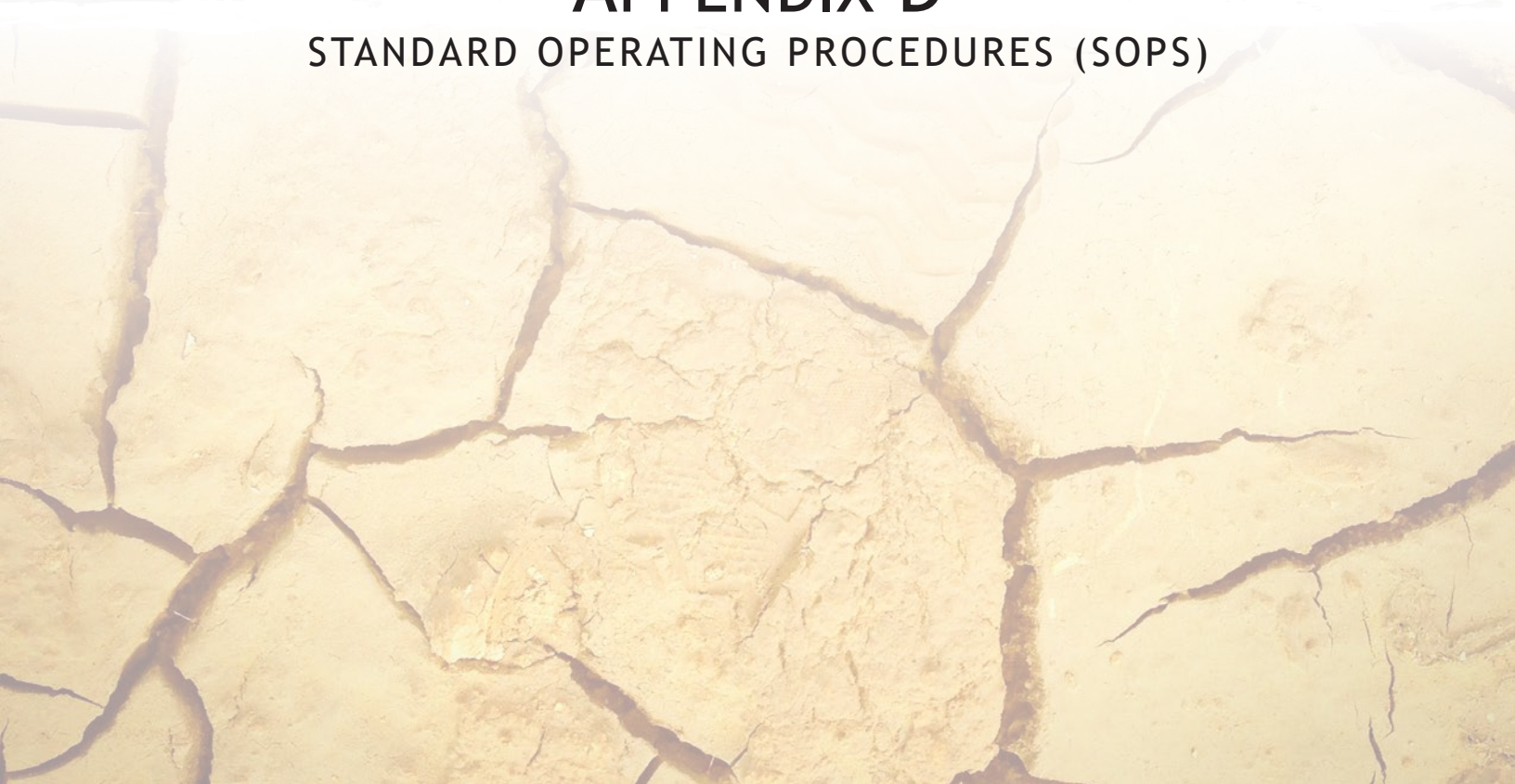
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CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Sodium diethyldithiocarbamate	148-18-5	ca, nc	2.0	20		64
Sodium fluoroacetate	62-74-8	nc			1.2	12
Sodium metavanadate	13718-26-8	nc			61	620
Strontium, stable	7440-24-6	nc			47,000	610,000
Strychnine	57-24-9	nc			18	180
Styrene	100-42-5	nc			1,500 *	1,500 *
1,1'-Sulfonylbis-(4-chlorobenzene)	80-07-9	nc			310	3,100
Systhane	88671-89-0	nc			1,500	15,000
Tebuthiuron	34014-18-1	nc			4,300	43,000
Temephos	3383-96-8	nc			1,200	12,000
Terbacil	5902-51-2	nc			790	8,000
Terbufos	13071-79-9	nc			1.5	15
Terbutryn	886-50-0	nc			61	620
1,2,4,5-Tetrachlorobenzene	95-94-3	nc			18	180
1,1,1,2-Tetrachloroethane	630-20-6	ca, nc	3.2	32		73
1,1,1,2,2-Tetrachloroethane	79-34-5	ca, nc	0.42	4.2		9.3
Tetrachloroethylene (PCE)	127-18-4	ca, nc	0.51	5.1		13
2,3,4,6-Tetrachlorophenol	58-90-2	nc			1,800	18,000
p,a,a,a-Tetrachlorotoluene	5216-25-1	ca	0.027	0.27		0.86
Tetrachlorovinphos	961-11-5	ca, nc	23	230		720
Tetraethyldithiopyrophosphate	3689-24-5	nc			31	310
Tetrahydrofuran	109-99-9	ca, nc	9.5	95		210
Thallium and compounds	7440-28-0	nc			5.2	67
Thiobencarb	28249-77-6	nc			610	6,200
Thiocyanate	NA	nc			3,100	31,000
Thiofanox	39196-18-4	nc			18	180
Thiophanate-methyl	23564-05-8	nc			4,900	49,000
Thiram	137-26-8	nc			310	3,100
Tin	7440-31-5	nc			47,000	610,000
Titanium	7440-32-6	nc			310,000	1,000,000 **
Toluene	108-88-3	nc			650 *	650 *
Toluene-2,4-diamine	95-80-7	ca	0.17	1.7		5.4
Toluene-2,5-diamine	95-70-5	nc			37,000	370,000
Toluene-2,6-diamine	823-40-5	nc			12,000	120,000
p-Toluidine	106-49-0	ca	2.9	29		91

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Toxaphene	8001-35-2	ca	0.50	5.0		16
Tralomethrin	66841-25-6	nc			460	4,600
Triallate	2303-17-5	nc			790	8,000
Triasulfuron	82097-50-5	nc			610	6,200
1,2,4-Tribromobenzene	615-54-3	nc			310	3,100
Tributyl phosphate	126-73-8	ca, nc	60	600		1,900
Tributyltin oxide (TBTO)	56-35-9	nc			18	180
2,4,6-Trichloroaniline	634-93-5	ca	16	160		510
2,4,6-Trichloroaniline hydrochloride	33663-50-2	ca	19	190		590
1,2,4-Trichlorobenzene	120-82-1	nc			62	220
1,1,1-Trichloroethane	71-55-6	nc			1,200 *	1,200 *
1,1,2-Trichloroethane	79-00-5	ca, nc	0.74	7.4		16
Trichloroethylene (TCE)	79-01-6	ca, nc	3.0	30	17	65
Trichlorofluoromethane	75-69-4	nc			390	1,300
2,4,5-Trichlorophenol	95-95-4	nc			6,100	62,000
2,4,6-Trichlorophenol	88-06-2	ca, nc			6.1	62
2,4,5-Trichlorophenoxyacetic Acid	93-76-5	nc			610	6,200
2-(2,4,5-Trichlorophenoxy) propionic acid	93-72-1	nc			490	4,900
1,1,2-Trichloropropane	598-77-6	nc			15	51
1,2,3-Trichloropropane	96-18-4	ca, nc	0.0050	0.050		0.11
1,2,3-Trichloropropene	96-19-5	nc			0.71	2.3
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	nc			5,600 *	5,600 *
Tridiphane	58138-08-2	nc			180	1,800
Triethylamine	121-44-8	nc			23	86
Trifluralin	1582-09-8	ca, nc	71	710	460	2,200
Trimellitic Anhydride (TMAN)	552-30-7	nc			8.6	86
1,2,4-Trimethylbenzene	95-63-6	nc			52	170
1,3,5-Trimethylbenzene	108-67-8	nc			21	70
Trimethyl phosphate	512-56-1	ca	15	150		470
1,3,5-Trinitrobenzene	99-35-4	nc			1,800	18,000
Trinitrophenylmethylnitramine	479-45-8	nc			610	6,200
2,4,6-Trinitrotoluene	118-96-7	ca, nc	18	180	31	310
Triphenylphosphine oxide	791-28-6	nc			1,200	12,000
Tris(2-chloroethyl) phosphate	115-96-8	ca, nc	39	390		1,200
Tris(2-ethylhexyl) phosphate	78-42-2	ca, nc	170	1,700		5,400



APPENDIX D
STANDARD OPERATING PROCEDURES (SOPS)



Department of Environmental Quality – Remedial Action

CONTAMINANT	CASRN	Class	Residential (mg/kg)			Non-residential (mg/kg)
			Carcinogen		Non-carcinogen	
			10 ⁻⁶ Risk	10 ⁻⁵ Risk		
Uranium (chemical toxicity only)	7440-61-0	nc			16	200
Vanadium and compounds	7440-62-2	nc			78	1,000
Vernam	1929-77-7	nc			61	620
Vinclozolin	50471-44-8	nc			1,500	15,000
Vinyl acetate	108-05-4	nc			430	1,400
Vinyl bromide	593-60-2	ca, nc	0.19	1.9		4.2
Vinyl chloride	75-01-4	ca, nc	0.085	NA		0.75
Warfarin	81-81-2	nc			18	180
Xylenes	1330-20-7	nc			270	420 *
Zinc	7440-66-6	nc			23,000	310,000
Zinc phosphide	1314-84-7	nc			23	310
Zineb	12122-67-7	nc			3,100	31,000
NA indicates not applicable.						
Class is the classification of the chemical. “ca” indicates carcinogenic effects; “nc” indicates non-carcinogenic effects. Chemicals that have both carcinogenic and non-carcinogenic effects are classified “ca, nc”.						
* Indicates SRL is based on the chemical-specific saturation level in soil for volatile organic chemicals only.						
** Indicates SRL is based on a 100% saturation ceiling limit for non-volatile organic chemicals.						
¹ Arsenic standards are not risk-based standards, but based on background.						
² Cyanide (free): Free cyanide is a subset of total cyanides. If any ADHS approved method for total cyanide reports a concentration exceeding this standard, further analyses to differentiate free cyanide from other cyanide metal complexes is required.						
³ Cyanide (hydrogen): If the cyanide concentrations using any method exceed the hydrogen cyanide standard, then hydrogen cyanide vapor samples should be collected at the site.						
⁴ PCBs, low-risk mixture: Use if laboratory analysis confirms that the total PCB concentration consists of 0.5 percent or less of congeners that contain five or more chlorines and that no dioxin-like congeners are present.						
⁵ PCBs, high-risk mixture: Use if only total PCB concentration is reported by any ADHS licensed analytical method, or if laboratory analysis confirms that the total PCB concentration consists of more than 0.5 percent congeners that contain five or more chlorines or that dioxin-like congeners are present.						
Bold indicates adequate evidence to classify the chemical as a known human carcinogen.						
CASRN is the Chemical Abstract System Registry Number.						

Historical Note

Adopted by emergency action effective March 29, 1996, pursuant to A.R.S. § 41-1026 and Laws 1995, Ch. 232, § 5; in effect until permanent rules are adopted and in place no later than August 1, 1997, pursuant to A.R.S. § 49-152 and Laws 1995, Ch. 232, § 5 (Supp. 96-1). Historical note revised to clarify exemptions of emergency adoption (Supp. 97-1). Interim emergency appendix reinstated at the request of the Department; historical note from Supp. 97-3 stating emergency expired removed for clarity. Appendix A adopted permanently effective December 4, 1997, replacing emergency appendix (Supp. 97-4). Amended to correct measurement units in columns 5 and 6 from “mg/k” to “mg/kg” (Supp. 01-4). Former Appendix A renumbered to Appendix B; new Appendix A made by final rulemaking at 13 A.A.R. 971, effective May 5, 2007 (Supp. 07-1).



SOP-1

FIELD LOG BOOK AND FIELD SAMPLING FORMS

Pertinent field investigation and sampling information should be recorded on a daily field log book and appropriate sampling forms to provide a continual record of actions taken each day on the site. Each employee is responsible for completing a record of the day's activities in a log book and field forms of sufficient detail such that someone can reconstruct the field activities without relying on the memory of the field crew. At a minimum, entries on the field log book shall include:

- Project and client name
- Purpose of the field effort
- Names of field crew leader and team members present on the site, and other site visitors
- Description of site conditions and any unusual circumstances, including weather conditions
- Details of actual work effort, particularly any deviations from the field work plan or standard operating procedures
- Location of sample site, including map reference, if relevant
- Field observations
- Field measurements made (e.g., PID readings, pH, temperature) on appropriate forms
- Date and time of initiation and cessation of work

Purpose

Provide guidance on how to document activities completed in the field

Goal and Objective

To provide a record of project work and decisions made in the field

Equipment Needs

Indelible Ink Pen
Field Log Book
Field Sampling Forms

Specific details for each sample collected should be recorded using NewField's standardized field forms. These field forms contain blank queries to be filled in by field personnel. Items typically recorded on field sampling forms consist of the following:

- Sample name
- Time and date samples were collected
- Number and type (media; natural, duplicate, QA/QC) of samples collected
- Analysis requested
- Sample preservative (if applicable)
- Sampling method, particularly any deviations from standard operating procedures
- Signature of sampler

All entries on the log book and field sampling forms must be made in indelible ink. Upon completion of the field effort, the original log book and field forms shall be scanned and maintained in the project file. Photocopies of original field forms can be used as working documents.



SOP-2

EQUIPMENT DECONTAMINATION

Decontamination of field equipment is necessary to prevent cross-contamination between sites and sampling locations. Decontamination should be performed on all non-dedicated and non-disposable sampling equipment that may contact potentially contaminated media. Field personnel must wear disposable gloves while decontaminating equipment to prevent cross-contamination.

The following should be done to decontaminate field equipment:

- Set-up a decontamination area, preferably upwind and upgradient from the sampling area.
- Prior to initiating decontamination, visually inspect sampling equipment for evidence of contamination; use stiff brush to remove visible material.
- Once rough brushing is complete, decontaminate each piece of equipment following a sequential process of washing with Alconox or an equivalent degreasing detergent; rinsing with deionized or laboratory grade distilled water; rinsing with 10% dilute nitric acid; and finally rinsing with deionized/distilled water three times. Best procedure is to set up multiple wash tubs for each of the above processes.
- Rinse equipment with 10% dilute methanol instead of nitric acid if sampling for organic contamination.
- Decontaminated equipment that is used for sampling organics should be wrapped in aluminum foil or another inert material if not used immediately.

Field equipment can be decontaminated by steam cleaning as an alternative. If equipment is steam cleaned, it should still be rinsed with 10% dilute nitric acid and deionized/distilled water.

All disposable items (e.g., paper towels, Nitrile gloves) should be deposited into a garbage bag and disposed in a proper manner. Handling and disposal procedures for the rinse and wash water will depend on the likely presence and type of contaminant in the wash water. The project Sampling & Analysis Plan should be reviewed to determine the process for handling wash water.

A list of equipment for decontamination is provided in the green box to the right. The amount of deionized/distilled water needed on site will depend on the number of samples to be collected and the sampling methods.

Purpose

Describe general decontamination procedures for field equipment

Goal and Objective

To sufficiently clean field equipment to prevent cross-contamination between sites and sample locations

Equipment Needs

5-gallon Plastic Tub(s) (minimum of four tubs)

Distilled/Deionized Water

1-gallon Container of 10% Nitric Acid

Spray Bottle(s) of 10% Methanol
Alconox Soap

Hard Bristle Brush

Garbage Bags

Disposable Nitrile Gloves

Paper Towels

55-gallon Drums (optional depending on need to containerize wash water)



SOP-3

SAMPLE NOMENCLATURE, DOCUMENTATION, AND CHAIN-OF-CUSTODY PROCEDURES

When completing sampling, it is critical that the process used to label and transport samples to the laboratory for analysis is sufficient to demonstrate with confidence that the samples were collected from the location indicated, and that during transport to the laboratory, no actions were taken to potentially alter the integrity of samples. Without following strict sample labeling and chain-of-custody procedures, analytical data collected at a site have little to no value.

SAMPLE NOMENCLATURE

Samples should be labeled in such a way to allow a person unfamiliar with the site to understand where the samples were collected. Samples should be labeled sequentially as follows:

Project site initials - sample type - sampling method -
sample number - sample depth.

For example, sample KR-SBSS-TPI-12', indicates the following: sample was collected at Knife River (KR); sample is a sub-surface soil sample (SBSS); sample is from test pit 1 (TP-1); and sample was collected at depth of 12 feet. Sample or sample site numbers should be numerically sequential (TPI, TP2, etc.). Prior to initiating sampling, field personnel should familiarize themselves with the Sampling & Analysis Plan and the sample nomenclature to be used for the site. The character prefixes in the table below are recommended for sample types.

SAMPLE DOCUMENTATION

In addition to the chain-of-custody forms discussed below, field personnel must keep a list of samples collected at the field in the field log book and on appropriate field sampling forms (see SOP-1). This allows you to go back and verify sample locations and numbers should there be any confusion at a later time. Upon returning to the office, the field log book and forms should be scanned and maintained in the project file, and subsequent copies sent to the laboratory, or other designated parties, as needed.

Each person in the field is responsible for putting entries into the field log and sampling forms. Designating an individual from the sampling team for record keeping is fine, provided all field personnel come to an agreement as to who this will be, and the field crew leader is certain field personnel are familiar with the record keeping requirements. All entries on the log book and field sampling forms must be made in indelible ink.

Purpose

Identify specific requirements for labeling and documenting sample collection

Goal and Objective

To increase confidence in sample locations and to submit samples to the laboratory without risk of integrity loss

Equipment Needs

Indelible Ink Pen

Chain-of-Custody Forms

Field Log Book

Field Sampling Forms



Sampling Acronym	Label
EB	Equipment Blank
TB	Trip Blank
FB	Field Blank
MW	Monitoring Well
DW	Domestic Well
IW	Injection Well
OB	Observation Well
UST	Underground Storage Tank
VE	Vapor Extraction
AA	Ambient Air
SUMP	Sump (Water sample)
POND	Ponds
SPR	Spring
LAKE	Lake
MTH	Methamphetamine
SW	Surface Water, Stream or River
SR	Surface Runoff
GW	Groundwater Sample
TP	Excavated Test Pit
SS	Surface Soil Sample
SBSS	Subsurface Soil Sample

CHAIN-OF-CUSTODY PROCEDURES

A chain-of-custody form must be generated for all samples collected in the field for laboratory analysis. Samples from more than one project should not be included on the same chain-of-custody form; however, multiple samples from a specific project can be included on the same chain-of-custody form.

Copies of the chain-of-custody form should be maintained in the project file. The sampler may use a NewFields' chain-of-custody form or a form provided by the laboratory. Sample custody records must be maintained from the time of sample collection until the time of sample delivery to the analytical laboratory, and should accompany the sample through analysis and final disposition. Information to be included on the chain-of-custody form will include, but is not limited to:

- Project number/site name
- Sampler's name and signature
- Date and time of sample collection
- Unique sample identification number or name
- Number of containers
- Sample media (e.g., soil, water, vapor, etc.)
- Sample preservative (if applicable)
- Requested analysis



- Comments or special instructions to the laboratory

Each sample must be assigned a unique sample identification number as described above. The information on the chain-of-custody form, including the sample identification number, must correspond to the information recorded by the sampler on the field forms, log book, and label on the sample container.

A sample is considered under a person's control when it is in their possession. When custody of a sample is relinquished by the sampler, the sampler will sign and date the chain-of-custody form and note the time that custody was relinquished. The person receiving custody of the sample will also sign and date the form and note the time that the sample was accepted into custody. The goal is to provide a complete record of control of the samples. Should the chain be broken (signed by the relinquisher, but not receiver, or vice versa), the integrity of the sample is lost and the resulting analytical data are suspect. Samples must be packaged and shipped to the laboratory following the procedures described in SOP-4. If an overnight shipping service is used to transport the samples to the laboratory, custody of the samples must be relinquished to the shipping service. If possible, have the shipping service sign the chain-of-custody form prior to placing the chain-of-custody form in the sample cooler. If this is not possible (i.e., form placed in sealed cooler), a note should be included on the chain-of-custody that the shipping company will receive the samples with the chain-of-custody form inside the sample container.



SOP-4

SAMPLE PACKAGING AND SHIPPING

SAMPLE PACKAGING

Samples must be packaged to preclude breakage or damage to sample containers, and shipped to comply with shipper, U.S. EPA, and U.S. DOT regulations. When packaging samples:

- Use sample labels from the laboratory whenever possible. Place the sample label on the sample container prior to collecting the sample, and use indelible ink when completing the label.
- Place labeled sample bottles in a high quality cooler. Place the samples in an upright position inside the cooler and wrap the samples with cushioning material for protection during transport. The cooler should be able to withstand tough handling during shipment without sample breakage.
- Make sure the cooler has an adequate amount of ice (secured inside sealed Ziploc® bags) to maintain a temperature of 4°C or less inside the cooler from the time the samples are placed in the cooler until they are received by the laboratory. Excess ice should be used when sampling in warm weather. Ensure the cooler drain plug is taped shut.
- Fill out the appropriate chain-of-custody forms and place them in a Ziploc bag and tape it to the inside lid of the shipping container. If more than one cooler is used per chain-of-custody form, put a photocopy of the form in the other coolers and mark them as a copy.
- Close and seal the cooler using strapping shipping tape.
- Place signed and dated sample custody seals on the outside of the cooler such that the seals will be broken when the cooler is opened. Secure the custody seals on the cooler with clear strapping tape.
- Secure a shipping label with address, phone number, and return address on the outside of the cooler where it is clearly visible.

Purpose

Ensure samples are properly packaged for shipment to the analytical laboratory

Goal and Objective

To have samples received by the analytical laboratory in good condition and within EPA temperature thresholds

Equipment Needs

Indelible Ink Pen
Chain-of-Custody Forms
Custody Seals
Sample Labels from Lab
Coolers and Ice
Strapping Tape
Field Sampling Forms
Ziploc Bags

SHIPPING HAZARDOUS MATERIALS/WASTE

Transportation regulations for shipping of hazardous substances and dangerous goods are defined by the U.S. DOT in 49 CFR, Subchapter C, Part 171 (October 1, 1988); IATA and ICAO. These regulations are accepted by Federal Express and other ground and air carriers.



According to U.S. DOT regulations, environmental samples are classified as Other Regulated Substances (ORS). ORS are articles, samples, or materials that are suspected or known to contain contaminants and/or are capable of posing a risk to health, safety, or property when transported by ground or air. Samples, substances, or materials from sources other than material drums, leachate streams, and sludges should be considered as ORS or environmental samples. Materials shipped under the classification of ORS must not meet any of the following definitions:

Class 1: explosives; Class 2: gases-compressed, liquefied, dissolved under pressure, or deeply refrigerated; Class 3: flammable liquids; Class 4: substances susceptible to spontaneous combustion; Class 5: oxidizing substances; Class 6: poisonous (toxic and infectious); Class 7: radioactive materials; and/or Class 8: corrosives.

If your samples might meet any of the above definitions, contact the project manager to obtain instructions on sample shipment.



SOP-13

SURFACE SOIL SAMPLING

This SOP describes the field equipment and sampling methods for surface sampling of soil. Review the project specific Sampling and Analysis Plan for additions or deletions to the methods noted below. These procedures may be modified in the field based on site conditions after appropriate annotations have been made in the field log book and the project manager has approved the change(s).

All sampling equipment shall be decontaminated in accordance with procedures described in SOP-2.

SURFACE SOIL SAMPLING

Commonly, there are two different methods of surface soil sampling completed on a site: discrete/grab samples, and composite samples. The methods for each of these are described below.

For both methods, surface soil samples should be collected from the surface to a depth of 6 inches, unless otherwise specified for the specific project.

Soils should be described according to procedures outlined in the Unified Soil Classification System (USCS; method ASTM D2487) or the Soil Conservation Service (SCS) classification system. Soil texture should be classified by either the USCS or the U.S. Department of Agriculture (USDA) classification. Descriptions shall be recorded in the field log books or on standard morphological description field forms.

Discrete or Grab Soil Samples

- Locate the sample site as directed in the project work plan.
- Wearing disposable latex or nitrile gloves, collect a sample by scraping the 0-6 inch interval of soil with a stainless steel spoon.
- Place the soil in a stainless steel bowl.
- Remove all coarse fragments greater than 0.5-inch diameter from the bowl. If volatile organics analysis is not required, mix the remaining sample in the bowl with the stainless steel spoon.
- Transfer the soil sample directly into a glass sample jar with teflon cap (4 or 8 ounce, depending on number of analyses required) and store in a cooler at ≤ 4 °C or less. Retain approximately 30 grams of the sample in a plastic bag for field measurement of pH or photo-ionization detector (PID) screening, if required.

Purpose

Provide guidelines for sampling surface soil.

Goal and Objective

To employ a method of collecting surface soil samples representative of field conditions.

Equipment Needs

Stainless Steel Mixing Bowl and Sampling Trowel

Hand-Lens (10 power)

pH and Conductivity Meters (if required)

Munsel Color Book (if required)

Latex or Nitrile Gloves

Locating Flags

Coolers and Ice

GPS Unit

Field Forms and Field Book

Decontamination Supplies



- Push flag into the ground at the sample location, which will allow for obtaining the coordinates of the sample location later with a GPS unit, or take a coordinate reading of the location prior to moving to another sample location.
- Record information about the sample collection on the appropriate field sample forms.

Composite Samples

Review the work plan to determine the location and spacing of sampling area grids for the collection of composite samples. When reviewing, determine the grids to be cordoned off in the field and the number of composite samples to be collected within the each grid. Follow the process below to collect the composite samples. **Composite soil samples should not be collected for analysis of volatile organic compounds (VOCs).**

- Prior to collecting the composite samples, mark off the sampling grid as described in the work plan.
- Collect 5 to 8 (as indicated in work plan) surface soil samples of equal volume using a sampling trowel from discrete locations within a sampling area, and place the samples in a mixing bowl. If a sod or duff layer is present, this layer should be peeled back to the top of the mineral soil.
- Remove all coarse fragments greater than 0.5-inch diameter from the bowl.
- Mix the samples well in the bowl, and then a fill a laboratory supplied sample containers with the mixed soil.
- Complete appropriate field sampling forms and chain-of-custody form (see SOP-3). Store all samples in a cooler with ice. Package and ship samples to the laboratory in accordance with procedures described in SOP-4.

SAMPLE CONTAINERS AND PRESERVATION

Soil samples should be preserved as described in the table below.

Parameter	Number	Container	Preservation	Maximum Holding Time Extraction/ Analysis
VOCs	1	4 oz glass	4°C	14 days to analysis
VPH	1	4 oz glass	4°C	Preserve in methanol within 7 days/40 days from preservation to analysis
EPH	1	4 oz glass	4°C	14 days/40 days from extraction to analysis
SVOCs	1	4 oz glass	4°C	7 days/40days from extraction to analysis
Metals	1	4 oz glass or plastic	4°C	6 months to analysis; mercury 28 days to analysis

Note: VOC = volatile organic compound; VPH = volatile petroleum hydrocarbons; EPH = extractable petroleum hydrocarbons; SVOC = semi-volatile organic compound; oz = ounce; °C = degrees Celsius.



SOP-24

QUALITY CONTROL SAMPLING

Quality Control (QC) samples are submitted along with natural samples to provide supporting laboratory data to validate laboratory results. QC field samples are submitted blind to the laboratory with the exception of trip blanks. In general, field equipment blanks and duplicate samples should be collected during every sampling event. Duplicate samples should be collected at a frequency of one sample for every 20 natural samples. Check the project-specific work plan before going to the field to determine what QC samples are required for the sampling event, and at what frequency QC samples should be collected.

With the exception of trip blanks, QC samples are prepared in the field. Trip blanks are supplied by the laboratory and will accompany each sample cooler containing samples for analysis of volatile organic compounds (VOC). Trip blanks provide data to evaluate whether the samples were affected by organic compounds during transport to the laboratory. Matrix spike and matrix spike duplicates (MS/MSD) are generated by submitting three duplicate samples from the same sample to the laboratory. The laboratory spikes two of the three samples with known concentrations of select target compounds, and all three are analyzed to evaluate the accuracy of the analysis.

The most common QC samples are shown in the table below:

Purpose

Outline the quality control samples to be collected in the field

Goal and Objective

To ensure quality control samples are collected along with natural samples to validate laboratory results

Equipment Needs

Field Forms and Field Book

Chain-of-Custody Forms

Most Common Quality Control Samples		
SP	Split Sample	A portion of a natural sample collected for independent analysis; used in calculating laboratory precision
D	Duplicate Sample	Two samples taken from the same media under similar conditions; also used to calculate precision
FB	Field Blank	Deionized water collected in sample bottle; used to detect contamination introduced during the sampling process.
RB	Rinsate Blank	Deionized water run through or over decontaminated equipment; used to verify the effectiveness of equipment decontamination procedures
MS/MSD	Matrix Spike/ Matrix Spike Duplicate	Certified materials of known concentration; used to assess laboratory precision and accuracy
TB	Trip Blank	Inert material (deionized water or diatomaceous earth) included in sample cooler; sent by the lab, the sample is used to detect any contamination or cross-contamination during handling and transportation.



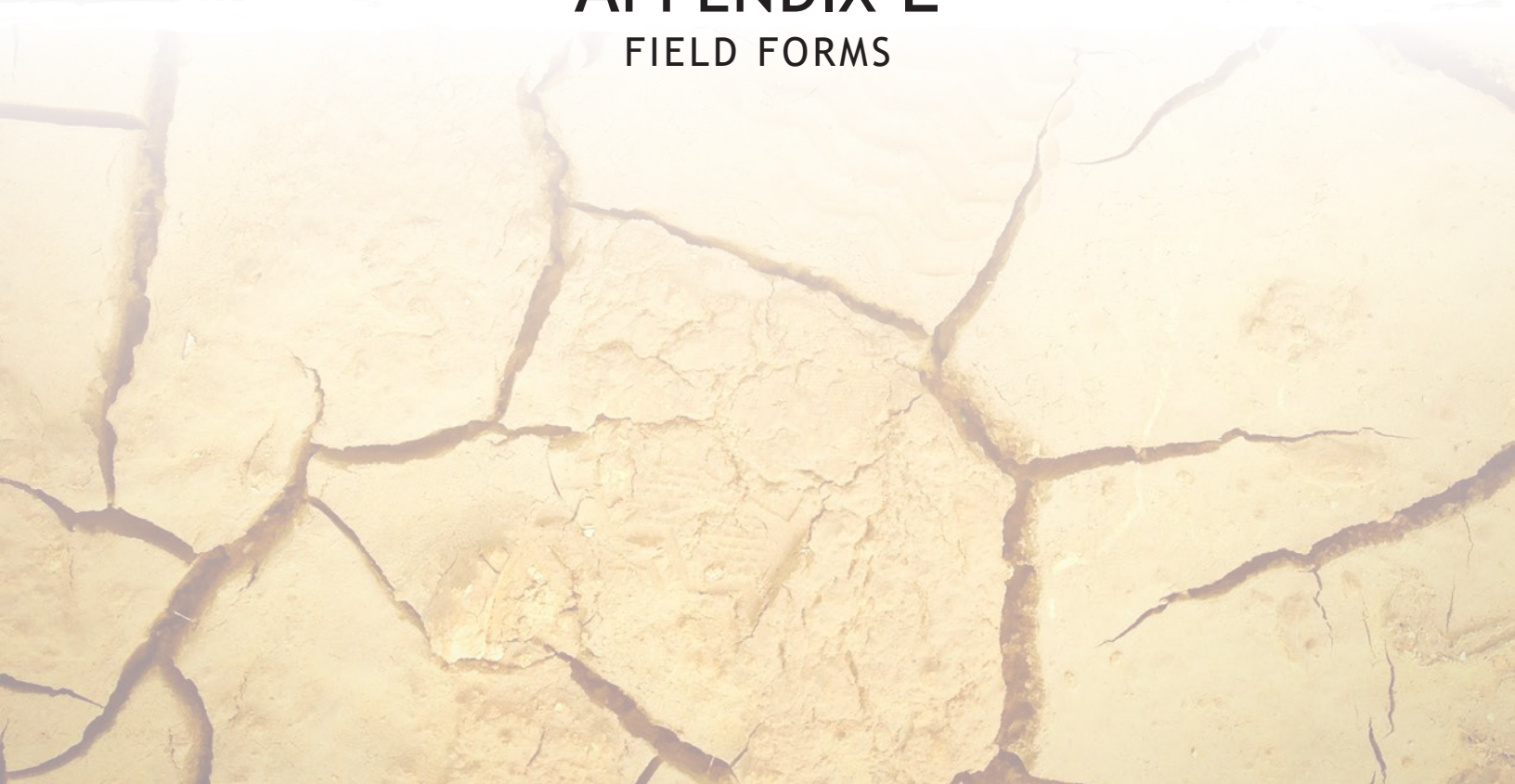
QC sample collection frequencies are presented in the table below. Each field crew leader will be responsible for all QC samples prepared by that crew.

QC Sample	Purpose	Collection Frequency
Field Duplicate	Measure analytical precision.	1 per every 20 samples
Matrix Spike/Matrix Spike Duplicate	Measure analytical accuracy.	1 per every 20 samples
Equipment Rinse Blanks	Evaluate effectiveness of equipment decontamination and sample handling procedures.	1 per sampling event per media
Field Blank	Assess possible cross-contamination of samples due to ambient conditions during sample collection.	1 per sampling event
Trip Blanks	Evaluate sample preservation, packing, shipping, and storage.	1 per sampling event with volatile constituents



APPENDIX E

FIELD FORMS



INCIDENT REPORT

Occupational Accident, Injury, or Illness

1. Employee Name: _____
2. Employee No.: _____ 3. Office location: _____
4. Job title: _____
5. Home address: _____
6. Phone number: _____
7. Sex: M F 8. Date of birth: _____
9. Type of incident: Exposure Physical injury
10. Address where incident occurred (include county): _____

11. Date and time of incident: _____
12. Date incident was reported: _____ To whom: _____
13. What were you doing when injured? (Be specific identify tools, equipment, or materials you were using.)

14. How did the accident or exposure occur? (Describe events fully. Tell what happened and how it happened. Use additional sheets if needed.)

15. Object or substance that directly injured you:

16. Describe the injury or illness (e.g., cut, strain, fracture, skin rash):

17. Part of body affected: _____

18. Did you receive medical care? Yes No If so, when? _____
By whom? (Name and address of physician/paramedic/hospital.)

If hospitalized, name and address of hospital:

19. Did you lose time from work? Yes No If so, how much? _____

20. Have you returned to work? Yes No If so, date returned: _____

21 List anyone else affected by this incident.

22 List any witnesses to this incident.

Signature

Date

Field Investigation Form

Project Name:

Date:

Project Number:

Investigation Date(s):

Project Address:

Site Contact:

Project City:

Client Contact:

EPA/DEQ Manager:

Required Check Offs

Yes

No

DEQ/EPA Approved SAP		
SAP Reviewed		
Utility Locate Number		
Owner Notified		
Health & Safety Plan		
Sample Location Map		
Holding times work		

Overall Reason For Investigation

Number of Hours Approved for Sampling Effort (include all that apply)

Task	Hours	Notes
ACM/LBP Inspection		
Soils Investigation		
Groundwater Sampling		
Other		

Sampling Methods

# of Samples	Analytical Parameters	Media	Natural or QC Sample?	Method #	Containers	Preservative	Hold Time	Sample Locations

Lab Pack:

Laboratory:

Shipping by:

Standard Operating Procedure	SOP #

Other Instructions

Project Manager:

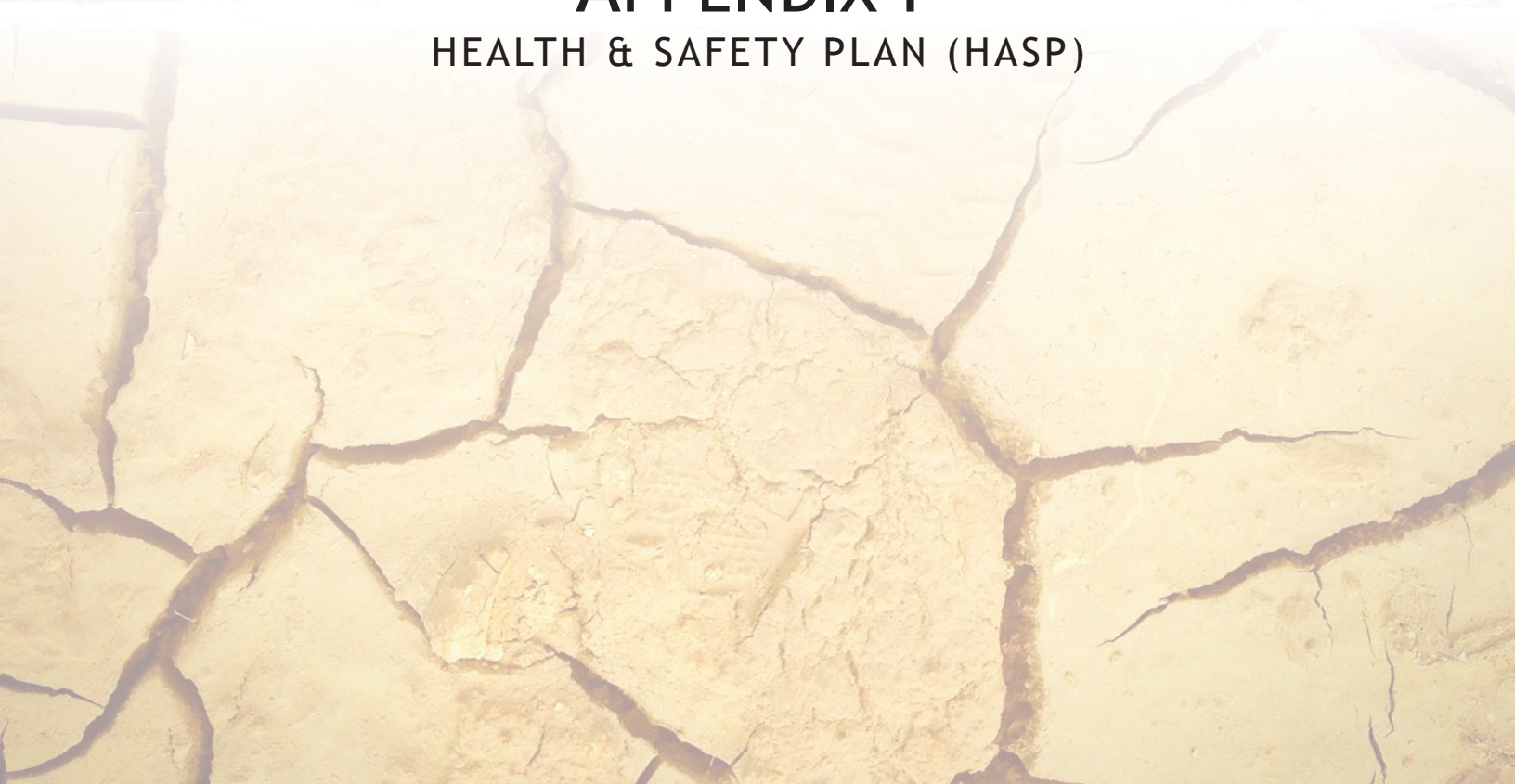
Site Investigator:





APPENDIX F

HEALTH & SAFETY PLAN (HASP)



**January Adit Sediment Removal
Santa Cruz, Arizona**

Site Specific Health and Safety Plan

**Submitted to:
Arizona Minerals Inc.
South 32
115-3845 North Business Center Drive
Tucson, AZ, 85705**

**Submitted by:
NewFields Mining & Energy Services
700 SW Higgins Ave, Suite 15
Missoula, Montana 59803**

**Updated
February 2019**



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NewFields Safety Policy

It is the policy of NewFields to provide a safe and healthful workplace for our employees and to observe all state and federal laws and regulations. NewFields has and will continue to maintain a safety and health program designed to recognize and correct unsafe working conditions.

Safety is a part of each employee's job. Active participation and adherence to the safety program is a condition of employment. Employees are expected to notify management if they consider an assigned job/task to be unsafe and to conduct assignments using procedures and equipment required to prevent injuries or illnesses as described in this program.

1. GENERAL

1.1. Introduction

This Site-Specific Health and Safety Plan (SSHASP or Plan) has been developed for Arizona Minerals, Inc. (recently acquired by South 32) for the January Adit Sediment Removal Project (Project). The purpose of this SSHASP is to define precautions to be taken to protect Project personnel, the public and the environment. Because certain activities of this Project are taking place on an active mine property, work activities will be guided by the Mine Safety and Health Administration (MSHA) as outlined in 30 CFR.

This SSHASP addresses NewFields site activities for the January Adit Sediment Removal Project site as described in **Section 2.2 Scope of Work**.

The Plan will be made available to and must be reviewed by NewFields site personnel. NewFields personnel who have not read and signed this SSHASP will not be allowed on site unless escorted at all times by an Arizona Minerals, Inc. (AMI) or South 32 Representative. Personnel covered by this SSHASP who do not comply with the requirements will be excluded from site activities.

The content of this SSHASP may change or undergo revision based on field monitoring results, modifications to the technical scope of work, or additional information made available to



NewFields personnel. Any proposed changes must be reviewed and approved by the Project Manager. Site personnel will be notified of changes prior to resuming work activities and will review the modified portions of the Plan.

1.2. Project Personnel and Responsibilities

The following describes the Project personnel and their health and safety roles and responsibilities for this project. This section will be updated as necessary to reflect the current project personnel and responsibilities for this Project.

1.2.1. Project Manager

The NewFields Project Manager (PM) for this site is **Wilhelm Welzenbach**. The PM has responsibility and authority to direct NewFields' work operations. The PM coordinates safety and health functions with the site Health and Safety Officer (HSO), has the authority to oversee and monitor the performance of the HSO, and bears ultimate responsibility for the proper implementation of this SSHASP. The specific duties of the PM are:

- Preparing and coordinating the site work plan;
- Providing site supervisor(s) with work assignments and overseeing their performance;
- Coordinating safety and health efforts with the HSO; and,
- Serving as primary site liaison with public agencies, officials and other site contractors.

1.2.2. Site Health and Safety Officer (HSO)

The NewFields site Health and Safety Officer (HSO) for this Project is **Rob Livesay**. The HSO has responsibility and authority to implement this SSHASP and to verify compliance with its requirements. The HSO is on site or readily accessible to the site during NewFields work operations and has the authority to stop work of NewFields personnel and subcontractors if unsafe conditions are detected. The specific responsibilities of the HSO are:

- Managing NewFields safety and health functions on the site;
- Serving as the point of contact for NewFields safety and health matters;
- Conducting or confirming site monitoring, worker training, and effective use of Personal Protective Equipment (PPE) and ensure the SSHASP is followed;
- Conducting and documenting Initial Work Area, Daily, Weekly and Monthly work area inspections;
- Assessing site conditions for unsafe acts and conditions and providing corrective action;
- Assisting with the preparation of and/or review of this SSHASP;
- Maintaining safety and health records as required by this SSHASP; and,



- Communicating safety and health matters with the Emergency Response Team (ERT) Coordinator, Site Supervisor(s), and others as necessary.

The NewFields site HSO will also immediately notify the AMI Representative of any health and safety regulatory inspection (for activities being performed on Company property) and provide copies of regulatory inspection reports within five working days.

1.2.3. Site Supervisor

The NewFields Site Supervisor is **Rob Livesay**. The Site Supervisor enforces the implementation of the SSHASP requirements and procedures in the field. The specific responsibilities of the Site Supervisor are:

- Executing the work plan and schedule as detailed by the PM;
- Verifying and enforcing compliance with the requirements of this SSHASP.

1.2.4. Site Personnel

NewFields site personnel are responsible for complying with this SSHASP, using the proper PPE, reporting unsafe acts and conditions, attending safety training (including required site orientation training as provided by Arizona Minerals, Inc.), and following the work and safety and health instructions of the PM, HSO, and Site Supervisor.

1.2.5. Arizona Minerals, Inc. Site Representative

Arizona Minerals, Inc.'s (AMI) will designate a Site Representative (AMI Representative) for contractor projects such as this one. The AMI Representative is responsible and accountable for contractor oversight.

The AMI Representative has the responsibility and authority to stop NewFields work activities if it is deemed unsafe to workers or property, or poses a significant environmental risk.

- The AMI Representatives designated for the January Adit Sediment Removal Project are Sarah Richman and Johnny Pappas.

1.3. Emergency Contact Information

Facility/Agency	Emergency Phone Number	Non-Emergency Phone Number
AMI Security	520.539.8082	
Charles (Chuck) Blair	520.235.4217	
Sheriff (Santa Cruz County-Nogales, AZ)	520.761.7869	
Volunteer Fire Department (Patagonia, AZ)	520.394.2337	
Fire Department (Nogales, AZ)	520.287.6548	
Ambulance/Emergency Medical Assistance (Dispatch)	911	



Facility/Agency	Emergency Phone Number	Non-Emergency Phone Number
Hospital (Nogales, AZ)	520.285.3000	
Poison Control Center	800.222.1222	
National Response Center (NRC) for Oil/Chemical Spills	800.424.8802	
AMI Project Representatives		
Sara Richman	805-617-9300	1-520-848-1330
Johnny Pappas	803-235-5563	1-520-485-1303
AMI Emergency Response Team		
AMI Security	520.539.8082	
NewFields Project Representatives		
Wilhelm Welzenbach, Project Manager	406.529.2577	406.218.2564
Robert Livesay, Field Supervisor	541.231.0695	406.549.8270 ext 233
Heather Grotbo, MES Health and Safety Coordinator	406.465.7661	406.549.8270 ext 216
Richard Leferink, NFC Health and Safety Manager	406.475.1655	406.443.3556 ext 108

1.4. Fitness for Duty

It is the policy of AMI to maintain a drug- and alcohol-free workplace and to enforce a zero tolerance standard for their employees, contractors, consultants, vendors, and visitors.

NewFields personnel are expected to be drug and alcohol free when reporting for work, at all times when conducting work activities for AMI or on the January Adit Sediment Removal Project, when driving or riding in an AMI owned vehicle or sponsored transportation, and/or when not working but “on call.”

Personnel who refuse to participate in drug and/or alcohol testing, test positive for prohibited drugs, or are found to have a blood alcohol level of 0.02 or greater will be removed from the Project.

1.4.1. Drug and Alcohol Testing

NewFields personnel conducting work on this Project will participate in a drug and alcohol testing program (in accordance with AMI requirements). All testing protocols will be consistent with NewFields Drug and Alcohol Policy Testing will be conducted as follows:

- **Pre-Employment:** Prior to commencing work on this project or in the absence of testing in the previous six months, NewFields personnel will submit to urine testing for drugs and breath alcohol testing for blood in alcohol concentration.
- **Post-Incident:** Drug and/or alcohol testing will be conducted for personnel involved in or potentially contributing to vehicular accidents, accidents resulting in serious injury or death, and at the HSO’s or PM’s discretion for near misses.
- **Reasonable Suspicion:** The HSO or PM may require a NewFields employee to submit to drug and/or alcohol testing if there is objective evidence based on the employee’s



appearance, behavior, speech, or other indications the employee is under the influence of drugs or alcohol.

- Random: A minimum of 20 percent of the NewFields workforce on this Project will be tested randomly each year drug and/or alcohol. Each person in the workforce must have an equal chance of being selected for testing. As such, personnel selection will be made using procedures established by the NewFields Drug and Alcohol Policy.
- Pursuant to Arizona Minerals, Inc. Health and Safety Management System and General Health and Safety Requirements for Contractors (**AMI-AZ-PCY-00005**) Drug and Alcohol Prevention Policy, NewFields staff will adhere to the policy as required.

1.4.2. Prohibited Substances (Drugs)

NewFields personnel are prohibited from possessing or using the following substances while working on this Project:

- Amphetamines and methamphetamines;
- Cocaine metabolites;
- Marijuana metabolites, including delta-9-tetrahydrocannabinol-9-carboxylic acid (THC);
- Opiates metabolites, including codeine, morphine, and acetyl morphine (heroin);
- Phencyclidines (PCP); or,
- Synthetic marijuana (includes Spice and other synthetic analytes).

1.4.3. Alcohol

NewFields personnel are prohibited from possessing or consuming alcohol while on AMI property.

1.4.4. Confidentiality

The results of drug and alcohol testing will be kept confidential in accordance with NewFields Drug and Alcohol Policy.

2. SITE DESCRIPTION AND SCOPE OF WORK

2.1. Site Description

The January Adit Sediment Removal area (site) is located in Santa Cruz County, Arizona near the Harshaw town site. The approximately .4-acre site received discharge from the January Adit, and collected solids precipitating from the discharge. The site is adjacent to Flux Canyon Road, with coordinates 31.4721, 110.7305. An October 2016 Wetland Soil Sampling Report prepared by Sovereign Consulting, LLC mapped the approximate boundary of the site, and provided results for total and leachable metals in the sediment. Total arsenic concentrations in the sediment ranged from 19 to 150 milligrams per kilogram (mg/kg), and were above the Arizona Non-



Residential Soil Remediation Level (NR-RSL) of 10 mg/kg. Total lead concentrations ranged from 80 to 29,000 mg/kg, and 8 of 12 results were above the NR-RSL of 800 mg/kg.

2.2. Scope of Work

The Project, for NewFields, consists of removing impacted sediment from the site and hauling it to a nearby Tailings Storage Facility (TSF). This project will be conducted following guidelines set forth by the Arizona Department of Environmental Quality (ADEQ) Voluntary Remediation Plan (VRP). NewFields site activities include: excavation and sediment haulage oversight and confirmation sampling.

The general scope of work to be accomplished in the field under this SSHASP includes the following:

- Oversight for Excavation and Hauling of Sediment
 - Stop any unsafe activities;
 - Ensure excavation is being executed according to the Design Documents;
 - Watch for heavy equipment operating;
 - Ensure haul trucks are following proper traffic pathways as prescribed in Design Documents;
 - Look for misplaced sediment at the haul truck loading zone and along the haul truck route;
 - Communicate with Tailings Storage Facility (TSF) Managers to ensure sediment is placed in the correct zone of the TSF;
 - Be mindful of changing weather conditions (heavy precipitation, lightning, excessive winds, heat stress, and cold stress);
 - Maintain a safe distance from suspended, overhead, rotating, and pressurized equipment;
 - Be mindful of any fall hazards associated with the excavation area;
 - Watch for biological hazards: poisonous snakes, reptiles, bees, and spiders;
 - Report any changes in field conditions, potential changes in design, etc. to the AMI Representative;
 - Assist in modifying designs to accommodate changed field conditions under the direction of the NewFields PM;
 - Perform daily safety meetings with excavator operator and staff;
 - Attend daily safety and construction meetings as directed by AMI.
- Confirmation Sampling
 - Do not enter the excavation alongside mobile equipment;



- Utilize radio communications with excavation operator, and verbally verify that sampling crew when excavation and hauling have stopped and it is safe to enter the excavation;
- Stop any unsafe activities;
- Ensure sampling is executed according to the Design Documents;
- Follow proper PPE protocol when handling and sampling sediment;
- Watch for heavy equipment operating;
- Look for trip hazards when entering the excavation area;
- Be mindful of changing weather conditions (heavy precipitation, lightning, excessive winds, heat stress, and cold stress);
- Be mindful of any fall hazards associated with the excavation area;
- Watch for biological hazards: poisonous snakes, reptiles, bees, and spiders;
- Report any changes in field conditions, potential changes in design, etc. to the AMI; Representative;
- Assist in modifying designs to accommodate changed field conditions under the direction of the NewFields PM;
- Attend daily safety and construction meetings as directed by AMI.

3. SITE ACCESS AND SECURITY

In order to conduct work for this Project, NewFields personnel must meet the training, medical, and fitness requirements detailed in this SSHASP. NewFields will provide AMI with a roster list of NewFields personnel who meet these requirements and will be assigned to the project. AMI will review the list and will approve or reject access based on provided documentation and/or additional screening.

While on site, NewFields personnel will follow all applicable AMI site security procedures. NewFields' personnel will check in with security upon arrival and check out upon departure and end of shift. Additionally, NewFields' staff will correspond with Sarah Richman (South 32 Representative) at the end of each shift/day.

NewFields personnel will not provide access to persons who are not authorized or approved to be on site.

NewFields personnel are responsible for their own security and for the security of their equipment and property. At the end of each work shift, vehicles, work spaces, equipment, and supplies will be properly secured.



3.1. Visitors and Subcontractors

Visitors and subcontractors must be approved by the PM or designee and by the AMI Representative. Visitors will be escorted at all times by an AMI Representative or designee. Prior to accessing the site, visitors and subcontractors must receive required training, as detailed in **Section 12. TRAINING REQUIREMENTS**.

4. SITE COMMUNICATIONS

Site personnel must be able to communicate with others on and off the site, including emergency coordinators, emergency response personnel, and NewFields Management site personnel and with off-site personnel and agencies.

The primary means of communication for this project will be cell phones (Verizon). Because cell service at the Project site may be limited, the secondary means of communication will be AMI approved radios. Landline telephones will also be available at the Security, Health and Safety Office, and Construction Offices.

Vehicles or equipment operating on mine roads or in active mining areas must be equipped with an AMI radio and must monitor the Mine channel.

5. EMERGENCY RESPONSE PROCEDURES

Emergency situations at this site may include but are not limited to:

- Lightning strike;
- Severe weather;
 - Electrical storms,
 - High winds
 - Heavy rain or hail
 - Tornadoes
- Collisions;
- Biological injury;
 - Snake/spider bites, bee stings, rodents, bats, mountain lion, and possibly wild dog
- Exposure to the elements;
 - Heat stress/cold stress
- Earthquakes;
- Fire/explosions;
- Flash floods;
- Accidental chemical releases; or,



- Injury or illness.

After calling **911**, all emergency situations must be reported immediately to the Site Safety Officer, AMI Emergency Response Team (ERT), and PM. The AMI emergency notification procedure may include:

- Alert the mine Emergency Response Team (ERT) of an emergency;
- Stop traffic so that the ERT Team is able to respond safely; and,
- Start radio silence so that responders are able to communicate efficiently.

All normal work is allowed to continue at the discretion of the Supervisor and Mine Rescue Captain. The types of work that should not continue are:

- Work in the immediate area of an emergency;
- Driving;
- Jobs requiring a permit; and,
- Any high risk activity (determined by Supervisor).

Emergency signals for this site include those for lightning, blasting, fire and chemical release.

Lightning

If NewFields' personnel observe lightning/electrical storms approaching the site/drill rig prior to Security, they will notify Security immediately (in accordance with AMI Lightning Procedure: **AMI-AZ-PCD-0004**). Security will notify the Site by Radio and One Call Now. Alerts will be issued by Security based on storm proximity to the Site.

- A Yellow Alert will be issued if lightning is greater than 32 (>32) miles from operation;
- An Orange Alert will be issued when lightning is 16 miles away; and,
- A Red Alert will be issued when the storm is within 8 miles of the mine operation.

Work can continue outdoors with a Yellow and Orange Alert, but plans to get to a vehicle or shelter should be made and all employees.

A Red Alert will be issued when the lightning is within 0-8 miles of area with alerts being issued Site the radios and Once Call Now notification. Outdoor work must cease and no one is allowed outside, unless moving from one safe shelter to another safe shelter. Area supervisors will evacuate and transport all ground personnel to appropriate shelters. The cab of a vehicle is appropriate if the windows are rolled up and doors are closed. Radios that are not protected with lightning arrestors and surge protectors must not be used except for emergencies. Handheld/portable radios, cell phones, office phones and computers can be used. Personnel must remain in equipment or buildings with windows and doors completely closed until the Red Alert has been terminated. Red Alert conditions may be removed 30 minutes after the last



recorded lightning activity. Alerts must be removed in order of severity. That is, if a Red Alert has been declared, it must be downgraded to an Orange Alert, then a Yellow Alert before being completely removed. AMI Security will announce when the alert terminations.

Fire and Chemical Alarms

Emergency contact information is provided in **Section 1.3**. In addition, emergency contact information, basic emergency response procedures, and instructions for accessing medical assistance are included in **Appendix A** of this SSHASP.

5.1. Emergency Evacuation Procedures

NewFields personnel will follow the emergency evacuation procedures provided by AMI (Surface Evacuation Procedure **AMI-AZ-PCD-00063**). The HSO or designee will account for NewFields personnel at the muster point (Harshaw Town site). The AMI Representative will be notified immediately if any NewFields personnel cannot be accounted for. If a person is unaccounted for after an evacuation, the AMI Representative will immediately activate the Arizona Minerals, Inc. Emergency Response Team (Site Safety Officer: ((520)) 235-4217).

5.2. Fire/Explosion

In case of a fire or explosion, NewFields personnel will follow emergency evacuation procedures (above). If NewFields personnel discover a fire or witness an explosion, they will notify the AMI Emergency Response Team, the AMI Representative, the HSO and/or PM of the location of the fire/explosion and any related injuries/illnesses as soon as it is safe to do so.

5.3. Accidental Hazardous Chemical Releases

NewFields personnel are not qualified to respond to accidental emergency releases of hazardous chemicals. If an emergency release occurs, NewFields personnel will follow emergency evacuation procedures.

As soon as it is safe to do so, NewFields personnel who discover a hazardous substance release will contact Security and AMI Representative on the mine radio and the HSO and provide as much of the following information as possible:

- Identification of hazardous substance;
- Location of the release;
- Estimated quantity of substance released;
- Direction/flow of release;
- Known related fire or explosion incidents; and,
- Injuries or illnesses resulting from the release.



5.4. Injuries/Illnesses

If an injury or illness occurs, immediately notify AMI Representative, and the HSO and/or PM. NewFields personnel with current first aid/CPR certification may render aid as appropriate. NewFields will immediately report to the AMI Representative all incidents involving injuries, near-misses, property damage, and environmental releases. NewFields staff understands undeclared or delinquent reporting/notification may result in termination of those responsible.

5.5. Incident Investigation and Reporting

NewFields is responsible for investigating incidents involving NewFields employees. Incidents will be investigated in accordance with NewFields **Standard Operating Procedure (SOP) 17 Incident and Accident Investigations**.

Safety incidents and near misses must be verbally reported to AMI no later than the end of the shift when the incident occurred. The completed or in-progress incident investigation report must be submitted to AMI within three (3) days of the incident occurring.

Environmental incidents must be reported to AMI Representative immediately, or as soon as it is safe to do so. Environmental incidents include releases of petroleum products, chemicals, hydraulic oil, process solutions, dewatering solutions, or the discovery of fossils or archeological artifacts.

5.6. MSHA Notification

In compliance with 30 CFR Part 50.10, AMI will notify MSHA at once without delay and within 15 minutes of becoming aware of an accident resulting in:

- a) A death of an individual at the mine;
- b) An injury of an individual at the mine which has a reasonable potential to cause death;
- c) An entrapment of an individual at the mine which has a reasonable potential to cause death;
or,
- d) Any other accident as defined in 30 CFR Part 50.2(h).

The MSHA notification number is 1-800-746-1553.

Immediately notify the AMI Representative of any Health and Safety regulatory inspection (for activities being performed on the AMI property) and provide copies of regulatory inspection reports in five working days compliance with 30 CFR Part.



6. HAZARD ASSESSMENTS

The following is a general discussion of the hazards that may be encountered on site. Required controls and PPE are included in **Appendix B – Task Specific Hazard Assessments**.

6.1. Chemical Hazards

NewFields personnel may be exposed to chemical hazards associated with work conducted by NewFields, AMI or other contractors on the site. Chemical hazard potential will be assessed prior to commencing work and as chemical hazards are introduced or change.

NewFields staff will be trained on the hazards of potentially harmful chemical before performing any work, including cleanup of the chemical.

6.2. Physical Hazards

NewFields site personnel may be exposed to the following physical hazards while conducting work activities on this site and/or traveling to site:

- Extreme weather
- Heat stress
- Cold stress
- Slips/trips/falls
- Cuts/abrasions
- Wildlife
- Struck by heavy equipment
- Stored energy (heavy equipment)
- Injection / puncture
- Struck by flying/falling object
- Struck by vehicle
- Excessive noise
- Electricity
- Poor driving conditions
- Violence

Please refer to **Section 11.14, Other Applicable NewFields SOPs, for relevant SOPs.**

6.3. Biological Hazards

Biological hazards that may be encountered during this project include:

- Poisonous plants (poison ivy, poison oak)
- Animals
 - Ticks and associated diseases
 - Mosquitoes and associated diseases
 - Snakes
 - Spiders
 - Scorpions



- Lizards (Gila Monster)
- Stinging insects (bees, banded desert centipede, conenose bug, and wasp)
- Cougars, bobcats, lynx, other big cats
- Coyotes, foxes
- Black bears
- Rodents/small mammals
- Cows/wild horses
- Other animal-related diseases
 - Hanta virus
 - Lyme disease
 - Rabies

Please refer to NewFields **SOP 5 Construction and Field Site Safety** and **SOP 2 Bloodborne Pathogens** for additional information.

6.4. Task Specific Hazard Assessments

Task specific hazard assessments have been completed for each task described in **Section 2.2 Scope of Work**. Because the potential for exposure to hazards during this Project depends primarily on the work activity being conducted and the location where the activity is performed, separate assessments will be completed for a task that is performed in multiple locations unless the hazards, potential exposures, and controls are the same.

Job Hazard Assessments (JSAs) will be updated as required if work procedures, site conditions, or identified hazards change. Affected site personnel will be notified of revisions to hazard assessments prior to re-commencement of work activities.

Completed hazard assessments are located in **Appendix B – Task Specific Hazard Assessments**.

7. HAZARD COMMUNICATION (HAZCOM) PLAN

HazCom plan will comply with NewFields **SOP 13 Hazard Communication** except where the requirements of MSHA 30 CFR part 47 are not met. The HazCom plan must be accessible to all affected personnel.

7.1. Container Labeling

Upon receipt, potentially hazardous chemicals will be checked for adequate labeling. Containers that are not properly labeled will be properly labeled before being used or stored. Outdated labels will be replaced when a revised label is received from the chemical manufacturer or supplier.



At a minimum, labels must:

- Be prominently displayed, legible, accurate, and in English (and Spanish, if necessary);
- Display appropriate hazard warnings;
- Use a chemical identity that permits cross referencing between the list of potentially hazardous chemicals, the chemical label, and its Safety Data Sheet (SDS); and,
- Include the name and address of a responsible party that can provide additional information about the potentially hazardous chemical.

7.2. Potentially Hazardous Chemicals

The HSO or designee will maintain a list of potentially hazardous chemicals brought on site by NewFields personnel. The list will identify chemicals to permit cross referencing between the list, container label, and SDS. A copy of the list can be found in **Appendix C**. A copy of the potentially Hazardous Chemical List will be provided to AMI.

7.3. Safety Data Sheets (SDSs)

The site HSO or designee will maintain current copies of SDSs for potentially hazardous chemicals used or stored on site by NewFields personnel. SDSs will be maintained in each field vehicle. SDSs for chemicals no longer used or stored at the site may be disposed of three months after notifying affected personnel.

When an updated SDS is received from the manufacturer, supplier, or other source, the outdated SDS will be replaced. If an SDS is found to be inaccurate, it must be replaced with an accurate version as soon as possible. SDSs must be readily available to all potentially exposed personnel.

8. EXPOSURE MONITORING

Exposure monitoring may be required to determine the potential for site personnel exposure to a potentially hazardous substances or airborne mists, vapors or particulate that may be encountered on the site or in conjunction with project development. Exposure monitoring will be conducted and interpreted by qualified personnel. This section specifies exposure monitoring to be conducted by NewFields site personnel.

Exposure to any airborne contaminants shall not exceed the Threshold Limit Values (TLVs) or Permissible Exposure Levels (PELs) adopted by the American Conference of Governmental Industrial Hygienists (ACGIH) and the Centers for Disease Control and Prevention (CDC), National Institute of Safety and Health (NIOSH), Pocket Guide to Chemical Hazards, updated September 2007.



8.1. Air Monitoring

Air monitoring may be used to determine the potential for exposure of site personnel to potentially hazardous airborne substances. Air monitoring methods and equipment will be based on the potential contaminants or work process on site and their potential concentrations, and may consist of direct-reading instruments or the collection breathing zone air sampling, or both. Equipment used for exposure monitoring will be calibrated and maintained according to manufacturers' recommendations.

NewFields site personnel do not anticipate the need to conduct air monitoring or require the use of respirators for this Project.

9. MEDICAL SURVEILLANCE

Medical surveillance is provided to medically monitor the health of personnel who:

- May be or are exposed to potentially hazardous substances near or above the established Permissible Exposure Level (PEL);
- Are required to wear a respirator; or,
- Are injured, become ill, or develop signs or symptoms due to possible overexposure to hazardous substances.

When medical examinations are required for medical surveillance, they will be conducted by or under the supervision of a licensed physician and provided to personnel free of cost, without loss of pay and at a reasonable time and place.

NewFields site personnel do not anticipate the need to require the use of respirators or encounter hazardous materials or atmospheres requiring medical surveillance for this Project.

10. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Safety and health hazards will be eliminated or reduced to the greatest extent possible through engineering controls and work practices. Where hazards cannot be adequately controlled, a combination of work practices, and Personal Protective Equipment (PPE) will be used to protect site personnel. PPE selection and use will comply with the following NewFields SOPs:

- **SOP 15 Hearing Conservation Program**
- **SOP 20 Personal Protective Equipment**
- **SOP 21 Respiratory Protection**

10.1. PPE Requirements

Specific PPE required for each work task is provided in **Appendix B – Task Specific Hazard Assessments**. PPE use will meet the requirements established by AMI as follows:



- All NewFields employees (at a minimum) will be required to wear;
- Approved hard hats;
- Approved safety glasses with side shields (ANSI Z87.1);
 - Approved safety glasses must be worn at all times inside the cabs of vehicles and equipment (side shields are not required while operating equipment or light vehicles with an enclosed cab)
- Approved hard-toed footwear (ANSI Z41-1991) for appropriate conditions;
 - Metatarsal (upper portion of foot) boots are required for individuals performing maintenance activities
- Approved high visibility-reflective clothing;
- Hearing protection when working in or around equipment with noise generating potential approaching 85 dBA; and,
- Seat belts when operating or travelling on or about the mine property in any vehicle or other mobile equipment.

PPE requirements may change based on changing site conditions and work procedures. Criteria for PPE changes are included in the **Task Specific Hazard Assessments in Appendix B**.

All personnel shall have visible an article of reflective clothing while in any work area other than office administrative buildings, light duty vehicles and cabs of mobile equipment.

Additional PPE will be required when performing any task or entering any area which has been identified as presenting a potential health or safety risk requiring protection beyond the use of basic PPE.

Earbuds, head phones and/or headsets are not to be used as a form of hearing protection and are not allowed to be used in hearing protection required areas.

The PPE requirement above may be reduced in the following situations:

- Off duty employees are exempt when accessing or exiting their work areas providing they are not exposed to hazards normally requiring use of PPE while accessing or exiting those areas;
- Visitors under escort are required to wear required to wear only the protective equipment necessary to protect against any hazards they may be exposed to; and,
- Hard hat use is not required inside the cabs of vehicles or equipment.



10.2. AMI Visibility Policy Requirements

All NewFields personnel will wear an article of reflective clothing while in a work area outside of mine facility buildings and cab of mobile equipment in accordance with AMI visibility policy. Article of clothing may include but are not limited to approved reflective vests, reflective arm bands, reflective belts, reflective stripes sewn on coveralls, high visibility reflective jackets, etc. The reflective portions of clothing must be worn in a manner that is it can be seen by other personnel. All personnel are also required to wear reflective tape or stickers on the sides and backs of their hard hats.

All personnel working outside (during night shifts, dark or dusk hours, or at times of low visibility) around any type of mobile equipment shall use an illuminated handheld flashlight or headlamp; unless the personnel are working in a well illuminated work area.

10.3. Respiratory Protection

When respiratory protection is required for this Project, it is indicated in the hazard analysis.

Use of respiratory protection will comply with the NewFields **SOP 21 Respiratory Protection Program**, except where it differs from MSHA regulations. Where MSHA regulations are more stringent than NewFields' program requirements, NewFields will comply with MSHA regulations, specifically Part 56 Subpart D - Air Quality and Physical Agents.

NewFields site personnel do not anticipate the need to conduct air monitoring or require the use of respirators for this project.

10.4. Hearing Conservation

Site personnel with potential exposure to noise levels exceeding the MSHA Action Level of 85 dBA as an 8-hour time-weighted average will be included in the NewFields Hearing Conservation Program. Where noise exposure meets or exceeds this level, noise is listed as a physical hazard in the hazard analysis for the tasks/operation, and hearing protection is required PPE.

Based on site conditions and planned operations (specifically drilling observation), there are site tasks associated with this Project that have noise exposure potential that will equal or exceed 85 dBA.

For the requirements of the NewFields Hearing Conservation Program, please see NewFields **SOP 15 Hearing Conservation**.

11. SAFE WORK PROCEDURES

NewFields personnel will conduct work in a safe and healthful manner and in compliance with regulatory and AMI requirements.



11.1. General Health and Safety Rules

NewFields personnel will abide by the general health and safety rules established by AMI. These rules include but are not limited to:

- Open flames, smoking or the presence of other potential sources or ignition are not permitted within 50 feet of flammable storage areas or dispensing points;
- Compressed air and gases must be stored and secured in an upright position and must be used in accordance with approved standards. Air lines and connections must be properly secured;
- High pressure (100 psi or greater) air or water line connections must be secured by a secondary safety device if there is a potential for the connection to fail (whip checks);
- The use of a cam lock also requires a secondary safety device to protect against connection failure, regardless of psi;
- Valves on compressed gas bottles, including welding bottles, must be closed and pressure bled from hoses when not in use;
- Seek assistance when (with equipment or from personnel) prior to attempting to lift or maneuver heavy (over 50 lbs), unwieldy objects or objects of unknown weight. Never overextend or over exert your reaching or lifting capabilities;
- Safe access shall be ensured and maintained to all work places. Care will be taken when accessing areas that are not normally visited during regular work activities. The occasional climbing of berms, to perform unusual duties shall be done with extreme caution, paying special attention to ground conditions and slope stability; and,
- Employees shall use three points of contact if slips, trips or falls may be possible. Individuals must maintain three points of contact at all times when ascending or descending ladders or stairs.

11.2. Safety Meetings

A NewFields Site Supervisor will attend daily safety meetings with the site contractor and AMI Representatives. The meeting will identify potential hazards and mitigations as presented in Project specific Job Hazards Analysis (JHA) or identification of any new potential hazards requiring a new JHA or update. Initial JHAs have been prepared for this Project and are presented in **Appendix B**.

NewFields personnel attending daily meetings will sign into the meeting and review any documentation provided and participate in meeting discussions as needed or required.

11.3. Safe Work Permits

AMI Health and Safety Standards require the use of specialized safety work permits for certain work tasks and/or conditions. Permits must be completed each time such work is conducted or working conditions encountered. These work task/conditions may include but are not limited to:



- Confined Space Entry;
- Lock Out / Tag Out / Try Out;
- Scaffolding;
- Trenching / Shoring;
- Hot Work; and
- Digging / Excavating.

NewFields personnel will not conduct confined space entry, lock out/tag out/try out, scaffolding, trenching/shoring, hot work, or digging/excavation work. When NewFields personnel may be exposed to hazards associated with these work activities or conditions, appropriate NewFields SOPs will apply, as detailed in **Section 11.14 Other Applicable NewFields SOPs**.

NewFields site personnel do not anticipate the need to conduct the work activities above.

NewFields site HSO will contact the AMI Representative should site or Project conditions warrant a change in current work plans to require work safety permits for any qualifying AMI permit controlled task. Task specific Job Hazard Analysis (JHA) preparation may identify additional tasks or job duties that will require AMI “permit to work” before the task may be carried out.

11.4. Confined Spaces

A confined space is defined as any space or structure which by design has limited openings for entry and exit, and which is not intended for continuous employee occupancy. Only personnel who have been trained and authorized compliance with NewFields **SOP 4 Confined Spaces** are allowed to enter a confined space.

A Permit Required Confined Space (PRCS) is a confined space that has one of more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material that has the potential to engulf an entrant;
- Has walls that converge inward or floors that slope downward and taper into a smaller area which could trap or asphyxiate an entrant; and,
- Contains any other recognized safety or health hazard, such as unguarded machinery, exposed live wires, or the potential for entrant heat stress.

Any PRCS entry will require the use of the permit in NewFields **SOP 4 Confined Spaces**. Identified confined spaces are listed below.



Confined Space Location/Description	PRCS? (Yes/No)	NewFields Personnel Entry? (Yes/No)

It is not anticipated that NewFields personnel will be required to enter confined spaces to conduct work tasks for this Project.

11.5. Vehicle Safety and Traffic Controls

Vehicles used on site will be kept in good working condition and will be equipped with appropriate safety devices including a buggy whip that extends three-feet higher than the highest part of the vehicle or nine feet from the ground, whichever is greater, with a high visibility flag at the top of the whip. Additionally, NewFields will follow the AMI Vehicle Safety Policy and equip vehicles with a flashing strobe light; 5 pound fire extinguisher, chock blocks and first aid kit (AMI Vehicle Safety Policy-**Appendix D**). Vehicle operators must meet all licensing requirements in order to operate a vehicle.

The operator will conduct pre-shift (Pre-Use) inspections and document with a Vehicle Daily Checklist (**Appendix E**). Vehicles with defects or potentially hazardous conditions will be taken out of service and tagged until noted conditions are corrected. All vehicles entering the AMI property may be inspected by an AMI Representative upon first arrival. Pre-Use inspection records may be audited by AMI Representatives.

All occupants of the vehicle will wear seat-belts. Headlights must be left on at all times during operation. Hazard lights are to be used to communicate giving the “right-of-way” to another vehicle.

Prior to operating vehicles on site, NewFields personnel will be trained in their safe operation. Vehicles to be operated on AMI property, including on mine roads or in active mining areas must be equipped with a AMI radio and the operator must monitor the Mine channel #1 (Pit).

Operators of mobile equipment and light vehicles must sound horns before starting engines (1 honk), before moving forward (2 honks) and before backing (3 honks), except when following normal work patterns. Operators must maintain control over their equipment and vehicles at all times; giving adequate consideration to the road and weather conditions, traffic controls and manufacturers recommendations.

All traffic patterns on the mine site are “left hand traffic” and the maximum speed on the mine site is 35 mph, unless posted otherwise. Speed must be reduced to a maximum of 15 mph in congested area including shop yards and parking areas.



A minimum distance of 300 feet must be maintained when following haul trucks or water trucks. Care must be exercised to ensure NewFields vehicles remain visible to truck and equipment operators in the equipment's rear view mirror.

Positive communication with equipment operators is required prior to passing any mine support equipment. To pass a parked haul truck or parked water truck communicate your intent and gain positive confirmation from operator or dispatch before passing.

The passing of haul trucks, water trucks, explosives vehicles or emergency response equipment/vehicles is strictly prohibited by AMI.

NewFields vehicle operators must never enter the working radius of operating equipment unless positive confirmation has been gained from the operator or that equipment. Caution must be used at all intersections. Yield to emergency vehicles, blasting vehicles, larger equipment, loaded equipment and "blind-sided" equipment.

Materials must be positively secured against unintended movement or displacement prior to being transported in or by a NewFields company vehicles or equipment. Spotters must be used when moving equipment in all instances when impaired visibility or the proximity of other equipment represents the potential for accidental contact.

When equipment must be moved or operated near energized high voltage power lines and clearance is anticipated to be less than 15 feet, the lines shall be de-energized or other precautionary measures shall be taken. If work is to be completed in close proximity to any high voltage electrical power source, a Job Hazard Assessment (JHA) must be completed by appropriate authorized personnel.

Mobile equipment must have park brakes set and be blocked against movement when controls are unattended. Buckets, forks, blades and other tools and implements must be lowered to the ground before dismounting the equipment.

All operators must set the park brake, turn off the equipment, exit the cab of the equipment, dismount the equipment and follow lock out procedures before any fueling, repair or service work can commence.

11.6. Ground Control

Vehicles, equipment and staff are not permitted to approach within 50 feet from a high wall. Do not park vehicles or equipment within 50 feet of a high wall. If a vehicle or equipment is within 50 feet of a high wall, do not exit on the high wall side or walk between the equipment and the high wall.

It is not anticipated that NewFields personnel will be required to approach active mining areas or in close proximity (within 50 feet) to high walls for this Project.



11.7. Hot Work

The AMI Hot Work Program must be adhered to when performing work where ignitable materials are present and when tools or equipment used represent a potential ignition source. If NewFields employees are required to perform hot work, they must be trained in a hot work program that meets or exceeds the AMI Program and regulatory requirements.

It is not anticipated that NewFields personnel will be required to perform hot work related activities for this project.

11.8. Lifting, Rigging and Towing

The AMI Lifting, Rigging and Towing Program must be adhered to when using lifting devices, rigging equipment or towing equipment. If NewFields employees are required to use lifting equipment, rigging or towing techniques, they must be trained in a program that meets or exceeds the AMI Program and regulatory requirements.

It is not anticipated that NewFields personnel will be required to perform lifting, rigging or towing related work activities for this project.

11.9. Trenching and Excavation

The AMI Trenching and Excavation Program must be adhered to when performing any trenching or excavating activity on the property that is **greater than one foot**. If NewFields employees are required to perform trenching or excavation activity, they must be trained in a program that meets or exceeds the AMI Program and regulatory requirements.

11.10. Working at Heights

The AMI Working at Heights Program must be adhered to when working (**at any elevation**) where there is a danger of falling. If NewFields employees are required to use fall protection, fall arrest or fall prevention, they must be trained in a program that meets or exceeds the AMI Program and regulatory requirements.

It is not anticipated that NewFields personnel will be required to work at heights requiring the use of fall protection or prevention for this project.

11.11. Workplace Inspections and Housekeeping

MSHA prescribes a workplace inspection is conducted prior to work in a work area (30 CFR Parts 56 and 57, January 2017). NewFields personnel will conduct a documented inspection of the work area at the beginning of each shift and notify coworkers of any condition that may adversely affect safety or health and take prompt corrective action to resolve the condition(s). The inspection and corrective actions taken will be documented at the beginning of each work shift (**Appendix F**).



NewFields personnel will also practice good housekeeping in their areas of control. This includes but is not limited to:

- Keeping travel ways and work areas (including cabs of vehicles) clean and orderly and free from potential hazards;
- Keeping workplaces, passageways, storerooms, and service rooms clean and orderly;
- Maintaining floors in a clean and, so far as possible, dry condition;
- Reporting or repairing (as appropriate) floors, work surfaces, and passageways that are damaged, have loose boards, protruding nails, or splinters;
- Disposal of rubbish/waste products in the proper manner;
- Flammables and other potentially hazardous materials must be stored in containers or cabinets approved for use, must be properly labeled and must be used in accordance with the manufacturer's directives; and,
- Oily rags must be disposed of in covered metal containers. Other potentially hazardous materials will be disposed of in accordance with AMI Environmental Department guidelines.

NewFields personnel will also conduct an inspection of each piece of NewFields equipment prior to operation at the beginning of each work shift. Inspections will include a thorough walk around, visual inspection and an operating systems check.

11.12. Fatigue Management

NewFields personnel will adopt the same shift limits as required for AMI staff and employees. This includes but is not limited to:

- Shift hours vary and may range from 8-12 hours per shift. No personnel will work a shift that exceeds 12 hours;
- No personnel will exceed these limits without the approval of the Project Manager and Site Health and Safety Office;
- When possible, personnel will coordinate travel to AMI to minimize the number of vehicles and drivers commuting to AMI to minimize driver fatigue among multiple drivers. This may require staging and securing additional vehicles on site; and,
- Personnel work schedules may also be staggered to ensure site work progresses as needed but incorporates commute time into work schedule when possible.

11.13. Hand and Power Tools

Hand and power tools will be inspected prior to use and maintained in good working condition. Tools found to be defective, damaged or otherwise unsafe will be removed from service and repaired or replaced, as appropriate.



Hand-held power tools shall be operated with controls that require constant pressure. No trigger locks are permitted on the work site. Circular saws and chainsaws shall not be equipped with devices that lock-on the operating controls. See **SOP 7 Electrical Safety and Energy Control, Appendix G – Electrical Equipment Inspection** for additional guidance and information.

Electrical equipment and extension cords must be inspected for ground resistance and continuity quarterly. Such testing must also be documented, see **SOP 7, Appendix A Electrical Equipment Inspection and Testing** for additional guidance and information.

11.14. Other Applicable NewFields SOPS

Other NewFields SOPs that are applicable to this Project include:

- **SOP 3 Bloodborne Pathogens**
- **SOP 5 Construction Field Site Safety (electrical, ladder, rooftop, compressed gases, biological hazards, violence, radio frequency)**
- **SOP 6 Disciplinary Action for Safety**
- **SOP 7 Electrical Safety and Energy Control**
- **SOP 8 Emergency Action Plan**
- **SOP 9 Excavation/Trenching Operations**
- **SOP 10 Fall Prevention**
- **SOP 11 Fire Prevention**
- **SOP 12 First Aid and CPR**
- **SOP 13 Hazardous Chemical Communication**
- **SOP 15 Hearing Conservation**
- **SOP 16 Heat/Cold Stress**
- **SOP 17 Incident/Accident Investigation and Reporting**
- **SOP 19 Office Safety**
- **SOP 20 Personal Protective Equipment**
- **SOP 21 Respiratory Protection**
- **SOP 22 Field Site Evaluations**
- **SOP 23 Subcontractor Safety**

12. TRAINING REQUIREMENTS

Site personnel will receive required training prior to accessing the site. Training requirements for this Project include:



- MSHA training, including:
 - 24-hour New Miner training (30 CFR 48.25)
 - Annual Refresher Training (30 CFR 48.28)
- AMI Site General Hazard Training;
- AMI Workplace Introduction;
- Site-specific hazard field training, including:
 - Introduction to the Work Environment
 - Emergency Escape and Evacuation
 - Health and Safety Aspects of Tasks Assigned (Job Hazard Analysis)
- AMI Site Specific work rules.

AMI may require additional training based on regulatory requirements, the work tasks to be performed, and the length and nature of the service contract.

Training methods will be appropriate to the subject and may include:

- Lecture
- Tailgate Safety Meetings
- Discussion (normally used with other methods)
- Audio visual
- Demonstration (often used when teaching skills)
- Site tour (walk around tours of the work environment)
- Computer
- Games (good for annual refresher and for evaluations)
- Practice (used when teaching and evaluating skills)

Training required by CFR 30 Part 48 must be conducted by an MSHA approved instructor, with the exception of new task training and hazard training as defined in 30 CFR Part 48.7 and 48.11 respectively. An evaluation will be conducted to confirm the effectiveness of the training.

12.1. Initial Training

Initial training requirements are based on site personnel's potential for exposure to hazardous materials and compliance with the requirements of the 30 CFR Part 48.



12.2. Refresher Training

Site personnel will receive annual 8-hour refresher training consistent with the requirements of 30 CFR Part 48. This training will review health and safety topics relevant to this site.

12.3. AMI Site General Hazard Training

AMI Site General Hazard Training will be provided by the AMI Safety/Health Department or designees.

12.4. AMI Workplace Introduction

AMI Site General Hazard Training will be provided by the AMI Safety/Health Department or designees.

12.5. SSHASP Review and Pre-entry Briefing

Site personnel will review this SSHASP and will attend a pre-entry briefing prior to commencement of work, to familiarize them with the project safety requirements and the contents of the SSHASP. Additional briefings will be provided to notify personnel of changes in site conditions and/or the requirements. This may include but is not limited to:

- Changes in the work schedule or plan;
- Newly identified hazards and required controls; and,
- Work related incidents.

Site workers must acknowledge that they have attended the pre-entry briefing by signing the Site Personnel Pre-Entry Briefing Form in **Appendix E**.

12.6. Task Specific Training

NewFields personnel will receive task specific health and safety training prior to performing tasks. If work procedure modifications result in changes to potential health and safety hazards, personnel receive training addressing the changes.

12.7. Visitor Training

Visitors are required to have AMI pre-entry training before accessing the site. In addition, Visitors to NewFields field facilities, such as dill pad, will receive training including but is not limited to:

- Brief site description;
- Site hazards and controls, including required PPE;
- Emergency response procedures; and,
- Other pertinent safety and health requirements.



Visitors to NewFields field facilities (if present) must acknowledge that they have received Visitor Training by signing the Visitor Training Form in **Appendix E**.

12.8. Subcontractor Training

NewFields subcontractors must meet AMI and MSHA training requirements before being allowed on site. At a minimum, subcontractors will receive the following training:

- Brief site description;
- Site hazards and controls, including required PPE;
- Emergency response procedures; and,
- Other pertinent safety and health requirements.

NewFields subcontractors must acknowledge that they have received Subcontractor Training by signing the Subcontractor Training Form in **Appendix E**.

In addition, NewFields subcontractors shall also prepare a Site Specific Health and Safety Plan for the Project to cover their employee's activities and conditions for working on the AMI site. NewFields SSHASP (this document) is not intended for the use of NewFields subcontractors or their reliance on this SSHASP.

12.9. Training Recordkeeping

Training records for this project will be maintained by the PM or designee. Training required by 30 CFR 48 must be documented on MSHA Form 5000-23. Training records will be kept at the NewFields office at their Missoula, Montana location and will be retained for the duration stated in applicable MSHA regulations or NewFields SOPs. Additionally, Field staff will carry current MSHA certification (MSHA Form 5000-23) at all times while on the AMI site.

13. HEALTH AND SAFETY GOALS/KEY PERFORMANCE INDICATORS

13.1. Worksite Examination

NewFields will examine their work area(s) prior to commencing work in a work area (Initial Work Area Inspection) and least once a shift (Daily Walk-Through) for conditions that may adversely affect health and safety. Any unsafe or unhealthy conditions will be documented and addressed promptly. Conditions that present an imminent danger will be immediately reported to the HSO or PM and the AMI Representative. A record of the Initial and Daily Walk-Through will be documented and kept on-site. Initial and Daily Walk-Through checklists developed for this Project are presented in **Appendix E**.

These inspection records may be audited by AMI Representatives. Initial and completed inspection forms (Initial, Daily, Weekly and Monthly) are presented in **Appendix F**. See NewFields **SOP 22 – Field Site Evaluations**. Documentation of examinations and actions taken to address unacceptable conditions (if identified) will be maintained for a minimum of one year.



13.2. Health and Safety Performance Audits

NewFields will conduct Health and Safety Performance Audits on a scheduled basis, per AMI requirements. AMI Representatives may participate in the audit along with NewFields HSO.

Audit documentation will include findings and action items to improve performance.

13.3. Health and Safety Performance Reporting

Worksite examination and audit documentation will be provided to AMI.

14. RECORDKEEPING

The PM or designee will maintain health and safety records for this project. Records will be maintained at the NewFields Missoula, Montana office. Record retention will comply with NewFields SOP requirements and applicable MSHA regulations.



Appendix A

Emergency Contact and Response Information



January Adit Sediment Removal Project Emergency Contact and Response Information

Facility/Agency	Emergency Phone Number	Non-Emergency Phone Number
AMI Security	520.539.8082	
Charles (Chuck) Blair	520.235.4217	
Sheriff (Santa Cruz County-Nogales, AZ)	520.761.7869	
Volunteer Fire Department (Patagonia, AZ)	520.394.2337	
Fire Department (Nogales, AZ)	520.287.6548	
Ambulance/Emergency Medical Assistance (Dispatch)	911	
Hospital (Nogales, AZ)	520.285.3000	
Poison Control Center	800.222.1222	
National Response Center (NRC) for Oil/Chemical Spills	800.424.8802	
AMI Project Representatives		
Sara Richman	805-617-9300	1-520-848-1330
Johnny Pappas	803-235-5563	1-520-485-1303
AMI Emergency Response Team		
AMI Security	520.539.8082	
NewFields Project Representatives		
Wilhelm Welzenbach, Project Manager	406.531.7216	406.218.2564
Robert Livesay, Field Supervisor	541.231.0695	406.549.8270 ext 233
Heather Grotbo, MES Health and Safety Coordinator	406.465.7661	406.549.8270 ext 216
Richard Leferink, NFC Health and Safety Manager	406.475.1655	406.443.3556 ext 108

NewFields personnel will follow the emergency evacuation procedures provided by AMI.

The HSO or designee will account for NewFields personnel at the muster point. The AMI Representative will be notified immediately if any NewFields personnel cannot be accounted for.

MEDICAL EMERGENCY PLAN

The following steps shall be taken if you discover or are involved in an emergency situation while at AMI property, remembering that only trained responders should provide first aid assistance:

1. Stay calm and get to a safe area.
2. Immediately contact **911**, Site Safety Officer (520) 235-4217 (Chuck Blair).
3. Provide the following information:
 - a) Name (**YOURS** not the VICTIM)
 - b) Number and location of victim(s)
 - c) Nature of injury or illness
 - d) Hazards involved
 - e) Nearest entrance (emergency access point)
 - f) If using a phone, your phone number



4. Do not move the victim unless the victim's location is unsafe.
5. Control access to the scene.
6. Take a "universal precautions" to prevent contact with body fluids and exposure to blood borne pathogens.
7. Meet mine rescue at the nearest entrance or emergency access point; direct them to victim(s).

FIRE EMERGENCY PLAN

The following steps shall be taken if you discover a fire while on AMI property, remembering that only trained responders should provide first aid assistance:

1. Stay calm.
2. Pull the fire alarm, (if available and not already activated) to warn occupants to evacuate. Help those needing assistance if safe. Take a "universal precautions" to prevent contact with body fluids and exposure to blood borne pathogens.
3. Use fire extinguisher to escape only. DO NOT fight the fire.
4. Evacuate building, vehicle, area to muster point (if applicable).
8. Immediately contact Site Safety Officer (520) 235-4217 (Chuck Blair).
5. Provide the following information:
 - a) Name
 - b) Location
 - c) Nature of fire
 - d) If using a phone, your phone number
6. Take a head count once at the muster point and inform mine rescue of any missing.
7. Control access to the scene.
8. Meet mine rescue at the nearest entrance or emergency access point; direct them to victim(s).

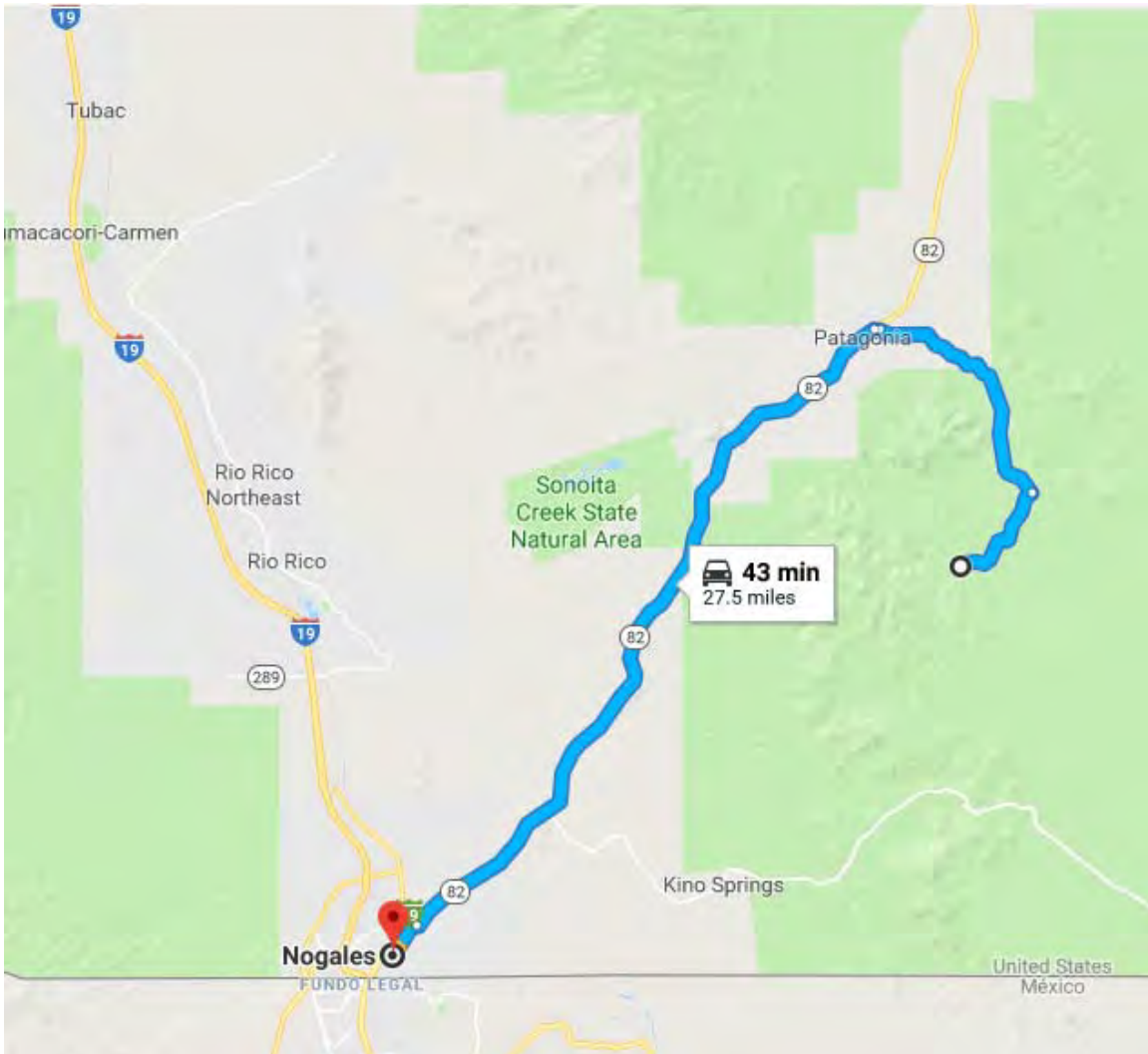
Carondelet Holy Cross Hospital

1171 W. Target Range Road



Nogales, AZ

520.285.3000





Appendix B

Task Specific Hazard Assessments



Appendix C

Hazardous Chemical List & Safety Data Sheets



**January Adit Sediment Removal
Hazardous Chemical List**

The chemical identity must permit cross referencing between this list, the container label, and the SDS.

Chemical Name	CAS No.	Use/Storage Area
HYDROCHLORIC ACID (HCL)	7647-01-0	FIELD KIT
LIQUINOX	SEE SDS FOR INFO	DECONTAMINATION/FIELD TRUCKS
METHANOL (DILUTE 10%)	67-56-1	DECONTAMINATION/FIELD TRUCKS
NITRIC ACID (HNO3) (DILUTE 10%)	7697-37-2	DECONTAMINATION/FIELD TRUCK



Appendix D

AMI Vehicle Safety Policy



Arizona Minerals Inc.

Hermosa Vehicle Safety Policy

Revised May 3rd, 2018

Effective Nov. 28th, 2017

Only Authorized vehicles are permitted on site. Authorized vehicles are defined as:

- AMI company vehicles.
- Company vehicles of a contractor authorized to perform work on the site.
- Personal vehicles which have been authorized and permitted by the safety department and are outfitted with the required vehicle safety equipment.

Vehicles operating on the Hermosa site shall be equipped with the following items:

- 5 pound fire extinguisher, securely mounted in a readily accessible location outside the vehicle cab.
- First aid kit.
- Wheel chocks.
- Safety whip with reflective flag attached.
- Flashing strobe light.

Conduct while operating a vehicle:

- A valid driver's license is required in order to operate an Arizona Minerals or personal vehicle as part of the individual's job duties
- Persons operating AMI vehicles shall obey traffic laws and speed limits at all times and always drive to the condition of the roadway.
- No vehicle shall be operated on or off site by an operator under the influence of drugs or alcohol.
- When driving vehicles to or from the site, including personal vehicles, the operator shall obey traffic laws and speed limits at all times and operate with the headlights or daytime running lights on.
- If approached from the rear by a vehicle which is operating at a higher speed or tailgating your vehicle continue to drive cautiously and look for a safe space to pull over and wave the other vehicle by. Do not pass another vehicle without receiving a hand signal and safe passing space from the operator of the other vehicle.
- All vehicles operating on site will obey site traffic rules and signage.
- All operators will drive cautiously and courteously on and off site, horseplay while driving a vehicle is strictly prohibited.

Vehicle operating procedures on the site:

- While on mine property, vehicles shall be operated with their headlights or daytime running lights on, strobe light on, and the safety whip and flag in the raised position. Seat belts shall be worn at all times while operating a vehicle. All passengers are also required to wear seat belts while riding in a vehicle.
- When vehicles are parked, whenever possible, they shall be backed into a designated parking ditch designed for that purpose, if a parking ditch is not available, wheel chocks shall be placed in proper position to prohibit the vehicle from rolling and wheels turned into bank if available. In either case, the parking brake shall be applied.
- The following horn signals shall be used when operating vehicles on site:

1 Honk -Before starting vehicle

2 Honks- Before moving forward.

3 Honks- Before backing up.

Drivers shall perform a pre-operational inspection before placing vehicle in operation. The following items shall be checked and recorded on the inspection report form, and any deficiencies or safety defects shall be noted and brought to the attention of your supervisor. If defects are found which make continued operation of the vehicle hazardous, the vehicle shall be tagged out, and the keys removed and given to your supervisor or Safety department.

- Backup alarm, if so equipped.
- Horn
- Glass and wipers
- Seat belts
- Lights, front and rear
- Mirrors
- Door/latches
- Housekeeping
- Service brakes
- Parking brakes
- Tires/wheels
- Steps/handrails
- Fire extinguisher

In addition, the following mechanical items shall be checked and recorded on the pre-op form.

- Engine oil level
- Water level
- Transmission (automatic)
- Windshield washer fluid
- Differentials (look for obvious leaks)

Windows, mirrors, and lights shall be kept clean. Cabs shall be kept clear of extraneous material, and insofar as possible, the exterior and interiors shall be kept clean. Windows shall be maintained in the closed position whenever possible.



Appendix E

**Daily Vehicle Inspection Sheets
Pre-Entry Training Sign Off Forms
Tailgate Safety Meeting Notes**



Appendix F

Work Area Inspection Forms

Daily Inspections



Initial Field Workplace Inspection

Date / Time: _____

Project Name: January Adit Sediment Removal

Inspection Performed By: _____

Project Number: 350.0300.002

Work Area Description: _____

Inspection Items	Good	Available	Needs Attention	Not Applicable	Comment (must be filled in if "Needs Attention" is marked or Corrective Action required) Date Corrective Action was completed (if not promptly corrected at the time of inspection)
General Safety Items (in place and working properly)					
Emergency Procedures and Contact Information (HASP Available)					
Fire Extinguisher Available / Inspection Tag Current					
First Aid Kit Available / No Expired Products					
Eye Wash Station / Kit Available (No Expired Products)					
Safety Glasses					
Hearing Protection					
Gloves (Nitrile, Leather, Kevlar)					
Steel Toed Safety Boots					
PPE and Field Gear (clothing for weather, vests, hard hats, etc.) stored properly					
Inspect Lighting Plan/Implementation if Night Work is Necessary					
Housekeeping					
Work Vehicle-neat, clean, and orderly					
Equipment and Supplies					
All flammable supplies stored properly					
Safety Data Sheets (SDSs) available for products in use, if any					
Equipment is stored in its proper place					
Tools and Equipment inspected and stored properly					
Comments / Concerns / Notifications and Status Conveyed to Workers Who May Enter the Area:					

SIGNATURE: _____



Daily Field Workplace Inspection

Date / Time: _____

Project Name: January Adit Sediment Removal

Inspection Performed By: _____

Project Number: 350.0300.002

Work Area Description: _____

Inspection Items	Good	Available	Needs Attention	Not Applicable	Comment (must be filled in if "Needs Attention" is marked or Corrective Action required) Date Corrective Action was completed (if not promptly corrected at the time of inspection)
General Safety Items (in place and working properly)					
Emergency Procedures and Contact Information (HASP Available)					
Fire Extinguisher Available / Inspection Tag Current					
First Aid Kit Available / No Expired Products					
Eye Wash Station / Kit Available (No Expired Products)					
Safety Glasses					
Hearing Protection					
Gloves (Nitrile, Leather, Kevlar)					
Steel Toed Safety Boots					
PPE and Field Gear (clothing for weather, vests, hard hats, etc.) stored properly					
Inspect Lighting Plan/Implementation if Night Work is Necessary					
Housekeeping					
Work Vehicle-neat, clean, and orderly					
Equipment and Supplies					
All flammable supplies stored properly					
Safety Data Sheets (SDSs) available for products in use, if any					
Equipment is stored in its proper place					
Tools and Equipment inspected and stored properly					
Comments / Concerns / Notifications and Status Conveyed to Workers Who May Enter the Area:					

SIGNATURE: _____



Appendix G

NewFields Project Specific Standard Operating Procedures (SOPs)

NewFields Health, Safety and Environment Standard Operating Procedure

HSE SOP 3 – Bloodborne Pathogens Exposure Control Plan



**Updated
January 2016**

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HSE SOP 3 – Bloodborne Pathogens Exposure Control Plan

Bloodborne pathogens standard adopted by the Occupational Safety and Health Administration (OSHA) applies to employees who may have occupational exposure which may reasonably anticipate job-related contact with blood or other potentially infectious materials ([OSHA 2000](#)). The three most common bloodborne pathogens (BBPs) include human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV).

1. PURPOSE

NewFields Health, Safety and Environment (HSE) program has incorporated this Standard Operating Procedure (SOP) to protect employees from exposure to health hazards associated with bloodborne pathogens by eliminating or minimizing exposure to potentially contaminated substances. This protocol also provides for appropriate treatment and counseling should an employee be exposed to bloodborne pathogens. The protocol is also required for NewFields compliance with the OSHA standard.

2. SCOPE

This SOP applies to NewFields employees with potential occupational exposure to blood and other potentially infectious materials during completion of job duties.

3. DEFINITIONS

The following definitions are incorporated by reference in this SOP:

- **Blood** – Human blood, human blood components and products made from human blood.
- **Bloodborne Pathogens (BBPs)** – Pathogenic microorganisms that are present in human blood and can cause disease in humans. The most common pathogens include, but are not limited to, human immunodeficiency virus (HIV), hepatitis B (HBV) and hepatitis C (HCV).
- **Center for Disease Control and Prevention (CDC)** – The government agency that is responsible for investigating and controlling disease in the US.
- **Contaminated** – The presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
- **Contaminated Sharps** – Any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, ends of dental wires, etc.
- **Decontamination** – The use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and is rendered safe for handling, use or disposal.

Purpose

To establish guidelines and protocols for the control of potential occupational exposure to blood or other potentially infectious materials by NewFields employees.

Goal and Objective

To ensure NewFields work activities and responses which may potentially result in exposure to bloodborne pathogens are sufficiently reviewed and evaluated prior to potential exposure.

Reporting Requirements

Potential Exposure Reporting and Incident Investigation



- **Engineering Controls** – Devices and items that isolate or remove the bloodborne pathogens hazard from the workplace (e.g., sharps disposal containers).
- **Exposure Incident** – A specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that is encountered in the performance of an employee's duties.
- **Hepatitis B Virus (HBV)** – a virus that may cause Hepatitis B and may damage the liver.
- **Hepatitis C Virus (HCV)** – a virus that may cause Hepatitis C and may damage the liver.
- **Human Immunodeficiency Virus (HIV)** – Human immunodeficiency virus that causes acquired immunodeficiency syndrome (AIDS).
- **Occupational Exposure** – Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.
- **Other Potentially Infectious Materials (OPIMs)** – Includes:
 - ❖ Semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva, any bodily fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; and,
 - ❖ Any unfixed tissue or organ (other than intact skin) from a human (living or dead).
- **Parenteral** – Piercing mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, and abrasions.
- **Personal Protective Equipment (PPE)** – Specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.
- **Regulated Waste** – Liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.
- **Source Individual** – any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to employees.
- **Sterilize** – The use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.
- **Universal Precautions** – An approach to infection control, the concept of Universal Precautions assumes all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, HBC and other potential bloodborne pathogens.
- **Work Practice Controls** – Practices that reduce the likelihood of exposure by altering the manner in which a task is performed.



4. ROLES AND RESPONSIBILITIES

The HSE program and this SOP assigns the following duties and responsibilities for NewFields Companies and subsidiaries staff and management:

- Partners, Principals or their management delegates (other Principals or Senior Project Managers) are responsible for ensuring workers who may be potentially exposed to BBPs receive appropriate training with personal protective equipment use to prevent a work place exposure. They are also responsible for follow up on exposure incidents and preparation of an Exposure Incident Investigation Form (**Attachment A**).
- Local Health and Safety Coordinators (HSC) will provide assistance to Project Managers and field staff to review potential situations and response activities which may result in the potential for worker exposures to BBPs and control measures to mitigate potential worker exposures.
- Employees are responsible for compliance with this BBPs Exposure Control Plan and any other site specific safety and health plan available for an office or work site environment. Workers are required to participate in site specific training, using good work practices during all work activities and knowing which work tasks may have the potential for occupational exposure to BBPs.
- Human Resources (HR) Manager and Corporate Health and Safety (CHS) Manager will periodically review the performance requirements for staff as identified in this SOP. The HR Manager is responsible for maintaining medical surveillance information for designated field employees who may be required to wear respiratory protective equipment and may have the potential for occupational exposure to BBPs.

5. EXPOSURE DETERMINATIONS

NewFields must continually review and identify job classification and job tasks where occupational exposures to blood will or may occur in the office or remote work site. The following job classifications or tasks have been identified with the potential for exposures to BBPs:

- **Technicians** – Employees whose work tasks may include collecting wastewater samples or other environmental samples that may contain BBPs or OPIMs.
- **First Aid Trained Personnel** – Employees designated as First Aid trained workers who may encounter BBP or OPIMs while rendering first aid treatment.

6. EXPOSURE MITIGATION AND CONTROLS

The NewFields HSE program, this SOP and Bloodborne Pathogens Exposure Control Plan adopts the Universal Precautions approach to control potential exposure to BBPs. The approach assumes all human blood, tissues or bodily fluids visible contaminated with blood and the following body fluids will be treated as if they are known to be infected with bloodborne pathogens:

- | | |
|-----------------------|---------------------|
| ➤ Semen | ➤ Synovial fluid |
| ➤ Vaginal secretions | ➤ Pleural fluid |
| ➤ Cerebrospinal fluid | ➤ Pericardial fluid |



- Amniotic fluid
- Saliva
- Peritoneal fluid
- Plasma and plasma derived products

In circumstances where it is difficult or impossible to differentiate between body and fluid types, all body fluids will be assumed potentially infectious. Universal Precautions will be employed whenever there is any potential exposure to human blood or OPIMs.

6.1. Engineering Controls

Engineering controls will be used wherever feasible to eliminate or minimize employee potential exposure to bloodborne pathogens. New technology will be periodically reviewed to determine its feasibility of use at NewFields work sites and office locations. This evaluation will focus on the reduction of injuries that cause exposure to blood or OPIMs. Employee input will be part of the evaluation and selection of all new engineering controls. Any existing engineering controls are to be reviewed annually for proper function and repair or replacement, if required.

Engineering controls used at NewFields office location and work sites include:

- Hand washing facilities, which are readily accessible to employees who have potential exposure in office sites and some project sites; and,
- Leak-proof bags for handling potentially contaminated materials.

6.2. Work Practice Controls

Work practice controls reduce the likelihood of exposure by altering the manner in which a task is performed. Some examples of work practice requirements for employees are:

- Employees will wash hands immediately or as soon as feasible after removal of gloves or other personal protective equipment;
- Following direct contact with blood or any OPIMs, employees will wash hands and exposed skin with soap and water as soon as possible. They will also flush mucous membranes with water if they have been in contact with blood or OPIMs;
- Eating, drinking, smoking, applying cosmetics or lip balm or handling contact lenses is prohibited in work areas where there is potential for exposure to BBPs. This would include any area where wastewater may be stored or processed;
- Equipment that may be contaminated will be decontaminated prior to reuse, service or shipping;
- An appropriate biohazard label will be attached to any potentially contaminated equipment or containers; and,
- All procedures involving the handling or potential exposure to blood or OPIMs will be performed in such a way as to minimize splashing or spraying.



6.3. Personal Protective Equipment

Personal Protective Equipment (PPE) will be used if the potential for occupational exposure remains after instituting engineering and work practice controls, or if these controls are not feasible. PPE which may be used to control exposure to BBPs include, but are not limited to:

- Gloves
- Safety Glasses
- Face Shields
- Pocket Masks

PPE provided to employees will also:

- Be provided at no cost to employees;
- Be accessible and in appropriate sizes for employees in the office location or work site; and,
- Be cleaned, repaired, replaced, and disposed properly at no cost to employees.

Disposable PPE, especially gloves, will be replaced as soon as possible after potential contamination or use, or if they become torn, punctured or otherwise lose their ability to function as an “exposure barrier”. Reusable PPE will be cleaned, laundered and decontaminated, as needed. Employees will remove all PPE prior to leaving a work area. Employees will not remove potentially BBP contaminated PPE from the work site or office location without proper packaging and labeling. All potentially BBP contaminated waste will be properly disposed of in accordance with local, state and federal regulations.

6.4. Housekeeping

The following housekeeping guidelines are established as a minimum requirement for personnel or potential work sites relying on this program.

6.4.1. Written Schedule

NewFields will develop and implement a written schedule for periodic cleaning and decontamination of work areas and equipment used for untreated wastewater processing, storage or sampling. The written schedule (**Appendix B**) will provide for the following:

- The area / equipment to be cleaned / decontaminated;
- Frequency of cleaning;
- Cleaners and disinfectants to be used; and
- Person(s) responsible for cleaning.

6.4.2. Minimum Requirements

In addition to scheduled housekeeping tasks, the following tasks will be required on an “as-needed” basis to minimize exposure to BBP:

- All personnel assigned to do housekeeping or cleaning must wear appropriate PPE for the job which may include gloves and safety glasses during all cleaning and decontamination work.



- All equipment and surfaces suspected to be contaminated with BBPs will be cleaned and decontaminated as soon as feasibly possible;
- Initial clean-up of blood or other potentially infectious materials must be followed by the use of an approved germicide (10% bleach or other FDA listed TB biocide);
- Equipment contaminated with blood or other potentially infectious materials will be cleaned and decontaminated prior to use, servicing or shipping;
- Decontamination procedure as recommended by the germicide manufacturer will be followed in all cases;
- Potentially contaminated broken glassware and other sharps will be picked up using mechanical means (such as dustpan and brush, tongs, forceps, etc.) and disposed of in rigid, puncture resistant, leak resistant containers (i.e. sharps biohazard containers); and,
- All reusable containers such as bins, pails, and cans that have a likelihood of contamination will be inspected and decontaminated on a regular basis or when visibly contaminated.

6.5. Vaccinations

NewFields will make available to employees who may encounter HBV the vaccination series to minimize the risk of contracting this virus following exposure to BBPs. The hepatitis B vaccination consists of three inoculations over a six-month period, shall be made available after the employee has received the required training and within ten days of initial assignment to tasks that may have BBP exposure. NewFields will provide medical evaluations and hepatitis B vaccination series that are:

- Made available at no cost to the employee;
- Made available to employees at a reasonable time and place;
- Performed by or under the supervision of a licensed physician or health care professional;
- Provided according to the current recommendations of the U.S. Public Health Service (CDC); and,
- All laboratory tests will be conducted by an accredited laboratory at no cost to the employee.

The following considerations will be included:

- The vaccine will not be provided to employees who exhibit the following:
 - ❖ Antibody testing has revealed that the employee is immune; or,
 - ❖ The vaccine is contraindicated for medical reasons.
- Pre-screening for antibody titer is not required; it is only made available to employees who wish to take it.
- The vaccine will be made available to employees who initially decline, but later decide to accept the vaccine.
- Employees who are offered the hepatitis B vaccine but refuse the vaccine must sign the Hepatitis B Vaccination Declination Form (**Appendix C**). This is documentation that the vaccine was offered and does not prevent the employee from getting the vaccine at a later date.



7. POST-EXPOSURE EVALUATION

If an employee is involved in an exposure incident:

- The employee will be offered a medical evaluation and appropriate treatment as expeditiously as possible, at no cost to the employee; and,
- An investigation of the circumstances surrounding the exposure incident will be conducted.

The Partner, Principal or their delegate will investigate every exposure incident. A written summary of the incident is to be prepared and recommendations are made for preventing similar incidents in the future (also see NewFields **SOP 17 Accident or Incident Investigation**). **Appendix A** “Bloodborne Pathogen Exposure Incident Investigation” should be completed along with the “Post-Exposure Evaluation” in **Appendix D**.

If the exposure incident also potentially involves a NewFields employee or source individual, that person will be provided medical counseling and a consent for blood testing will be requested (when required by law). The source individual’s blood will be collected and tested as recommended by CDC. All results of such source testing will be kept confidential and will be discussed (if appropriate) with the exposed employee only after they have been made aware of all applicable confidentiality regulations. If the employee / source individual agrees to a baseline blood test, but does not agree to HIV testing, the blood sample will be preserved for 90 days to allow consent to be given at a later date. However, it is recommended by CDC that treatment for an HIV exposed individual occur within a few hours of exposure.

The post-exposure evaluation and follow-up will include the following:

- All blood testing and medical consultations will be conducted by licensed health care professionals;
- All laboratory tests are to be conducted by an accredited laboratory;
- Evaluation will be provided as soon as possible after exposure; and,
- Follow up evaluations will be discussed with the attending physician.

A healthcare professional that evaluates an employee after an exposure incident will be provided with the following:

- A copy of the Bloodborne Pathogens standard ([OSHA Regulation 1910.1030](#));
- A description of the employee's duties relevant to the exposure incident;
- Documentation of the route of exposure and circumstances under which the exposure occurred;
- Results of the source individual's blood tests, if available; and,
- All other medical records relevant to the appropriate treatment of the employee including vaccination status.



Within 15 days of the consultation, the healthcare professional will provide a written opinion evaluating the exposed employee. This written opinion will remain part of the employee's medical record. The written opinion will contain only the following information:

- Whether hepatitis B vaccination is indicated;
- Whether the employee has received the hepatitis B vaccination;
- Confirmation that the employee has been informed of the results of the evaluation; and,
- Confirmation that the employee has been told about any medical conditions resulting from the exposure incident which require further evaluation or treatment.

All other findings or diagnoses will remain confidential and will not be included in the written opinion. NewFields will furnish a copy of this opinion to the exposed employee.

8. INFORMATION AND TRAINING

NewFields will use various methods to communicate and describe the potential for bloodborne pathogen exposures to employees. This will include periodic training sessions with employees prior to carrying out tasks or working on projects with potential for BBP exposure. For work on sites with known biological hazards or contaminants, site controls may also utilize labels, signs and site specific training.

8.1. Labels and Signs

Biohazard warning labels and signs will be used to identify products or work areas with the potential for or known biological hazard contamination. The following items in the facilities will be labeled or demarcated with appropriate signage:

- Contaminated equipment;
- Contaminated sample containers and holders;
- Approaches to areas warning of the potential biohazard; and
- Any required PPE that must be worn with respect to a job specific task or work area.

8.2. Training

Training will be required for employees with potential occupational exposure to BBPs or OPIMs. Training will be provided during normal working hours and at no cost to employees. NewFields local office administrators, local HSC and employees will maintain training records.

Training will be provided prior to or at the time of initial assignment to tasks or projects where occupational exposure may occur and at annually thereafter. Follow up training may also be required at any time if an employee fails to demonstrate a working knowledge of the BBP Exposure Control Plan. Training will include:

- An copy of the OSHA BBP standard and explanation of the standard;
- The modes of contracting or transmitting BBPs;
- The epidemiology and symptoms of HBV and HIV;
- NewFields BBP Exposure Control Plan and where to find the document;



- Methods to recognize tasks / activities that may result in exposure to BBPs;
- The use and limitations of control methods, including:
 - ❖ Engineering controls;
 - ❖ Work practice controls;
 - ❖ Personal protective equipment; and,
 - ❖ New technology.
- The types, selection, proper use, location, removal, decontamination and disposal of PPE;
- The hepatitis b vaccine:
 - ❖ Efficacy;
 - ❖ Safety;
 - ❖ Method of administration;
 - ❖ Benefits of vaccination; and,
 - ❖ NewFields' vaccination program.
- Post-exposure evaluation and follow-up procedure;
- Emergency procedures for an exposure incident;
- Signs and labels and / or color coding requirements; and,
- Provision for a question and answer session following training.

9. RECORD KEEPING

NewFields local office administrators, local HSC and employees will maintain training records. NewFields HR Manager will maintain both confidential and non-confidential medical records. Records will be available for examination and duplication by the employee. Confidential medical records will be kept in the HR Managers secure file storage and released only to the employee or others with the written consent of the employee.

9.1. Medical Records

Medical records will be maintained for the term of employment plus thirty years. The records will be maintained confidential. Medical Records will include:

- Employee name;
- Social security number;
- HBV vaccination status (including evaluation, report by the medical professional, and dates of all vaccinations received); and
- Records related to reported exposure incidents, including results of examination, medical testing, follow-up health care professional's written opinion, and all information provided to the evaluating health care professional.



9.2. Training Records

Training records will be maintained for a minimum of three years from the date of the training session, and made available for inspection and copying to employees, and authorized OSHA representatives upon request.

Training records will include:

- Date(s) of each training session;
- Contents / summary of the training session;
- Names and qualifications of the instructor(s); and,
- Names and job titles of employees attending the training sessions.

10. CONTAMINATED WASTE

Waste generated by handling, cleaning, or decontaminating BBP or OPIM will be properly packaged and disposed of in accordance with local, state and Federal regulations.

11. REFERENCES

Occupational Health and Safety Administration (OSHA) 2000, United States Department of Labor, Title 29 Code of Federal Regulations (CFR) [1910.1030, Bloodborne Pathogens](#), accessed January 2016.

APPENDIX A

Bloodborne Pathogen Exposure Incident Investigation



BBP EXPOSURE INCIDENT INVESTIGATION

Employee Name: _____

Date of Incident: _____

Time of Incident: _____

Location: _____

Potentially Infectious Materials Involved:

Type	Source

Circumstances (work being performed, etc.):

How incident was caused (accident, equipment, malfunction, etc.)

Personal protective equipment being used:

Actions taken (decontamination, clean-up, reporting, etc.):

Recommendations for avoiding repetition:

APPENDIX B
Workplace Cleaning Schedule



WORKPLACE CLEANING SCHEDULE

Location / Equipment	Frequency	Product	Individual Responsible

APPENDIX C
Hepatitis B Vaccine Declination



HEPATITIS B VACCINE DECLINATION

I understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring the Hepatitis B Virus (HBV) infection. I have been given the opportunity to be vaccinated with Hepatitis B Vaccine, at no charge to me. However, I decline to receive the Hepatitis B Vaccination at this time.

I understand that by declining this vaccine, I continue to be at risk of acquiring the HBV, a serious disease. If in the future, should I continue to have the potential for occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with the Hepatitis B Vaccine, I can receive the vaccination series at no charge to me.

My reason for choosing not to participate is _____

(It is not compulsory that the employee provide the above information)

Signature

Date

APPENDIX D
Post-Exposure Evaluation



POST-EXPOSURE EVALUATION

The following steps must be taken, and information transmitted, in the case of an employee's exposure to Bloodborne Pathogens:

Activity	Completion Date & Initials
Employee furnished with documentation regarding exposure incident	_____
Source individual identified (_____) source individual or NA	_____
Source individual's consent for blood tested requested <input type="checkbox"/> No consent for testing source obtainable	_____
Appointment arranged for employee with healthcare Professional Healthcare Professional's Name: _____	_____
Physician's Written Opinion received and provided to employee	_____

Documentation provided to healthcare professional:

- OSHA Bloodborne Pathogens Standard
- Description of exposed employee's duties
- Description of exposure incident, including routes of exposure
- Information regarding source individual, if applicable or available
- Employee's medical records

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1. PURPOSE

The purpose of this guideline is to provide general reference information regarding various hazardous field conditions not discussed in other NewFields SOPs.

2. SCOPE

This SOP applies to NewFields project sites where common hazardous conditions related to fieldwork are encountered. These conditions include biological hazards, walking/working surfaces, ladder safety, weather and railway safety and hunting seasons.

3. RESPONSIBILITIES

Corporate Health & Safety Coordinator (CHSC) - The CHSC is responsible for periodic review of the guidelines in this policy.

Project Principals (PP) - The PP is responsible for the overall implementation and enforcement of this procedure for employees in locations under their area of responsibility. The PP is responsible for providing resources to conduct the operations safely.

Employees – Employees are responsible for observing all safety general safety guidelines at all NewFields worksites.

4. GUIDELINES

4.1. Biological Hazards

Biological hazards include:

- Insects and insect-borne diseases: ticks, mosquitoes, West Nile Disease, Lyme Disease, venomous spiders , bees;
- Bloodborne Pathogens: medical waste, such as syringes, sharps or materials contaminated with human blood or bodily fluids;
- Plants: poison ivy, oak and sumac;
- Fungi or mold: Histoplasmosis
- Animals and animal-borne diseases: venomous snakes, rodents, rabies, and wild dogs.

NewFields employees working in the field will be made aware of the potential for these biological hazards by review of the H&S Checklist for the project and by the PP. NewFields employees should take precautions in areas where such hazards are present, such as wearing fully covering clothing or Tyvek suits to prevent contact with insects or plants. Insecticide should be used to prevent insect bites, especially when entering wetland areas.

An employee who is aware of a bee sting or other allergy, which may pose additional hazards during field operations, should notify the PP prior to beginning site work so that appropriate control measures can be taken.

See NewFields SOP #2 *Bloodborne Pathogens* if medical waste, drug paraphernalia, or other items contaminated with human bodily fluids may be contacted on a project.

All incidents of employee exposure to biological hazards should be reported to the PP or Supervisor and an Incident Report should be completed. Please see SOP #17 *Injuries and Illnesses Investigation* for more information.

4.2. Ladder Safety

Ladders will be capable of supporting the following loads without failure:

- Self-supporting portable ladder should be able to support at least four times the maximum intended load, except that each extra-heavy-duty type 1A metal or plastic ladder shall sustain at least 3.3 times the maximum intended load
- Portable ladder that is not self-supporting should support at least four times the maximum intended load, except that each extra-heavy-duty type 1A metal or plastic ladders shall sustain at least 3.3 times the maximum intended load
- Fixed ladder should be able to support two loads of at least 250 pounds each, concentrated between any two consecutive attachments, plus anticipated loads caused by ice buildup, winds, rigging, and impact loads resulting from the use of ladder safety devices. Each step or rung shall be capable of supporting a single concentrated load of at least 250 pounds applied in the middle of the step or rung.
- Ladders shall not be loaded beyond the maximum intended load for which they were built, or beyond their manufacturer's rated capacity
- Ladder rungs and cleats will be level, parallel and spaced uniformly when in use.

4.2.1. Portable Ladders

The following requirements apply to the use of portable ladders, including job-made ladders:

- When portable ladders are used for access to an upper landing surface, the ladder side rails should extend at least 3 feet above the upper landing surface.
- If a 3-foot extension is not possible then the ladder should be secured at its top to a rigid support
- Non-self-supporting ladders shall be used at an angle such that the horizontal distance from the top support to the foot of the ladder is approximately one- quarter of the working length of the ladder (the distance along the ladder between the foot and the top support)
- Wood job-made ladders with spliced side rails shall be used at an angle such that the horizontal distance is one-eighth the working length of the ladder
- Ladders shall be used only on stable and level surfaces unless secured to prevent accidental displacement
- Ladders shall not be used on slippery surfaces unless secured or provided with slip-resistant feet to prevent accidental displacement
- Ladders placed in any location where they can be displaced by workplace activities or traffic, such as in passageways, doorways, or driveways, shall be secured to prevent accidental displacement, or a barricade shall be used to keep the activities or traffic away from the ladder
- The area around the top and bottom of ladders shall be kept clear

- The top of a non-self-supporting ladder shall be placed with the two rails supported equally unless it is equipped with a single support attachment
- Portable ladders with structural defects, shall either be immediately marked as defective, or be tagged with "Do Not Use", and shall be withdrawn from service until repaired

4.2.2. Fixed Ladders

The following requirements apply to the use of fixed or permanent ladders:

- Fixed ladders at their point of access/egress shall have a step-across distance of not less than 7 inches (18 cm) nor more than 12 inches (30 cm) as measured from the centerline of the steps or rungs to the nearest edge of the landing area. If the normal step-across distance exceeds 12 inches (30 cm), a landing platform shall be provided to reduce the distance to the specified limit.
- Fixed ladders shall be used at a pitch no greater than 90 degrees from the horizontal, as measured to the backside of the ladder.
- Fixed ladders without cages or wells shall have a clear width to the nearest permanent object of at least 15 inches (30 cm) on each side of the centerline of the ladder
- Fixed ladders shall be provided with cages, wells, ladder safety devices, or self-retracting lifelines where the length of climb is less than 24 feet (7.3 m) but the top of the ladder is at a distance greater than 24 feet (7.3 m) above lower levels
- Where the total length of a climb equals or exceeds 24 feet (7.3 m), fixed ladders shall be equipped with one of the following:
 - Ladder safety devices
 - Self-retracting lifelines, and rest platforms at intervals not to exceed 150 feet (45.7 m)
 - A cage or well, and multiple ladder sections with each ladder section not to exceed 50 feet (15.2 m) in length. Ladder sections shall be offset from adjacent sections, and landing platforms shall be provided at maximum intervals of 50 feet (15.2 m).
- Individual-rung/step ladders, except those used where their access openings are covered with manhole covers or hatches, shall extend at least 42 inches (1.1 m) above an access level or landing platform either by the continuation of the rung spacing as horizontal grab bars or by providing vertical grab bars that shall have the same lateral spacing as the vertical legs of the rungs.

4.2.3. General work practices

Employees when using ladders should adhere to the following work practices:

- When ascending or descending a ladder, the user shall face the ladder
- Each employee shall use at least one hand to grasp the ladder when progressing up and/or down the ladder, always have 3 points of contact with the ladder (one hand and two feet or 2 hands and one foot)
- An employee shall not carry any object or load that could cause the employee to lose balance and fall. Employees will use a backpack or hoist by rope any equipment.
- Ladders shall be maintained free of oil, grease, and other slipping hazards

- Ladders shall be used only for the purpose for which they were designed
- Ladders shall be inspected by a competent person for visible defects on a periodic basis
- Ladders shall not be painted or covered in any way to hide defects
- Ladder repairs shall restore the ladder to a condition meeting its original design criteria, before the ladder is returned to use

4.2.4. Ladder Maintenance

NewFields owned ladders will be kept clean and maintained as recommended by the manufacturer. Ladders will be inspected prior to being used and periodically when in storage. Ladders found to be defective will be removed from service immediately and cleaned, repaired or disposed of by cutting it into small parts.

4.3. Walking/Working Surfaces

It is generally expected that the ground at most field sites may be uneven, the surface may be unreliable due to settling, surface debris, and wet or muddy conditions. Therefore, the potential for slipping, tripping, and falling is present, especially where PPE or respirators may impede vision. Severe trip hazards should be identified in site meetings and demarcated by flags or caution tape.

Debris and site waste should be cleaned daily as poor housekeeping is a main cause of slip, trips or falls on worksites. Report other unsafe conditions to the PP, or designee, so appropriate safety precautions can be taken.

Structures under renovation, remediation or construction may also have walking or working surfaces that are dangerous, such as holes in floors, floor openings, wall openings, etc. These hazards should be identified in H&S Checklist and be guarded, however, it is important to remain aware of the conditions in the work area and notify the PP if uncontrolled hazards are identified.

4.4. Hunting Season

If work is taking place during a hunting season (i.e. deer hunting is typically from October to December) on or near hunting grounds or in rural areas, workers will wear blaze orange hats and/or jackets or vests.

4.5. Violence

It is possible to be exposed to violence from individuals working on the site or others in the area. This may occur in Urban or Rural settings. You may be the intended victim or a bystander. Using the buddy system is recommended whenever going into areas where there is a possibility of a violent encounter. In some cases, professional security or police assistance may be needed. These potential hazards should be discussed and reviewed in the H&S Checklist or HASP.

NewFields employees are prohibited from carrying firearms to worksites. Cell phones should be available when entering areas of security concern.

Employees who have been involved in a workplace violence episode should notify their PP immediately.

4.6. Severe Weather

Severe weather includes high winds, lightning storms, tornados, hurricanes, snow/ice storms or other weather conditions that could present a hazard to employees. The PP will decide when weather conditions present a hazard and employees should seek shelter and postpone outdoor activities until the hazardous weather conditions have passed.

Projects on bridges, utilizing cranes, derricks or drill rigs shall not operate during lightning storms or high winds. If severe weather is predicted for your site location contact the project PP to determine if activities are being postponed.

4.7. Railway Safety

Personnel working in areas adjacent to active rail traffic must undergo a rail safety orientation prior to working on the project. All work in vicinity of rail tracks will be coordinated with the railway operators (LIRR, NJTransit, Amtrak, etc.) safety division.

High visibility vests should be worn when working in active railway areas. Some areas or operations will also require the use of a flagman.

NewFields employees should never stop or park vehicles on railroad tracks even if they believe they are inactive. NewFields employees shall never ignore warning barriers, lights or signs whether driving or walking around railways.

4.8. Compressed Gases

Most gas cylinders are equipped with safety devices to protect the cylinder against excessive temperature and pressure. These devices consist of fusible plugs, rupture disks or pressure relief valves. These safety relief devices will release all or part of the cylinder contents at temperatures as low as 125°F to 170°F. For this reason, cylinders should not be stored near sources of high temperature.

4.8.1. Valve Connections

Connecting a compressed gas cylinder with equipment not specifically designed for that gas may result in serious hazards. Standard valve outlet connections have been established for valves used with compressed gas cylinders. These standard connections are designed so that valve connections for one gas will not fit the connections for incompatible gases. NEVER ATTEMPT TO ALTER OR MODIFY THE OUTLET THREADS OR ADAPT A DIFFERENT FITTING.

- If cylinders are equipped with protective caps, such caps must be kept on the cylinders at all times, when the cylinder is not in use
- Cylinders must be stored and/or transported in an upright position
- A suitable hand dolly or similar device is to be used in transporting cylinders; these cylinders should be tightly chained or secured with 3" nylon binder in an upright position
- Secure all cylinders in an upright position to walls where chains/clamps were installed to secure them, or racks designed to contain cylinders (rope is not acceptable to secure cylinders)
- Never lift a cylinder by its valve or protective cap, or with chains, slings, or magnets. A crane may be used when a safe cradle or platform is provided to hold the cylinder.
- Never drop cylinders or permit them to strike each other when handling or transporting them
- Protect cylinders from any objects that will produce a cut or abrasion in the surface of the metal
- Never use cylinders for rollers, supports, or for any purpose other than to contain gas
- Never hammer, pry, or use a wrench on a stuck cylinder valve. If the valve will not open by hand, mark the cylinder and return to the supplier at once!
- Keep cylinders away from live electrical circuits
- Never allow anyone to use any compressed gas cylinder to remove dust or debris from the body or as a sweeping, cleaning medium
- Never strike an arc or tap a welding electrode on a cylinder
- Keep cylinders away from sparks and molten metal when welding, cutting or machining

4.8.2. Use of Cylinders

- Never use a cylinder unless it is labeled in accordance with DOT regulation 172.400. Labels should include the composition of the gas and the hazards.
- Do not rely just on the color of the cylinder to identify cylinder content
- When in doubt regarding the proper handling of a gas cylinder or its contents, consult the supplier of the gas cylinder
- If a cylinder develops a leak while in use, it should be removed to a safe open, well-ventilated area. The cylinder should be barricaded and secured upright, if possible, and the supplier should be notified. The PP should also be notified to determine if additional precautions should be taken.
- When the gas cylinder is not in use, keep valves tightly closed
- Do not deface or remove any markings, labels, decals, tags, or stencil marks applied by the supplier and used for identification of cylinder or its content
- Do not change, modify, tamper, or repair pressure relief devices
- Any damage noted, that might impair the safety of the cylinder, must be reported to the attention of the supplier, and the cylinder should be taken out of service immediately
- Before returning an empty cylinder, make sure of the following:

- The valve is closed
- The protective cap is in place
- The cylinder is tagged with an “EMPTY” cylinder tag
- The cylinder is placed in a rack, secured, and easily accessible for pick-up
- Never test for leaks with an open flame (use a leak detector or bubble solution)
- A compressed gas cylinder should never be subjected to a temperature above 125°F
- A direct flame should never be permitted to come in contact with any part of a compressed gas cylinder
- Do not allow grease, oil, or other combustible material to touch any part of a cylinder
- If the hose on a manifold system exceeds 18 inches and if not shielded from personnel, both ends should be firmly anchored to prevent “whipping”

4.8.3. Regulators and Piping

- The regulator and piping must be suited for design conditions and for the nature of the gas (corrosive, flammable)
- A safety valve or rupture disc should be provided to protect the downstream equipment in case of regulator failure
- Piping upstream of the safety device should be pressure tested with inert gas (such as nitrogen) at full cylinder pressure

NOTE: Do not use nitrogen to test piping in a breathing air system

- After removing valve caps, carefully open valve slightly for an instant to clear openings of dust and dirt, except for hydrogen or fuel gas
- Wipe the outlet with a clean, dry, lint-free cloth after the valve opening has been cleared
- Make sure that the threads on regulators or other auxiliary equipment are the same as those on the cylinder valve outlet, never force connections that are not made to fit each other and do not use oil or grease on these connections
- Regulators and pressure gauges provided for use with a particular gas, must not be used on cylinders containing a different gas
- Stand to one side, with the regulator pointing away from you, while opening the cylinder valve very slowly
- Never use wrenches or tools, except those provided or approved by the manufacturer
- Never hammer the valve wheel in attempting to open or close the valve
- Be sure that all connections are tight and remain so

4.8.4. Oxygen Cylinders

- Never permit oil, grease or any other readily combustible substance to come in contact with oxygen cylinders, valves, regulators, gauges, or fittings
- Oxygen cylinders with regulators attached should always be opened very slowly

- Combustible material should not be stored immediately adjacent to oxygen cylinders
- Do not allow oxygen cylinders to stand under lines or other places where oil can drip on the cylinder, its valve, or attachments
- Never use oxygen to operate air tools or other equipment
- Oxygen cylinders must be stored in a separate location at least 20 feet from cylinders of flammable/combustible gases or separated by a non-combustible barrier 5 feet high

4.8.5. Storage of Cylinders

- Store cylinders with protective caps in place
- Store cylinders only in designated areas and segregate cylinders containing different products
- Store empty cylinders separately and tag them with an “empty” tag
- Cylinders should be protected against excessive rise in temperature
- Cylinders should never be exposed to continuous moisture
- Post “NO SMOKING” signs around all fuel gas and oxygen storage areas
- Never store cylinders near flammable substances such as oil, gasoline or waste
- Do not store cylinders near elevators or gangways, or locations where heavy objects may strike or fall on them
- Cylinders containing flammable or toxic gases should be stored in well-ventilated areas

4.9. Working Over/Near Water

Lifesaving Skiffs – a boat used for rescuing persons that have fallen into bodies of water.

Personal Flotation Device (PFD) - equipment that, when selected and used properly, acts as a life saving device in water. These devices must be approved by the U.S. Coast Guard pursuant to 46 CFR part 160 (Type I, II, III, or V PFD) and marked for use as a work vest, for commercial use, or for use on vessels.

Ring Buoy – water rescue device approved by the U.S. Coast Guard.

4.9.1. Personal Flotation Devices

Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jacket or buoyant work vests. Employees will wear Personal Flotation Devices when working on or in the following areas:

- On small boats
- On floating rafts, stages, or piers
- When working on structures without adequate guard rails that extend over, or are adjacent to water
- When working near or on any riverbank or stream

Personal flotation devices shall be maintained in safe condition and shall be inspected for defects that would alter their strength or buoyancy prior to, and after each use. Personal flotation devices shall be considered unserviceable when damaged in a manner that affects buoyancy or fastening capability. Defective units shall not be used and will be tagged, "Damaged, Do Not Use", or destroyed.

4.9.2. Water Rescue Devices

Ring buoys with at least 90 feet of line will be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.

At least one lifesaving skiff will be immediately available at locations where employees are working over or adjacent to water.

4.9.3. Boarding Watercrafts or Barges

NewFields personnel working on watercrafts or barges will board these vessels via gangways, never by jumping across open water. A gangway of not less than 20 inches in width, of adequate strength, maintained in safe repair and safely secured shall be used. Handrails with a minimum height of 33 inches measured perpendicularly from rail to walking surfaces at the stanchion, with a mid-rail, must be on both sides of the gangway. Handrails may be made of wood, pipe, chain, wire, rope or materials of equivalent strength and shall be kept taut at all times. When the gangway overhangs the water so that there is danger of employees falling between the ship and the dock, a net or suitable protection shall be provided to prevent employees from receiving serious injury from falls to a lower level.

If a gangway is not practicable, a straight ladder meeting the requirements of 29 CFR that extends at least 36 inches above the upper landing surface and is secured against shifting or slipping shall be provided.

When conditions are such that neither a gangway nor straight ladder can be used, a Jacob's ladder meeting the following requirements may be used.

- Jacob's ladders shall be of the double rung or flat tread type
- Well maintained and properly secured
- A Jacob's ladder shall either hang without slack from its lashings or be pulled up entirely
- Spacers (bumpers) shall be hung between the vessel, barge, or other structure to which the barge is tied alongside, or other equally effective means shall be provided to prevent damage to the bottom rungs of the ladder
- When there is a danger of an employee falling or being crushed between the vessel, barge, or other structure (pier), suitable protection shall be provided

Personnel can be severely injured or killed from falls between watercraft. NewFields personnel will comply with all safety policies of the watercraft owners/operators while on board the vessel.

4.10. RF Energy Hazards

Exposure to radiofrequency (RF) radiation can negatively impact the health of workers. The exposure may occur when working on rooftops or near communications equipment such as cell phone towers.

The primary hazards associated with exposure RF energy are thermal effects and fire. While RF energy is non-ionizing and therefore does not change the structure of atoms or molecules, it can cause biological tissue to heat rapidly. Tissue may be damaged if the body fails to dissipate excessive heat. The extent of heating and the potential for damage depends on a variety of factors, including:

- Radiation frequency
- The size, shape, and orientation of the exposed person/body part
- Duration of exposure
- Level of exposure
- Environmental conditions
- The efficiency of heat dissipation from the exposed tissue

The eyes and the testes are known to be particularly vulnerable to heating by RF energy due to a relatively low level of blood flow to and from those two areas of the body. Tissue damage may occur during exposure to high RF levels. Temporary sterility, burns, and even death can result from contact with high levels RF.

Burns can be caused by touching the RF emitter or the passage of large amounts of RF energy through the body. The intense heat generated by arcing may also cause burns. All cases of RF energy burns require immediate medical attention.

Where flammable materials are present near sources of RF energy, special care is necessary in the selection of equipment when working on or near the energy source. The following may cause fires or explosions:

- Sparks
- Short circuits
- Overloading

Whenever possible, engineering and administrative control methods will be utilized to minimize or eliminate personnel exposure to RF radiation. NewFields personnel will avoid contact and will maintain a safe working distance from RF energy emitting equipment.

4.10.1. Monitoring RF Fields

Rooftop, communications operations and other operations where there is potential for exposure to RF fields will use appropriate monitoring devices, such as a Radman unit.

If NewFields personnel must work in an area affected by RF radiation, exposure levels will be monitored and personnel will not exceed the maximum permissible exposure (MPE) limits, as established by FCC for occupational exposure, see tables below. However, wherever possible, NewFields personnel will attempt to remain below the uncontrolled exposure limits.

Table 1. FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	100 †	6
3.0-30	1842/f	4.89/f	900/f ² †	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	100 †	30
3.0-30	842/f	2.19/f	180/f ² †	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz

* = plane-wave equivalent power density

NOTE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Table 2 - Limits for Occupational Exposure

Specific Absorption Rate (SAR) 100 kHz – 6 GHz	
Whole-Body	Partial-Body
<0.4 W/kg	<8 W/kg

In addition, in the unlikely event that a worker has RF current flow through their body, the exposure limits outlined in Table 3 will not be exceeded.

Table 3 – Limits for RF Current Through the Body

Frequency (MHz)	Through Both Feet	Through Either Foot	Contact	Averaging Time
0.3-0.1	2000 f	1000 f	1000 f	1 second
0.1-100	200	100	100	6 minutes

4.10.2. RF Monitoring

A Radman or any other RF monitoring equipment will be maintained and calibrated as recommended by the manufacturer. Narda-STS equipment recommends recalibration by the manufacturer every 3 years.

Scan the area using the RF monitor and record any areas exceeding the Maximum Permissible Exposure (Uncontrolled). Verbally advise other persons present of any areas exceeding the MPE. (This will include any readings of the Radman unit as even the lowest indication shows values in excess of Uncontrolled MPE.) Areas where readings occur should be avoided.

The unit shall be examined at least every 15 minutes for the maximum hold reading. Any readings should be recorded for location and intensity when they occur.

The alarm will sound in any area where the exposure reaches 50% of the Occupational MPE. NewFields employees will leave the area immediately and conduct the operation a safe distance from the danger area. Monitoring results will be documented in field notes or reports and maintained.

4.10.3. Safe Work Practices

In addition to the exposure limits, safe work practices should be used to reduce the potential hazards to NewFields personnel working in areas affected by RF energy. At a minimum, the following guidelines will be followed:

- Remove all metal including jewelry, rings, and watches before working with RF equipment
- Never use metal ladders when working on or near RF equipment. Use fiberglass or wooden ladders.

5. TRAINING

NewFields employees who are exposed to any hazardous field condition will be trained to recognize and prevent hazards and to use safe work practices to reduce the risks associated with these typical field conditions. This training may be provided during orientation of field employees or during on site safety training, depending on the hazards and knowledge of the employees.

6. REFERENCES

29 CFR 1926.1053

29 CFR 1926.106

29 CFR 1918 Subpart C

29 CFR 1910.97

FCC OET Bulletin 54, 56 www.Narda-STS.com

30 CFR 56.11011

30 CFR 56.10007

30 CFR 56.4602, 56.7802, 56.7802

NewFields Health, Safety and Environment Standard Operating Procedure

HSE SOP 6 – Disciplinary Policy for Site Safety



**Updated
October 2016**

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HSE SOP 6 – Disciplinary Policy for Site Safety

The goal of this policy is to ensure appropriate hazard prevention and control measures are utilized on a work site. It is not intended to discourage coaching to correct an unsafe act, reporting unsafe behavior, accident or incident. Coaching among NewFields employees represents the best approach to identify and correct a potentially unsafe condition or work task on a work site.

The Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA) consider this policy as necessary and integral to the control and prevention of hazards in the work place.

1. PURPOSE

NewFields Health, Safety and Environment (HSE) program has incorporated this Standard Operating Procedure (SOP) to protect employees from hazards associated with unsafe work practices, identify site conditions requiring the proper use of Personal Protective Equipment (PPE) and hazards or unsafe conditions that may be created by others on a work site. The goal of this policy is to ensure hazard prevention and control measures are followed at all times. The policy is also required for NewFields compliance with OSHA and MSHA standards.

2. SCOPE

This SOP applies to all NewFields employees.

3. DEFINITIONS

The following definitions are incorporated by reference in this SOP:

- **Site Specific Safety and Health Plan (HASP)** – Plan which may be developed for a specific site that identifies potential hazards and prescribes controls to eliminate, reduce or otherwise control the hazards identified.
- **Personal Protective Equipment (PPE)** – Equipment such as safety glasses, safety shoes, high visibility vest, hearing protection and others that may be used to protect employees from potential hazards.

4. ROLES AND RESPONSIBILITIES

The HSE program and this SOP assigns the following duties and responsibilities for NewFields Companies and subsidiaries staff and management:

Purpose

To ensure control measures are followed to mitigate potential hazards which may be potentially harmful to NewFields employees.

Goal and Objective

To ensure hazard prevention and control measures are followed on work sites.

Reporting Requirements

Site Inspection, Deficiencies and Corrective Actions



- Partners, Principals or their management delegates (other Principals or Senior Project Managers) are responsible for ensuring workers adopt safe work practices at all times and receive appropriate training as prescribed by local, state and Federal regulations. They are also responsible to ensure workers are trained in the proper use of Personal Protective Equipment (PPE) to prevent a work place hazard exposure. This also includes making provisions for PPE (suits, respirators, gloves, etc.) as appropriate for work activities.
- Local Health and Safety Coordinators (HSC) will provide assistance to Project Managers and field staff to review potential projects or work activities which may include preparation of a site specific Health and Safety Plan (HASP) with measures to eliminate, mitigate or control hazards on the work site.
- Employees are responsible for compliance with the site specific HASP and any hazard control measures identified within it. In addition, employees are also responsible for the selection and proper use of appropriate PPE based on the task or activity they are to conduct.
- Human Resources (HR) Manager and Corporate Health and Safety (CHS) Manager will periodically review the performance requirements for staff as identified in this SOP. The HR Manager is responsible for maintaining records or written warning as may be provided by the Project Principal or their management delegates.

5. GUIDELINES

The HSE program and other SOPs (incorporated in the HSE program by reference) provide guidance for NewFields staff for work environments which may include the proper use of PPE or work control measures to eliminate or reduce workplace hazards. The following sections provide guidance and cross reference to other applicable HSE SOPs within the NewFields HSE program.

5.1. Site Safety Violations

NewFields employees will always respect and comply with all site specific health and safety protocols that may be established and required in a work place or job site. The following behaviors are considered site safety violations under this policy:

- Disregard for NewFields written health, safety and environment policies or the disregard for verbal coaching or correction of an unsafe act;
- Disregard for client requirements for site control, health, safety or procedure on a client controlled site;
- Refusal to wear appropriate or required PPE;
- Misuse, destruction, intentionally modifying or not maintaining PPE;
- Misuse, destruction, intentionally modifying or not maintaining safety equipment;
- Falsifying health and safety records or training certifications; or,
- Intentionally committing an unsafe act or asking another person to perform an unsafe act.

5.2. Coaching and Notifications

Verbal coaching to correct an observed behavior that may otherwise result in a preventable accident or injury represents the on-going obligation of all employees, supervisors and senior management. Verbal or written warnings may be issued to an employee if initial coaching did not correct coworker or site



personnel behavior. The warning will also include the corrective action that must be taken to improve the employee's safety performance and reduce workplace hazards. A copy of all written warnings may also be kept in the employees file.

In the event the unsafe acts or behaviors continue despite coaching and warnings, it may become necessary for an employee to be suspended, suspended without pay or terminated. The Partner, Principal or their management delegates will coordinate with the HR Manager in all such cases.

5.3. Site Safety Inspections

NewFields Partners, Principals or their management delegates (Project Managers, Supervisors or site Safety and Health Coordinators) will periodically conduct safety inspections on project sites where NewFields employees are scheduled to be on-site daily, for more than a month or if site conditions warrant such inspections regardless of project timeframe. Safety inspections may be delegated to on-site safety personnel, if appropriate. Inspections will focus on hazards specific to the site, include a review for new hazards not previously identified and the hazard control procedures identified in the site specific HASP or NewFields HSE Program. Any deficiencies observed will be first discussed with employees (coached correction). Verbal or written warning may follow along with corrective action as determined by Project Management, Partners or Principals. Inspections, deficiencies and corrective actions will be documented.

6. REFERENCES

Occupational Health and Safety Administration (OSHA), United States Department of Labor, Title 29 Code of Federal Regulations (CFR), Safety and Health Program Management Guidelines; Issuance of Voluntary Guidelines, [Notice](#), accessed October 2016.

NewFields Health, Safety and Environment Standard Operating Procedure

HSE SOP 7 – Electrical Safety and Energy Control



**Updated
October 2016**

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Appendix A	Electrical Equipment Inspection and Testing
Appendix B	Site Specific Energy Control Plan Template



HSE SOP 7 – Electrical Safety and Energy Control

Electrical safety and energy control are required for NewFields project and office locations where electricity or stored energy may represent potential hazards or pose a risk to employees or others in our workplaces. Reviewing potential work sites and work practices for the safe use of electricity or other potentially harmful energy sources is a priority for NewFields Companies, its subsidiaries, Senior Management and staff. Proactively reviewing proposed projects and work practices and conducting job hazard analysis with respect to energized equipment and machinery is an essential component of NewFields Health, Safety and Environment (HSE) program. In addition, both the Occupational Health and Safety Administration (OSHA) and the Mine Safety and Health Administration (MSHA) have establish specific performance and proactive worker protection requirements to ensure energy and energized equipment is safely used, and sufficiently isolated or de-energized prior to service, repair or related work. Site specific energy control plans may also be developed for procedures to de-energizing circuits or equipment (lockout/tagout) and testing prior to work being performed.

I. PURPOSE

NewFields HSE program has incorporated this Standard Operating Procedure (SOP) to establish a protocol for proactively reviewing electrical safety and energy control planning to minimize the potential for accidents or injuries involving NewFields staff. This protocol provides a framework for electrical equipment inspection and use as well as the need for the development of a site specific energy control plan as appropriate for each workplace location or remote work site. Ultimately, the purpose of this guidance is to ensure that before any NewFields employee performs any installation, servicing or maintenance on machinery or equipment, where the unexpected energizing, start up, failure or release of stored energy could occur and cause injury, the machinery or equipment will be rendered or deemed safe prior to working with it, working on it or working near it.

2. SCOPE

This SOP applies to all NewFields employees for review of projects or tasks that may have the potential for worker exposure to electrical or stored energy hazards in a NewFields workplace or job site. In addition, federal, state or local regulations also require the periodic inspection and documented isolation/testing of electrical equipment prior to or periodically in use in the workplace or on a project site. See Electrical Equipment Inspection and Testing (**Appendix A**). This SOP also incorporates an assessment of the need for a site specific energy control plan (lockout/blockout/tagout) procedures which also assigns specific roles and responsibilities of NewFields employees under the plan. See **Appendix B**, Site Specific Energy Control Plan Template.

Purpose

To proactively consider and plan for the safe use of electrical equipment and the need for energy control or isolation prior to conducting any task that may pose a potential hazard.

Goal and Objective

To energized equipment and stored energy sources are properly used, removed or isolated to ensure no hazard is posed by the equipment or energized machinery.

Reporting Requirements

Equipment Specific Inspection, Testing and Reporting Requirements

Site Specific Energy Control Plans



3. DEFINITIONS

The following definitions are incorporated by reference in this SOP:

- **Commissioning, Testing, Servicing and/or Maintenance** – Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining and/or servicing machines or equipment, including lubrication, cleaning or unjamming of machines or equipment, and making adjustments or tool changes, where employees could be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.
- **Energized** – Machines and equipment are energized when they are connected to an energy source or they contain residual or stored energy.
- **Energy Isolating Device** – A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy.
- **Energy Source** – Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- **Ground Fault Circuit Interrupter (GFCI)** – A Ground Fault Circuit Interrupter (GFCI) is a device to protect against electric shock should someone come in contact with a live (Hot) wire and a path to ground which would result in a current through his/her body. The GFCI operates by sensing the difference between the currents in the hot and neutral conductors.
- **Lock Out** – The placement of a lock out device on an energy-isolating device, in accordance with an established procedure (**Appendix B**), ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
- **Lock Out Device** – Any device that uses positive means, such as a lock, blank flanges and bolted slip blinds, to hold an energy-isolating device in a safe position, thereby preventing the energizing of machinery or equipment.
- **Tag Out** – The placement of a tag out device on an energy-isolating device, in accordance with an established procedure (**Appendix B**), to indicate that the energy-isolating device and the equipment being controlled may not be operated until the tag out device is removed.
- **Tag Out Device** – Any prominent warning device, such as a tag and a means of attachment, that can be securely fastened to an energy-isolating device to indicate that the machine or equipment to which it is attached may not be operated until the tag out device is removed.
- **Qualified Personnel** – Personnel trained in and familiar with special precautionary techniques, Personal Protective Equipment (PPE), insulating and shielding materials, and insulated tools necessary to work safely with energized electrical equipment. Qualified personnel possess skills and techniques to distinguish exposed live parts, to determine nominal voltage of exposed live parts, and knowledge of safe clearance distances.
- **Zero-Energy State** – A condition that is reached when all energy sources to or within equipment are isolated, blocked, or otherwise relieved, with no possibility of re-accumulation of energy. Equipment must be in a zero-energy state before commencing work.



4. ROLES AND RESPONSIBILITIES

The HSE program and this SOP assigns the following duties and responsibilities for NewFields Companies and subsidiaries staff and management:

- Partners, Principals or their management delegates (other Principals or Senior Project Managers) are responsible for ensuring workers are trained (office and field locations) with respect to electrical and energy safe work practices and appropriate site specific energy control plans (lockout/tagout) are prepared, updated and followed when necessary. Training requirements and site specific plans must also be reviewed with new employees or employees new to a NewFields office or project location and periodically reviewed with existing employees.
- Local Health and Safety Coordinators (HSC) will provide assistance to Principals or Senior Project Managers and coworkers, to ensure workers are trained for the duties they will perform, introduce any site specific plan to new employees and review work place or site specific procedures for adequacy.
- Only Authorized Employees may lock or tag machines or equipment in order to perform commissioning, testing, servicing and/or maintenance.
- Affected Employees are those who may be required to use machines or equipment on which commissioning, testing, servicing and/or maintenance is being performed under the lockout/tagout standard or who perform other job responsibilities in an area where such servicing is performed.
- Employees are responsible for the safe use (including the use of PPE) and periodic inspection of electrical equipment and electrical tools in accordance with manufactures recommendations. In addition, employees working in areas where energy control procedures may be utilized must be made aware of their potential for use.
- Corporate Health and Safety (CHS) Coordinator will periodically review the performance requirements for local HSC, administrative support and management staff as identified in this SOP. The CHS Coordinator is available to assist the HSC and management with site specific plan review, modifications or review of new or remote site specific plan, as needed or requested.

5. GUIDELINES

The HSE program and other SOPs (incorporated in the HSE program by reference) provide guidance for NewFields staff who may be required to operate electrically powered or energized equipment, perform work on electrically powered or energized equipment or work near such equipment.

OSHA has established a several standards and rules pertaining to the safe use of electricity and the control of energy. Specifically, OSHA has adopted the following regulations pertaining to electricity, energy and controls:

- Electrical – [29 CFR 1910.331](#);
- Training – [29 CFR 1910.332](#);
- Electrical Safe Work Practice Standard – [29 CFR 1910.333](#);
- Control of Hazardous Energy (Mechanical lockout/blockout/tagout) – [29 CFR 1910.147](#);



- Lock Out and Tag Out of Circuits – [29 CFR 1926.417](#); and,
- Accident Prevention Tags – [29 CFR 1926.200 \(h\)](#).

In addition, MSHA has also adopted a variety of electrical performance requirements as found in [Title 30 CFR, Mineral Resources, Part 56 – Safety and Health Standards, Surface Metal and Nonmetal Mines, Subpart K – Electricity](#). This section of MSHA regulation pertains to a variety of electrical hazards and their control.

Only trained and authorized personnel may work near electrical equipment that has not been de-energized or as may be necessary to perform a lockout/tagout procedure. Other personnel (Affected and Other Employees) may work on or near electrical equipment only after the equipment has been fully de-energized and lockout/tagout procedures have been implemented. Only trained and authorized personnel (Authorized Employees) may re-energize the electrical equipment and no one else is permitted to so.

6. HAZARDS

Electrical and stored energy hazards may vary by job site, equipment type, equipment component or system that may be present. Hazard identification is critical to understanding the nature of the hazard, the magnitude it represents and how best to control, remove or isolate the hazard identified. See **Appendix B** for guidance on site specific energy source assessment. The following represent general hazards associated with electricity and stored energy.

6.1. Electrical Shock

Electricity travels in closed circuits. Electrical shock occurs when the human body or part of it becomes part of the closed circuit. The effect on the body of an electrical current passing through it is subject to:

- The amount of current flowing through the body (as measured amperage (amps) or milliamperes (mA));
- The currents path through the body;
- The length of time the body remains in the circuit; and,
- The currents frequency (as measured in cycles per second or hertz (Hz)).

The resistance of the human skin can also influence the severity of shock. Dry skin has a fairly high resistance to electrical current. But moist or wet skin may act as a conductor in closing an electrical circuit. This means anyone working with electricity in a damp or wet environment needs to exercise extra caution to prevent electrical hazards.

Shock effects can result from exposure to voltages as low as 15 Volts (V). Fatalities can result from exposures to voltages as low as 70 V. Fatal injuries have been recorded as a result of exposure to the normal domestic and industrial voltage of 240 V Alternating Current (AC) and from currents of 25-30 milliamps. **Table 6.1.1** below shows the predicted effect of electricity on the human body based on changes in current (milliamperes or mA).



Table 6.1.1 Predicted Effect of Electrical Shock on the Human Body	
Current (mA)	Reaction
Below 1	Generally not perceptible
1	Faint tingle
5	Slight shock, average person can let go. Strong involuntary reactions can lead to other injuries*.
6 – 30	Shock, loss of muscular control. Individual cannot let go, muscles may throw individual off circuit.
50 – 150	Extreme pain, respiratory arrest, severe muscular contractions. Death is possible.
1,000 – 4,300	Heart ceases pumping. Muscular contract and nerve damage occur. Death likely.
10,000	Cardiac arrest, severe burns. Death probable.

* Extensor muscles may be triggered by shock throwing the person away from the power source.

6.2. Burns

Burns are the most common shock related injury. An electrical shock can result in an electrical burn, arc burn, thermal contact burn or any combination of these. Seek medical attention immediately following any event resulting from an electrical burn. Each of these types of burns are described in more detail below:

- Electrical burns are among the most serious burns and require immediate medical attention. They occur when electrical current flows through tissues or bone, generating heat that causes tissue damage.
- Arc or flash burns result from high temperatures caused by an electric arc or explosion near the body. These burns should also be treated promptly.
- Thermal contact burns are caused when the skin touches hot surfaces of overheated electrical conductors, conduits or other energized equipment. Thermal burns can also be caused when clothing catches on fire, as may occur when an electrical arc is produced.

6.3. Explosion or Fire

Arcs generated from electrical short circuits can cause injury and also start a fire. Extremely high energy arcs can damage equipment and may result in fragmented metal flying out from the point of the arc or explosion. Even low energy arcs may cause violent explosions in atmospheres that contain flammable gasses, vapors or combustible dusts.

Electrical power tool selection in potentially flammable or explosive atmospheres requires Intrinsically Safe or IS tools which are specially design for operations in such environments.

6.4. Stored Energy

Stored energy hazards may be present in many forms for equipment and machinery. Sources may include electrically powered equipment (including battery powered), mechanically powered equipment as driven by engines or incorporating springs, counter weights, flywheels, hydraulically and pneumatically powered or assisted.



Hazards may be encountered in performing installation, servicing or maintenance on machinery or equipment, where the unexpected energizing, start up, failure or release of stored energy could occur and cause injury.

7. CONTROL METHODS

In general, control methods for hazards associated with electrical or stored energy hazards are site, equipment and task specific considerations prior to the use or working with the equipment. The following represent general control methods to minimize potential hazards associated with electricity and stored energy.

7.1. Grounding and Circuit Protection

Grounding refers to a means or system of intentionally creating a low-resistance path that connects to earth. This prevents the buildup of voltages that could create a potential hazard. Grounding is normally a secondary protective measure to protect against electric shock. Grounding alone will not protect against all risk of shock but it will reduce the risk of shock. A service or system ground is primarily designed to protect machines, tools and insulation from damage through the use of a neutral or grounded conductor.

An equipment ground helps protect the equipment operator by providing a second path for the current to pass through from the tool or machine to ground. This additional grounding system safeguards the operator if a malfunction causes the tools metal frame to become energized. The resulting flow of current through this system may trigger a circuit protection device within the tool (shutting it down) or may be used in conjunction with an external Ground Fault Circuit Interrupter (GFCI). An external GFCI is used between the power source and the tool or equipment.

7.2. Tool and Equipment Selection

Select only hand portable tools and equipment that are protected by an approved industry system. Double insulated tools are marked with a “box within a box” designation or equivalent indicating the tool is equipped with a double insulating system.

7.3. Equipment Inspection and Testing

Prior to using electrically powered equipment, cords or other items designed to carry an electrical current, the item must be periodically inspected (and in some cases tested) for defects or damage prior to use. Cables connecting equipment to power must be selected for appropriate size, gauge and length to support safe operation of the electrical tool put into service. In general, extension cords and tools must be three pronged, grounded designed for hard or extra-hard usage and be in good condition. See **Appendix A** for additional guidance on equipment selection, inspection and testing requirements for equipment used on NewFields controlled job sites or workplaces.

7.4. Lockout/Blockout/Tagout

Prior to working with or working on electrical equipment or machinery with the potential for stored mechanical energy, an assessment must be conducted to determine if the energy source represents a hazard to the worker in direct contact with the equipment or those working near it. If the equipment or



work to be performed on it may create a hazard, a system for lockout/blockout or tagout is required to eliminate the electrical or stored energy hazard. The system also requires only authorized individuals (Authorized Employee) are permitted to isolate electrical circuits, equipment or machinery through the use of locks and tags. Other workers in the area (Affected Employees and Other Employees) also need to be made aware of the system and details about its use in the workplace or on the job site. See **Appendix B** for additional guidance on the details of a lockout/blockout/tagout system and a template for a Site Specific Energy Control Plan Template.

7.5. Overhead Powerlines

Prior to staging equipment or establishing the work area, survey the area for overhead powerlines. Do not stage high profile equipment at night or in conditions of poor visibility. When staging equipment or transporting equipment maintain minimum safe distances to power lines as presented in **Table 7.5.1** below.

Table 7.5.1 Minimum Safe Distance to Overhead Power Lines	
Voltage Alternating Current (Kilovolts / kV)	Clearance Distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	*

* As established by the utility owner/operator or a register professional engineer who is a qualified person with respect to electrical power transmission and distribution.

7.6. Underground Utilities

Prior to conducting work that may require earthworks (grading, trenching, drilling, etc.) notify local utility location services in advance of the underground work. Prior to site work, inspect the site for surface markings and establish minimum working distances with the location service provider. Markings may also technically expire over time (established number of days) and require periodic update by the location service. **Table 7.6.1** presents the uniform color codes for marking underground utilities.



White	Proposed Excavation
Pink	Temporary Survey Markings
Red	Electric Power Lines, Cables, Conduit and Lighting Cables
Yellow	Gas, Oil, Steam, Petroleum or Gaseous Materials
Orange	Communication, Alarm or Signal Lines, Cables or Conduit
Blue	Potable Water
Purple	Reclaimed Water, Irrigation and Slurry Lines
Green	Sewers and Drain Lines

7.7. Signs and Labels

Switchboard, panel boards, control panels and motor control centers on NewFields controlled sites are to be marked in accordance with the 2002 National Electrical Code (NEC) 110.6 labeling requirements. Any equipment installed after 2002 needs to be labeled and equipment installed before 2002 must be labeled if any modifications or upgrades are made.

7.8. Safe Work Practices

The following electrical and energy safe work practices will be used in NewFields office locations and work sites:

- Work areas must be well lit and kept clean and orderly. Employees will not enter any area that does not have sufficient illumination to work safely, especially if there may be electrical or stored energy hazards in the area;
- Avoid working with or around a source of electricity when you, your surroundings, your clothing, or your tools are wet;
- Remove all metal jewelry, rings, and watches before working with electrical equipment or power tools if wearing these items may represent a potential hazard;
- Never use metal ladders when working on or near electrical equipment. Use only non-conductive, dry fiberglass or wooden ladders; and,
- De-energize any electrical or stored energy source that may represent a hazard when working directly with equipment or machinery or represents a hazard in the proposed work area.

7.9. Protective Equipment

The following personal protective equipment must be made available to employees working with or near potential electrical hazards:

- Use gloves rated for the voltage range that may be encountered;
- Wear safety boots meeting the ASTM F2413-11 standard for safety footwear;



- Wear safety goggles meeting the ANSI Z87.1-1989/CSA Z94.3-92 standard. Goggles meeting this standard are rated to reduce eye exposure to solar radiation or unexpected short-term electrical arc; and,
- Wear a Class E hardhat meeting the ANSI Z89.1 standard. Class E hardhats are proof-tested at 20,000 volts.

8. TRAINING

In general, all NewFields employees who may be exposed to hazard associated with working near electrical and stored energy sources must receive training to include the minimum topics below:

- The potential hazards associated with electricity and stored energy;
- Safe work practices for working near electrical equipment and machinery;
- Proper use and inspection of electrical powered tool and equipment (**Appendix A**);
- Evaluating both electrical and stored energy sources for potential hazards (**Appendix B**);

Subject to work assignments and project requirement, NewFields staff may also be required to participate in training for equipment inspection and testing (**Appendix A**) and as needed for participation in a site specific Energy Control Plan. **Appendix B** contains a template for development of a site specific plan. Both of these appendices and the training requirements (both initial training and refresher training requirements) within are incorporated by reference in this SOP and the NewFields HSE program by reference.



9. REFERENCES

Occupational Health and Safety Administration (OSHA) 2002, United States Department of Labor, Publication 3075, [Controlling Electrical Hazards](#), Revised 2002.

OSHA 2015, 29 CFR 1910.331, [Electrical Scope](#), accessed October 2016.

OSHA 2015, 29 CFR 1910.332, [Electrical Training](#), accessed October 2016.

OSHA 2015, 29 CFR 1910.333, [Electrical Selection and use of safe work practices](#), accessed October 2016.

OSHA 2015, 29 CFR 1910.333, [General Environmental Controls, The control of hazardous energy \(lockout/tagout\)](#), accessed October 2016.

OSHA 2015, 29 CFR 1926.417, [Electrical, Lockout and tagging of circuits](#), accessed October 2016.

OSHA 2015, 29 CFR 1926.200, [Accident prevention signs and tags](#), accessed October 2016.

OSHA 2015, 29 CFR 1926.200, [Accident prevention signs and tags](#), accessed October 2016.

Mine Safety and Health Administration, Title 30 CFR, Mineral Resources, Part 56 – Safety and Health Standards, Surface Metal and Nonmetal Mines, Subpart K – [Electricity](#), accessed October 2016.



APPENDIX A
Electrical Equipment Inspection and Testing



HSE SOP 7 – Appendix A: Electrical Equipment Inspection and Testing

NewFields workforce understands electrical safety and energy control are required for NewFields project and office locations where electricity or stored energy may represent potential hazards or pose a risk to employees or others in our workplaces. To minimize the potential hazards associated with electrical equipment use, NewFields has adopted the following Electrical Equipment Inspection and Testing protocol to ensure electrical equipment is periodically inspected and tested.

This protocol does not include procedures for lock out / tag out, power tool usage, overhead or underground electrical hazards. See **HSE SOP 7 Electrical Safety and Energy Control** for guidance with respect to these topics.

I. POWER TOOL INSPECTION

Electric hand tools selected for use on NewFields work site should be double-insulated. This generally means the tool is encased in plastic, which will prevent the user from electric shock if the tool were to develop a short circuit. These type of tools are identifiable with a square-within-a-square logo or the words “double-insulated” on the label. These tools will have two-prong plugs with no ground pin and one prong will be wider than the other. The wider pin is the neutral conductor and the thinner pin is the hot side of power. When these types of tools are used in conjunction with a properly wired power supply, the tools built-in internal switch will control the hot conductor in the event of a short circuit so the tool will not be energized. If the tool is used with an improperly wired power circuit, the internal switch will still shut the tool off but the internal wiring of the tool may still be energized creating the potential for the user to be exposed to an electrical hazard.

Other electric hand tools have three prongs (hot, neutral and ground). Any tool of this type with a missing grounding pin must be taken out of service immediately for repair or replacement as it represents an extremely hazardous situation if placed into service. Electric power tool should be inspected before each use. If there are any defects, such as insulation missing from the power cord or the protective shell is broken, the tool must be taken out of service until repaired.

2. EXTENSION CORD INSPECTION

Only extension cords in good working order will be used on NewFields work sites. OSHA requires only three-wire cords designed for hard or extra-hard usage are permitted. The National Electrical Code (NEC) has different designations for extension cords. Hard-service cords are marked with letters such as S, SE, SO or ST; junior hard service cords are marked with letters such as Sj, SJE, SJO, SJT or SJTO. Other letters may be included after these to indicate the nature of the insulation or outer covering.

Wire gauge (diameter) is not prescribed in the OSHA standard, but the size of the wire in an extension cord must be sufficient to handle the amperage that will be drawn by tools connected to the cord. For example a hard service cord may be available made of 18-gauge wire that is rated to carry a maximum of 7 amps but would be insufficient to power a drill that draws 11 amps. A cord made of 12-gauge wire with a capacity of 20 amps would be sufficient to provide power to the drill in this example.

Flat-wire cords are prohibited from use on construction site because they do not provide the protection that double-insulated cords do. In addition, if the grounding pin is missing in a three-wire cord, the cord must be removed from service, repaired and tested before it is put back into service.

3. GROUND FAULT CIRCUIT INTERRUPTER INSPECTION

Ground Fault Circuit Interrupters (GFCIs) must be used on all projects for 120-volt, single-phase 15 and 20 amp service when the circuit is not a part of the permanent wiring of a building or structure. Most modern generators are equipped with GFCIs and they must be periodically checked to ensure they are working properly.

If a generator to be used on a site is not equipped with a GFCI, a portable GFCI unit must be used to ensure proper ground fault protection. The portable GFCI must be placed into the generator or power source and extension cords to power equipment must be plugged into the GFCI unit.

4. ASSURED EQUIPMENT GROUNDING PROGRAM

In addition to Ground Fault Circuit Interrupters (GFCIs) use, NewFields has also adopted the use of an Assured Equipment Grounding Program for electrical equipment to be used on a project or work site. The objective of the program is to minimize the possibility of electrical hazards to workers by ensuring equipment grounding wires are electrically continuous from the power tool to the power source.

The Assured Equipment Grounding Program consists of a written program (this document), daily visual inspection and a method to detect faulty grounding wire in an electrical extension cord or hand tool. In addition to electrical extension cords and hand tools, receptacles must also be tested.

5. EQUIPMENT TESTING PROCEDURE

In order to ensure a grounding wire is electrically continuous throughout an extension cord or power tool, a continuity test must be conducted. There are several different type of continuity testers available for purchase. Contact your local Health and Safety Coordinator (HSC), designated site Safety and Health Coordinator or the Corporate Health and Safety Coordinator if you require assistance selecting a unit or have questions about their use.

In general, one end of the continuity tester has an alligator clip that attaches to the grounding pin of a tool that is not double-insulated or the extension cord to be tested. The other end of the tester may have a metal probe that plugs into the extension cord or is touched to the metal part of the power tool. A light meter on the tester will indicate the ground is continuous and the tool or cord has passed the continuity test. If the meter or light on the tester does not indicate the tool or cord has passed to the continuity test, the tool or cord must be removed from service until it is repaired. Once repaired it must be retested before returning to service.

6. EQUIPMENT TESTING FREQUENCY

Each electrical extension cord, tool and receptacle shall be tested on the frequencies indicated below:

- Before the equipment is first used;
- Before it is returned to service following any repairs;
- Before the equipment is used after any incident that can reasonably be suspected to have caused damage to the tool, such as a vehicle running over a cord;
- At intervals not to exceed three month for tools and cords and six months for receptacles.

7. COLOR CODING

NewFields has adopted a system of color coded tape to indicate that a piece of equipment has passed an inspection and continuity test. The color of the tape applied to the equipment also indicates the period or quarter the equipment was last tested. Routine testing will be completed on the first working day of the new quarter. Monthly testing (if a requirement of the equipment or work process) will be completed on the first working day of the month. **Table AI.1** below shows testing frequency and colored tape selections as adopted by NewFields.

Table AI.1 Equipment Color Coding Tape Selections And Testing Frequency		
Quarter / Month	Quarterly Colors	Monthly Colors
Q1 / January	White	White
Q1 / February	White	White and Yellow
Q1 / March	White	White and Blue
Q2 / April	Green	Green
Q2 / May	Green	Green and Yellow
Q2 / June	Green	Green and Blue
Q3 / July	Red	Red
Q3 / August	Red	Red and Yellow
Q3 / September	Red	Red and Blue
Q4 / October	Orange	Orange
Q4 / November	Orange	Orange and Yellow
Q4 / December	Orange	Orange and Blue
Repair / Damaged / Removed From Service	Brown	Brown

8. PROGRAM REVIEW

NewFields staff working with electrical equipment managed under this inspection system will review this inspection and coding system annually and amend the system if necessary based on site conditions, equipment in use or other considerations.



Project Name: Project Number:		ASSURED EQUIPMENT GROUNDING QUARTERLY INSPECTION REPORT			Physical Condition			
Date	ID #	Type of Equipment	Ground	Continuity	Cord	Outlet	Other	By



APPENDIX B
Site Specific Energy Control Plan Template

Site Specific Energy Control Plan			
Project Name:	<Project Name>	Date Prepared:	4 October 2016
Project Number:	<Project Number>	Date of Update:	<Date of Site Specific Update>
Prepared by:	Ross Cravens	Projects Coordinator	
Approved by:	<NewFields Designated>	Senior Construction Manager / Project Manager	
Approved by:	<NewFields Designated>	Health, Safety and Environment Manager	

One Lock, One Key, One Life

NewFields management and workforce understand electrical safety and energy control are required for NewFields project and office locations where electricity or stored energy may represent potential hazards or pose a risk to employees or others in our workplaces. To minimize the potential hazards associated with electrical and stored energy hazards, NewFields has prepared the following site specific Energy Control Plan (ECP) to ensure electrical equipment and equipment or machinery on this job site is made safe prior to NewFields employees or others in the workplace working on or near such equipment. This protocol does not include procedures for power tool inspection or usage, overhead or underground electrical hazards. See **HSE SOP 7 Electrical Safety and Energy Control** for guidance with respect to these topics.

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I. PURPOSE

The purpose of this site specific Energy Control Plan (ECP) is to ensure that before any construction employee performs any installation, servicing or maintenance on machinery or equipment, where the unexpected energizing, start up or release of stored energy could occur and cause injury, the machinery or equipment will be rendered safe to work on.

2. GENERAL INFORMATION

OSHA has adopted two standards, found in the Code of Federal Register (CFR), that require lockout/blockout/tagout of machinery and equipment applicable to non-electrical energy producing machinery and equipment:

- Control of Hazardous Energy (Mechanical lockout/blockout/tagout) - [29 CFR 1910.147](#); and
- Electrical Safe Work Practice Standard - [29 CFR 1910.333](#).

OSHA has also established a construction standard that requires lockout/tagout of equipment and circuits applicable to electrical hazards:

- Lockout and Tagout of Circuits – [29 CFR 1926.417](#)

OSHA also has an Accident Prevention Tag standard that requires defective tools, equipment, etc. to be tagged out:

- Accident Prevention Tags – [29 CFR 1926.200 \(h\)](#)

Lockout is the preferred method of isolating machines or equipment from energy sources and shall be used whenever possible. Equipment obtained or modified after January 2, 1990, will be installed with lockout capability. If tags are used, additional steps shall be taken as may be necessary to provide the equivalent safety available from the use of a lockout device.

3. BASIC RULES FOR LOCKOUT OR TAGOUT SYSTEM PROCEDURE

All equipment shall be locked out, blocked out (blocks, blinds, etc.) or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Anyone operating or attempting to operate any switch, valve, or other energy isolating device that is not locked, blocked or tagged out will be disciplined.

4. GENERAL LOCKOUT/BLOCKOUT/TAGOUT PROCEDURES

This site specific ECP establishes the minimum requirements for lockout, blockout or tagout of energy isolating devices.



Specific procedures for control of hazardous energy sources must be developed (in addition to the general procedures outlined in this ECP) for any equipment or machinery before any maintenance or servicing is performed on it, unless it meets the exceptions noted in [29 CFR 1910.147\(c\)\(4\)\(i\)](#) below:

Note: "Exception:" The employer need not document the required procedure for a particular machine or equipment, when all of the following elements exist: [1] The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees: [2] the machine or equipment has a single energy source which can be readily identified and isolated: [3] the isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment: [4] the machine or equipment is isolated from that energy source and locked out during servicing or maintenance: [5] a single lockout device will achieve a locked-out condition: [6] the lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance: [7] the servicing or maintenance does not create hazards for other employees; and [8] the employer, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.

All machines and equipment shall be evaluated using **Appendix A - Energy Source Determination Checklist**. After Energy Source Determination Checklist is completed, review **Appendix B** for a list of previously prepared **Energy Control Procedures** which have been prepared and used for this worksite. If the equipment or machinery is not in the current listing or a new or updated procedure is required, **Appendix B** contains an **Energy Source Control Procedure** to be prepared for each piece of equipment, machine or process requiring control.

5. RESPONSIBILITIES

Any employee who could be potentially exposed to hazardous energy sources shall be instructed in the safety significance of the lockout, blockout or tagout procedure. Employees authorized to perform energy control measures shall receive training commensurate with their responsibilities and as required by the applicable OSHA standards. **Appendix A** is to be completed to evaluate all machines and equipment and include a list of names and job titles of employees authorized to lockout and tagout such equipment (Authorized Employees). Each new or transferred affected employee and other employees whose work operations are or may be in the area shall be instructed in the purpose and use of the lockout or tagout procedure. The job titles of employee who work with the equipment or machinery to be lockout, blocked or tagout (Affected Employees) are to be listed in the checklist in **Appendix A**. Prior to lockout/blockout/tagout the senior authorized individual will brief all Affected Employees in person. In the event of tagout system only is to be used, the Authorized Employee will also brief all Other Employees potentially exposed to the hazard or present in the control work area in person. These employees are also to be listed on the checklist in **Appendix A**. The procedures noted in the SEQUENCE OF LOCKOUT OR TAGOUT SYSTEM PROCEDURE (**Section 7** below) will be followed.

6. PREPARATION FOR LOCKOUT OR TAGOUT

The **Authorized Employee** shall make a survey to locate and identify all isolating devices to be certain which switch(s), valve(s) or other energy isolating devices apply to the equipment to be locked or tagged out. More than one hazardous energy source and/or means of disconnect (electrical, mechanical, or others) may be involved. If more than one energy source or stored energy is to be locked or tagged out on more than one occasion, consult **Appendix B** for a list of specific procedures previously utilized and



then review previously prepared procedures presented in **Appendix C**. Update existing procedures, if required. In the case that a machine or piece of equipment does not have a specific procedure, no work can proceed until **<NewFields Designated>** writes and provides the Authorized Person with a specific procedure.

7. SEQUENCE OF LOCKOUT, BLOCKOUT OR TAGOUT SYSTEM PROCEDURE

NewFields has adopted the following procedure for evaluating and establishing a lockout, blockout or tagout system:

1. Notify all Affected Employees that a lockout, blockout or tagout system is going to be utilized and the reason why. The Authorized Employee shall know the type and magnitude of energy that the machine or equipment utilizes, generates or stores and shall understand the hazards thereof.
2. If the machine or equipment is operating, shut it down by the normal stopping procedure. This is usually done by depressing stop button, open toggle switch, etc. In addition, ensure that all stored energy is dissipated or properly restrained.
3. Operate the switch, valve, or other energy isolating device(s) so that the equipment is isolated from its energy source(s). Stored energy such as the springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc. must be dissipated or restrained. Combinations of these energy sources and any stored energy will require a specific procedure, in this case consult the **Appendices B** and **C** for the applicable equipment, machinery or process specific procedure.
4. Lockout, blockout and/or tagout device application:
 - a. Locks, blocks and tags shall be affixed to each energy-isolating device only by an Authorized Employee.
 - b. Locks and tags shall be singularly identified.
 - c. Locks shall be affixed in a manner that will hold the energy-isolating device in a safe or off position.
 - d. Tags, when used, shall be affixed in a manner that will clearly indicate that the operation or movement of the energy isolating device from the "safe" or "off" position is prohibited.
 - e. Tags that cannot be affixed directly to the energy isolating device shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.
 - f. All potentially hazardous stored or residual energy shall be relieved, disconnected, restrained or otherwise rendered safe. If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall continue until the possibility of accumulation no longer exists. Stored energy may require blocks, blinds, flanges, etc. in order to appropriately control stored energy.
 - g. After ensuring that no personnel are exposed, as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. (See **Appendices B** and **C** for procedures for specific machinery and equipment.)

CAUTION
RETURN OPERATING CONTROL(S) TO "NEUTRAL" OR "OFF"
POSITION AFTER THE TEST.

5. The equipment is now locked out or tagged out.



8. TESTING OR POSITIONING OF MACHINES, EQUIPMENT OR COMPONENTS

In situations which lockout, blockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:

1. Clear the machine or equipment of tools and materials.
2. Remove employees from the machine or equipment area.
3. Remove the lockout or tagout devices.
4. Energize and proceed with testing or positioning.
5. De-energize all systems and reapply energy control measures in accordance with the requirements of this ECP.

9. RESTORING MACHINES OR EQUIPMENT TO SERVICE OR OPERATION

Restoring machines or equipment to service or operation shall include:

1. After the servicing and/or maintenance is complete and equipment is ready for normal operation, check the area around the machine or equipment to ensure that no one is exposed to any hazard that may be associated with startup or operation.
2. After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lockout or tagout devices. Operate the energy isolating devices to restore energy to the machine or equipment.

10. PROCEDURE INVOLVING MORE THAN ON PERSON

In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place his/her own assigned lockout device or tagout device on the energy isolating device(s). When an energy-isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. If lockout is used, a single lock may be used to lockout the machine or equipment with the key being placed in a lockout box or cabinet that allows the use of multiple locks to secure it. Each employee will then use his/her own assigned lock to secure the box or cabinet. As each person no longer needs to maintain his or her lockout protection, that person will remove his/her lock from the box or cabinet.

11. REMOVAL OF LOCKOUT OR TAGOUT DEVICES

A lockout/tagout device shall be removed from each energy-isolating device by the employee who applied it, EXCEPT:

1. Lockout/tagout devices may be removed by [<NewFields Designated>](#) if the Authorized Employee who applied it is not available and:
 - a. It is verified that the Authorized Employee who applied the device is not on the worksite;
 - b. All reasonable efforts were made to contact the Authorized Employee to inform him/her that his/her lockout or tagout device has been removed and;
 - c. The Authorized Employee has this knowledge before he/she resumes work on the worksite.



12. INFORMING OUTSIDE CONTRACTORS

<NewFields Designated> will inform all outside contractors of the elements of this program and obtain information regarding their lockout/tagout programs. This information shall be conveyed to employees in an understandable manner. The work efforts covered by the procedure shall be fully coordinated and complied with.

13. ESTABLISHED WORKSITE OR FACILITY

When work is to be performed at an established worksite or facility, coordination will be made to determine the energy control measures required for the worksite or facility. NewFields will follow rules and train our personnel according to this ECP in addition to any worksite or facility requirements.

14. SHIFT OR PERSONNEL CHANGES

In the case of shift or personnel changes, a changeover period will be established so that the Authorized Employee may exchange their assigned locks/tags. Authorized Employee assuming control of lockout of equipment will be fully briefed in the scope and stage of the work by those whom are being relieved.

15. TRAINING

Training shall be given to all authorized, affected and other personnel as required by [29 CFR 1910.147 \(c\)\(7\)](#) and [29 CFR 1910.332](#). **Appendix D** provides **Key Points for Lockout/Tagout Training Program** and shall be used as a training outline along with the appropriate sections of the standard.

In addition, to the training program points presented in **Appendix D**, an on-line training module is also available by following the link [here](#). OSHA also has an on-line lockout/tagout tutorial available on-line by following the link [here](#).

<NewFields Designated> will conduct training and prepare a record and certify that the employee training has been accomplished. The certification will be made on **Appendix D (Training Record)**. <NewFields Designated> will conduct retraining when there is:

1. A change in their job assignments,
2. A change in machines, equipment or processes that present a new hazard, or
3. Additional retraining shall also be conducted whenever the periodic inspection reveals, or whenever there is reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

16. PERIODIC EVALUATIONS

Periodically (at least annually) the effectiveness of the entire program will be evaluated by an authorized employee(s) other than the one(s) utilizing the energy control procedure being inspected. Any deviations or inadequacies shall be documented and corrected. These annual evaluations will be conducted during the month of <NewFields Designated>.



The date of the inspection/evaluation will be documented on the **Annual Inspection Report (Appendix E)** and maintained as a part of this program until the next annual evaluation replaces it.

17. ELECTRICAL WORK PRACTICES

The adoption of the following elements for electrical work is designed for in plant electrical work. This adoption of the following requirements is not intended to be used for high voltage work (over 600 volts), or exposure to overhead power lines.

18. ELECTRICAL LOCKOUT/TAGOUT ([29 CFR 1910.333\(B\)](#))

The adoption of the following elements for electrical work is designed for in plant electrical work. This adoption of the following requirements is not intended to be used for high voltage work (over 600 volts), or exposure to overhead power lines.

Locks can be placed without a tag only under the following conditions:

1. Only one circuit or piece of equipment is de-energized.
2. The lockout period does not extend beyond the work shift.
3. Employees exposed to the hazards associated with reenergizing the circuit or equipment are familiar with the procedure.

In addition, tags used without a lock must be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by use of a lock. Additional methods include, but are not limited to, removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnect device.

19. ELECTRICAL TEST VERIFICATION OF DE-ENERGIZED CIRCUITS ([29 CFR 1910.333\(B\)\(2\)\(IV\)](#))

A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are de-energized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been de-energized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment shall be checked for proper operation immediately before and immediately after this test.

20. WORK ON ENERGIZED CIRCUITS

Approval must be obtained from [<NewFields Designated>](#) or authorized maintenance supervisor prior to any work on energized circuits. [<NewFields Designated>](#) or authorized maintenance supervisor will verify that by de-energizing circuits, it will create additional or increased hazards or it is infeasible due to equipment design or operational limitations.


Working on energized parts requires the wearing of appropriate personal protective equipment. [<NewFields Designated>](#) will be responsible for specifying appropriate personnel equipment to be used, to ensure compliance with [29 CFR 1910.335](#). Personal protective equipment for electrical hazards shall



meet, be used and maintained in accordance with [ANSI J6.1 through J6.7](#). Qualified employees for electrical work shall be aware of and follow the approach distances for qualified employees for alternating current as specified in [29 CFR 1926.403 Tables K-1 and K-2](#).

21. ACCIDENTS CONCERNING LOCKOUT/TAGOUT

The NewFields Principal or designated delegate will responsible for fully investigating all lockout/tagout accidents. If the accident involved the control of hazardous energy with a single lockout source, a specific procedure will be written and included in **Appendix C** before work is continued. If the accident involved a specific procedure for a piece of equipment, the lockout/tagout specific procedure will be evaluated and modified (if necessary) prior to authorizing work to continue.

Project Name: Project Number:	APPENDIX A ENERGY SOURCE DETERMINATION LOCKOUT/TAGOUT PROCEDURE/CHECKLIST		 Perspective. Vision. Solutions.
<i>In order to determine all energy sources for each piece of equipment, all questions must be answered. If the question does not apply, write N/A in the blank. Circle "yes" or "no" or fill in the blank.</i>			
Equipment Location:	Equipment Name / Model:	Equipment Details:	Procedure No. Assigned:
Plan Covered Employees:	Employee Name	Employee Work Area	Employee Job Function
Authorized Employees ¹ :			
Affected Employees ² :			
Other Employees ³ :			
<p>1 - A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment.</p> <p>2 - An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.</p> <p>3 - Where tagout systems are used, all other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out, blocked out, or tagged out.</p>			
Equipment Electrically Powered? (includes battery)	Yes	No	If yes, Motor Control Center (MCC) or power panel and breaker number:
Does Equipment have a lockout device?	Yes	No	Battery location: Battery disconnect location:





**APPENDIX A
ENERGY SOURCE DETERMINATION
LOCKOUT/TAGOUT PROCEDURE/CHECKLIST**

Project Name: Project Number:					
Equipment Mechanically Powered?	Yes	No	If yes, mark each type of energy source that applies below.		
Engine Driven?	Yes	No	If yes, switch or key location:		
Is lockout device installed?	Yes	No	If no, method of preventing operation:		
Spring loaded?	Yes	No	Yes	No	If spring loaded, is there a method of preventing spring activation? If no, method to prevent movement:
Counter weights?	Yes	No	Yes	No	If counter weight present, is there a method of preventing activation? If yes, method to secure movement and lock: If no, method to prevent movement and lock:
Flywheel?	Yes	No	Yes	No	If flywheel present, is there a method of preventing movement? If yes, method to secure movement and lock: If no, method to prevent movement and lock:
Equipment Hydraulically Powered?	Yes	No	Yes	No	If yes, location of main control/shut off valve: Can control/shut off valve be locked in "off" position? If no, location of closest manual shutoff valve:



**APPENDIX A
ENERGY SOURCE DETERMINATION
LOCKOUT/TAGOUT PROCEDURE/CHECKLIST**

Project Name: Project Number:					
			Yes	No	Does manual shutoff valve have a lockout device? If no, what is needed to lock valve closed?
Equipment Pneumatically Powered?	Yes	No	Yes	No	Is there a bleed or drain valve to reduce pressure to zero? If no, what will be required to bleed off pressure?
Equipment Chemical System?	Yes	No	Yes	No	If yes, location of main control/shut off valve: Can control/shut off valve be locked in "off" position? If no, location of closest manual shutoff valve: Does manual shutoff valve have a lockout device? If no, what is needed to lock valve closed? Is there a bleed or drain valve to reduce system pressure and drain the system of chemicals? If no, how can system be drained and neutralized?

Project Name: Project Number:	APPENDIX A ENERGY SOURCE DETERMINATION LOCKOUT/TAGOUT PROCEDURE/CHECKLIST				 NewFields Perspective. Vision. Solutions.
					What personal protective clothing or equipment is needed for this equipment?
Thermal Energy?	Yes	No	Yes	No	<p>If yes, location of main control/shut off valve:</p> <p>Can control/shut off valve be locked in “off” or closed position? If no, location of closest manual shutoff valve:</p> <p>Does manual shutoff valve have a lockout device? If no, what is needed to lock valve closed?</p> <p>Is there a bleed or drain valve to reduce system pressure and temperature and drain the system? If no, how can system pressure and temperature be reduced and drained?</p> <p>What personal protective clothing or equipment is needed for this equipment?</p>
Recommendations or Comments:					
Completed by:		Reviewed by:		Approved by:	


Project Name:
Project Number:


APPENDIX B
LIST OF ENERGY CONTROL PROCEDURES



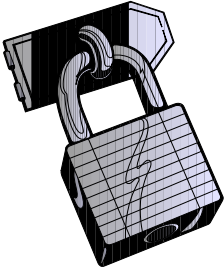
Each procedure established for this Site Specific Energy Control Plan to be listed here. Specific Energy Control Plan are presented in Appendix C.

Procedure Number:	Equipment, Machinery or Process:

Project Name: Project Number:		APPENDIX C ENERGY SOURCE CONTROL PROCEDURE			 NewFields Perspective. Vision. Solutions.	
<i>In order to determine all energy sources for each piece of equipment, all questions must be answered. If the question does not apply, write N/A in the blank. Circle "yes" or "no" or fill in the blank.</i>						
Procedure No. Assigned:		Equipment, Machinery or Process:			Date Approved/Implemented:	
Energy Control Measures to be Used in the Specific Procedure:						
Lock	Tag	Block	Blind	Other (Specify Measures Used):		
Yes / No	Yes / No	Yes / No	Yes / No			
SPECIFIC PROCEDURE						
<i>Required for all equipment, machinery, and/or process that fails to meet the exceptions noted in 29 CFR 1910.147(c)(4)(i).</i>						
<i>The purpose of this specific procedure is to protect the employees of NewFields. Failure to comply with these procedures will result in disciplinary action and may result in employee discharge.</i>						
Type(s) and magnitude(s) of energy and hazards:						
Procedure Covered Employees:		Employee Name	Employee Work Area		Employee Job Function	
Authorized Employees ¹ :						
Affected Employees ² :						

Project Name: Project Number:	APPENDIX C ENERGY SOURCE CONTROL PROCEDURE		
Other Employees³:			
<p><i>1 - A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment.</i></p> <p><i>2 - An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.</i></p> <p><i>3 - Where tagout systems are used, all other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out, blocked out, or tagged out.</i></p>			
Means of notifying affected and other employees:			
Type(s) and locations of energy isolating means:			
Type(s) of stored energy and methods to dissipate or restrain:			
Additional method(s) selected to ensure that tags provide adequate level of safety (i.e., removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, the removal of a valve handle to reduce the likelihood of inadvertent energization, blocks to support elevated members, blinds in pipes, etc.):			
Type(s) of equipment checked to ensure disconnections:			
Names/job titles of employees authorized for group lockout/tagout:			
Special precautions not noted above (i.e., fire hazards, chemical reactions, required cool down periods, etc.):			

METHODS OF TAG AND LOCK IDENTIFICATION

	<p>RECORD SERIAL NUMBER ON APPENDIX A TO IDENTIFY EMPLOYEE ASSIGNED. ALL LOCKS WILL BE OF <NewFields Designated> BRAND.</p> <p>ONE KEY WILL BE ISSUED TO THE EMPLOYEE AND THE SECOND KEY WILL BE DESTROYED.</p>
---	---

TAGS WILL ALWAYS BE SECURED BY A NYLON SELF LOCKING TIE, WHICH WILL REQUIRE CUTTING THE NYLON SELF LOCKING TIE TO REMOVE.

<p>DANGER</p> <p>Do Not</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Name of Authorized Employee</p>	<p>Insert one of the following:</p> <p>start, open, close, energize or operate</p>	<p>DANGER</p> <p>Do Not Remove This Tag.</p> <p>To do so without authority will mean immediate discharge.</p> <p>See Other Side.</p>
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NOTE: OTHER METHODS OF IDENTIFYING LOCKS AND TAGS ARE ACCEPTABLE. THESE OTHER METHODS ARE SPECIFIED IN 29 CFR 1910.147(c)(5).



APPENDIX D KEY POINTS FOR NEWFIELDS LOCKOUT/TAGOUT TRAINING PROGRAM

GENERAL

NewFields has developed procedures for documenting and utilized appropriate controls of potentially hazardous energy on our job sites. Standard Operating Procedure (SOPs), specifically Health, Safety and Environment (HSE) **SOP 7 Electrical Safety and Energy Control**, which includes a site specific energy control plan template (this document) for use in preparing a site specific control plan.

NewFields has or will provided locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware for isolating, securing or blocking machines or equipment. These devices must:

- Be singularly identified (noticeable and recognizable);
- Used only for controlling energy; and,
- Are not to be used for other purposes.

Durable lockout/tagout devices must be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected. Standardized lockout/tagout devices must be maintained within each facility or job site. At a minimum, standardized in at least color, shape or size.

Tagout devices must also be standardized in print and format, must be legible and understandable, and may also be bi-lingual if necessary for job site location or workforce requirements.

Lockout/tagout devices must also indicate the identity of the employee (Authorized Employee) applying the devices.

When major modifications are made to machinery electrical systems or when new machinery is installed, the energy source must be designed to accept a lockout device.

KEY POINTS OF NEWFIELDS SITE SPECIFIC ENERGY CONTROL PLAN

Inspection: To be conducted at least annually

- Performed by authorized employee other than those utilizing energy control procedure under inspection;
- Designed to correct any deviations or inadequacies observed;
- Include review of each authorized employee's responsibilities under the procedure(s). If tagout is used, then include review of limitations of tags; and,
- Review of the site specific energy control plan and update, if required.



Substantial: Tagout devices and means of attachment

- Must be sufficient to prevent inadvertent or accidental removal; and,
- Attachment means must be non-reusable type; attached by hand; self-locking; non-releasable with minimum unlocking strength no less than 50 pounds; at least equivalent in design and characteristics to one-piece, all environment tolerant nylon cable tie; and if used with electrical must be non-conductive.

Warnings: Tagout devices


- Warn against hazardous conditions if machine or equipment will be or is energized; and,
- Legend such as "Do Not Start", "Do Not Close", "Do Not Energize", "Do Not Operate".

Training: Limits of tags

- Warning devices, not physical restraint;
- Do not remove without authorization; never bypass, ignore, or otherwise defeat tag;
- Must be legible and understandable (may be bi-lingual, if required);
- Tags and means of attachment must be made of materials that will withstand workplace environmental conditions;
- May evoke false security; understand meaning; and,
- Securely attached to energy isolating devices.

Application: Tagout devices

- Clearly indicate that the operation or movement of energy isolating devices from "safe" or "off" position is prohibited;
- Attach at the same point that lock would have been attached (if lockout capability exists); and,
- If tagout device cannot be affixed to energy isolating device, then affix as close as safely possible and in an obvious position.

Project Name: Project Number:	APPENDIX E ANNUAL EVALUATION REPORT	
Date of Evaluation:	Evaluation was made by:	Site Specific Energy Control Plan Reviewed: Yes / No
Comments on general energy control plan:		
The following site specific procedures have been reviewed (list below):		
The following site specific procedures were modified (list below):		
The following site specific procedures were added (list below):		
Following a review of the log of occupational injuries and illnesses (OSHA form 200 or Equivalent) and the associated accident reports and injury/illness reports (OSHA form 101 or equivalent, the following injuries resulted from deficiencies in the energy control (lockout/tagout) plan:		
<i>Note: If injuries are listed above, indicate procedure number for applicable equipment, process or machinery. These procedures shall be reviewed and modified as necessary in conjunction with this review.</i>		
Comments:		
Review and Change: All changes, modifications and/or revisions to this plan must be documented in the table below.		
Description of Changes to the Document		

NewFields Health, Safety and Environment Standard Operating Procedure

HSE SOP 8 – Emergency Action Plan



**Updated
March 2017**

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Appendix A Site Specific Emergency Action Plan Template



HSE SOP 8 – Emergency Action Plan

Emergency action planning for NewFields office locations and work sites represents a proactive approach for responding to emergency situations which may pose a risk to staff and workplaces. Preparation and planning conducted prior to an emergency in the office setting or a remote project site is a priority for NewFields Companies, its subsidiaries, Senior Management and staff. Emergency preparedness in the event of a major emergency situation will potentially minimize harm to NewFields staff operating domestically and abroad. The goal of preparing a site specific Emergency Action Plan (EAP or Plan) is to prepare and familiarize NewFields staff with procedures to follow in the event of an emergency. Each Plan is to be periodically reviewed, updated and revised to ensure changes to the workplace or office location setting or staff duties and responsibilities are reflected and incorporated into the site specific EAP. Plans may also be developed for remote field locations or international project locations, as necessary based on country risk analysis, staff safety and security or health concerns. NewFields Companies, its subsidiaries and labor force also have a responsibility for periodic review of workplace or office Plans and those prepared for site specific considerations of a remote work site location. The Occupational Health and Safety Administration (OSHA) also requires [Emergency Action Plans](#) be developed and implemented for management of workplace emergencies (OSHA 2002).

Purpose

To proactively consider potential threats to the health and safety of NewFields staff working in a fixed office or remote project locations where advanced site specific planning may be necessary.

Goal and Objective

To ensure Emergency Action Plans (EAPs) are prepared to familiarize NewFields staff with appropriate responses to consider in the event of an emergency.

Reporting Requirements

Site Specific Office EAPs
Remote or Project Site Specific EAPs

1. PURPOSE

NewFields Health, Safety and Environment (HSE) program has incorporated this Standard Operating Procedure (SOP) to establish a protocol for site specific emergency planning to minimize the potential for accidents or injuries involving NewFields staff. The protocol provides a framework for the development of a site specific plan for each workplace location or remote work site.

2. SCOPE

This SOP applies to the preparation of site specific EAPs that will serve as a response planning tool for NewFields staff to familiarize themselves with their workplace or worksite. Site specific Plans will also identify roles and responsibilities of staff designated in the Plan, response procedures and steps to be taken in the event of a workplace emergency.

3. DEFINITIONS

The following definitions are incorporated by reference in this SOP:



- **Accident** – An accident is an unplanned, unexpected and undesired event which may occur suddenly and cause harm to people, damage to property, loss or harm to the environment or communities. Examples may include motor vehicle or mobile equipment related accidents, equipment failure or malfunction, infrastructure failures and others.
- **Automated External Defibrillator (AED)** – An AED is typically a lightweight, battery operated, portable device that (once connected to potential heart attack victim) checks for heart beats or rhythm and can automatically (or provide audible instructions for) delivering an electric shock to the heart in an effort to restore a normal rhythm. AEDs are used in the treatment of Sudden Cardiac Arrest (SCA).
- **Bloodborne Pathogens** – A bloodborne pathogen is a term used to describe pathogenic or infectious microorganisms that may be present in blood and can cause disease in humans. Pathogens may include but are not limited to hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV) and others. Blood and other potentially infection materials may contain infectious microorganisms.
- **Cardiopulmonary Resuscitation (CPR)** – Is an emergency medical procedure employed with the goal of restoring normal heartbeat and breathing to a victim suffering from heart failure. The procedure may involve breathing for the victim and applying external chest compressions to make the heart pump. The technique is only successful about five (5) percent of the time depending on the age of the victim, the nature of cardiac arrest and other factors.
- **Emergency Action Plan (EAP)** – A written document required by OSHA standard, [29 CFR 1910.38](#). The purpose of the plan is to facilitate and organize employer and employee actions during workplace emergencies (OSHA 2002).
- **First Aid** – First aid refers to medical attention that is usually administered immediately after the injury occurs and at the location where it occurred. It often consists of a one-time, short-term treatment and requires little technology or training to administer. [First aid](#) can include cleaning minor cuts, scrapes, or scratches; treating a minor burn; applying bandages and dressings; the use of non-prescription medicine; draining blisters; removing debris from the eyes; massage; and drinking fluids to relieve heat stress (OSHA 2015).
- **Injury or Illness** – An injury or illness is an abnormal condition or disorder. An injury is any wound or damage to the body and may include cuts, abrasions, sprains, fractures or burns. Illnesses include both acute (sudden) and chronic (over an extended period of time) conditions such as skin disease, respiratory disorder or poisoning. OSHA applies these definitions to their “Recordable Incident” criteria with requisite employer notification requirements.
- **Physician or Other Qualified Health Care Professional** – A physician or qualified health care professional is an individual who is qualified by education, training, licensure / regulation (when applicable), and facility privileging (when applicable) who performs a professional service within his / her scope of practice and independently reports that professional service.

4. ROLES AND RESPONSIBILITIES

The HSE program and this SOP assigns the following duties and responsibilities for NewFields Companies and subsidiaries staff and management:

- Partners, Principals or their management delegates (other Principals or Senior Project Managers) are responsible for ensuring workplace (office and field locations) EAPs are prepared and updated as necessary. The Plans must also be reviewed with new employees or employees new



to a NewFields office or project location and periodically reviewed with existing employees.

- Local Health and Safety Coordinators (HSC) will provide assistance with periodic review of the Plan with coworkers, introduce the Plan to new employees and review the emergency procedures presented in it for accuracy and adequacy.
- Employees are responsible for periodically reviewing the Plan and the performing the responses to emergencies presented within it. Employees may be asked or are required to perform certain duties as described in the Plan in the event of an emergency.
- Corporate Health and Safety (CHS) Manager will periodically review the performance requirements for local HSC, administrative support and management staff as identified in this SOP. The CHS Manager is available to assist the HSC and management with Plan review, modifications or review of new or remote site specific EAPs, as needed or requested.

5. GUIDELINES

The HSE program and other SOPs (incorporated in the HSE program by reference) provide guidance for NewFields staff in responding to a workplace emergency and evacuations (as required by OSHA and presented in [publication 3088](#), OSHA 2001). In addition, each NewFields office location also has a site specific EAP with additional emergency related response details for each office location. The following sections provide emergency planning guidance and cross references to other applicable SOPs within the NewFields HSE program:

5.1. Types of Emergencies

An emergency is any unforeseen situation that potentially poses a threat to NewFields employees, disrupts or shuts down an office location or project site, or causes physical or environmental damage. There are a wide variety of potential emergency situations that may occur within or near a NewFields office location or remote work site. Contingency planning should also be incorporated into initial Health, Safety and Environmental Checklists or site specific Health and Safety Plans (HASPs) as required for proposed field projects or work sites (See **HSE SOP 14 – HazWoper Standard and Site Specific Health and Safety Plans (HASPs)**). The following may represent emergencies in workplaces, offices or field locations:

- Severe weather including floods, hurricanes, tornados or lightning;
- Fire or explosion;
- Chemical spill or toxic gas release;
- Radiological accident;
- Bomb threat;
- Medical emergency;
- Power failure;
- Civil disturbances, and;
- Workplace violence resulting in bodily harm or trauma.



5.1.1. Severe Weather

Severe weather conditions may include, snow storms, blizzards, flooding, hurricanes, tornados, lightning, high winds or heavy rain. Severe weather may cause significant hazards for travel and field operations, depending on the tasks being performed and other factors. The potential for severe weather conditions should be considered when writing site specific HASPs. In some cases, severe weather may affect the safety of personnel in office locations as well. It is the responsibility of each office or local HSC to consider the range of severe weather conditions the office location or proposed field site may encounter and consider response planning to mitigate the potential condition. It is the responsibility of the local or on site HSC, Partner, Principal or their delegate to determine when work or travel will be postponed and employees advised to seek shelter. If severe weather conditions may be encountered during travel or field work, the following should be considered prior to commencing the field activity:

- Check the extended forecast for the project site or destination to prepare for possible severe weather situations;
- Review weather forecast information using AM / FM radio, National Oceanic and Atmospheric Administration (NOAA) Weather Radio or smartphone to access the [National Weather Service](#) and other websites to get updated information on potential storms in the project area;
- The National Weather Service also maintains a [Weather Safety](#) update section on their website along with streaming [Severe Thunderstorm Forecasts](#) throughout the US.

Severe weather may include lightning which can pose a serious risk to workers in the field. Mobile equipment such as drill rigs, boats or vessels also present unique safety concerns with respect to lightning. If serious weather conditions develop, project operations may be required to stop and site personnel should proceed to designated shelters until it is safe to resume field work.

5.1.2. Fire or Explosion

When a fire is detected, the fire department will be contacted immediately by activating the office alarm system or calling 911 (see **Section 5.3 Emergency Services Notification**). A portable fire extinguisher meeting the requirements of [29 CFR Part 1910.157](#), as a minimum, will be accessible to control small fires. Appropriate fire extinguishers will be located in each office area, all company vehicles and on project sites, as required. Only personnel with appropriate training in the use of [portable fire extinguishers](#) should use this equipment.

5.1.3. Chemical Spill or Toxic Gas Release

Accidents may include chemical releases involving toxic gases, liquids, or solids. In the event of an accidental spill or release, the area may be blocked off to avoid the spread of the spilled material or contact with personnel, equipment or vehicles. Minor chemical spills may be cleaned up utilizing appropriate personal protective equipment (selected with respect to the type chemical) absorbent material and proper disposal. The location of any required spill clean-up equipment should be included in new employee orientation training or initial project site briefing. Only trained and qualified personnel may respond to a large spill or one involving a potentially toxic or harmful substance.



In the event of a large spill, a spill of an unknown substance, or the release of chemical or airborne vapor that is potentially toxic or harmful to human health, all NewFields personnel will evacuate the area and Emergency Response personnel will be notified (see **Section 5.4 Emergency Services Notification**). Additional agencies or groups may need to be notified during or after the emergency, such as State or local environmental control program or the Environmental Protection Administration (EPA) for a potentially hazardous material spill. Consult with your supervisor or Senior Management for guidance before calling these agencies to ensure compliance appropriate regulations and protocols.

5.1.4. Radiological Accident

NewFields operates and maintains equipment containing radioactive material for use in laboratory and field work testing. In the event In the event this radiological equipment has become damaged, or may become damaged due to fire, theft, transportation accident or other event immediately contact the appropriate NewFields Radiation Safety Officer (RSO) for guidance. In the event NewFields staff are informed of radiological accident or incident within or near a fixed work place or work site, all NewFields personnel will evacuate the area and Emergency Response personnel will be notified (see **Section 5.4 Emergency Services Notification**).

5.1.5. Bomb Threat

In the event NewFields staff are informed of a potential bomb threat near a fixed work place or work site, all NewFields personnel will evacuate the area and Emergency Response personnel will be notified (see **Section 5.4 Emergency Services Notification**).

5.1.6. Medical Emergency

Personnel injury may occur at any location, and medical treatment may range from first aid to emergency first responder life-saving techniques. If medical attention is required an emergency medical services team (ambulance / rescue squad) should be contacted for treatment and transport. Some situations may require transport of an injured person by company personnel. Directions to the nearest hospital and route instruction are located in the site-specific HASP or EAP (refer to **SOP 12 First Aid and CPR** and **SOP 17 Accident or Incident Investigation**).

5.1.7. Power Failure

In the event of a power failure in a NewFields office location, office or building Management may require staff to exit the facility until power can be restored. If available, increase natural light sources by opening blinds or windows in the area. Shut off electrical appliances and computers before the power is restored to prevent potential damage to equipment and devices. Cease any work activities that involve potential injury due to power or light loss. Use appropriate precautions when moving about in an under-lighted work area to avoid injury from slips, trips or falls. Keep an alternative light source available to facilitate safe exit from the work area or building. The In multi-level office facilities with elevators, the status of passenger cars and potential occupants will be established by NewFields and building Management to confirm all NewFields building occupants are accounted for.



5.1.8. Civil Disturbance

In the event of unplanned demonstration or civil disturbance near an office location, stay within the building and notify local authorities, building security or law enforcement of the situation. If necessary, building security or law enforcement will provide guidance on what actions are necessary given the situation.

5.1.9. Workplace Violence

If confronted by a violent person, your safety is of primary concern. If you are not alone in the work area, it is likely that another employee will call local law enforcement or building security respond and gain control of the situation. If possible, request someone nearby call building security or local law enforcement. Remain calm and speak to the individual in a quiet and calm manor voice until security or law enforcement arrives to control the situation.

5.2. Emergency Equipment

NewFields office locations will maintain, at a minimum:

- Emergency lighting is required for exit illumination in the event of loss of power or building emergency;
- A portable source of lighting is also recommended to assist with work area evacuation (if necessary) or search work place;
- Fire extinguishers suitable for extinguishing ABC class fires;
- First aid kit / Bloodborne pathogens kit; and
- CPR / AED kit

NewFields field sites will maintain the following equipment for safety and emergency response purposes. Additional equipment may be required subject to site specific hazards:

- Fire extinguisher;
- First aid / Bloodborne pathogens kit;
- Self-contained eye wash tank (when potential for eye contact exists);
- Personal Protective Equipment; and
- Air horns or equivalent signal device.

5.3. Employee Notification

The purpose of employee alarm and notification systems are to reduce the severity of workplace accidents by alerting employees to a workplace emergency requiring evacuation, shelter in place and other responses, if required. Notification systems will vary by office location or project site but may include automated or manually triggered bells, horns, sirens, voice alert systems or other devices that can be distinguished above and apart from the normal sound level in the workplace. Subject to the details required in site specific EAP, different signals may be required to establish an evacuation notification or an alternative signal for shelter in place, if required. Employees are required to review the site specific EAP and understand notification systems and the required response associated with unique alerts or patterns.



5.4. Emergency Services Notification

When notifying outside emergency response agencies of an emergency, it is important to assure the rapid and accurate transfer of information to appropriate personnel. There are different details to consider when calling from a fixed site landline or a [mobile phone](#). It is critical that you provide the emergency operator with information that is accurate and as complete as possible. Try to remain calm, and speak slowly and clearly. When calling an emergency operator to request police, fire department, or emergency medical services personnel, the following information should be provided:

- Tell the emergency operator the location of the emergency right away;
- Provide the emergency operator with your wireless phone number so if you are disconnected they can call you back if additional information is needed;
- Provide a brief description of the incident and time of occurrence;
- Exact location (including street, floor or site location); and,
- Extent of injuries or property damage, if any.

5.5. Emergency Contact Information

Site specific EAPs are also to contain emergency telephone numbers near telephones, on employee notice boards, and other conspicuous locations where telephones serve as the primary means of reporting emergencies. In most instances calling 911 will establish connection with an emergency operator to request emergency response personnel. If you are attending to a victim or a situation or are not able to make the call, ask others (if present) to contact emergency personnel or call 911. Be sure to designate a single person to place the call, not “someone call 911”. In addition to requesting emergency response personnel and the site specific EAP, it may also be a Plan requirement to contact other NewFields staff or management, building management and others to inform them of an emergency. The site specific EAP should contain these additional contact details as well.

5.6. Evacuation and Shelter in Place Planning

In most emergency situations all personnel will be required to evacuate the building or work site and assemble at a designated muster point. To support this contingency, each office and required project site location will have a site specific EAP describing the details of the evacuation plan (**Appendix A**). Other EAPs may also contain responses to situations which require shelter in place and not evacuation. The appropriate EAP must include employee evacuation signal and (if necessary) a different signal for shelter in place notifications, a map of building exit routes and the locations or appropriate muster points for personnel to meet outside the office location. Many municipalities require an exit route map be posted in office locations. Project site specific EAPs may also designate egress routes to muster points and site entry / exit log review with muster point attendants.

5.7. Evacuation Essential Services and Duties

Site specific EAP designated personnel will be responsible for accounting for personnel at muster points. Other staff may be assigned tasks to support and ensure the building or work space or work site has been successfully evacuated. In some office environments, this may include checking elevator status in the event



of a power failure, conducting a final sweep of the office space to ensure no occupants remain and all have been notified. Other duties may include prohibiting unauthorized personnel back into the work area or office building once the emergency signal has been initiated. Individuals with essential services or duties will be identified in the EAP. Contact your local HSC, your supervisor or Senior Management if you would like more information about the EAP or your respective duties in the event of an emergency.

6. TRAINING

All NewFields employees will receive, at a minimum, Emergency Awareness training during new employee orientation or when induction training is required for a new work site or location. Additional training will be completed whenever a change in the EAP occurs. All NewFields employees at field sites will be provided site specific EAP training during the initial briefing for the project and whenever a change is required in the EAP. Such training will be documented and include:

- Employee notification alarm systems;
- Evacuation or shelter in place procedures;
- Muster points and egress routes; and,
- Emergency recognition and response.

6.1. New Employee or Site Orientation Training

New employee orientation will include review of emergency procedures. New employees will be briefed on alarm signals, appropriate responses to the signals, lines of authority, evacuation routes and muster points.

Initial field site briefings will include emergencies procedures, alarm signals and the designation of the safe refuge during a site evacuation. All employees are required to gather at the designated refuge site after hearing the emergency signal.

6.2. Subcontractors

Subcontractors working on NewFields project sites will identify an appropriate refuge or muster point for their workers. Each subcontractor will identify one person to account for their personnel and report status.

6.3. Evacuation Review and Drills

All NewFields office locations will conduct evacuation drills at least annually. Drills must include the sounding of appropriate alarms, evacuation of all personnel, accounting for personnel at muster points, and evaluation of drill effectiveness. Any deficiencies should be noted and appropriate improvements should be made to the office location's site specific EAP for building evacuation.



7. REFERENCES

Occupational Health and Safety Administration (OSHA) 2002, United States Department of Labor, Title 29 Code of Federal Regulations (CFR) 1910.38, Means of Egress, Emergency Action Plans, [Evacuation Planning and Procedures eTool](#), accessed December 2015.

OSHA 2015, [CFR 1910.151, Medical Services and First Aid](#), Safety and Health Topics, Medical and First Aid, accessed December 2015.

OSHA 2001, How to Plan for Workplace Emergencies and Evacuations, [publication 3088](#), revised 2001.



APPENDIX A
Site Specific Emergency Action Plan Template

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1. PURPOSE

To provide information regarding safe operating procedures for NewFields employees working in or near excavation or trenching operations at field sites.

2. SCOPE

Applies to all field locations and activities that may expose NewFields employees to excavation or trenching hazards. While the actual excavation activities will not be conducted by NewFields, employees may be exposed to hazards when required to be in the area of these operations. This SOP is not intended to cover any subcontractors of NewFields or any other contractor, nor will it be used to in any way define the means and methods of the contractor's operations. NewFields employees will not assume the responsibilities of the "Competent Person" for any excavation or trench.

3. DEFINITIONS

Adjacent area - The horizontal surface area surrounding the excavation, which extends outward from the excavation edge up to a distance that is half the depth of the excavation.

Competent Person – Competent Person is defined by OSHA as someone who is capable of identifying existing and potential hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authority to take corrective action to eliminate or reduce the hazard.

Excavation - Any manmade cavity or depression in the earth's surface, including its sides, walls, or faces, formed by earth removal and producing unsupported earth conditions.

Protective system - Shoring, Shielding, Sloping or equivalent designed to prevent collapse of the excavation.

Trench - A narrow excavation made below the earth's surface. In general, the depth is greater than the width, but the width of a trench is no greater than 15 feet.

4. RESPONSIBILITIES

Contractor Competent Person - Providing a Competent Person is the responsibility of the excavation contractor. This individual is responsible for identifying the hazards and potential hazards during an excavation activity, including testing to determine soil types, protective systems design requirements, hazardous atmospheres and daily inspection requirements. They will inspect the excavation daily (an example of an excavation checklist is in Appendix A) and prohibit entrance into unsafe excavations. A Soil Analysis (example in Appendix B) should be completed when determining the soil type(s) present in the excavation. Any deficiencies must be corrected before work inside the excavation can begin. All subcontractors will provide their own Competent Person for their excavation activities. NewFields personnel will not assume the Competent Person role.

Corporate Health & Safety Coordinator (CHSC) – The HR is responsible for maintaining the required records and periodically reviewing and updating this program.

Project Principles (PP) - The PP is responsible for identifying situations where employees may be exposed to excavation and trenching hazards and for verifying that affected employees receive appropriate training and personal protective equipment. The PP or designee will confirm that the contractor designated Competent Person for any excavation (including subcontractors) is onsite each day and that the appropriate inspections have been completed.

Employee - The employee is responsible for complying with the requirements of this program as well as knowing the hazards and understanding the consequences of entering an excavation that has not been inspected and approved by a Competent Person. The NewFields employees shall **NOT** enter an excavation unless the PP has coordinated with the Competent Person to determine that the excavation has been inspected and is deemed safe. They must understand and utilize the provided personal protective equipment and exit the excavation if the Competent Person orders evacuation. Employees will **NOT** enter excavations unless the task cannot be accomplished from above.

5. GUIDELINES

NewFields will use these guidelines to determine if any entry into an excavation is acceptable.

5.1. Hazards Associated with Excavation/Trenching

The principle hazards associated with excavation/trenching are:

- Suffocation, crushing or other injury from falling material.
- Damage/failure of installed underground services and consequent hazards.
- Tripping, slipping or falling.
- Possibility of explosive, flammable, toxic or oxygen-deficient atmosphere in excavation.

5.2. Hazard Controls

- Stairs, ladders or ramps are required for trenches that are greater than 4 feet deep.
- Travel distance to get to a ladder/stair/ramp must be no more than 25 feet.
- The Competent Person must inspect the excavation each day prior to any entry and complete an excavation checklist or the equivalent to the example in Appendix A.
- The contractor Competent Person should complete a Soil Analysis checklist (example in Appendix B) when soil analysis has been made to determine the soil type(s) present in the excavation.
- No NewFields employees are permitted underneath loads handled by lifting or digging equipment
- BEFORE an employee enters the excavation, the Competent Person must test the atmosphere in excavations greater than 4 feet deep, as well as ones where oxygen deficiency or a hazardous atmosphere exists or could exist. A four-gas meter should be used to check for lower explosion limit, CO, H₂S and O₂.
- Ventilation using a standard blower may be used to provide for a safe entry based upon the contaminants in the excavation. Validate the efficiency of the ventilation by keeping the four gas meter in the excavation while employees are inside.

- Water should not be allowed to accumulate within any excavation. The site supervisor or foreman should have a portable pump available to dewater the hole prior to personnel entry.
- Maintain spoil piles at least two feet from the edge of the excavation
- Guardrails are only required when the excavation edges are blocked by vegetation/debris and not readily visible

5.3. Requirements for Protective Systems

Excavations less than 5 feet deep are not required to have protective systems if deemed safe by a Competent Person. Any excavation 5 feet deep or more requires some protective system. Some excavations less than 5 feet deep may still need protection systems in unstable soil conditions.

Protective systems may include benching, sloping, shoring or shielding and may be designed by Competent Persons using the OSHA tables in 1926 subpart P or may be designed by a registered professional engineer (PE). Since there are so many specifications for these systems, it is imperative that a Competent Person evaluates the excavation.

5.4. Inspections

The designated Competent Person will perform inspections each day before employees enter the excavation, after every rainstorm, as needed throughout the shift, and as soil conditions change.

During the inspection the Competent Person must determine the protective system is adequate for the soil classification and the external loads placed on the adjacent area. He/she will evaluate the excavation, the adjacent area and the protective system, for hazardous atmosphere, potential situations that could lead to cave-in, indications of failure of a protective system, cracks in the ground parallel to the top of the excavation, and any other potential hazardous conditions.

The Competent Person will verify that ladders or other means of access/egress to excavations are provided at a maximum spacing of 100 feet on the perimeter of open excavations and maximum travel distance of 25 feet for trench excavations greater than 4 feet in depth.

5.5. Entering the Excavation

NewFields employees shall **NOT** enter an excavation unless the PP or designee has coordinated with the contractor/subcontractor/consultant Competent Person to determine the excavation has been inspected and is deemed safe. NewFields employees will **NOT** enter any excavation unless the task cannot be accomplished from above.

6. EMPLOYEE INFORMATION AND TRAINING

Employees working in or near excavations will be trained to recognize the hazards associated with excavations and trenches. Basic employee construction training will include hazard

recognition associated with entering excavations or trenches and emergency egress procedures.

7. SUBCONTRACTORS

Subcontractors are responsible for having their own Competent Person for their excavations and trenches.

8. RECORDKEEPING

The Competent Person should maintain copies of their own Excavation Checklists and any Soil Analysis Checklists or equivalent documentation. This documentation should be available for the NewFields PP or designee to review.

Training regarding excavation hazards should be documented.

9. REFERENCES

OSHA Regulations 29 CFR 1926 Subpart P – Excavations

APPENDIX A - EXCAVATION CHECKLIST EXAMPLE

(to be completed by a Competent Person)

Site Location: _____

Date: _____ Time: _____ Competent Person: _____

Soil Type (see attached form): _____

Soil classification: _____ Excavation depth: _____ Excavation width: _____

Type of protective system used: _____

(Indicate for each item: Yes – No – or N/A for Not Applicable)

I. General inspection of job site:

- A. Excavations, adjacent areas and protective systems inspected by a Competent Person daily prior to the start of work. _____
- B. Competent Person has authority to remove employees from the excavation immediately. _____
- C. Surface encumbrances removed or supported. _____
- D. Employees protected from loose rock or soil that could pose a hazard by falling/rolling into the excavation. _____
- E. Hard hats worn by all employees. _____
- F. Spoils, materials and equipment set back at least 2' from the edge of the excavation. _____
- G. Barriers provided at all remotely located excavations, wells, pits, shafts, etc. _____
- H. Walkways and bridges over excavations 4' or more in depth are equipped with standard guardrails. _____
- I. Visibility vests or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic. _____
- J. Employees are required to stand away from vehicles being loaded or unloaded. _____
- K. Warning system established and utilized when mobile equipment is operating near the edge of excavation. _____
- L. Employees prohibited from going under suspended loads. _____
- M. Employees prohibited from working on the faces of sloped or benched excavations above other employees. _____
- N. Utilities:
 - a. Utility companies contacted and/or utilities located. _____
 - b. Exact location of utilities marked when approaching the utilities. _____
 - c. Underground installations protected, supported or removed when excavation is open. _____

II. Means of access and egress:

- A. Means of egress no greater than 25' lateral travel distance in excavations 4' or more in depth. _____

- B. Ladders used in excavations are secured and extend 3' above the edge of the trench. _____
- C. Structural ramps used by employees designed by a competent person. _____
- D. Structural ramps used for equipment designed by a registered professional engineer (RPE) _____
- E. Ramps constructed of materials of uniform thickness cleated together on the bottom, equipped with no-slip surface. _____
- F. Employees protected from cave-ins when entering or exiting the excavation. _____

III. Wet conditions:

- A. Precautions taken to protect employees from the accumulation of water. _____
- B. Water removal equipment monitored by a Competent Person. _____
- B. Surface water or runoff diverted or controlled to prevent accumulation in the excavation. _____
- D. Inspections made after every rainstorm or other hazard occurrence. _____

IV. Hazardous atmosphere:

- A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other harmful containment. _____
- B. Adequate precautions taken to protect employee from exposure to an atmosphere containing less than 19.5% oxygen and/or to other hazardous atmospheres. _____
- C. Ventilation provided to prevent employee exposure to an atmosphere containing flammable gas in excess of 20% of the lower explosive limit of the gas. _____
- D. Testing conducted often to ensure that the atmosphere remains safe. _____
 - a. Emergency equipment, such as breathing apparatus, safety harness and line, and basket stretcher readily available where hazardous atmospheres could or do exist. _____
- E. Employees trained to use personal protective and other rescue equipment. _____
- F. Safety harness and life line used and individually attended when entering bell bottom or other deep confined excavations. _____

V. Support systems:

- A. Materials and/or equipment for support systems selected based on soil analysis, trench depth and expected loads. _____
- B. Materials and equipment used for protective systems inspected and in good condition. _____
- C. Materials and equipment not in good condition has been removed from service. _____
- D. Damaged materials and equipment used for protective systems inspected by a Registered Professional Engineer (RPE) after repairs and before being placed back into service. _____
- E. Protective systems installed without exposing employees to the hazards of cave-ins, collapses or from being struck by materials or equipment. _____
- F. Members of support system securely fastened to prevent failure. _____

- G. Support systems provided to insure stability of adjacent structures, buildings, roadways, sidewalk, walls, etc. _____
- H. Excavations below the level of the base or rooting approved by an RPE. _____
- I. Removal of support systems progresses from the bottom and members are released slowly as to note and indication of possible failure _____
- J. Backfilling progresses with removal of support system. _____
- K. Excavation of material to a level no greater than 2' below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth. _____
- L. Shield system placed to prevent lateral movement. _____
- M. Employees are prohibited from remaining in shield system during vertical movement. _____
- N. Shielding extends to top of trench and extends 18" above trench if used with sloping.. _____

VI. Remarks: _____

Date: _____ Signature: _____

Weather: _____ Project: _____

Was Dig Safe Contacted: Yes No

Protective System: Trench Shield (Box) Wood Shoring Sloping Other

Purpose of Trenching: Drainage Water Sewer Gas Other

Were Visual Tests Taken: Yes No

Type of Soil: _____

Soil Strength: _____

Hazardous Atmosphere Exists: Yes No (If yes, refer to Confined Space Entry program, complete Confined Space Entry Permit. (4ft. trenches or greater))

Is trenching or excavation exposed to public vehicular traffic (exhaust emission):
 Yes No (If yes, refer to Confined Space Entry program, monitor for Toxic gases.)

Measurement of Trench: Depth _____ Length _____ Width _____

Is a ladder within 25 feet of travel distance: Yes No

Is excavated material stored 2 feet or more from edge of the excavation: Yes No

Are employees exposed to public vehicular traffic: Yes No
(If yes, visibility vests are required)

Are other utilities protected: Yes No Not required
(Water, sewer, gas or other structures)

Are sewer or natural gas lines exposed: Yes No (If yes, refer to Confined Space Entry program, complete Confined Space Entry Permit, monitor for Toxic Gas(es)).

Periodic Inspection: Yes _No Last _____

Did employees receive Training in Excavation: Yes No

APPENDIX B - SOIL ANALYSIS CHECKLIST EXAMPLE
(to be completed by a Competent Person)

This checklist must be completed when soil analysis has been made to determine the soil type(s) present in the excavation. A separate analysis must be performed on each layer of soil in excavation walls. A separate analysis must be performed if the excavation (trench) is stretched out over a distance where the soil type may change.

Site Location: _____

Date: _____ Time: _____ Competent Person: _____

Where was the sample taken from: _____

Excavation: Depth _____ Width _____ Length _____

VISUAL TESTParticle type: Fine-grained (cohesive) Course grained (sand or gravel)Water conditions: Wet Dry Surface water present SubmergedPreviously disturbed soils: Yes NoUnderground utilities: Yes No If yes, what type? _____Layered soils: Yes NoLayered soil dipping into excavation: Yes NoExcavation exposed to vibrations: Yes No If yes, from what? _____Crack like openings or spilling observed: Yes NoConditions that may create a hazardous atmosphere: Yes No

If yes, identify condition and source: _____

Surface encumbrances: Yes No If yes, what type? _____Work to be performed near public vehicular traffic: Yes NoPossible confined space exposure: Yes No

Manual Test

Plasticity: Cohesive Non-cohesive

Dry strength: Granular (crumbles easily) Cohesive (broken with difficulty)

Note: The following unconfined strength tests should be performed on undisturbed soils.

Thumb Test used to estimate unconfined compressive strength of cohesive soil:

Test performed: Yes No

- Type A – soil indented by thumb with every great effort.
- Type B – soil indented by thumb with some effort.
- Type C – soil easily penetrated several inches by thumb with little or no effort.
If soil is submerged, seeping water, subjected to surface water, runoff, exposed to wetting.

Penetrometer or Shearvane used to estimate unconfined compressive strength of cohesive soil.

Test performed: Yes No Device used: _____

- Type A – soil with unconfined compressive strength of greater than 1.5 tsf.
- Type B – soil with unconfined compressive strength of 0.5 tsf to 1.5 tsf.
- Type C – soil with unconfined compressive strength of less than 1.5 tsf. If soil is submerged, seeping water, subjected to surface water, runoff, exposed to wetting.

**Wet Shaking Test used to determine percentage of granular and cohesive materials.
(Compare results to soil textual classification chart to determine soil type.)**

- Type A – clay, silty clay, sandy clay, clay loam, and in some cases silty clay loam and sandy clay loam.
- Type B – angular gravel (similar to crushed rock), silt, silt loam, sandy loam, and in some cases, silty clay loam and sandy clay loam.
- Type C – granular soil including gravel, sand, and loamy sand.
 % granular % cohesive % silt

Note: Type A – no soil is type “A” if: soil is fissured; subjected to vibration: previously disturbed; layered dipping into the excavation on a slope of 4H:1V.

Soil Classification

Type A Type B Type C

Selection of Protective System
(see OSHA 1926 subpart P Appendix F)

- Sloping (OSHA 1926 subpart P Appendix B) Specify angle
- Timber shoring (OSHA 1926 subpart P Appendix C)
- Aluminum hydraulic shoring (OSHA 1926 subpart P Appendix D)

Note: Although OSHA will accept the above tests in most cases, some states will not. Check your state safety requirements for excavation and trenching regulations.

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1. PURPOSE

The purpose of this SOP is to provide information to protect NewFields personnel from injuries associated with falls from elevations.

2. SCOPE

This SOP applies to NewFields personnel whenever activities at construction operations expose them to potential fall hazards. This includes all construction related activities on structures, working on ladders or elevated equipment, scaffolding, near excavations, or any other area where there is a potential to fall from a height. While it is generally the construction contractor's responsibility to provide required fall protection, NewFields employees need to be aware of the hazards and control methods to prevent injuries.

This SOP **does not** cover fall hazards associated with non-construction, general industry operations. Ladder and working surfaces hazards are addressed in SOP #19 *Office Safety* and SOP #5 *Construction and Field Site Safety*.

3. DEFINITIONS

Access Zone, Designated - An area or space which is defined by a perimeter barrier, erected to warn employees when they approach an unprotected side or edge, and serves to designate areas where work may be performed without additional fall protection.

Aerial Lifts - Mechanical devices such as articulated boom personnel lifts, manlifts, scissor lifts, and bucket trucks used as access to heights.

Anchorage - A secure point of attachment for lifelines, lanyards, or deceleration devices.

Body Harness - Multiple straps that are secured about the wearer in a manner which distributes the fall arrest forces over the thighs, pelvis, waist, chest, and shoulders, with a means for attaching it to other components of a personal fall arrest system.

Body Belt - A device consisting of a belted strap around the waist of the person, this device may only be used as part of a restraint system, not as part of a personal fall arrest system.

Buckle - Any device for holding the body belt or body harness closed.

Connector - A device that is used to couple (connect) parts of the personal fall arrest system and positioning device or anchorage system together. It may be an independent component of the system, such as a carabineer, or it may be an integral component of the system (such as a buckle or D-ring sewn into a body harness).

Competent Person - A competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authority to take prompt corrective action to eliminate or reduce the hazard.

Controlled Access Zone - An area in which certain work may occur without the use of conventional fall protection and access to the zone is controlled.

Dangerous Equipment - Any equipment that, as a result of form or function, may be hazardous to employees who fall onto or into the equipment.

Deceleration Device - Any mechanism, such as a rip-stitch lanyard, tearing or deforming lanyards, or self-retracting lifelines, which serve to slow the fall and reduce the force experienced by an employee during a fall arrest.

Deceleration Distance - The vertical distance a falling person travels, excluding lifeline elongation and free-fall distance, from the point at which the deceleration device begins to operate until the fall is stopped. It is measured as the distance between the location of a person's body harness attachment point at the moment of activation, and the location of the attachment point after the person comes to a complete stop.

Different Level Fall - An accident in which an employee falls below the level on which he/she was standing or walking (e.g. a fall below foot level).

D-Ring – An attachment point(s) on a belt or harness for a device or lanyard.

Fall Elimination - Planning a task or activity that avoids exposure to heights and fall hazards.

Fall Prevention - The provision of same-level barriers, such as guardrails and warning lines, which prevent falls from occurring.

Free Fall - The act of falling prior to activation of the personal fall arrest system.

Free Fall Distance - The vertical distance between the body harness attachment point at the time of a fall and the attachment point at activation of the personal fall arrest system.

Guardrail System - A barrier erected to prevent employees from falling to lower levels.

Hole – A gap or void of two (2) inches or more in its least dimension, in a floor, roof, or other walking/working surface.

Infeasible – It is impossible to perform the work using a conventional fall protection system (i.e. guardrail system, safety net system, or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection.

Lanyard - A flexible line of rope, wire rope, or strap that has a connector at each end for connecting the body harness to a deceleration device, lifeline, or anchor point. A shock- absorbing lanyard has a “built-in” deceleration device.

Leading Edge – The edge of a floor, roof, or framework for a floor or other walking/working surface which changes location as additional floor, roof, or decking is constructed. The leading edge is considered to be an unprotected side and edge during periods when it is not actively and continuously under construction.

Lifeline- A flexible line for connection to an anchor point at one end which hangs vertically (vertical lifeline), or for connection to anchorage's at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Opening – A gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.

Personal Fall Arrest System – A system used to arrest an employee in a fall. It consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, or lifeline.

Positioning Device System – A body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free.

Qualified Person – A qualified person is one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to fall protection.

Rope Grab – A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest a fall. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

Safety Monitoring System – A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

Self-retracting Lifeline/Lanyard – A deceleration device containing a drum-wound line that can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which automatically locks the drum and arrests a fall.

Slip - A same level fall caused by inadequate friction between the foot or footwear and the walking/working surface.

Snap Hook - A self-closing connecting device with a gatekeeper latch or similar arrangement that will remain closed until manually opened. Must be double action snap hooks to prevent unintended release.

Toeboard – A low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

Unprotected Sides and Edges - Any side or edge (except at entrances to points of access of a walking/working surface, e.g., floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches (1.0 m) high.

Walking/Working Surface – Any surface, whether horizontal or vertical, on which an employee walks or works, including, but not limited to: floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel; but not including: ladders, vehicles, or trailers.

Warning Line System – A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge. Also designates a controlled access zone in which roofing work may take place without the use of guardrail, body belt, or safety net system to protect employees in the area.

Work Area – That portion of a walking/working surface where job duties are being performed.

4. RESPONSIBILITIES

Human Resources Director (HR) – The HR is responsible for periodically reviewing and revising this SOP as needed.

Project Principles (PP) – The PP has primary responsibility for the implementation of this SOP at NewFields field sites. The PP should be able to identify different types of fall hazards and determine whether the fall protection provided is appropriate. If needed, the PP will provide appropriate fall arrest equipment. The PP will verify that authorized personnel have been appropriately trained in fall protection methods when required. The PP will also confirm that a rescue plan is in place for any employee who may fall.

Employees - All NewFields employees are responsible for complying with the requirements of this SOP and using appropriate fall protection equipment and procedures.

5. GUIDELINES

Since NewFields is not responsible for the installation of fall protection, this information is provided to allow the PP to assess the fall protection provided by the construction contractor. If the PP identifies deficiencies in the fall protection provided, NewFields employees will be prohibited from accessing the area and the contractor and/or client will be notified regarding the deficiencies.

5.1. When is Fall Protection Required

The PP or a designee must evaluate the walking/working surfaces to determine whether there is a potential fall hazard. Either a guardrail system or personal fall arrest system is required in the following circumstances when working six (6) feet or higher above a lower level:

- Unprotected sides and edges
- Leading edges
- Hoist areas
- Holes, if the hole only creates a tripping hazard a cover should be used
- Open sides of ramps, runways, and other walkways
- Wall openings

Guardrails or personal fall arrest systems are also required at **any height** at which an employee is working above dangerous equipment and has the potential to fall into/onto the equipment.

5.2. Fall Protection Systems and Practices

The PP or designee can use the Fall Hazard Assessment Checklist in Appendix A to assess the fall hazards and control measures. The following information is provided to assist the PP in determining whether contractor provided fall protection is adequate. The PP should request information from the contractor competent person or safety officer whenever concerns regarding the adequacy or usage of fall protection occur.

5.2.1. Protection from Falling Objects

NewFields requires that employees wear a hardhat if exposed to falling objects. Additional control measures could include:

- Toe boards, screens, or guardrail systems to prevent objects from falling from higher levels.

Barricade the area where the falling object hazard may exist, prohibit employees from entering the area, and keep objects far enough away from the edge on the higher level so that they will not go over the edge.

5.2.2. Guardrail Systems

The top edge of the guardrail must be 42 inches (+ or – 3 inches) above the walking/working surface. When there is not a wall at least 21 inches high, there must also be a midrail, screen, mesh or intermediate vertical member (not more than 19 inches apart). Construction and load testing of the guardrail system must be according to the specifications outlined in 29 CFR 1926.502(b). This includes being able to withstand a force of 200 pounds without failure and other strength and construction requirements.

5.2.3. Personal Fall Arrest Systems

Personal fall arrest systems usually consist of an anchorage, connectors, body harnesses, deceleration device and lifelines. The system must not allow an employee to free-fall more than six (6) feet or contact a lower level. The personal fall arrest system must be inspected prior to each use for wear, damage, and other deterioration. The attachment point of the body harness should be in the center of the wearer’s back near shoulder level, or above the wearer’s head. The components of a fall arrest system may not be used for hoisting material. Required strengths, tolerances, and testing requirements for personal fall arrest systems are specified in 29 CFR 1926.502(d).

Note: Body belt use is not permitted as part of a fall arrest system.

5.2.4. Safety Nets

Safety nets should be installed as close as practicable under the walking/working surface on which employees are working, but in no case more than 30 feet below the working level. When nets are used on bridges, the potential fall area from the walking/working surface to the net will be unobstructed. Safety nets will be installed with sufficient clearance under them to prevent contact with any surface or structures below.

Safety nets will extend outward from the outermost projection of the work surface as follows:

Minimum required horizontal distance of outer edge of net from the edge of the working surface	Vertical distance from working level to horizontal plane of net
Up to 5 feet	8 feet
More than 5 feet up to 10 feet	10 feet
More than 10 feet	13 feet

5.2.4.1. Drop Test

Safety nets and their installations must be capable of absorbing an impact force equal to that produced by the drop test. Safety nets and safety net installations shall be drop-tested at the jobsite after initial installation and before being used as a fall protection system, whenever relocated, after major repair, and at 6-month intervals if left in one place. The drop-test consists of a 400-pound bag of sand, 30 inches in diameter, dropped into the net from the highest walking/working surface where employees are exposed to fall hazards. Defective nets shall not be used.

Safety nets must be inspected weekly for wear, damage, and other deterioration. Defective components will be removed from service. Safety nets will be inspected after any occurrence that could affect the integrity of the safety net system (dropped material, storm, etc.).

Materials, scrap pieces, equipment, and tools that have fallen into the safety net must be removed as soon as possible and at least before the next work shift.

The maximum size of safety net mesh opening shall not exceed 36 square inches nor be longer than 6 inches on any side, and the opening, measured center-to-center of mesh ropes or webbing, shall not be longer than 6 inches. All mesh crossings shall be secured to prevent enlargement of the mesh opening. Each safety net or section will have a border rope for webbing with a minimum breaking strength of 5,000 pounds. Connections between safety net panels shall be as strong as integral net components and shall be spaced not more than 6 inches apart.

5.2.5. Lifelines

Horizontal lifelines must be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system. Lanyards and vertical lifelines will have a minimum breaking strength of 5,000 pounds. When vertical lifelines are used, each employee will be attached to a separate lifeline. Lifelines will be protected against being cut or abraded.

On suspended scaffolds or similar work platforms with horizontal lifelines that may become vertical lifelines, the devices used to connect to a horizontal lifeline must be capable of locking in both directions (horizontal and vertical) on the lifeline.

5.2.6. Aerial Lifts

Aerial lifts include extended boom platforms, aerial ladders, articulating boom platforms, and vertical towers (this does not include scissors lifts). Workers must be trained in standard operating procedures for using any of these equipment in accordance with requirements specified in 29 CFR 1926.453 for aerial lifts and with the manufacturers' recommendations. These requirements include:

- The use of a body belt (to be used as a positioning device only) or a full body harness with a lanyard attached to the railing of the basket while workers are performing a job function inside an aerial lift basket in an elevated position
- The weight load limits on the boom and basket specified by the manufacturer shall not be exceeded
- Brakes shall be set and if outriggers are used, they shall be positioned on pads or level surface. If an aerial lift is used on an incline, wheel chocks need to be used to stabilize and secure the aerial lift.
- Aerial lift trucks shall not be moved while men are performing work inside the basket in an elevated position
- Aerial lifts (particularly articulating boom and extensible boom platforms) designed as personal carriers shall have controls in both lower and upper platforms, with the lower control capable of overriding the upper controls
- Employees should be instructed to stand firmly on the floor of the basket, and to not sit or climb on the edge of the basket, or tie themselves off while standing on the outside edge of the basket, or use any ladders or stands inside the basket to gain elevation while operating the aerial lift

- Scissors lifts are a mobile scaffold and have guardrails as the fall protection system. Employees must not climb out of the scissors lift or stand on the rails. Scissors lifts are not equipped with anchorage points and personal fall arrest systems must not be secured to any part of the lift.

5.2.7. Fall Protection Plan

Where it has been demonstrated that it is infeasible or creates a greater hazard to use conventional fall protection, a Fall Protection Plan can be used. Fall Protection Plan must be prepared and implemented to meet the requirements of 29 CFR 192.502(k), listed below. NewFields employees are not expected to access areas where a Fall Protection Plan is needed.

- a. The Fall Protection Plan must be developed specifically for the site where the work is being performed and must be updated to reflect current conditions.
- b. A qualified person must write and approve any changes to the Fall Protection Plan.
- c. A copy of the Fall Protection Plan and all approved changes must be kept at the job site.
- d. The PP or a designee must supervise the implementation of the Fall Protection Plan.
- e. The Fall Protection Plan must document the reasons why conventional fall protection is infeasible or why their use would create a greater hazard.

The Fall Protection Plan must include a written discussion of other measures taken to reduce or eliminate fall hazards for those employees who are not protected by conventional fall protection systems.

- a. Where no other measures to reduce or eliminate fall hazards have been implemented, a Safety Monitoring System must be used (See section 5.2.8).
- b. The Fall Protection Plan must identify each location where conventional fall protection methods cannot be used. These locations must then be classified as controlled access zones.
- c. The Fall Protection Plan must identify, by name, the employees who are designated to work in controlled access zones. No other employees may enter controlled access zones.
- d. In the event of a fall or some other related, serious incident, NewFields will investigate the circumstances to determine if new practices, procedures or training need to be incorporated into the Fall Protection Plan.

5.2.8. Safety Monitoring System

When conventional fall protection systems are not feasible, employees will be protected using a Safety Monitoring System. The safety monitoring system must comply with the following. The PP or a designee will:

- Monitor the safety of site personnel
- Warn the personnel when it appears that they are unaware of a fall hazard or acting in an unsafe manner
- Be on the same walking/working surface and within visual sighting distance of the employee being monitored
- Be close enough to communicate orally with the employee
- Not have other responsibilities that could take the monitor's attention from the monitoring function

- And any area where a Safety Monitoring System is in use is a controlled access zone

5.2.9. Inspection Checklists

Inspections of fall protection equipment must be performed and documented to verify that it is properly maintained and ready for use. An example of an equipment inspection checklist is presented in Appendix B. The PP or designee will request documentation of the safety inspections from the contractor.

5.2.10. Rescue

There must be a plan in place on each site for prompt rescue of employees in the event of a fall unless it is determined that employees are able to rescue themselves. This plan must include the equipment and personnel needed to affect a rescue. This plan should be documented.

6. TRAINING

NewFields employees who are potentially exposed to fall hazards will be trained to recognize falling hazards and appropriate control methods. This training will be conducted as needed by the specific job duties and site requirements of the project. The training should include:

- The nature of fall hazards in the work area
- Correct procedures for use, maintenance and inspection of the personal fall arrest systems to be used
- The use and operation of guardrail systems, safety nets, warning lines, safety monitoring systems, controlled access zones and other protection
- The role of each employee in the Safety Monitoring System
- The limitations on the use of mechanical equipment during work on sloped walking/working surfaces
- Correct procedures for handling and storage of equipment
- The roles of employees in the Fall Protection Plan

Employees should be retrained when:

- Inadequacies in the employee's knowledge or use of fall protection systems or equipment indicate that he/she has not retained the requisite understanding or skill
- There are changes at the worksite that render previous training obsolete
- Changes in the types of fall protection systems or equipment used renders previous training obsolete

Training will be documented and copies sent to HR.

7. REFERENCES

29 CFR 1926, Subpart M

30 CFR 56.11012 and 56.11027

APPENDIX A – FALL HAZARD ASSESSMENT CHECKLIST

Use the following checklist to identify potential fall hazard situations. If a listed hazard is present, mark "yes" on the checklist and describe the location or locations where the hazard is identified. If a listed hazard is not present, mark "no" on the checklist and proceed to the next item.

NOTE: When filling out this checklist, you must consider both *routine and non-routine tasks*

Potential Fall Hazard	Yes	No	Location(s)
General			
1. Any other walking/working surface with an unprotected side or edge 6 feet or more above a lower level 1926.501(b)(1)			
2. Hoist areas 6 feet or more above a lower level 1926.501(b)(3)			
3. Excavations 6 feet or more in depth			
4. Fall hazards from open pits, tanks, vats, ditches, etc.			
Floor and Wall Openings and Holes			
1. Stairway floor openings			
2. Ladderway floor opening or platform			
3. Hatchway and chute floor openings			
4. Skylight floor openings			
5. Pit and trapdoor floor openings			
6. Manhole floor openings			
7. Temporary floor openings			
8. Floorholes into which persons can accidentally walk			
9. Doors or gates which open directly into a stairway			
10. Wall openings with drops of more than 6 feet			
11. Window wall opening at stairway landings, floors, platforms, or balconies from which there is a drop of more than 6 feet			
12. Temporary wall openings			
13. Hazard of material falling			
14. Open-sided platforms 6 feet or more above the adjacent floor or ground level			
15. Runways with open sides 6 feet or more above the			

Potential Fall Hazard	Yes	No	Location(s)
floor or ground level			
16. Open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment regardless of heights			
17. Unguarded stairs with 4 or more risers with no handrail or guardrail 1926.1022			
<i>Fixed Ladders</i>			
1. Ladders of more than 24 feet climb without cage or fall protection			
2. Ladder landings			
3. Landing platforms			
<i>Scaffolding</i>			
1. Scaffolding with open sides more than 10 feet above the ground or the floor			
2. Crawl boards or chicken ladders			
<i>Permit-Required Confined Spaces</i>			
1. Entrance covers removed where an employee could fall into a confined space			
2. Use of tripod and winch to lower employees into confined spaces			

APPENDIX B – FALL PROTECTION EQUIPMENT INSPECTION CHECKLIST

Inspection Date: _____ **Inspector:** _____

Type	Manufacturer	Model No.	Serial No.
Harness			
Lanyard			
Anchor Strap			
Carabineer			

Inspection of all fall protective equipment must be conducted before and after each use. This checklist is designed to document that the components have been inspected and that no defective or damaged components have been found. Should defective or damaged parts be found the entire piece of fall protective equipment must be removed from service and tagged "**OUT OF SERVICE - DO NOT USE**" until the components can be either repaired or discarded.

Part	Condition	Acceptable	Unacceptable
Personal fall arrest systems (<i>Harness, buckles, D-rings, straps, keepers, etc.</i>)	Metal connectors, snap-hooks, D-rings etc., must not show signs of damage, including: broken, distorted, sharp edges, burrs, cracks, worn parts, or corrosion. <i>Note: Make sure all buckles work freely.</i>		
	The harness and straps must not show signs of damage including: frayed, cut or broken fibers; tears, abrasions, mold, burns, or discoloration, pulled or cut stitches, knots, excessive soiling or paint buildup. <i>Note: Broken stitches or exposed fall indicator stitching may be an indication the harness has been shock-loaded during a fall and must be discarded.</i>		
	The harness must have an original label indicating the manufacturers intended load capacity.		
Shock absorbing lanyards	The lanyards must not show signs of damage or stress or shock loading including: rust or staining, chemical or heat damage, or degradation. The lanyard must also have complete and legible labels including the manufacturer name and rated capacity. <i>Note: Broken stitches or exposed fall indicator stitching may be an indication the harness has been shock loaded in a fall and must be discarded.</i>		

VEHICLE MOUNTED PLATFORMS AND MANLIFTS

Inspection Date: _____ **Inspector:** _____

Type	Manufacturer	Model	Serial No.

Inspection of all vehicle mounted platforms must be completed prior to operation each day or each shift. The inspection must be documented. If any condition is found to be defective or damaged, then the vehicle mounted platform or manlift may not be used until the defective or damage component has been repaired or replaced. During the time when the platform or lift is being repaired or waiting repair, the unit is to be tagged "**OUT OF SERVICE - DO NOT USE**". Safety harnesses and lanyards used must also be inspected.

Part	Condition	Acceptable	Unacceptable
Tires	Tires are in good condition and are not flat or loosely attached to unit.		
Hydraulic System	There are no visible hydraulic leaks or hydraulic fluid on ground around unit.		
Controls	The controls are labeled clearly and correct. The controls work as intended.		
Guardrails	The guardrails and toe boards around the personnel platform area are intact, secure and welds not cracked or broken.		
Platform Gate	The gate is self-closing and works properly. Latching mechanism works and securely fastens gate.		
Outriggers (if equipped)	The outriggers are free from recognized damage and move easily. The support pads are intact and not damaged.		
Brakes	The brakes have been tested and work properly.		
Horn	The horn is functional and can be heard over nearby operating equipment.		

HORIZONTAL LIFELINE SYSTEMS

Location: _____

Inspection Date: _____ **Inspector:** _____

Inspection of the horizontal lifeline system must be conducted before and after each use. The checklist is designed to document that the components have been inspected and that no defective or damaged components have been found. Should defective or damaged parts be found they must be removed and replaced with new parts. If the wire rope is damaged the entire horizontal lifeline should be tagged "**OUT OF SERVICE - DO NOT USE**". The inspection of safety harnesses and lanyard must also be documented.

Part	Condition	Acceptable	Unacceptable
Hardware <i>(Hardware includes: end anchors, links, terminals, brackets and connectors)</i>	Hardware items must not show signs of damage, including: broken, distorted, sharp edges, burrs, cracks, worn parts, or corrosion.		
Wire Rope	Wire rope must not be damaged, including: six (6) or more broken wires in one rope lay or three (3) or more broken wires in one strand, corrosion, permanent kinks, burn marks, bird caging or exposed core.		

NewFields Health, Safety and Environment Standard Operating Procedure

HSE SOP 11 – Fire Prevention and Protection



**Updated
January 2017**

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Appendix A	Portable Fire Extinguisher Inspection Checklist
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HSE SOP 11 – Fire Prevention and Protection

Fire is a chemical reaction that requires three elements to be present for the reaction to take place and continue. The three elements are heat (or an ignition source), fuel and oxygen. These three elements typically are referred to as the “fire triangle”. Fire is the result of the reaction between the fuel and oxygen in the air. Heat fuel and oxygen must combine in a precise way for a fire to start and continue to burn. If one element of the fire triangle is not present a fire will not start. If a fire is already burning and an element is removed, it will extinguish.

Heat or ignition sources can include any material, equipment or operation that emits a spark or flame including obvious items such as torches as well as less obvious items such as static electricity and grinding operations. Equipment or components that radiate heat such as kettles, space heaters, automotive catalytic converters and mufflers can also be ignition sources. Fuel sources include combustible materials such as wood, paper, trash, clothing, flammable liquids such as gasoline or solvents and flammable gases such as propane or natural gas.

Oxygen in the fire triangle comes from air in the atmosphere. Air contains approximately 79 percent nitrogen and 21 percent oxygen. For humans, an oxygen deficient atmosphere is present when it has less than 19.5 percent oxygen or an oxygen enriched atmosphere greater than 23.5 percent. Either condition represents an atmosphere Immediately Dangerous to Life and Health (IDLH) for humans for reasons unrelated to the presence of fire. Depending on the type of fuel involved, fires can occur with a much lower volume of oxygen present than is needed to support human respiration.

Fire can represent a threat to workers, the work environment and potentially prohibit egress routes to safe locations in the event of a fire. The Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA) has established guidelines for workplace safety, potential fire types and portable fire extinguishers.

I. PURPOSE

NewFields Health, Safety and Environment (HSE) program has incorporated this Standard Operating Procedure (SOP) to provide general information on fire prevention and measures to protect employees in the event of a fire. This protocol provides information about fire prevention and extinguishing or suppression equipment that may be present on job sites or in workplaces where NewFields employees are present. In addition, this protocol also describes the different types of potential fires, suppression equipment, equipment use and inspection requirements. The protocol and the performance requirements described herein is also required for NewFields compliance with the OSHA and MSHA standards, specifically [29 CFR 1910.157](#), [29 CFR 1910.39](#) and [30 CFR 56/57.4201](#) respectively.

Purpose

To establish guidelines and protocols for the prevention of fire in the workplace and to minimize hazards that may be encountered in the event of a fire.

Goal and Objective

To ensure NewFields offices, field work locations and assignments consider the potential for fire hazards, fire protection equipment, training and workplace inspections.

Reporting Requirements

Fire Extinguisher Inspection Checklist and Tracking Form
Fire Prevention Plan



2. SCOPE

This SOP applies to NewFields employees for review with respect to existing office locations and project locations where a potential for fire may be present and fire extinguishing or suppression equipment may require use, periodic inspection or testing (assuming your building or site management does not provide inspection and testing service). The protocol also provides information on equipment inspection and testing requirements (**Appendix A**). This SOP also incorporates a site specific Fire Prevention Plan for office or project locations as required by OSHA. See **Appendix B**, Site Specific Fire Prevention Plan Template.

3. DEFINITIONS

The following definitions are incorporated by reference in this SOP:

- **Combustible** – Capable of catching fire and burning (inflammable, flammable or incendiary).
- **Class A Fire** – Fire with ordinary combustibles such as wood, paper, cloth or plastics.
- **Class B Fire** – Fire involving flammable and combustible liquids and gasses such as gasoline, oil lacquer, paint mineral spirits and alcohol.
- **Class C Fire** – Fire is essentially a Class A or B fire where the fuel involved is energized with electricity.
- **Class D Fire** – Fire involving combustible metals such as aluminum, magnesium, titanium, zirconium, sodium and potassium.
- **Explosive Limits** – The amount of vapor in air sufficient to form explosive mixtures. Explosive limits are expressed as lower explosive limit and upper explosive limit; these give the range of vapor concentrations in air that, if present between the two limits, will ignite upon contact with an ignition source.
- **Flammable or Inflammable** – Easily ignited and capable of burning rapidly. Any material containing more than one percent asbestos. Flammable Limits are the same of as Explosive Limits.
- **Flash Point** – The temperature threshold of a liquid at which it gives off vapor to form an ignitable mixture with air near the surface.
- **Fire Extinguisher Classification** – Letter classification given to an extinguisher to designate the class or classes of fire on which an extinguisher will be effective.
- **Incipient Stage Fire:** Fire that is in initial or beginning stage and can be controlled or extinguished by portable fire extinguisher.

4. ROLES AND RESPONSIBILITIES

The HSE program and this SOP assigns the following duties and responsibilities for NewFields Companies and subsidiaries staff and management:

- Partners, Principals or their management delegates (other Principals or Senior Project Managers) are responsible for ensuring fire protection equipment or systems are present in NewFields office locations and job sites. In the absence of building management, lease provider or as site conditions require, the Partners, Principals or their management delegates will ensure employees



are trained to conduct inspection of work site conditions, fire extinguishing or suppression equipment and the proper use of such equipment. Partners, Principals or their management delegates will use the guidelines established in this protocol to conduct fire protection assessments, select fire protection equipment for work tasks and schedule or perform inspection and maintenance of fire protection equipment. Establishment of a site specific Fire Prevention Plan is also required by OSHA and a template for use is provided in this protocol (**Appendix B**).

- Local Health and Safety Coordinators (HSC) will provide assistance to Project Managers and field staff to review potential projects or work activities which may require fire protection equipment, fire prevention plan or other site specific safety and health considerations to reduce or mitigate the potential for fire.
- Employees are responsible for practicing safe work habits including risk assessments, job safety analysis and work site housekeeping to minimize the chance of fire.

5. GUIDELINES

The HSE program and other SOPs (incorporated in the HSE program by reference) provide guidance for NewFields staff for work environments which may include the potential for workplace fire. NewFields employees will only use fire protection equipment if properly trained and when using such equipment does not endanger the user or other NewFields employees. In general, use fire suppression equipment / extinguishers only if you are sure you have training and the right equipment to extinguish the fire. All other use should be in an emergency and only to facilitate safety exiting the work area. The following sections provide guidance and cross reference to other applicable HSE SOPs within the NewFields HSE program.

5.1. Fire Prevention

NewFields office locations and work sites vary in size, complexity and work tasks to be performed. In general, office locations should be periodically reviewed for potential fire hazards and extinguisher or suppression system adequacy (building management or lease providers may have this responsibility for the office or building location). Work sites should also be initially and periodically reviewed through on-going risk analysis and job safety assessments or addressed in an Emergency Action Plan (see **SOP 8 – Emergency Action Plan**) or Fire Prevention Plan (this SOP, **Appendix B**). In general, office and work site locations should consider the following fire prevention measures:

- Keep hallways, corridors and exits clear of items that may impede egress in an emergency (chairs, table, boxes, equipment, etc.)
- Properly store combustible items and avoid storage of flammable liquids outside of a flammable storage cabinet. Do not accumulate combustible materials such as cardboard boxes, chemicals and paper products.
- Do not store or place any items within 18 inches of a sprinkler head or fire suppression discharge deflectors.
- Only purchase field and office equipment that has been approved by a recognized testing organization such as Underwriters Laboratories (UL) or Factory Mutual (FM).
- Keep electrical equipment, cords and plugs in good condition (see **SOP 7 – Electrical Safety and Energy Control**).



- Do not overload electrical outlets and report loose electrical wall receptacles, missing outlet faceplates and exposed wires to building management or site supervisor for repair or replacement.
- Disconnect electrical equipment that could possibly overheat when unattended.
- Keep fire extinguishers charged, stored in designated locations, and ensure annual inspection.
- When using a space heater, allow a minimum of three (3) feet between the heater and combustible materials.
- Turn off electrical and heat-producing appliances or equipment at the end of the day or shift.
- Field work or client controlled work site may require completion and notification of a Hot Work Permit to ensure adequate work controls are established prior to conducting a task that may use or result in an unplanned fire.
- Do not store combustible materials (paper, napkins, cardboard, cloth, etc.) with or in the same storage space as potentially flammable materials (chemicals, solvents, oil, gasoline, etc.).
- Know how to safely exit the work area and designated assembly point location in the event a fire or other emergency should occur (see **SOP 8 – Emergency Action Plan**). Have at least two (2) exit routes in mind and walk through them periodically to assure your safe response in the event of an emergency. Always observe a fire alarm.

5.2. Classes of Fire

The National Fire Prevention Association (NFPA) categorizes fire by class designation. The following classes represent fire types as designated by the NFPA:

- **Class A – Trash, Wood, Paper:** Class A fires involve ordinary combustible materials, paper wood, fabrics, rubber and many plastics. Extinguishing by water or insulating by a multipurpose (ABC) dry chemical agent is effective.
- **Class B – Liquids, Grease:** Class B fires occur with flammable liquids, gasoline, oils, grease, tar, paints, lacquers and flammable gases. Dry chemicals and carbon dioxide agents extinguish these fires.
- **Class C – Electrical Equipment:** Class C fires involve live electrical equipment, motors, generators, switches and appliances. Non-conducting extinguishing agents such as dry chemicals or carbon dioxide are required to extinguish them.
- **Class D – Combustible Metals:** Class D fires include combustible metals such as magnesium, titanium, zirconium, sodium, lithium and potassium. Sodium carbonate, graphite, bicarbonate, sodium chloride and salt based chemicals extinguish these fires.

5.3. Types of Fire Extinguishers

Extinguishers vary by the fire type they were designed to extinguish or suppress. Newer fire extinguishers use a picture / labeling system to designate which types of fires they are to be used on. Older fire extinguishers are labeled with colored geometrical shapes with letter designations. Many extinguishers are designed for more than one type of fire and will therefore be labeled with more than one designation. The following classes represent fire types as designated by the NFPA:



- **Multipurpose Dry Chemical – Class A, B and C Fires:** Dry chemical agents (monoammonium phosphate) is inexpensive and electrically non-conductive but leaves a powdery residue that may damage equipment.
- **Water – Class A Fires:** Water should not be selected as an extinguishing agent for Class C fires because it will potentially conduct electricity.
- **Carbon Dioxide (CO₂) – Class B and C Fires:** Carbon Dioxide is a colorless, odorless gas that leaves no residue potentially damaging equipment. This type of extinguishing agent is also good from extinguishing “hidden” or concealed fires. However the heavy vapor settles out over distance, limiting the total discharge range to approximately eight (8) feet. Carbon dioxide may also cause thermal (cold) and static (shock) damage.
- **Dry Chemical – Class B and C Fires:** Potassium bicarbonate and sodium bicarbonate extinguishing agents are extremely effective against Class B fires and are electrically non-conductive. They are non-toxic and cleanup may be accomplished with a vacuum cleaner or broom and dustpan.
- **Dry Chemical – Class D Fires:** Extinguishing agents include sodium carbonate, salt, graphite, bicarbonate and sodium chloride based chemicals. These agents are not equally effective on all combustible metal fires. Be sure the extinguishing agent chosen will be effective on the combustible metal present, as the wrong agent can increase or spread the fire.

5.4. Fire Extinguisher Ratings

Class A extinguishers are rated from 1A through 40A. The number indicates the amount of water or similar and as effective extinguishing agent. A Class 1A water extinguisher contains 1.25 gallons of water or equivalent agent, a Class 2A contains 2.5 gallons or twice the 1A capacity. Class B extinguishers are rated from 1B through 640B and this rating is based on the approximate square foot area of flammable liquid fire that a non-expert operator can extinguish. The non-expert operator is expected to be able to extinguish 1 square foot of fire for each numerical rating or value. A fire extinguisher with a rating of 2A, 10BC should extinguish the same amount of fire as a 2.5 gallon water extinguisher or extinguish a liquid fire that is 10 square feet in size and the extinguishing agent will not conduct electricity.

5.5. Fire Extinguisher Locations

Portable fire extinguishers intended for Class A and Class D fires must be distributed throughout a building or job site so that the travel distance for employee to any fire extinguisher is 75 feet or less. Extinguishers intended for Class B fires must be within 50 feet. Employee proximity to extinguishers for Class C fires are a function of Class A and B extinguisher placement. Multipurpose dry-chemical extinguisher intended for Class A, B and C fires must be within a 50 foot maximum travel distance for employees in the work area.

Dry chemical fire extinguishers placed in moving vehicles, vessels and watercraft or affixed to vibrating machinery should be mounted horizontally to minimize compression of the dry chemical agent to the bottom of the cylinder. Compression or packing of the agent due to vibration over time may cause the extinguisher to function poorly when used or not work at all.

5.6. Building Fire Suppression Systems

Some NewFields office locations and work sites may be equipped with fire detection and suppression sprinkler systems. These systems are generally automatic and require no manual operation. In addition,



some facilities and work sites may also utilize fire hydrants, hoses and other fire protection equipment that should only be deployed and used by dedicated fire fighters or emergency response teams.

6. INSPECTION, MAINTENANCE AND RECORDKEEPING

Fire protection equipment will be inspected on a routine basis and in some NewFields office locations, this may be the responsibility of building management or leasing agent. Fire extinguishers in office location, on job sites or in vehicles should be inspected on a monthly basis for condition and proper charge. They should also be inspected and serviced periodically by a fire extinguisher servicing company.

Periodic and annual extinguisher inspections are to be documented in accordance with OSHA and MSHA guidelines. A portable fire extinguisher inspection checklist is presented in **Appendix A**.

7. TRAINING

Training in the proper use of fire extinguishers shall be provided to any NewFields employee who may be required to operate an extinguisher on a job site, office or field location. Refresher training should also be conducted on an annual basis or sooner if there is a change in potential fire Class or extinguishing equipment to be used. Initial and annual training should include:

- Classes of fire types and selection of appropriate extinguisher equipment.
- Proper use, maintenance and inspection requirements of fire suppression equipment.
- Evaluation of the fire and hazard assessment.
- Hazards and risks involved with using fire protection equipment.
- Emergency Action Plan and Fire Prevention Plan.
- Emergency procedures and self-rescue.

7.1. Training Record Keeping

NewFields local office and/or project site may maintain the following records:

- Worker training records (initial training and subsequent refresher training for fire extinguishers);

8. REFERENCES

Mine Safety and Health Administration (MSHA), United States Department of Labor, Title 30 Code of Federal Regulations (CFR), [57.4200 Firefighting Equipment Inspection](#), General Requirements, accessed October 2016

Occupational Health and Safety Administration (OSHA), United States Department of Labor, Title 29 Code of Federal Regulations (CFR), [1910.157 Fire Protection](#), Portable Fire Extinguishers, accessed October 2016.

OSHA, United States Department of Labor, Title 29 Code of Federal Regulations (CFR), [1910.39 Means of Egress](#), Fire Prevention Plans, accessed December 2016.



APPENDIX A
Portable Fire Extinguisher Inspection Checklist


PORTABLE FIRE EXTINGUISHER INSPECTION CHECKLIST


Checklist Guidelines:


This checklist covers regulations issued by the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.157. It applies to the placement, use, maintenance, and testing of portable fire extinguishers. The regulations cited apply only to private employers and their employees, unless adopted by a State agency and applied to other groups such as public employees. Definitions of terms in bold type are provided at the end of the checklist. This checklist does not address detailed regulations covering the methods used for hydrostatic testing of fire extinguishers. Please consult 29 CFR 1910.157 for additional information.

Fire Class Definitions:

- **Class A Fire:** Fire with ordinary combustibles such as wood, paper, cloth or plastics.
- **Class B Fire:** Fire involving flammable and combustible liquids and gasses such as gasoline, oil lacquer, paint mineral spirits and alcohol.
- **Class C Fire:** Fire is essentially a Class A or B fire where the fuel involved is energized with electricity.
- **Class D Fire:** A Fire involving combustible metals such as aluminum, magnesium, titanium, zirconium, sodium and potassium.
- **Incipient Stage Fire:** A Fire that is in initial or beginning stage and can be controlled or extinguished by portable fire extinguisher.

Project Name: Project Number:	PORTABLE FIRE EXTINGUISHER INSPECTION CHECKLIST	 <p>NewFields Perspective. Vision. Solutions.</p>
<i>In order to determine if portable fire extinguishers are evaluated properly with respect to OSHA guidance, all questions must be answered. If the question does not apply, write N/A in the blank. Circle "yes" or "no" or fill in the blank.</i>		
General Requirements		
Are all portable fire extinguishers approved? [29 CFR 1910.157(c)(2)]		Yes / No / NA
Are portable fire extinguishers using carbon tetrachloride or chlorobromomethane prohibited? [29 CFR 1910.157(c)(3)]		Yes / No / NA
Have all the following portable fire extinguishers been removed from service? [29 CFR 1910.157(c)(5)] <ul style="list-style-type: none"> • Soldered or riveted shell self-generating soda acid; • Self-generating foam; or, • Gas cartridge water. 		Yes / No / NA
<i>Note: These types of fire extinguishers are operated by inverting the extinguisher to rupture the cartridge or to initiate an uncontrollable pressure-generating chemical reaction to expel the agent.</i>		
Are portable fire extinguishers mounted, located, and identified so that they are readily accessible? [29 CFR 1910.157(c)(1)]		Yes / No / NA
Are portable fire extinguishers fully charged, operable, and kept in their designated places at all times? [29 CFR 1910.157(c)(4)]		Yes / No / NA
If fire extinguishers are enclosed in cabinets, is access to the cabinet unobstructed and is the cabinet clearly visible? [recommended]		Yes / No / NA

Project Name: Project Number:	PORTABLE FIRE EXTINGUISHER INSPECTION CHECKLIST	 <p>NewFields Perspective. Vision. Solutions.</p>
If fire extinguishers are enclosed in cabinets with opaque doors, are doors unlocked, and are the cabinet contents indicated on the outside? [recommended]	Yes / No / NA	
When fire extinguishers are enclosed in locked cabinets and doors are equipped with approved visual identification clear glass panels, are glass panes easily broken? Is the door capable of being opened when the glass panel is broken? Is the unlocking handle painted red? Is the direction the handle must be pushed or pulled to open the door indicated? Is the door labeled Fire equipment: in case of fire, break glass and operate red handle? [recommended]	Yes / No / NA	
When fire extinguishers are enclosed in locked cabinets and doors are completely glass, are doors labeled In case of fire, break glass? [recommended]	Yes / No / NA	
Are extinguishers installed on the hangers or on the supplied brackets, mounted in cabinets, or set on shelves unless the extinguishers are of the wheeled type? [recommended]	Yes / No / NA	
Are extinguishers installed where they are subject to physical damage protected from impact? [recommended]	Yes / No / NA	
Training and Education Requirements		
When employees are expected to use fire extinguishers, have they been trained in the general principles of fire extinguisher use and the hazards involved with incipient stage firefighting? [29 CFR 1910.157(g)(1)]	Yes / No / NA	
Is this training given at the time of initial assignment and annually thereafter? [29 CFR 1910.157(g)(2)]	Yes / No / NA	
Extinguisher Selection and Distribution		
Is at least one fire extinguisher available in each laboratory, shop, or other career-technical room, and one fire extinguisher available for each 2,500 square feet of floor area? [recommended]	Yes / No / NA	
Are portable fire extinguishers selected and distributed based on the classes (see fire class definitions above) of anticipated fires and on the size and degree of hazard that would affect their use? [29 CFR 1910.157(d)(1)]	Yes / No / NA	
<i>Note: Fire Class A, minimum distance 75 feet, Fire Class B, minimum distance 50 feet, Fire Class C, minimum distance 50-75 feet, Fire Class D, minimum distance 75 feet.</i>		
Inspection, Maintenance and Testing		
Are portable fire extinguishers inspected monthly? [29 CFR 1910.157(e)(2)]	Yes / No / NA	
Are portable fire extinguishers subjected to an annual maintenance check? [29 CFR 1910.157(e)(3)]	Yes / No / NA	
Does each extinguisher have a tag or label securely attached that indicates the month and year the inspection, maintenance, states that recharging was performed and identifies the person performing the service? [recommended]	Yes / No / NA	
Are records of the annual maintenance check kept and retained for at least a year? [29 CFR 1910.157(e)(3)]	Yes / No / NA	
When portable fire extinguishers are removed for service, are standby or spare units temporarily installed of the same type and capacity? [29 CFR 1910.157(e)(5)]	Yes / No / NA	
<i>Note: Dry chemical extinguishers with non-refillable disposable containers are exempt from this requirement.</i>		
Hydrostatic Testing		
Are extinguishers hydrostatically tested at the intervals listed below? [29 CFR 1910.157(f)(2)]	Yes / No / NA	

Project Name: Project Number:	PORTABLE FIRE EXTINGUISHER INSPECTION CHECKLIST	 <p>NewFields Perspective. Vision. Solutions.</p>
<i>Note: Test interval is five (5) years for the following types of extinguishers: Stored pressure water and/or antifreeze, Wetting agent, Aqueous film forming agent (AFFF). Test interval is twelve (12) years for the following types of extinguishers: Dry chemical, stored pressure, with mild steel, brazed brass or aluminum shells, Halon 1211, Halon 1301, Dry powder, cartridge or cylinder operated with mild steel shells.</i>		
Is hydrostatic testing performed by trained persons with suitable testing equipment and facilities? [29 CFR 1910.157(f)(1)]	Yes / No / NA	
Are hydrostatic testing certification records maintained that show the date of the test, the signature of the person who performed the test, and the serial number (or other identifier) of the fire extinguisher that was tested? [29 CFR 1910.157(f)(16)]	Yes / No / NA	



APPENDIX B
Site Specific Fire Prevention Plan Template

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1. PURPOSE

The purpose of this plan is to provide guidelines and procedures for the proper response to injuries and illnesses of NewFields employees.

2. SCOPE

These first aid guidelines apply to NewFields employees only.

First Aid workers at NewFields offices are volunteers and will not be required as a job duty to provide assistance during an emergency, but are available on a voluntary basis for the health of their co-workers. It is assumed by NewFields that medical treatment is available in a reasonable time for potential hazards occurring at these locations.

NewFields project sites must be evaluated individually to determine if First Aid personnel are required or if medical or first aid treatment is available for NewFields employees on the site. However, project sites with three or more full-time employees will have at least one trained First Aid worker and appropriate supplies.

3. DEFINITIONS

Cardiopulmonary Resuscitation (CPR) – CPR is an emergency procedure consisting of external cardiac massage and artificial respiration; the first treatment for a person who has collapsed and has no pulse and has stopped breathing; attempts to restore circulation of the blood and prevent death or brain damage due to lack of oxygen

First Aid Worker – NewFields employee who are trained in the administration of first aid.

First Aid Treatment – First aid refers to medical attention that is usually administered immediately after the injury occurs and at the location where it occurred. It often consists of a one-time, short-term treatment and requires little technology or training to administer. First aid can include cleaning minor cuts, scrapes, or scratches; treating a minor burn; applying bandages and dressings; the use of non-prescription medicine; draining blisters; removing debris from the eyes; massage; and drinking fluids to relieve heat stress.

Medical Professional – A doctor, nurse, or other person specifically trained and licensed to administer medical treatment.

Medical Treatment – Medical attention administered by a doctor, nurse, or other medical professional.

Paramedic – A person trained to assist medical professionals and to administer emergency medical treatment.

4. RESPONSIBILITIES

Human Resources (HR) – Human Resources is responsible for administering the first aid and CPR program. HR is responsible for maintaining first aid records including documentation regarding injuries, First Aid and CPR training, and medical services received by employees for work-related injuries and illnesses.

Project Principal (PP) – The PP is responsible for identifying First Aid workers and providing adequate supplies at NewFields sites. The PP will provide appropriate training. The PP will provide first aid kits that are accessible, are properly stocked and regularly inspected. The PP will inform employees of the locations of first aid kits and supplies and emergency contact information. The PP will also forward copies of all injury and first aid rendered reports to HR.

First Aid Worker - A designated First Aid worker on NewFields project sites will be responsible for providing first aid treatment to NewFields employees as needed, and will inspect and maintain the first aid supplies for the site.

Employees – Employees are responsible for using safe work practices to minimize first aid and medical treatment. In case of a work-related injury or illness, employees must promptly report the incident to the PP.

5. GUIDELINES

First Aid Personnel can treat minor injuries or illnesses such as small cuts, burns or abrasions. First Aid workers can provide some assistance with stabilizing a moderate or severe injury until emergency medical personnel can arrive. Medical professionals should treat moderate or severe injuries and illnesses.

Emergency contact information will be posted in visible and useful locations at NewFields sites. For project locations emergency contact information should be determined and employees notified prior to starting work on that site.

5.1. First Aid Treatment

Each location/site should have at least one First Aid worker on site. First aid may be rendered for minor, non-life or -limb threatening injuries and illnesses at the site. In case of moderate or severe injury or illness, first aid may be rendered until professional medical treatment can be administered. First aid treatment may include: cleaning minor cuts, scrapes, or scratches; treating a minor burn; applying bandages and dressings; the use of non-prescription medicine; draining blisters; removing debris from the eyes; massage; and drinking fluids to relieve heat stress. During a more severe injury or illness it may include: CPR, initial control of shock, application of a tourniquet or reduction of blood loss, and other emergency treatment to stabilize the employee before medical professionals arrive.

5.2. Medical Treatment

Each NewFields location will identify and post information regarding emergency medical treatment facilities. Designated medical facilities will be in close proximity and will be equipped to deal with potential work-related injuries and illnesses. One or more medical facilities will be designated prior to beginning work at NewFields project sites.

If an injury or illness is moderate or severe, professional medical attention will be sought. The affected employee will be transported to the designated medical treatment facility via company vehicle or ambulance, depending on the severity of the situation and the availability of such

transportation. The appropriate local emergency contact number, usually 911, shall be called immediately for life threatening injury or illness.

6. FIRST AID SUPPLIES

Each NewFields site will be equipped with basic first aid supplies. A means to contact emergency medical personnel must also be available at all project sites. Other first aid supplies such as eye wash stations and emergency showers may be required at some NewFields sites.

6.1. First Aid Kits

First aid kits will be placed in accessible locations at each NewFields site. The locations of first aid kits and supplies will be stated in the site-specific HASP, when required. First aid kits will consist of properly labeled, weatherproof containers stocked with individually packaged items. The contents of the first aid kits should meet or exceed the requirements of ANSI Standard Z308.1-1998 and OSHA 1910.151, Appendix A. A medical professional should approve a list of first aid supplies for use on NewFields sites. A list of First Aid supplies is located in Appendix A of this plan.

6.1.1. Inspection

The PP or designee will inspect first aid kits periodically. The First Aid Worker will inspect first aid kits located on project sites prior to the start of the project and weekly thereafter. During inspections, expended items will be noted and restocked and items with expiration dates will be checked and replaced, if necessary.

6.2. Eye Wash Stations and Emergency Showers

Eye wash stations and emergency showers will be provided in work areas where employees could potentially be exposed to corrosive materials. Such facilities will deliver a minimum of 30-gallons per minute for 15 minutes and will be located within 100 feet of areas where corrosive materials are stored or handled. Eye wash stations and emergency showers will consist of plumbed units whenever possible. When plumbed units are not possible, gravity fed or pressurized units will be used. Eye wash stations and emergency showers shall be indicated with appropriate signage and will be indicated on site maps.

6.2.1. Inspection

Eye washes and emergency showers will be tested monthly for proper operation and cleanliness. Self-contained systems will be replenished on the expiration of the saline solution.

7. FIRST AID & CPR TRAINING

NewFields employees may be asked to volunteer for First Aid training. First Aid Personnel should be available and willing to render emergency first aid at the work site. Employees will be provided First Aid Training at no cost. NewFields voluntary First Aid workers are not required to be certified in First Aid or CPR, but will be trained to provide emergency treatment. Employees designated as First Aid Workers are required to have valid first aid and CPR certification.

Training and certification will be obtained from the American Red Cross, American Heart Association, or an equivalent organization.

Refresher training will occur periodically, when first aid procedures change, or if an employee demonstrates a lack of knowledge or understanding of first aid procedures.

All First Aid Workers will participate in the NewFields SOP # 2 Bloodborne Pathogens Exposure Control Plan. Please refer to this plan for training and other requirements.

8. FIRST AID PROCEDURES

Immediate emergency medical assistance should be sought if an employee exhibits any of the following:

- Lack of consciousness
- Severe vomiting, or vomiting bile or blood
- Heavy bleeding
- Chest pain
- Difficult breathing
- Convulsions

Basic first aid procedures to be conducted on the site include:

- Cuts, scrapes, and bruises
- Burns
- Strains or sprains to muscles, bones, and joints
- Sudden illness
- Bites and stings, unless allergic reaction is life threatening
- Heat-related conditions, unless life threatening
- Cold-related conditions, unless life threatening

9. RECORDKEEPING

Records of work-related injuries and illnesses, first aid and medical treatment rendered, and HR will maintain first aid and CPR training.

10. REFERENCES

29 CFR 1926.50 and 30 CFR 56.15001

APPENDIX A – LIST OF MINIMUM FIRST AID SUPPLIES

Item	Minimum Size	Quantity
Absorbent Compress	32 sq. in. (no side smaller than 4" per side)	1
Adhesive Bandages	1" x 3"	16
Adhesive Tape	5 yd.	1
Antiseptic	0.5g application	10
Burn Treatment	0.5g application	6
Medical Exam Gloves	N/A	2 pair
Sterile Pads	3" x 3"	4
Triangular bandage	40" x 40" x 56"	1

Additional recommended supplies:

- Cold pack
- CPR protective face/mouth guard Scissors

Additional supplies will be added for specific needs during field operations. Additional quantities will be added for 10 or more NewFields employees on a site.

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1. PURPOSE

This document is NewFields plan for hazard communication and control of hazardous substances used by NewFields or on project sites where NewFields employees may be exposed to the hazardous substances used by other employers. Its purpose is to set forth guidelines and procedures for the proper communication, training, handling, storage, and disposal of identified hazardous substances.

2. SCOPE

The guidelines and procedures outlined in this document apply to NewFields locations, operations, and employees. NewFields does not expect to maintain hazardous materials at their locations and will have minimal exposure to such materials on most project sites.

3. DEFINITIONS

Also see Appendix C for more definitions.

Affected Employees - an employee who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies.

Common Name - any designation such as, a trade name, brand name, generic name, code name or code number that is used to identify a chemical and that is not its chemical name.

Container - any bag, barrel, bottle, box, can, cylinder, drum, carton, or storage tank.

Health Hazard - a chemical for which there is statistically significant evidence, based on at least one study conducted in accordance with established scientific principles, where acute or chronic health effects may occur in exposed employees. It includes chemicals that are:

- a) Carcinogens
- b) Toxic or highly toxic agents
- c) Reproductive toxins
- d) Irritants
- e) Corrosives
- f) Sensitizers
- g) Hepatotoxins (liver toxins)
- h) Nephrotoxins (kidney toxins)
- i) Neurotoxins
- j) Agents that act on the hematopoietic system (blood forming system)
- k) Agents that damage the lungs, skin, eyes or mucus membranes.

Hazard Warning - any words, pictures, accepted symbols or any combination thereof appearing on a label or other appropriate form of warning sign that conveys the hazard(s) of chemical(s) in the container.

Material Safety Data Sheet (MSDS) - a written or printed document that lists chemical, physical and toxicological information about a specific chemical.

Permissible Exposure Limit (PEL) - the airborne concentration of a chemical to which an employee may be exposed without the use of controls. PEL is published and enforced by OSHA.

Physical Hazard - a chemical for which there is scientifically valid evidence that it is a flammable or combustible liquid, a compressed gas, explosive, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water reactive.

Threshold Limit Value (TLV) - the airborne concentration of a chemical to which it is believed that an employee may be exposed for 8 hours per day for the duration of a working lifetime and experience no irreversible health effects. These exposure limits are reviewed and published annually by the American Conference of Governmental Industrial Hygienists (ACGIH). They are not regulatory limits, but are acknowledged as best practice in industry since they are current.

Personal Protective Equipment (PPE) - equipment that, when selected and used properly, provides protection from a specific chemical(s) and reduces an individual's exposure to that chemical.

4. RESPONSIBILITIES

Project Principal (PP) - The PP is responsible has overall responsibility for the Hazard Communications program at the sites they oversee. These responsibilities include:

- Review of requests for new hazardous chemicals to determine appropriate controls
- Confirming that MSDS are maintained and available for employee use, at field sites
- Maintaining and updating a field site-specific chemical inventory list
- Checking that chemical labeling on the site is adequate
- Notifying NewFields employees of the hazards associated with specific chemicals to which they may be exposed

Health and Safety Coordinator (HSC) – The HSC is responsible for the Hazard Communications Program at the office location.

- Periodic review and update of the Hazard Communication plan
- Maintaining and updating a chemical inventory list for the office location
- Confirming that MSDS are maintained and available for employee use
- Inspecting chemical storage at office location
- Checking that chemical labeling on the site is adequate
- Notifying NewFields employees of the hazards associated with specific chemicals to which they may be exposed

Human Resources (HR) – The HR department will maintain Hazard Communications training records.

Employees – All employees are responsible for complying with this Hazard Communications Plan. Observe label warning and adhere to established safety procedures. Any unlabeled or

unknown chemical container must be brought to the attention of the PP as soon as possible. Employees must not remove or deface labels on hazardous chemicals.

5. HAZARD DETERMINATION

Hazardous substances are those chemicals that are designated as hazardous by any one of the following:

- The supplier;
- The manufacturer;
- The MSDS; or
- If they are listed on the "Directors List" of hazardous chemicals, or similar government list.

Manufacturers and suppliers are required to provide health and safety information to their customers on hazardous substances purchased. This is done through the use of Materials Safety Data Sheets (MSDS), which must be provided to the purchaser prior to or at the time of shipment.

NewFields will maintain copies of the MSDS for each hazardous substance purchased and will make these readily accessible to employees.

Any hazardous substance received without the MSDS should not be utilized until a follow-up request has been sent and an MSDS received. If the vendor has not provided the MSDS within 25 working days of the request, the local office of OSHA shall be notified for assistance as specified in the Law.

Only designated employees have the authority to make purchases that involve hazardous materials. Open purchase orders shall not include hazardous substances. All purchases will be made from the list of approved vendors. Any exception from this practice must first be approved by the PP/HSC.

6. CHEMICAL INVENTORY LIST

A list of potentially hazardous chemicals will be maintained by the PP/HSC. Chemical Inventory will contain, at a minimum:

- Product names
- Hazardous components
- Manufacturer's identification
- Location used

New chemicals will be added to the list when received. Please refer to Appendix D for the Chemical Inventory.

7. LABELS

7.1. Incoming Products

Each product containing hazardous substances must be properly labeled, tagged, or clearly marked. All information must be prominently displayed and written in English. Incoming products will be inspected and must be labeled with:

- The identity of hazardous substance(s) present;
- Appropriate hazard warnings;
- Manufacturer's name.

Labels must not be defaced or removed from hazardous material containers. Existing labels on incoming containers shall not be removed or defaced. Containers must be stored to prevent the labels from becoming damaged or worn by weather, chemicals, or physical contact. Large containers may be labeled with signs or other appropriate written information as long as the container to which the information applies is identified.

The PP/HSC must be notified if a container arrives without a label, the label is illegible, or the label does not identify the chemical, the name and address of the manufacturer or list hazard warnings. Substances that lack proper labeling and/or cannot be identified shall not be used, handled, or stored. The material must then be identified and properly labeled or removed from the site.

7.2. Transfer Containers

When a hazardous chemical is transferred from its original container to a new one, the transfer container must be adequately labeled. The label shall include the chemical name, CAS#, ingredients if it is a mixture, date prepared and initials of responsible person. This container must remain in the responsible person's control until it is emptied and use of the container may not exceed one shift. An example of the labels to be used can be found in Appendix B.

8. SAFETY DATA SHEETS

SDS formerly known as MSDS for hazardous chemicals being used or stored will be accessible to employees working at that site. Valuable information for the safe use, handling, and disposal of chemical materials on the site may be obtained from the manufacturer or supplier in the form of a SDS. Each SDS describes the physical and chemical properties of one chemical material or substance. It also provides information for first aid treatment and special personal protection, procedures for cleanups, and precautions for storing and handling that are appropriate to the material. Appendix C contains a list of terms commonly found on SDSs that may be unfamiliar to employees.

SDSs shall be in English and will contain the following information as required by Federal Regulation:

- Manufacturer information:
- MSDS preparation information

- Hazardous Substances:
- Chemical Identification:
- Physical Data:
- Fire and Explosive Hazard Information
- Health Hazard Data:
- Reactivity Data:
- Special Protection Information:
- Emergency and First Aid Procedures:

Newly received chemical SDSs should be reviewed by the PP/HSC prior to obtaining the chemical to review any potential severe health or physical hazards. NewFields accepts the accuracy of the SDS provided by the manufacturer or distributor of the hazardous chemical.

SDS received by manufacturers and distributors will be maintained by NewFields for a period of 30 years. SDS for chemicals no longer in use may be placed in an archives file. Field locations may have access to SDS by CD, internet, or fax from the NewFields Office.

9. TRAINING

NewFields employees who may be exposed to chemicals will be trained regarding the characteristics and safe handling of hazardous chemicals in the workplace:

- At the time of initial assignment
- Prior to assignment of non-routine tasks
- Whenever a new hazard or operation is introduced into the workplace

Employees will be provided with the following information and training:

1. Requirements of the OSHA Chemical hazard communication Standard (29 CFR 1910.1200 or 30 CFR 47.71 whichever is applicable).
2. Location and availability of NewFields hazard communication plan.
3. Details of NewFields hazard communication plan including:
 - a) The right of the employee and/or the employee's physician to receive information regarding hazardous substances to which the employee may be exposed,
 - b) Where to find and how to use SDSs,
 - c) How to use the hazardous substances labeling system,
 - d) Definitions of terms (e.g. exposure, TLV, PEL, etc.),
 - e) The location(s) of hazardous chemicals to which employees may be exposed,
 - f) The name(s) of hazardous chemicals present in the work area including generic, chemical, common, and trade names,
 - g) The physical and chemical properties of hazardous chemicals to which employees may be exposed,

- h) Potential physical and health hazards and effects associated with the use, exposure, and overexposure of hazardous substances or mixtures,
- i) Symptoms of exposure and overexposure,
- j) Methods and observations used to detect the presence or release of a hazardous chemical in the workplace (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance, or odor of hazardous chemicals when released),
- k) Safe handling of hazardous chemicals,
- l) First aid and emergency procedures to be utilized in the case of spills or accidental overexposure,
- m) General safety precautions such as safe work practices and proper use of PPE necessary to prevent or minimize exposure to hazardous substances.

Refresher training will be provided as needed and in the event that an employee fails to follow necessary safe work practices.

9.1. Informing Non-English Speaking Employees

Non-English speaking employees will be informed in their own language(s) of the hazardous chemicals they may be exposed to at NewFields sites. Whenever possible, SDSs, labels, and other hazardous chemical information will be provided in the language(s) of non-English speaking employees. Non-English documentation may be used in addition to English documentation but will under no circumstances replace English documentation.

10. NON-ROUTINE TASKS

The employee will be given information about hazardous chemicals involved any non-routine tasks. This information will include:

1. Specific chemical hazards
2. Protective measures the employee can take
3. Measures that NewFields has taken to lessen the hazards including ventilation, respirators, PPE use, presence of another employee (i.e. the buddy system), and emergency procedures.

11. RECORDKEEPING

The following records must be maintained:

1. NewFields Hazard Communications Program
2. Chemical hazard communication training attendance documents
3. Chemical Inventory list (Appendix D)
4. SDS

The PP/HSC is responsible for maintaining the Chemical Inventory and SDS at sites they oversee. Training documents will be maintained by the HR Department.

12. INFORMING CONTRACTORS AND SUBCONTRACTORS

Each contractor and subcontractor working on a NewFields site will be provided and notified of the following information:

- List of hazardous chemicals they may encounter while on NewFields site.
- How to obtain an SDS for the chemicals on the list.
- Hazardous chemicals to which they may be exposed.
- Measures that may be taken to lessen the possibility of exposure.
- First aid and emergency procedures.

The contractor and subcontractor will sign a statement (Appendix A) confirming that they have reviewed and understood the above information.

Contractors and subcontractors are responsible for providing NewFields with SDSs for any hazardous chemicals they bring onto NewFields sites. Contractors and subcontractors are also responsible for proper storage and labeling.

When working on a Multi-employer site, the PP will determine that NewFields employees have been notified of potentially hazardous chemicals they may be exposed to and that they have access to SDS and other information from the contractor or owner of the site.

13. INFORMING VISITORS

All visitors are required to check in with the appropriate authority and will be accompanied while on the site. Visitors should be provided with any necessary PPE and the following information:

1. Hazardous chemicals to which he/she may be exposed.
2. Measures the visitor may take to lessen the possibility of exposure including the proper use of the PPE.
3. NewFields policies and procedures to be followed.
4. Emergency procedures.

14. REFERENCES

29 CFR 1910.1200

29 CFR 1926.59

30 CFR 47

APPENDIX A –CONTRACTOR HAZARD COMMUNICATIONS ACKNOWLEDGEMENT FORM

Project/Name: _____ **Date:** _____

I, _____ (name), as an authorized representative of _____ (company name), have received a copy of the following information from NewFields:

- List of hazardous chemicals that may be encountered while on the job.
- The location and procedure for receiving an MSDS for each chemical on the list.
- Hazardous chemicals to which we may be exposed,
- Measures I may take to lessen the possibility of exposure, and
- Emergency procedures.

I will ensure that the other representatives from our company receive this information before beginning work on the project.

If we bring any chemicals onto the site, we will ensure SDSs/MSDSs are available and that the appropriate labels are on all containers. We will alert NewFields prior to the use of any hazardous chemicals on the site and of the associated hazards and control methods.

Name _____ Title _____

Signature _____

APPENDIX B – EXAMPLES OF HAZARDOUS CHEMICAL LABELS**SAMPLE LABEL****PRODUCT IDENTIFIER****CODE****Product Name****SUPPLIER IDENTIFICATION****Company Name**

Street Address

City

State

Postal Code

Country

Emergency Phone Number

PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.

Keep away from heat/sparks/open flame. No smoking.

Only use non-sparking tools.

Use explosion-proof electrical equipment.

Take precautionary measure against static discharge.

Ground and bond container and receiving equipment.

Do not breathe vapors.

Wear Protective gloves.

Do not eat, drink or smoke when using this product.

Wash hands thoroughly after handling.

Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO₂) fire extinguisher to extinguish.**First Aid**

If exposed call Poison Center.

If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS**SIGNAL WORD****Danger****HAZARD STATEMENT****Highly flammable liquid and vapor.****May cause liver and kidney damage.****SUPPLEMENTAL INFORMATION****Directions for use**

Fill weight:

Lot Number

Gross weight:

Fill Date:

Expiration Date:

APPENDIX C – GLOSSARY OF MSDS TERMS

Information sheets such as MSDS for hazardous or toxic substances contain words that may be unfamiliar. The following explanation of terms will help employees understand the MSDS.

American Conference of Governmental Industrial Hygienists (ACGIH) - a private organization of occupational safety and health professionals. The ACGIH recommends occupational exposure limits for numerous toxic substances and it updates and revises its recommendation as more information becomes available.

Carcinogenic - Capable of causing cancer

Ceiling Limit - The maximum amount of toxic substance allowed to be in workroom air at any time during the day.

Combustible - Able to catch fire and burn

Concentration - The amount of one substance in another substance. Decomposition - Breakdown of a chemical

Density - How much space a given weight of substance takes up. Gold is a very dense substance because a small piece of it weighs a lot. Styrofoam is not very dense because it weighs very little but takes up a lot of space. The density of a substance is usually compared to water, which has been given a density value of one. Substances more dense than water (which sink in water) have a density greater than one; substances that float on water have a density of less than one.

Dermal - By or through the skin

Explosive Limits - The amounts of vapor in air sufficient to form explosive mixtures. Explosive limits are expressed as lower explosive limits and upper explosive limits; these give the range of vapor concentrations in air that will explode if heated. Explosive limits are expressed as a percentage of vapors in the air.

Flammable - Catches on fire easily and burns rapidly Flammable Limits - See explosive limits

Flash Point - The lowest temperature at which the vapor of a substance will catch on fire, and then go out, if heat is applied. Provides an indication of how flammable a substance is. Not to be confused with ignition temperature.

Health Hazard - Anything that can have a harmful effect on health under the conditions in which it is used or produced. There can be both acute and chronic health hazards.

Ignition Temperature - The lowest temperature at which a substance will catch on fire and continue to burn. The lower the ignition temperature, the more likely the substance is going to be a fire hazard.

Inflammable - Same as Flammable Ingestion – Swallowing LC50 - The concentration of a substance in air that causes death in 50 percent of the animals exposed by inhalation. A measure of acute toxicity LD50 - The dose that causes death in 50 percent of the animals exposed by swallowing a substance. A measure of acute toxicity mg/kg - A way of expressing dose: milligrams (mg) of a substance per kilogram (kg) of body weight. Example: a 100 kg (220

pound) person given 10,000 mg (about 0.02 pounds) of a substance would be getting a dose of 100 mg/kg (10,000 mg/100 kg).

mg/m³ - A way of expressing the concentration of a substance in air: milligrams (mg) of substance per cubic meter (m³) of air.

Milligram - One one-thousandth of a gram

Mutagenic - Capable of changing cells in such a way that future cell generations are effected. Mutagenic substances are usually considered suspect carcinogens.

National Institute for Occupational Safety and Health (NIOSH) - Department of Health and Human Services. NIOSH does research on occupational safety and health questions and makes recommendations to OSHA.

Odor Threshold - The lowest concentration of a substance's vapor, in the air, that can be smelled. Odor thresholds are highly variable depending on the individual who breathes the substance and the nature of the substance.

Oxidizer - Any substance that reacts violently with oxygen or that gives off large amounts of energy in a chemical reaction.

PEL - Permissible Exposure Limit: the same as TLV. PEL is often used in OSHA Standards instead of TLV.

pH - A measure of how acidic or caustic (basic) a substance is on a scale of 1-14. pH 1 indicates that a substance is very acidic; pH 7 indicates that a substance is neutral; and pH 14 indicates that a substance is very caustic (basic).

Parts per Million (PPM) - Generally used to express small concentrations of one substance in a mixture.

Reactivity - The ability of a substance to undergo change, usually by combining with another substance or by breaking down. Certain conditions, such as heat and light, may cause a substance to become more reactive. Highly reactive substances may explode.

Solubility - The amount of a substance that can be dissolved in solution, usually water.

Suspect Carcinogen - A substance that might cause cancer in humans or animals, but has not been proven to do so.

Teratogenic - Capable of causing birth defects

Threshold Limit Value (TLV) - The average 8-hour occupational exposure limit. This means that the actual exposure level may sometimes be higher, sometimes lower, but the average must not exceed the TLV. TLVs are calculated to protect most workers for a working lifetime.

Toxic Substance - Any substance that can cause acute or chronic injury to the human body, or that is suspected of being able to cause disease or injury under some conditions. Many toxic substances are chemicals or chemical mixtures, but there are other kinds of toxic substances as well (bacteria and viruses, for example).

Vapor - The gas given off by a solid or liquid substance at ordinary temperatures.

Vapor Density - The density of the gas given off by a substance. It is usually compared with air, which has a vapor density set at one. If the vapor is denser than air (greater than one) it will sink to the ground; if it is less dense than air (less than one), it will rise.

Volatility - A measure of how quickly a substance forms vapors at ordinary temperatures. Vapor pressure is a measure of volatility. The lower the vapor pressure the lower the volatility.

APPENDIX D – CHEMICAL INVENTORY LIST

CHEMICAL	AMOUNT	LOCATION
Nitric Acid	4 gals	
Ethyl alcohol	4 gals	
Hydrochloric acid	250 ml	
Sulfuric acid	250 ml	
Armstrong Floor Tile Adhesive	2 gals	
Alconox cleaner	0.4 lbs.	
Powder detergent	1 liter	

NewFields Health, Safety and Environment Standard Operating Procedure

HSE SOP 15 – Hearing Conservation



**Updated
June 2018**

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HSE SOP 15 – Hearing Conservation

Concern for hearing conservation while working in a location where the potential for high noise levels may exist is a safety priority for NewFields Companies, its Senior Management and staff. Exposure to high levels of sound can negatively impact hearing. The Occupational Health and Safety Administration (OSHA) has established limits for worker exposure to noise ([OSHA 1974](#), last amended 2008). Noise is classified into categories for continuous, intermittent or impact. Continuous noise has a constant level with duration greater than one (1) second. Intermittent noise may be the result of periodic equipment operation or moving in and out of high noise areas. Impact noise has a short duration, one (1) second or less, with an interval greater than one (1) second.

Initial hearing loss from overexposure to noise may be temporary. However, repeated noise exposure over a substantial length of time will result in permanent hearing loss. A person may not be aware of noise-induced hearing loss since it may occur slowly over many years. Noise-induced hearing loss is a result of destruction of organs in the inner ear. Noise induced hearing loss cannot be medically restored. To prevent hearing loss in workers, excessive noise sources must be removed or isolated or the exposure to its intensity or duration must be limited.

I. PURPOSE

NewFields Health, Safety and Environment (HSE) program has incorporated this Standard Operating Procedure (SOP) to establish a protocol for hearing conservation and worksite evaluation to minimize the potential for unsafe or unhealthy working conditions for NewFields staff. The protocol provides necessary information to establish safe work procedures for employees who may be potentially exposed to hazards associated with high noise levels in the work place.

2. SCOPE

This SOP applies to NewFields work site locations and will serve as the basis for initial and periodic review of NewFields work locations where excessive noise may be present at levels that may represent a potential hazard to hearing. This SOP also identifies corrective measures or controls to eliminate or mitigate the hazard. Conducting initial and periodic site specific reviews of work locations is the responsibility of local Health and Safety Coordinators (HSC), Partners and their management delegates to ensure potential noise hazards are identified and appropriate mitigations are instituted.

Purpose

To provide guidance to managers and staff on proper procedures to follow for evaluation, mitigation and control of worker exposure to potentially harmful noise levels encountered in work activities.

Goal and Objective

To ensure all managers and staff are familiar with identifying harmful site conditions or operations with potentially harmful noise levels and steps required to protect and conserve worker hearing.

Reporting Requirements

Noise Monitoring Results

Audiogram Testing Results

3. DEFINITIONS

The following definitions are incorporated by reference in this SOP:

- **A Scale Decibels (dBA)** – Unit of measurement for sound intensity based on a frequency weighted average that best simulates the sensitivity of the human ear.
- **Administrative Controls** – A change in work procedure such as written safety policies, rules, supervision, schedules and training with the objective of reducing the duration, frequency or severity of exposure to potential hazards.
- **Action Level (AL)** – A noise level of 50 percent of the Permissible Exposure Level (PEL below). Exposure to noise at or approaching this level requires a written Hearing Conservation Plan (HCP below) must be developed and implemented and hearing protection devices must be made available to workers exposed to this noise level or above.
- **Decibel (dB)** – Unit of measurement for sound intensity (sound pressure level) on a logarithmic scale.
- **Dose** – The noise level a worker is exposed to over a period of time.
- **Engineering Controls** – A means to eliminate or reduce exposure to a hazard through the use or substitution of engineered machinery or equipment. Engineering controls are preferred over Administrative Controls (above) and Personal Protective Equipment (PPE below).
- **Hearing Protection (HP)** – An ear protection device worn in or over the ears to protect the wearer from potentially noise-induced hearing loss.
- **Occupational Safety and Health Administration (OSHA)** – The Federal authority that develops and enforces regulations protecting worker health and safety.
- **Mine Safety and Health Administration (MSHA)** – The Federal authority that develops and enforces regulations protecting worker health and safety on mine sites. In general, MSHA regulations for hearing conservation are the same as OSHA.
- **Noise Reduction Rating (NRR)** – The average sound level reduction (attenuation) provided by a Hearing Protection (HP) device in a laboratory test. A rating given to all hearing protection equipment.
- **Permissible Exposure Limit (PEL)** – A Time Weighted Average (TWA below) of 90 A scale decibels (dBA above) as measure over an 8-hour period as defined in [29 CFR 1910.95](#). The PEL also varies depending on duration of exposure.
- **Personal Protective Equipment (PPE)** – Equipment designed to protect against workplace hazards when engineering or administrative controls are inadequate or not feasible.
- **Standard Threshold Shift (STS)** – A change in hearing threshold relative to a baseline audiogram for the employee that indicates an average of 10 dB or more at 2000, 3000 or 4000 Hertz (Hz) in one or both ears.
- **Time Weighted Average (TWA)** – A measured exposure interval in the workplace averaged over the duration of a work shift (usually an 8-hour time period).

4. ROLES AND RESPONSIBILITIES

The HSE program and this SOP assigns the following duties and responsibilities for NewFields staff and management:

- Human Resources (HR) Manager and Corporate Health and Safety (CHS) Manager will periodically review the employee testing and performance requirements for staff as identified in this SOP. The HR or CHS Manager may assist local Health and Safety Coordinators or office management to establish baseline or periodic audiometric testing of employees. The results of such testing will remain confidential between the employee and the attending physician or testing provider. All medical exam records, including audiometric testing results, will be kept in confidential records storage by the HR Manager.
- Partners, Principals or their management delegates (other Principals or Senior Project Managers) are responsible for ensuring field work sites are initially and periodically reviewed for excessive noise levels and recommend improvements to be instituted as necessary.
- Local Health and Safety Coordinators (HSC) will provide assistance with initial and periodic review of work sites or tasks with managers or coworkers and review recommended and completed control measures implemented following the review.
- Employees are responsible for periodically reviewing and re-evaluating work sites and tasks in accordance with this SOP and prevent unsafe conditions or unsafe acts that may cause injury to themselves or co-workers. Employees' are responsible for identifying potential hazards and effecting controls within their ability or notifying the HSC or Management of potential hazards beyond their control.
- Corporate Health and Safety (CHS) Manager will periodically review the performance requirements for local HSC, administrative support and management staff as identified in this SOP. The CHS Manager is available to assist the HSC and management staff with workplace review and recommendations, as needed or requested.

5. GUIDELINES

The HSE program and other SOPs (incorporated in the HSE program by reference) provide guidance for NewFields staff working in field or at work site locations. The following workplace hearing conservation safety guidelines are recommended for periodic review with respect to planned work tasks or in advance of working around excessive noise creating machinery. The following sections provide general guidelines for work task review, noise level measurement and mitigation measures in addition to references to other applicable SOPs within the NewFields HSE program.

5.1. Noise Level Exposure

OSHA and MSHA have established standards to protect employees working in conditions with excessive noise. OSHA Standards 29 CFR [1910.95](#), [1926.52](#) and MSHA [Part 62](#) Occupational Noise Exposure establish limits for occupational exposure to noise in the workplace. The OSHA standard specifies:

- Protection against the effects of noise exposure shall be provided when sound levels and duration exceed those shown in **Table 5.1**.

- When employees are subjected to sound levels exceeding those listed in **Table 5.1**, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels below the levels listed in **Table 5.1**, personal protective equipment shall be provided and used to reduce sound exposure to levels below those in **Table 5.1**.

Table 5.1 lists OSHA permissible noise levels for continuous and intermittent noise. Exposure to noise at or above these limits require implementing engineering controls, administrative controls and / or hearing protection.

Table 5.1 Permissible Exposure Limits (PELs) for Noise	
Hours / Day	A Scale Decibels (dBA)
12	87
10	88
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
≤ 0.25	115

Noise levels exceeding 85 dBA are typically present when an individual needs to raise their voice above a normal level to be heard by someone three (3) feet away or less. Employees who may be exposed to this noise level (85 dBA) for a 8-hour period or may be required to work in an area approaching or exceeding this noise level (the OSHA AL or AL) must consider and implement engineering controls, administrative controls and / or hearing protection use.

5.2. Noise Level Measurement

A Sound Level Meter (SLM) may be utilized to measure noise generated by equipment or activities that produce high sound levels. There are two types or classes of SLMs, Type I or Class 1 are precision grade for laboratory and field use (± 0.7 dB) and Type II or Class 2 are general purpose grade for field use. Occupational noise guidelines require the use of such devices when measuring sound levels with respect to occupational noise exposure. A noise dosimeter is also a specialized SLM intended to accurately measure the noise exposure to worker over time.

The National Institute of Health (NIOSH) has also developed a SLM app for use with iOS smart phones. The app / phone SLM is not meant to replace a professional SLM, dosimeter or to be used for occupational compliance purposes. NIOSH also recommends the use of an external microphone that can be calibrated with an acoustical calibrator for improved accuracy (± 1 dB over testing range 65 – 95 dB). The app can

be downloaded here from the [NIOSH web site](#). Other apps are also available for Android devices but all app / phone combinations should be considered as sound level screening tools and not Type I or II SLMs as required for occupational noise measuring compliance devices.

Any noise measurements made by NewFields staff will be communicated to affected employees verbally or in writing or posted in the work area. Employees must also be notified in writing within 15 calendar days of work area or dosimetry monitoring results when exposure is determined to be equal or exceed the AL (50 percent of a PEL or 85 dBA for 8-hour TWA) or should measured levels exceed the PEL, **Table 5.1**. Any records of such noise measurements must be maintained for a minimum of two (2) years.

5.3. Hearing Conservation Program

Employees who may be potentially exposed to noise equal to or exceeding the AL (50 percent of PEL or 85 dBA for 8-hour TWA) must be included in a Hearing Conservation Program. NewFields employees who regularly work full shifts in the following operations of working conditions should be included in this program:

- Working on construction sites and around construction equipment;
- Working in close proximity to drilling operations; or,
- Working in / near high speed vehicle traffic areas.

Employees working near the following operations for any duration:

- Working around blasting areas;
- Working near or on airport facilities;
- Working near sand blasting, or other high noise operations; or,
- Working on or near equipment identified as producing high noise levels.

Employees who visit construction sites occasionally with the above operations or for short durations are not expected to be exposed to noise exceeding the AL. However, these employees are still encouraged to wear hearing protection to reduce these exposures as low as possible. These employees will be provided initial noise awareness training prior to assignment.

5.4. Audio Testing Program

Employees who may be potentially exposed to noise equal to or exceeding the AL (50 percent of a PEL or 85 dBA for 8-hour TWA) are required to participate in a Hearing Conservation Program. These employees will have a baseline audiogram established within 30 days of the employee's first exposure at or above the AL. This baseline audiogram will be used as a comparison to subsequent audiograms. Subsequent annual audiograms are compared to the baseline to determine if a Standard Threshold Shift (STS) has occurred. Audiograms must be given after at least 14 hours without exposure to high noise levels.

The audiograms must be performed by a licensed or certified audiologist, otolaryngologist, physician or technician certified by the Council for Accreditation in Occupational Hearing Conservation (CAOHC). The results of the audiograms must be evaluated by an audiologist, otolaryngologist, or physician who will determine whether there is a need for further hearing evaluation.

If an annual audiogram indicates an STS has occurred, the employee shall be notified in writing within 21 days of the determination. A retest may be performed within 30 days to confirm the standard threshold shift. When a standard threshold shift occurs and it is determined to be occupationally related the employee must:

- Wear hearing protection and be trained in its use and care if not already wearing hearing protection.
- Be refitted and retrained in the use of hearing protection offering greater attenuation if already using hearing protection.
- Be referred for further examination or additional testing, if appropriate, or if employer thinks ear pathology is related to wearing hearing protection.
- A standard threshold shift is considered a recordable accident for the OSHA 300 log, if applicable.

NewFields will offer audiometric testing free of cost to participating employees. Results of audiometric testing will be made available to employees within 10 working days and results of testing will also be maintained by HR.

5.5. Engineering and Administrative Controls

Prior to the use of hearing protection devices, OSHA requires that methods to reduce the noise through engineering or administrative controls must be considered first. Engineering controls for noise should be evaluated to reduce production of noise at the source, interrupt the transmission of noise along a pathway from the source to the receiver or attenuate the intensity at the receiver. Due to the nature of NewFields fieldwork, engineering controls are usually not feasible. NewFields will consider noise reduction engineering controls for any equipment owned and operated by NewFields.

Administrative controls are measures taken to limit the amount of time that an employee is exposed to high noise levels. This is typically done by rotating employees between areas of high and low noise exposure and / or controlling the operating duration of equipment producing excessive noise levels. This may be considered on some projects where NewFields employees are available for rotation in high noise areas.

Employees are also encouraged to distance themselves from noise producing equipment since this will also reduce noise exposures.

5.6. Hearing Protection Devices

When feasible engineering and administrative controls fail to reduce an employee's noise exposure to acceptable levels, personal protective equipment in the form of Hearing Protection (HP) devices must be used. Employees who are exposed to noise levels at or above the AL will be provided with appropriate HP. Those employees exposed to noise levels at or above the AL are required to wear HP. Employees who have experienced a STS or have a known hearing loss will also be required to wear HP.

Employees required to wear hearing protectors will be notified by the Project Manager for each project task or tasks be described in the site Health and Safety Plan. Employees are encouraged to where HP whenever they are in areas of high noise levels. Employees can identify when noise levels exceed of 85 dBA when they need to raise their voice above normal to be heard by someone three (3) feet away or by screening noise levels with a mobile phone enabled app.

NewFields will provide at no cost a variety of HP for employees who may be exposed to high noise levels. At least one (1) set of foam earplugs, pre-formed earplugs or muffs should be available. The hearing protectors selected must reduce the employee noise exposure level below 85 dBA. The effectiveness of hearing protection can be evaluated from its Noise Reduction Rating (NRR). To determine the noise reduction a worker should receive from an earplug, divide the labeled NRR by two (2) (i.e. earplug with NRR of 30 dB, have a working attenuation of 15 dB). Earmuffs provide a working attenuation approximately 75 percent of the labeled NRR (i.e. ear muff with NRR of 45 dB, has a working attenuation of 33 dB) ([3M 2000](#)).

HP will be selected based on available noise measurements to reduce employee exposures below the AL and PEL. Where noise measurements are not available, HP will be selected to provide a 15 dB noise reduction. This will be sufficient to reduce sound levels up to 105 dBA for a full 8-hour shift. NewFields employees are not expected to be exposed to noise doses exceeding this level.

6. TRAINING AND INFORMATION

NewFields employees participating in the Hearing Conservation Program will receive training, prior to assignment and annual hearing conservation training. This training will include the following:

- The effects of noise on hearing;
- The purpose of hearing protection devices, various types available, selection, fitting, use and care of hearing protection devices;
- Properly storing and maintaining hearing protection devices in good condition;
- The purpose of audiometric testing and an explanation of test procedures;
- Typical noise levels of various equipment and operations and identifying high noise environments; and,
- Audiograms must be given after 14 hours of low noise levels.

A copy of the OSHA Occupational Noise Standard and this program will be provided to affected employees who request a copy. A copy of the standard will be posted at any site where employees are exposed to noise above the AL.

Training will be updated if there are any changes in the type or use of hearing protectors or changes in processes that may influence noise exposures.

7. RECORDKEEPING

NewFields Human Resources (HR) Department will maintain audiometric testing records as medical records for the length of employment plus 30 years. HR will maintain hearing Conservation Training records for three (3) years.

Noise measurement records will be maintained for a minimum of two (2) years. The Project Manager or Principal will store such measurement records in the project files.

8. REFERENCES

Occupational Health and Safety Administration (OSHA) 1974, United States Department of Labor, Title 29 Code of Federal Regulations (CFR) 1910 Subpart G, [1910.95](#), Occupational Health and Environmental Control, Occupational Noise Exposure, last amended 2008.

Mine Safety and Health Administration (MSHA) 2000, Title 30, Chapter I, Subchapter M, [Part 62](#), Occupational Noise Exposure, accessed June 2018.

3M Education 2000, Education Resource Guide, How to Use the Noise Reduction Rating ([NRR](#)).

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1. PURPOSE

To establish procedures for the implementation and monitoring of a heat and cold stress prevention program, and to describe symptoms that characterizes excessive exposure to hot and cold environments.

2. SCOPE

These guidelines apply to NewFields employees who may be exposed to heat or cold stress conditions.

3. DEFINITIONS

Acclimatization - Acclimatization is the process of the body becoming accustomed to extremes in temperature. Acclimatization to heat involves a series of physiological and psychological adjustments that occur in an individual during the first week of exposure to hot environmental conditions.

ACGIH Cold Stress Threshold Limit Values (TLVs) – Limits intended to protect workers from the most severe effects of cold stress and cold injury and to describe exposures to cold working conditions under which it is believed that nearly all workers can be repeatedly exposed without adverse health effects. The TLV objective is to prevent the deep body core temperature from falling below 36 °C (96.8 °F) and to prevent cold injury to body extremities.

ACGIH Heat Stress Threshold Limit Values (TLVs) – Limits intended to protect workers from the most severe effects of heat stress and heat injury and to describe exposures to hot working conditions under which it is believed that nearly all workers can be repeatedly exposed without adverse health effects. The TLV objective is to prevent the deep body core temperature from exceeding 38 °C (100.4 °F).

Cold Stress Conditions - These conditions include working environments with an ambient temperature of 30 degrees Fahrenheit or less and cool working environments where employee clothing may be wetted or saturated with water.

Deep Body Temperature - The core temperature of the body as determined by rectal temperature measurements. For a single, occasional exposure to a cold environment, a drop in core temperature to no lower than 35 °C (95 °F) is permissible.

Equivalent Chill Temperature (ECT) - ECT is an index describing the effect of the cooling power of moving air on exposed flesh. The effect of wind velocity at a certain temperature is expressed as the equivalent cooling effect of a lower temperature with still air.

Heat Stress Conditions – These conditions include working environments exceeding 70 degrees Fahrenheit while wearing impervious personal protective equipment and working environments exceeding 80 degrees Fahrenheit for normal work clothing.

Work-Rest Regimen – Defined as a ratio of time spent working versus time spent resting. The ratio applies to one-hour periods. For example, a work-rest regimen of 75% work, 25% rest corresponds to 45 minutes work and 15 minutes of rest each hour.

4. RESPONSIBILITIES

Project Principals (PP) – The PP is responsible for providing appropriate resources in personnel and equipment required to complete the operations safely. They are also responsible for making available required training to affected employees. The PP is responsible for determining if a work- rest regime is needed. The PP or designee will perform heat stress monitoring and enforce compliance with this SOP.

Employees - Will adhere to this SOP and will act in accordance with the specified site procedures.

5. HEAT STRESS

Hot weather can cause physical discomfort, a decrease in work efficiency, and personal injury. Wearing personal protective equipment may increase the risk of developing heat stress at temperatures of 70⁺ F, due to the decrease in natural ventilation.

Heat Stress is caused by factors, including environmental conditions, clothing, PPE, workload, and the individual characteristics of the worker. It is important to note that individuals vary in their susceptibility and their reactions to heat related conditions. Factors that may predispose someone to a heat condition include:

- Lack of physical fitness
- Lack of acclimatization
- Age
- Dehydration
- Obesity
- Alcohol and drug use
- Infection
- Sunburn
- Diarrhea
- Chronic disease

Heat stress is one of the most common illnesses especially when workers are not acclimatized to the work environment. New workers, and those unaccustomed to the hot environment should be given a break in period of a few weeks with shorter work periods or easier tasks.

Early symptoms of heat stress may include fatigue, irritability, anxiety, and decreased concentration, dexterity or movement. If not recognized and treated, heat stress can become a serious medical emergency.

5.1. Heat Related Conditions

5.1.1. Heat Rash

Heat rash is caused by continuous exposure to hot and humid air and aggravation of the skin by chafing clothes. This condition decreases the ability to tolerate heat and is a nuisance.

To treat heat rash, apply mild drying lotions and recommend wearing clean, dry clothing between heat exposures.

5.1.2. Heat Cramps

Heat Cramps are caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Signs and symptoms of heat cramps include muscle cramps and pain in the extremities and abdomen.

Heat Cramps should be treated by administering commercially available electrolyte- balanced liquids (e.g. Gatorade®) or water. Rest breaks should be increased until effected personnel are acclimatized. In cases of serious heat cramps, medical attention should be sought.

5.1.3. Heat Exhaustion

Heat Exhaustion is caused by increased stress on the organs to meet increased demands for body cooling. Signs and symptoms of heat exhaustion include shallow breathing; pale, cool, moist skin; profuse sweating; dizziness; nausea; vomiting or fatigue.

An employee suffering from heat exhaustion should move to a cooler environment and rest in a reclining position. Fluids, preferably water, should be administered. If symptoms do not improve, seek medical attention.

5.1.4. Heat Stroke

Heat Stroke is the most severe form of heat stress. Signs and symptoms of heat stroke include red, hot, dry skin; no perspiration; nausea; dizziness and confusion (semi- conscious); strong, rapid pulse; or coma. If untreated, heat stroke can result in death.

Heat stroke is considered an Immediately Dangerous to Life or Health (IDLH) condition and must be treated as an emergency. Any person suffering from heat stroke must be cooled down immediately by immersion in water or by wrapping in wet sheets/cloth and fanning. These steps are to be taken while waiting for emergency response to arrive, or while transporting the victim to an emergency medical facility.

5.2. Heat Stress Prevention

One or more of the following can help prevent or reduce heat stress:

- Drinking water - frequent small drinks, i.e., one cup every 15-20 minutes (about 150 ml or ¼ pint)
- Keep water reasonably cool (55-60 °F) and stored in clean areas
- Workers should maintain a well-balanced diet
- A commercially available product such as Gatorade or Exceed may be used for electrolyte replacement
- Cooling devices may be used, however, they add weight, and should be considered with worker efficiency
- Long cotton underwear should be worn. It acts as a wick to help absorb moisture and protect the skin from direct contact with heat-absorbing PPE.

- Provide air-conditioned shelter or shaded areas for rest periods
- Install mobile showers and/or hose-down facilities
- Conduct operations in the early morning or evening
- Rotate workers, additional personnel will allow for frequent breaks in extreme heat conditions
- Work-rest regimens should be instituted
- Mandate work slowdowns in extreme heat conditions
- Good hygiene including frequent change of clothing and daily showering
- Clothing should dry during rest periods

5.3. Heat Stress Monitoring

Heat stress biological monitoring may be needed in some extreme conditions. This could include weighing individuals and monitoring vital signs, such as blood pressure, and body temperature. If there is a need to institute a heat stress-monitoring program, the PP will discuss control methods with the company physician.

6. COLD STRESS

Cold Stress injuries are classified as either localized, as in frostbite or generalized, as in hypothermia. Physical conditions that worsen the effects of cold include allergies, vascular disease, smoking, excessive drinking, and the use of specific drugs and medications.

Factors contributing to cold injury include exposure to humidity and high winds, duration of exposure, contact with wetness or metal, inadequate clothing, age and general health, including circulation and diet. The wind-chill factor (combination of wind speed and air temperature) is a better indicator of the hazard than temperature.

The table below shows the cooling power of wind on exposed flesh.

Wind Speed (mph)	Actual Temperature Reading (F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
Equivalent Chill Temperature (ECT) (F)												
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-64	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148

Wind speed greater than 40mph have little additional effect	LITTLE DANGER in <1 hr with dry skin. Maximum danger of false sense of security	INCREASING DANGER Danger from freezing of exposed flesh within one minute	GREAT DANGER Flesh may freeze within 30 seconds
	Trench foot and immersion foot may occur at any point on this chart.		
* 2002 – ACGIH-TLV Thermal Stress			

The greatest incremental increase in wind chill occurs when a wind of 5 mph increases to 10 mph. In addition, water conducts heat 240 times faster than air; thus, the body cools suddenly when chemical-protective equipment is removed and the clothing underneath is wet from perspiration.

6.1. Cold Stress Conditions

6.1.1. Frostbite

Frostbite of the extremities can be categorized by the degree of damage:

- **Frost nip frostbite** – this is a condition characterized by a sudden blanching or a whitening of the skin.
- **Superficial frostbite** – the skin has a waxy or white appearance and is firm to the touch, but the tissue beneath is resilient.
- **Deep frostbite** – tissues are cold, pale, and solid.

Factors that contribute to frostbite include handling solvents, tight footwear, use of alcohol, wet clothing, high altitudes and race. African-Americans are three to six times more likely to get frostbite than Caucasians.

Frostbitten skin should never be rubbed since it can result in permanent tissue damage. For frostnip, applying firm pressure with a hand or other warm body part should warm the skin.

Professional medical help should be sought for frostbite cases. First aid responders can begin to warm the affected part by skin-to-skin contact or by submerging in 108 to 110 degree water. Extreme care should be taken since burns due to loss of feeling can happen easily. There will be some pain when thawing begins.

6.1.2. Hypothermia

Hypothermia is the lowering of the core body temperature. It can occur from exposure to conditions well above freezing when a worker is immersed in cold water or is exposed to cool, high winds. Individuals who are exhausted, or undernourished are susceptible to hypothermia.

The first symptoms of hypothermia are uncontrollable shivering and feeling cold. The heartbeat then slows and sometimes becomes irregular, the pulse weakens and the blood pressure changes. Other symptoms are slurred and slow speech, memory lapses, incoherence, drowsiness, poor judgment, mental confusion and apparent exhaustion.

Core Temp		Clinical Signs and Symptoms
C	F	
37	98.6	"Normal" oral temperature
36	96.8	Metabolic rate increases in an attempt to compensate for heat loss
35	95.0	Maximum shivering
34	93.2	Victim conscious and responsive, with normal blood pressure
33	91.4	Severe hypothermia below this temperature
32	89.6	Consciousness clouded; blood pressure becomes difficult to obtain; pupils dilated but react to light; shivering ceases
30 29	86.0 84.2	Progressive loss of consciousness; muscular rigidity increases; pulse and blood pressure difficult to obtain; respiratory rate decreases
28	82.4	Ventricular fibrillation possible with myocardial irritability
27	80.6	Voluntary motion ceases; pupils nonreactive to light; deep tendon and superficial reflexes absent
26	78.8	Victim seldom conscious
25	77.0	Ventricular fibrillation may occur spontaneously
24	75.2	Pulmonary edema
22	71.6	Maximum risk of ventricular fibrillation
20	68.0	Cardiac standstill
18	64.6	Lowest accidental hypothermia victim to recover
*2002 ACGIH TLV Thermal Stress		

For mild hypothermia, move the person indoors, remove wet clothing, and provide a warm beverage. The body must be rewarmed slowly.

In severe cases emergency medical attention is needed. While transporting or awaiting the arrival of the emergency medical assistance:

- Keep the person dry, remove wet clothing
- Apply external warmth
- Have person breathe warm moist air
- Handle the person gently
- Remain alert of any complications.
- **Do Not** give hot liquids
- **Do Not** allow the patient to exercise.

6.2. Cold Stress Prevention

Prevention includes proper work practices, protective clothing and proper diet. The following is recommended to prevent cold related injuries:

- Temperature and wind monitoring
- Work periods with frequent breaks for rewarming

- Supply of beverages
- Bare skin should not contact metal objects
- Use the buddy system
- Wet clothing should be changed immediately
- Provide shelter

If work is performed continuously at 20°F ECT or below, heated warming shelters should be provided. A work-warming regimen can be established that assumes workers are properly clothed when working at temperatures below freezing.

For work at or below 10°F ECT the following should apply:

- Constant protective observation (buddy system or direct supervision)
- The work rate should not cause sweating
- Employees should become accustomed to the working environment
- Sitting or standing still for long periods is minimized
- Unprotected metal chair seats will not be used
- Protect from drafts

6.3. Clothing Requirements

Clothing should be worn loosely, in layers to provide maximum protection by trapping warm air between the layers. The layer closest to the skin should keep the skin dry and allow the perspiration to escape. Wool absorbs significant amount of body moisture before losing its ability to insulate, making it preferable to cotton. Gore-Tex™ and polypropylene are often recommended for use next to the skin. If clothing becomes damp or wet from the work activity or perspiration, it should be changed.

The outer layers of clothing are for insulation and should be made of wool, goose down, or synthetic fiber-filled materials. Waterproof outerwear should be worn if there is precipitation.

Appropriate head coverings are an important since up to 50 percent of heat loss occurs through the head, ears and back of the neck. Hands should be protected since hands and fingers are susceptible to frostbite.

Footwear should be waterproof. Boots should be worn when working in snow or wet areas. When toe protection is required, fiberglass or composite-toed safety footwear is preferable to steel-toed footwear. A combination of working boots and rubber overboots is a cost-effective method of providing insulation. The footwear should not be too constricting and the socks should allow evaporation of perspiration.

7. TRAINING

NewFields employees who are exposed to heat or cold conditions will receive training in safe work practices. Training may be conducted as part of the site safety orientation or during other H&S training, such as HazWoper training.

Employees exposed to heat stress conditions will have instruction in:

- Proper cooling procedures
- First aid treatment
- Proper clothing and effect of PPE
- Proper eating and drinking
- Recognition of signs and symptoms of heat stress conditions
- Safe work practices
- Work-rest regime
- Biological monitoring program, if appropriate

Employees exposed to cold stress will have instruction in:

- Proper warming procedures
- First aid treatment
- Proper clothing
- Proper eating and drinking
- Recognition of signs and symptoms of cold stress conditions
- Safe work practices
- Work-warming regime

8. REFERENCES

ACGIH Threshold Limit Values (TLV) and Biological Exposure Indices (BEI)

DHHS (NIOSH) Publication No. 86-113 (April 1986) Criteria for Recommended Standard:
Occupational Exposure to Hot Environments

NewFields Health, Safety and Environment Standard Operating Procedure

HSE SOP 17 – Accident or Incident Investigation



**Updated
June 2018**

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LIST OF APPENDICES

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Appendix B	Mine Accident, Injury and Illness Report (MSHA)



HSE SOP 17 – Accident or Incident Investigation

Accident or incident investigation is a priority for NewFields Companies, its Senior Management and staff. Field activities, office workspaces and transportation related accidents all represent risks to employees. Motor vehicle accidents are recognized as a leading cause of work and non-work related serious injuries and fatalities. The goal of conducting an accident investigation is to discover the conditions that led to an incident and to mitigate the likelihood of future occurrences through improved work practices, procedures or controls. NewFields Companies employees also have a responsibility for the prompt reporting of accidents involving NewFields staff.

1. PURPOSE

NewFields Health, Safety and Environment (HSE) program has incorporated this Standard Operating Procedure (SOP) to establish a protocol for the investigation and reporting of accidents or injuries involving NewFields staff. The protocol also provides a means for documenting “near miss” incidents recognizing their potential to enhance coworker and management awareness of potential hazards and developing mechanisms for their avoidance in the future.

2. SCOPE

This SOP applies to all work related accidents, injuries or illnesses which involve NewFields employees in NewFields office locations, field work sites and motor vehicle operation.

3. DEFINITIONS

The following definitions are incorporated by reference in this SOP:

- **Accident** – An accident is an unplanned, unexpected and undesired event which may occur suddenly and cause harm to people, damage to property, loss or harm to the environment and / or harm to communities. Examples may include motor vehicle or mobile equipment related accidents, equipment failure or malfunction, infrastructure failure and others.
- **First Aid** – First aid refers to medical attention that is usually administered immediately after the injury occurs and at the location where it occurred. It often consists of a one-time, short-term treatment and requires little technology or training to administer. First aid can include cleaning minor cuts, scrapes, or scratches; treating a minor burn; applying bandages and dressings; the use of non-prescription medicine; draining blisters; removing debris from the eyes; massage; and drinking fluids to relieve heat stress (Occupational, Safety and Health Administration, OSHA 2015).

Purpose

To establish guidelines and protocols for prompt reporting of accidents or incidents involving NewFields employees.

Goal and Objective

To ensure accidents are reported, investigated and measures identified to minimize the risk of future occurrences.

Reporting Requirements

Motor Vehicle Accidents
Field or Office Accidents
Occupational, Safety and Health (OSHA) requirements
Mine, Safety and Health Administration (MSHA) requirements



- **Injury or Illness** – An injury or illness is an abnormal condition or disorder. An injury is any wound or damage to the body and may include cuts, abrasions, sprains, fractures or burns. Illnesses include both acute (sudden) and chronic (over an extended period of time) conditions such as skin disease, respiratory disorder or poisoning. The Occupational Health Administration (OSHA) applies these definitions to their “Recordable” incident criteria with requisite employer notification requirements. The Mine Safety and Health Administration (MSHA) considers an “occupational injury” as an injury to an employee which occurs at a mine for which medical treatment is administered or which results in death or loss of consciousness.
- **Near Miss** – A near miss is an incident that could have caused an employee injury or illness, but was detected, avoided, mitigated and did not result in an accident. Near misses represent opportunities to enhance coworker understanding and implement control methods to prevent the risk of injury or future occurrence of the condition.
- **Physician or Other Qualified Health Care Professional** – A physician or qualified health care professional is an individual who is qualified by education, training, licensure / regulation (when applicable), and facility privileging (when applicable) who performs a professional service within his / her scope of practice and independently reports that professional service.

4. ROLES AND RESPONSIBILITIES

The HSE program and this SOP assigns the following duties and responsibilities for NewFields Companies staff and management:

- Human Resources (HR) Manager and Corporate Health and Safety (CHS) Manager will periodically review the performance requirements for staff as identified in this SOP. The HR Manager will refer employees for non-emergency medical treatment, receive and maintain records for work related injuries or illnesses and file required reports with NewFields Workers Compensation insurance carrier. The CHS Manager will maintain OSHA 300 logs (required for recording accidents for OSHA compliance) for each POD level and a second OSHA 300 log aggregated for NewFields Companies, LLC. The HR Manager will also keep OSHA 300 logs on file as prepared and provided to each local unit or POD (as provided to local HSC below).
- Local Health and Safety Coordinators (HSC) will provide assistance in the investigation of accidents and near misses, as required. They may also provide accident and near miss information to other offices or groups within NewFields as necessary for reporting requirements or to provide near miss information to coworkers or colleagues. The local HSC (with local administrative assistance, if required) will also maintain and post as necessary OSHA 300 logs as required for each individual office location.
- Partners, Principals or their management delegates (other Principals or Senior Project Managers) are responsible for ensuring workplace (office and field locations) accidents (injuries or illnesses) are reported in a timely manner to NewFields Companies representatives to ensure any additional reporting or testing protocols are implemented in accordance with the HSE program. They will also provide or make provision for appropriate investigation of accidents or near misses and for implementing control methods as required to prevent similar incidents.
- Employees are responsible for reporting all work related accidents, injuries or illnesses immediately to their supervisor, Partner, Principal and / or their management delegate. Employees will assist with the completion of required incident reports and accident investigations. Employees may also report near miss incidents to their supervisor, Senior Management and local HSC for the purpose of implementing controls to prevent the possibility of future accidents.



5. GUIDELINES

The HSE program and other SOPs (incorporated in the HSE program by reference) provide guidance for NewFields staff for responding to accidents, investigations, notification and reporting requirements. The following sections provide guidance and cross reference to other applicable HSE SOPs within the NewFields HSE program.

5.1. Accident Response

When responding to an accident involving an injured employee or coworker it is imperative the first responder quickly consider and assess the following; is it safe to approach the injured person? If the condition that caused the injury is still present and continues to represent a threat to first responders, mitigate the threat first before responding to the injured person. Examples may include electrocution sources, hazardous atmospheres, vehicle traffic and other site specific considerations. Once you have made certain the injured person is in a location or has been relocated to a location which poses no risk to you, proceed to assist and assess the injured person. See **HSE SOP 12 – First Aid and CPR** for additional information on NewFields protocols and procedures for rendering first aid.

5.2. Accident Investigation and Corrective Actions

Partners, Principals or their management delegates which may include Senior Project Management together with the local HSC will investigate all incidents and near misses for the root causes of the accident and to identify appropriate corrective actions. Responsibilities should be assigned to individuals for the completion of each corrective action required as well as target dates for implementation. Work activities associated with the accident may be stopped, if appropriate subject to the accident or incident, and may not resume until corrective actions have been identified and implemented. Completed corrective action will be documented and provided to the local HSC, CHS Manager and HR Manager (see the **Corrective Actions Taken** section of the **Accident, Injury or Incident Report** form provided in **Appendix A**).

5.3. NewFields Notification and Reporting Requirements

- Employees must report all accidents, incidents or near misses immediately to Senior Project Management and local HSC. Employees, Partners, Principals or their management delegate are also required to report all accidents or incidents to the CHS Manager or Chief Operating Officer (COO) and the HR Manager as soon as possible following incident occurrence (see **Appendix A** for contact information). Subject to the details of the accident or incident, Breath Alcohol Testing may be required for a qualifying incident within two (2) hours. OSHA and MSHA also require notification within certain timeframes for a qualifying incident.
- If medical attention is required, follow the guidelines listed in **HSE SOP 8 – Emergency Action Plan** or as provided in the site-specific Health and Safety Plan (HASP) for emergency contact information and route to the nearest medical facility or call 911 for emergency personnel;
- Unless federal, state or local laws require a different notification or reporting protocol, the Partner, Principal or a management delegate will complete an “**Accident, Injury and Incident Report**” form (**Appendix A**) or “**Mine Accident, Injury and Illness Report**” form (**Appendix B**) within 24 hours of the accident or incident detailing the injury or illness to personnel or accidental damage to property. Reports are required to be archived for up to five years following a qualifying accident or incident.



- Motor vehicle accidents also require report completion for company vehicles, rental or leased vehicles, and personal vehicles used for business if the accident occurred during company business use. For motor vehicle accidents or incidents, a copy of the police report must also be attached.
- A copy of the completed report will be sent no later than 24 hours following the incident to the HR Manager, CHS Manager and COO.
- The HR Manager will notify the appropriate insurance company representatives of the accident. Injuries and illnesses will also be reported to the Workers Compensation insurance carrier, motor vehicle accidents will be reported to the vehicle insurance carrier. The owner of a personal vehicle, if in use for company business, will also report an accident to the HR Manager. The owner of a personal vehicle, not in use for company business, will report the accident to their personal auto insurance carrier.

5.4. OSHA Notification and Reporting Requirements

- OSHA requires employers track recordable injuries and periodically summarize and post injury and labor statistics (number of workers and labor hours) on OSHA 300 log forms (OSHA 300, Log of Work-Related Injuries and Illnesses and 300A, Summary of Work-Related Injuries and Illnesses). The 300A summary for the previous calendar year is required to be posted at each NewFields office location from February 1 to April 30 the following year. OSHA requires the following work related injuries to be recorded; accidents or injuries resulting in death (see below), if a worker loses consciousness, requires days away from work, restricted work activity or job transfer, or medical treatment beyond first aid (OSHA 2004).
- OSHA also requires that the employer verbally report by phone any occupationally caused fatality (except vehicular or public / commercial transportation) and any single incident that results in the hospitalization of three or more individuals (a catastrophic event) within eight (8) hours of receiving the information. This includes any fatality or hospitalization of three or more individuals up to 30 days after the initial incident (OSHA 2004). Any fatality or catastrophe incident will be reported immediately to the Partner, Principal, local HR and CHS Managers and the COO. NewFields Companies management will report such incidents to OSHA as required.

5.5. MSHA Notification and Reporting Requirements

- 30 CFR Part 50 requires mine operators and contractors working at mining facilities to investigate mine accidents and injuries and report qualifying incidents to MSHA. The regulation also requires operators and contractors to report employment data. Incorrect or incomplete reporting on the Quarterly Mine Employment and Coal Production Report (Form 7000-2) or the Mine Accident, Injury and Illness Report (Form 7000-1) may result in citations and monetary fines.

The Mine Accident, Injury and Illness Report Form 7000-1 (**Attachment B**) must be completed for those incidents which are defined as “accidents”, “occupational injuries” or “occupational illnesses”. An “occupational injury” is any injury to an employee which occurs at a mine for which medical treatment is administered or which results in death or loss of consciousness, inability to perform all job duties on any day after the injury, restriction of work or motion, lost workdays, temporary assignment to other duties on any day after the injury, transfer to another job or termination. “Occupational illness” is an illness or disease of an employee which may have resulted from work at a mine or for which an award of compensation if made. First aid



only injuries are not reportable provided there are no lost workdays, restricted workdays, restricted work activities or transfer because of injury.

- Form 7000-1 must be completed within 10 working days of a reportable occurrence and provided to MSHA. The form must also include return-to-duty information (Section D) when available and a copy of the completed form must be retained at the mine site or contractor office for at least five years.
- MSHA also requires that the employer immediately report (within 15 minutes) accidents resulting in the death of a worker or worker involved accidents so serious as to have a reasonable potential to cause death. Only those injuries which would be considered to be potentially fatal require immediate notification. MSHA has established a number of other mine site conditions for which immediate reporting is required (MSHA 2006). Any fatality or catastrophe incident will be reported immediately to the Partner, Principal, local HR and CHS Managers and the COO. NewFields Companies management will report such incidents to MSHA as required.



6. REFERENCES

Occupational Health and Safety Administration (OSHA) 2015, United States Department of Labor, Title 29 Code of Federal Regulations (CFR) [1910.151, Medical Services and First Aid](#), Safety and Health Topics, Medical and First Aid, accessed December 2015.

OSHA 2004, [Forms for Recording Work-Related Injuries and Illnesses](#), updated January 2004.

Mine Safety and Health Administration (MSHA) 1978, United States Department of Labor, 30 CFR Part 50, [Report on 30 CFR Part 50](#), revised 1986.

MSHA 2006, [Immediately Reportable Accidents and Injuries](#)



APPENDIX A
Accident, Injury and Incident Report
NewFields / OSHA Required



Accident, Injury and Incident Report

- Employee, Partner, Principal or management delegate to complete this form and provide to the local HSC, HR, CHS Managers and COO within 24 hours of the accident or incident.
- Verbal notification of the accident or incident must be made as soon as possible to the Partner, Principal or management delegate and HR Manager, CHS Manager or COO.

Employee Information:

Name: _____

Home Address: _____

Date and Time of Accident or Injury: _____

Date of Birth: _____

Date of Hired: _____

Occupation: _____

POD / Office: _____

Phone: _____

Accident or Incident Type (Select All That Apply):

- Injury or Illness
 - Requiring Medical Attention
 - Disabling Restricted Duty Recordable
 - Requiring First Aid Only (not recordable)
 - No Injuries Requiring Medical Attention or First Aid
- Motor Vehicle Accident
 - Multiple Vehicle Accident
 - Others Injured Others at Fault
 - Single (NewFields) Vehicle Accident
 - Leased Vehicle Rented Vehicle
 - Other Vehicle (please explain) _____
- Other Accident, Incident or Potential Environmental Concern
 - Near Miss
 - Other (please explain) _____



Accident or Incident Details:

Location of the accident or incident:

If Injuries Resulted from Incident (Please Complete the Sections Below):

Name of injured NewFields staff and contact information:

Date of Birth: _____

Date Hired: _____

Male: Female:

Time employee began work: _____

AM: PM: Not Determined:

Describe the nature and details of the injury:

Type of injury treatment required:

- Required Emergency Room Treatment
- Required Overnight Hospitalization (In-Patient)
- Required Medical Attention (Out-Patient)
- Required First Aid Only
- No Treatment Required

If medical treatment was required at the worksite, provide the medical treatment providers name, location and contact information:



If medical treatment was provided away from the worksite, where was it provided? Please provide the medical treatment providers name, location and contact information:

If Injuries, Employees Current Situation:

If employee is to be placed on restricted duty, please provide details of the restriction:

If employee is to be placed off duty, please provide the next scheduled doctor visit date and time:

If employee has been hospitalized, please provide the name and address of the hospital:

Property Damage:

Please describe the any property damage below:

Property Damaged: _____

Nature of Damage: _____

Vehicle Speed: _____

Registration Number: _____

Estimates Repair Cost: _____

Actual Repair Cost: _____

Photos taken and available: Yes: No:

Please describe any additional details about the nature or extent of the property damage:



Accident or Incident Investigation:

Please describe the accident or incident:

What was the work assignment, details of the work activities leading to or just prior to the accident?

Describe the activity, as well as the tools, equipment or material the employee was using. Please be specific. Examples: "Driving to the job site with seatbelt and lights on", "Backing out of a parking lot", "Walking over a job site with clipboard and site drawings".

Describe the accident, what happened?

Please explain how the injury occurred. Examples: "Slipped on wet floor and fell on left side"; "Hit from behind by another motorist while stopped at intersection", "Driving on job site, lost control of vehicle and slid down embankment", "Lifting boxes loaded with equipment and slipped on ice".

Describe the injury or illness.

Please describe what part of the body was affected and how it was effected. Please be more specific that "hurt", "pain" or "sore". Examples: "Strained lower back", "Pinched right index finger", "Sprained left ankle".

Describe the object or substance that injured the employee.

Please describe what object or substance directly harmed the employee. Examples: "concrete floor", "hammer". If this questions does not apply to the incident, indicate "NA".

Describe the environmental, human factors or equipment issues that may have contributed to the accident.



Corrective Actions Taken:

Please describe the corrective actions that were or are to be taken:

Please indicate if work was stopped, postponed or others notified of the potentially unsafe condition that may have contributed to the incident.

Please indicate what corrective actions are to be taken to mitigate potential reoccurrence of the incident.

Please indicate who has been informed of corrective actions to be taken and any action items to be completed by NewFields staff to mitigate potential reoccurrence of the incident.

Report Preparer, Authentication and Understanding:

Completed by: _____

Title: _____

Phone: _____

Employee Signature: _____

Date of Form Completion: _____

Project Manager Signature: _____

Date of Signature: _____

Local HSC Signature: _____

Date of Signature: _____



Report Distribution:

Please provide a scanned / email or fax of the completed and signed report to the individuals below within 24 hours of incident occurrence.

Richard Leferink
Corporate Health and Safety (CHS) Manager
rleferink@newfields.com
406.443.3556 ext 108
406.475.1655 cell
406.443.3568 fax

Ginger Hicks
Chief Operating Officer (COO)
ghicks@newfields.com
404.347.9050 ext 961
706.867.7550 cell
404.347.9080 fax

Elizabeth Voss
Human Resources (HR) Manager
evoss@newfields.com
404.969.0985 direct
404.502.1409 cell
404.969.0986 fax



APPENDIX B
Mine Accident, Injury and Illness Report
MSHA 7000-1

Mine Accident, Injury and Illness Report



• **Section A - Identification D** Approved For Use Through 09/30/2017 OMB Number 1219-0007

MSHA ID Number	Contractor ID	Report Category	• Check here if report pertains to contractor
		Metal/Nonmetal Mining Coal Mining	
Mine Name		Company Name	

• **Section B - Complete for Each Reportable Accident Immediately Reported to MSHA**

1. Accident Code (circle applicable code - see instructions)	01 - Death	02 - Serious Injury	03 - Entrapment						
04 - Inundation	05 - Gas or Dust Ignition	06 - Mine Fire	07 - Explosives						
08 - Roof Fall	09 - Outburst	10 - Impounding Dam	11 - Hoisting						
12 - Offsite injury									
2. Name of Company Investigator	3. Date Investigation Started	4. Steps Taken to Prevent Recurrence of Accident							
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">Month</td> <td style="width: 20px;">Day</td> <td style="width: 20px;">Year</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Month	Day	Year					
Month	Day	Year							

• **Section C - Complete for Each Reportable Accident, Injury or Illness**

5. Circle the Codes Which Best Describe Where Accident/Injury/Illness Occurred (see instructions)

(a) Surface Location:	02 Surface at Underground Mine	30 Mill, Preparation Plant, etc.	03 Strip/Open Pit Mine	04 Surface Auger Operation
	05 Culm Bank/Refuse Pile	06 Dredge Mining	12 Other Surface Mining	17 Independent Shops (with own MSHA ID)
(b) Underground Location:	01 Vertical Shaft	02 Slope/Inclined Shaft	03 Face	04 Intersection
	05 Underground Shop/Office	06 Other	07 Unknown	
(c) Underground Mining Method:	01 Longwall	02 Shortwall	03 Conventional Stopping	05 Continuous Mining
	06 Hand	07 Caving	08 Other	

6. Date of Accident	7. Time of Accident • am	8. Time Shift Started • am							
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">Month</td> <td style="width: 20px;">Day</td> <td style="width: 20px;">Year</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Month	Day	Year				• pm	• pm	7 8
Month	Day	Year							

9. Describe Fully the Conditions Contributing to the Accident/Injury/Illness, and Quantify the Damage or Impairment

10. Equipment Involved	Type	Manufacturer	Model Number	10 MAN
------------------------	------	--------------	--------------	-----------

11. Name of Witness to Accident/Injury/Illness	12. Number of Reportable Injuries or Illnesses Resulting from This Occurrence
--	---

13. Name of Injured/III Employee	14. Sex	15. Date of Birth							
	• Male • Female	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">Month</td> <td style="width: 20px;">Day</td> <td style="width: 20px;">Year</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Month	Day	Year				12 14
Month	Day	Year							

16. Last Four Digits of Social Security Number	17. Regular Job Title	18. Check if this Injury/Illness resulted in death.	19. Check if Injury/Illness resulted in permanent disability (include amputation, loss of use, & permanent total disability).
			16 17 18 19

20. What Directly Inflicted Injury or Illness?	21. Nature of Injury or Illness
	20 21

22. Part of Body Injured or Affected	23. Occupational Illness (circle applicable code - see instructions)	21 Occupational Skin Diseases
	22 Dust Diseases of the Lungs 23 Respiratory Conditions (toxic agents) 25 Disorders (physical agents) 26 Disorders (repeated trauma)	24 Poisoning (toxic Materials) 29 Other
		22 24

24. Employee's Work Activity When Injury or Illness Occurred	Experience	Years	Weeks						
	25. Experience in This Job Title								
	26. Experience at This Mine								
	27. Total Mining Experience								
• Section D - Return to Duty Information		<i>Answer 30 & 31 when case is closed</i>							
28. Permanently Transferred, Quit or Terminated (if checked, complete items 29,30, &31)	29. Date Returned to Regular Job at Full Capacity (or item 28)	30. Number of Days Away from Work (if none, enter 0)	31. Number of Days Restricted Work Activity (if none, enter 0)						
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">Month</td> <td style="width: 20px;">Day</td> <td style="width: 20px;">Year</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Month	Day	Year					
Month	Day	Year							

Person Completing Form (name)	Title
Date This Report Prepared (month, Day, year)	Area Code and Telephone Number

For Official Use Only

Degree

Accident Type

Accident Class

Scheduled Charge

Keyword

MINE ACCIDENT, INJURY, AND ILLNESS REPORT

MSHA FORM 7000-1

Section 50.20 of Part 50, Title 30, Code of Federal Regulations, requires a report to be prepared and filed with MSHA of each accident, occupational injury, or occupational illness occurring at your operation. The requirement includes all accidents, injuries, and illnesses as defined in Part 50 whether your employees or a contractor's employees are involved. A Form 7000-1 shall be completed and mailed within ten working days after an accident or occupational injury occurs, or an occupational illness is diagnosed.

This report is required by law (30 U.S.C. §813; 30 C.F.R. Part 50). Failure to report can result in the institution of a civil action for relief under 30 U.S.C. 9818 respecting an operator of a coal or other mine, and assessment of a civil penalty against an operator of a coal or other mine under 30 U.S.C. 9820(a). An individual who, being subject to the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 9801 at seq.) knowingly makes a false statement in any report can be punished by a fine of not more than \$10,000 or by imprisonment for not more than 5 years, or both, under 30 U.S.C. §820.(f). Any individual who knowingly and willfully makes any false, fictitious, or fraudulent statements, conceals a material fact, or makes a false, fictitious, or fraudulent entry, with respect to any matter within the jurisdiction of any agency of the United States can be punished by a fine of not more than \$10,000, or imprisoned for not more than 5 years, or both, under 18 U.S.C. 91001.

REPORTING INSTRUCTIONS

Form 7000-1 consists of four sheets, an original (page 1) and three copies. The original will be mailed to MSHA, Denver Safety and Health Technology Center. The first copy (page 2) will be mailed to the appropriate local MSHA District or Subdistrict Office. Envelopes are included with the forms for mailing to those offices. If the mailed forms do not show return to duty information on an injured employee, complete and mail the second copy (page 3) to MSHA, Denver Safety and Health Technology Center, when the employee returns to regular job at full capacity or a final disposition is made on the injury or illness. The third copy (page 4) is to be retained at the mine for a period of five years. It is important to remember that a Form 7000-1 is required on each accident as defined in 30 CFR Part 50 whether any person was injured or not. A form is required on each individual becoming injured or ill, even when several were injured or made ill in a single occurrence. The principal officer in charge of health and safety at the mine or the supervisor of the mine area in which the accident, injury, or illness occurred shall be responsible for completing the Form 7000-1. Note: First aid cases (those for which no medical treatment was received, no time was lost, and no restriction of work, motion, or loss of consciousness occurred) need not be reported.

SPECIFIC INSTRUCTIONS

Detailed instructions for completing Form 7000-1 are contained in Part 50. A copy of Part 50 was sent to every active and intermittently active mine and independent mining contractor. If you do not have a copy, you may obtain one from your local MSHA Mine Safety and Health District or Subdistrict Office.

Section A- IDENTIFICATION DATA

Check the report category indicating whether your operation is in the metal/nonmetal mining industry or the coal mining industry.

MSHA ID Number is the number assigned to the operation by MSHA. If you are unsure of your number assignment, contact the nearest MSHA Mine Safety and Health District or Subdistrict Office. Reports on contractor activities at mines must include an MSHA-assigned contractor ID Number as well as the 7-digit operation ID.

Show mine name and company name. Independent contractors should provide the mine name and show the contractor name under "company name."

Section B- COMPLETE FOR EACH ACCIDENT IMMEDIATELY REPORTABLE TO MSHA

Section 8 is to be completed only when your operation has an accident that must be reported immediately to MSHA. Circle code 02 "Serious Injury" only if the injury has a reasonable potential to cause death. For additional detail on those specific kinds of accidents see Section 50.10 of Part 50. When it is necessary to complete Section 8, circle the applicable accident code; give the name of the investigator (the person heading the investigating team on the accident); show the date the investigation was started; and describe briefly the steps taken to prevent a recurrence of such an accident.

Section C- COMPLETE FOR EACH REPORTABLE ACCIDENT, INJURY, OR ILLNESS

Section C must be completed on each form submitted to MSHA.

Item 5. If you are reporting an occurrence at a surface mine or other surface activity, circle the code which best describes the accident location in (a) Surface Location; do not mark any codes in (b) or (c). If you are reporting an occurrence in an underground mine, circle the code which best describes the underground location in (b) Underground Location and in (c) Underground Mining Method.

Items 6, 7, and 8. Show the date and time of the occurrence and the time the shift started in which the accident/incident occurred or was observed.

Item 9. Describe fully the conditions contributing to the occurrence. Detailed descriptions of the conditions provide the basis for accident and injury analyses which are intended to assist the mining industry in preventing future occurrences. Please see Part 50 for detail on what your narrative should include.

Item 10. If equipment was involved in the occurrence, name the type of equipment, the manufacturer, and the model number of the equipment.

Item 11. If there was a witness to the occurrence, give the name of the witness.

Item 12. If the occurrence resulted in one or more injuries, report the number. A separate report must be made on each injured person.

Item 13. Show the name of the injured person. [Note: In these instructions, "injured person" means a person either injured or ill.]

Item 14. Indicate the sex of the injured person.

Item 15. Show the date of birth of the injured person.

Item 16. Show the last four digits of the injured person's Social Security Number.

Item 17. Give the regular job title of the injured person at the time he was injured.

Item 18. Check this box if the injury or illness resulted in death.

Item 19. Check this box if the injury or illness resulted in a permanent disability. A permanent disability is any injury or occupational illness other than death which results in the loss (or complete loss of use) of any member (or part of a member) of the body, or a permanent impairment of functions of the body, or which permanently and totally incapacitates the injured person from following any gainful occupation.

Item 20. Name the object or substance that directly caused the injury or illness.

Item 21. Report the nature of injury or illness by naming the illness; or for injuries, by using common medical terms such as puncture wound, third degree burn, fracture, etc. For multiple injuries, enter the injury which was the most serious. Avoid general terms such as hurt, sore, sick, etc.

Item 22. Name the part of body with the most serious injury .

Item 23. Occupational illness is any abnormal condition or disorder, other than one resulting from an occupational injury , which falls into the following categories:

Code 21 - Occupational Skin Diseases or Disorders.

Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; chrome ulcers; chemical burns or inflammations; etc.

Code 22 - Dust Diseases of the Lungs CPneumoconioses).

Examples: Silicosis, asbestosis, coal worker 's pneumoconiosis, byssinosis, and other pneumoconioses.

Code 23 - Respiratory Conditions Due to Toxic Agents.

Examples: Pneumonitis, pharyngitis, rhinitis, or acute congestion due to chemicals, dusts, gases, or fumes; etc.

Code 24 - Poisoning (Systemic Effects of Toxic Materials).

Examples: Poisoning by lead, mercury, cadmium, arsenic, or other metals, poisoning by carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays such as parathion, lead arsenate; poisoning by other chemicals such as formaldehyde, plastics, and resins; etc.

Code 25 - Disorders Due to Physical Agents (Other than

Toxic Materials). Examples: Heatstroke, sunstroke, heat exhaustion and other effects of environmental heat; freezing, frostbite and effects of exposure to low temperatures; caisson disease; effects of ionizing radiation (isotopes, x-rays, radium); effects of nonionizing radiation (welding flash, ultraviolet rays, microwaves, sunburn); etc.

Code 26 - Disorders Associated with Repeated Trauma.

Examples: Noise-induced hearing loss; synovitis, tenosynovitis, and bursitis; Raynaud's phenomena; and other conditions due to repeated motion, vibration, or pressure.

Code 29 - All Other Occupational Illnesses. Examples:

Infectious hepatitis, malignant and benign tumors, all forms of cancer, kidney diseases, food poisoning, histoplasmosis; etc.

Item 24. Describe what the employee was doing when he or she became injured or ill.

Items 25, 26, and 27. Show the number of weeks (or years and weeks) of experience of the injured person at the job title (indicated in Item 17), at your operation, and his/her total mining experience.

Section D - RETURN TO DUTY INFORMATION

Section D is to be completed in full when all return-to-duty information is available. If the information is not available within ten working days after a reportable occurrence, then the first two pages are sent to MSHA without Section D being completed; PAGE 3 is then mailed to DSHTC- with full information when the data are available. Until all the items are answered and the report sent to DSHTC-DMIS, the occurrence remains an open case.

Item 28. If the injured person was transferred or terminated as a result of the injury or illness, check the box and answer items 29, 30, and 31.

Item 29. Show the date that the injured person returned to his regular job at full capacity or was transferred or terminated. This date should indicate when the count of days away from work and/or days of restricted work activity have stopped.

Item 30. Show the number of workdays 1/ the injured person did not report to his place of employment, i.e., number of days away from work.

Item 31. Show the number of workdays the injured person was on restricted work activity; do not include days away from work reported in Item 30.

At the bottom of the form, show the name of the person who completed the form; the date the report was prepared; and the telephone number where the person who completed the form may be reached.

1/ Note: The number of lost workdays should not include the day of injury or onset of illness, or any days on which the employee was not previously scheduled to work even though able to work, such as holidays or plant closures. Diagnosis of an "occupational illness or disease" under Part 50 does not automatically mean a disability or impairment for which the miner is eligible for compensation, nor does the Agency intend for an operator's compliance with Part 50 to be equated with an admission of liability for the reported illness or disease. If a chest x-ray for a miner with a history of exposure to silica or other pneumoconiosis-causing dusts is rated at 1/0 or above, utilizing the International Labor Office (ILO) classification system, it is MSHA's policy that such a finding is, for Part 50 reporting, a diagnosis of an occupational illness, in the nature of silicosis or other pneumoconiosis and, consequently, reportable to MSHA.

DEFINITIONS

(1) "Coal or other mine" means (a) an area of land from which minerals are extracted in nonliquid form or, if in liquid form, are extracted with workers underground, (b) private ways and roads appurtenant to such area, and (c) lands, excavations, underground passageways, shafts, slopes, tunnels and workings, structures, facilities, equipment, machines, tools, or other property including impoundments, retention dams, and tailings ponds, on the surface or underground, used in, or to be used in, or resulting from, the work of extracting such minerals from their natural deposits in nonliquid form, or if in liquid form, with workers underground, or used in, or to be used in, the milling of such minerals, or the work of preparing coal or other minerals, and includes custom coal preparation facilities. In making a determination of what constitutes mineral milling for purposes of this Act, the Secretary shall give due consideration to the convenience of administration resulting from the delegation to one Assistant Secretary of all authority with respect to the health and safety of miners employed at one physical establishment.

(2) "Operator" means any owner, lessee, or other person who operates, controls, or supervises a coal or other mine or any designated independent contractor performing services or construction at such mine.

(3) "Occupational injury" means any injury to a worker which occurs at a mine for which medical treatment is administered, or which results in death, loss of consciousness, inability to perform all job duties on any day after an injury, or transfer to another job.

(4) "Occupational illness" means an illness or disease of a worker which may have resulted from work at a mine or for which an award of compensation is made.

(5) "Medical treatment" means treatment, other than first aid, administered by a physician or by a registered medical professional acting under the orders of a physician.

DIFFERENCES BETWEEN MEDICAL TREATMENT AND FIRST AID

Medical treatment includes, but is not limited to, the suturing of any wound, treatment of fractures, application of a cast or other professional means of immobilizing an injured part of the body, treatment of infection arising out of an injury, treatment of bruise by the drainage of blood, surgical removal of dead or damaged skin (debridement), amputation or permanent loss of use of any part of the body, treatment of second and third degree burns. Procedures which are diagnostic in nature are not considered by themselves to constitute medical treatment. Visits to a physician, physical examinations, x-ray examinations, and brief hospitalization for observations, where no evidence of injury or illness is found and no medical treatment given, do not in themselves constitute medical treatment. However, if scheduled workdays are lost because of hospitalization, the case must be reported. Procedures which are preventative in nature also are not considered by themselves to constitute medical treatment. Tetanus and flu shots are considered preventative in nature. First aid includes any one-time treatment and follow-up visit for the purpose of observation of minor scratches, cuts, burns, splinters, etc. Ointments, salves, antiseptics, and dressings to minor injuries are considered to be first aid.

(1) **Abrasions**

(i) First aid treatment is limited to cleaning a wound, soaking, applying antiseptic and nonprescription medication, and bandages on the first visit and follow-up visits limited to observation including changing dressing and bandages. Additional cleaning and application of antiseptic constitutes first aid where it is required by work duties that soil the bandage.

(ii) Medical treatment includes examination for removal of imbedded foreign material, multiple soakings, whirlpool treatment,

treatment of infection, or other professional treatments and any treatment involving more than a minor spot-type injury. Treatment of abrasions occurring to greater than full skin depth is considered medical treatment.

(2) **Bruises**

(i) First aid treatment is limited to a single soaking or application of cold compresses, and follow-up visits if they are limited only to observation.

(ii) Medical treatment includes multiple soakings, draining of collected blood, or other treatment beyond observation.

(3) **Burns. Thermal and Chemical** (resulting in destruction of tissue by direct contact).

(i) First aid treatment is limited to cleaning or flushing the surface, soaking, applying cold compresses, antiseptics or nonprescription medications, and bandaging on the first visit, and follow-up visits restricted to observation, changing bandages, or additional cleaning. Most first degree burns are amenable to first aid treatment.

(ii) Medical treatment includes a series of treatments including soaks, whirlpool, skin grafts, and surgical debridement (cutting away dead skin). Most second and third degree burns require medical treatment.

(4) **Cuts and Lacerations**

(i) First aid treatment is the same as for abrasions except the application of butterfly closures for cosmetic purposes only can be considered first aid.

(ii) Medical treatment includes the application of butterfly closures for noncosmetic purposes, sutures (stitches), surgical debridement, treatment of infection, or other professional treatment.

(5) **Eye Injuries**

(i) First aid treatment is limited to irrigation, removal of foreign material not imbedded in eye, and application of nonprescription medications. A precautionary visit (special examination) to a physician is considered as first aid if treatment is limited to above items, and follow-up visits if they are limited to observation only.

(ii) Medical treatment cases involve removal of imbedded foreign objects, use of prescription medications, or other professional treatment.

(6) **Inhalation of Toxic or Corrosive Gases**

(i) First aid treatment is limited to removal of the worker to fresh air or the one-time administration of oxygen for several minutes.

(ii) Medical treatment consists of any professional treatment beyond that mentioned under first aid and all cases involving loss of consciousness.

(7) **Splinters and Puncture Wounds**

(i) First aid treatment is limited to cleaning the wound, removal of foreign object(s) by tweezers or other simple techniques, application of antiseptics and nonprescription medications, and bandaging on the first visit. Follow-up visits are limited to observation including changing of bandages. Additional cleaning and applications of antiseptic constitute first aid where it is required by work duties that soil the bandage.

(ii) Medical treatment consists of removal of foreign object(s) by physician due to depth of imbedment, size or shape of object(s), or location of wound. Treatment for infection, treatment of a reaction to tetanus booster, or other professional treatment, is considered medical treatment.

(8) **Sprains and Strains**

(i) First aid treatment is limited to soaking, application of cold compresses, and use of elastic bandages on the first visit. Follow-up visits for observation, including re-applying bandage, are first aid.

(ii) Medical treatment includes a series of hot and cold soaks, use of whirlpools, diathermy treatment, or other professional treatment.

PRIVACY ACT NOTICE FOR MINE ACCIDENT, INJURY AND ILLNESS REPORTS

GENERAL

This notice is given as required by Public Law 93-579 (Privacy Act of 1974) December 31, 1974, to the operators of mines providing personal information on injury and illness reports and accident investigations.

AUTHORITY

The authority to collect this information is Section 103 of Public Law 91-173, as amended by Public Law 95-164.

PURPOSE AND USE OF INFORMATION

The information collected will be used to help determine the cause of accidents, injuries, illnesses and fatalities associated with metal and nonmetallic and coal mining. The information will also be used with the intent to prevent and reduce future accidents, injuries, fatalities and illnesses.

EFFECTS OF NON-DISCLOSURE

You are required to furnish the information. Without it, MSHA may not be able to help prevent miners and other workers from becoming similarly hurt or ill in the future.

INFORMATION REGARDING PERSONAL IDENTIFICATION UNDER PUBLIC LAW 93-579 SECTION 7(b)

MSHA asks for the last 4 digits of the social security number under authority of Section 103 of Public Law 91-173, as amended by Public Law 95-164. This personal identification, which is not unique to any individual, helps MSHA establish the accuracy and usefulness of the information from injury and illness records.

BURDEN STATEMENT

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This is a mandatory collection of information as required by 3 CFR 50.20. The information is used to establish injury, accident or illness files used to measure the levels of injury experience and identify those areas most in need of improvement. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Program Evaluation and Information Resources, Mine Safety and Health Administration, U.S. Department of Labor, Room 2301, 1100 Wilson Boulevard, Arlington, VA 22209-3939, and to the Office of Management and Budget, Paperwork Reduction Project (1219-0007), Washington, D.C. 20503.

Persons are not required to respond to this collection of information unless it displays a currently valid control number .

NewFields Health, Safety and Environment Standard Operating Procedure

HSE SOP 19 – Office Safety



**Updated
June 2018**

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LIST OF APPENDICES

Appendix A Office Safety Checklist

HSE SOP 19 – Office Safety

Concern for safety in while working in an office environment location is a priority for NewFields Companies, its Senior Management and staff. Office workplace settings, like field work environments, have potential safety hazards to be identified, assessed and mitigated on an on-going basis. Many elements of office and general building safety are presented in the National Fire Prevention Association (NFPA) 101 Life Safety Code (NFPA 2018) and others pertaining to building construction or occupancy standards, local building codes and federal legislation. The Occupational Health and Safety Administration (OSHA) also requires [Emergency Action Plans](#) be developed and implemented for management of workplace emergencies (OSHA 2002).

I. PURPOSE

NewFields Health, Safety and Environment (HSE) program has incorporated this Standard Operating Procedure (SOP) to establish a protocol for office safety and workplace evaluation to minimize the potential for unsafe or unhealthy working conditions for NewFields office staff. The protocol provides a framework for review of office work environments and specific steps to identify, avoid or mitigate potential hazards or unhealthy conditions in the work place.

2. SCOPE

This SOP applies to NewFields office locations and will serve as the basis for periodic review of NewFields office locations for potentially unsafe or unhealthy working conditions and establish corrective measures or controls to eliminate the hazard. Conducting periodic site specific reviews of office locations are the responsibility of local Health and Safety Coordinators (HSC), office management and office staff to ensure potential hazards are identified and appropriate mitigations are instituted.

3. DEFINITIONS

The following definitions are incorporated by reference in this SOP:

- **Emergency Action Plan (EAP)** – A written document required by OSHA standard, [29 CFR 1910.38](#). The purpose of the plan is to facilitate and organize employer and employee actions during workplace emergencies (OSHA 2002). See **SOP 8 Emergency Action Plan** for additional information.
- **Safety Data Sheet (SDS)** – The OSHA Hazard Communication Standard ([29 CFR 1910.1200](#)) requires chemical manufacturers, distributors or importers to provide SDSs to communicate the hazards of potentially hazardous chemicals. See **SOP 13 Hazard Communication** for additional information.

Purpose

To provide guidance to office managers and staff on safe and healthy work practices for office based work activities.

Goal and Objective

To ensure all office managers and staff are familiar with identifying potentially unsafe or unhealthy conditions in the work place and the methods to resolve or mitigate the condition.

Reporting Requirements

Office Safety Checklist



4. ROLES AND RESPONSIBILITIES

The HSE program and this SOP assigns the following duties and responsibilities for NewFields Companies and subsidiaries staff and management:

- Partners, Principals or their management delegates (other Principals or Senior Project Managers) are responsible for ensuring workplace (office and home office locations) are periodically reviewed and recommended improvements instituted as necessary.
- Local Health and Safety Coordinators (HSC) will provide assistance with periodic review of the workplace with office managers or coworkers and review recommended and completed control measures implemented following the periodic office review.
- Employees are responsible for periodically reviewing and maintaining office areas in accordance with this SOP and prevent unsafe conditions or unsafe acts that may cause injury to themselves or co-workers. Employees' are responsible for identifying potential hazards and effecting controls within their ability or notifying the HSC or Management of potential hazards beyond their control.
- Corporate Health and Safety (CHS) Manager will periodically review the performance requirements for local HSC, administrative support and management staff as identified in this SOP. The CHS Manager is available to assist the HSC and management staff with workplace review and recommendations, as needed or requested.

5. GUIDELINES

The HSE program and other SOPs (incorporated in the HSE program by reference) provide guidance for NewFields staff working in fixed or home office locations. The following workplace office safety guidelines are recommended for periodic review of the office setting. An Office Safety Checklist has also been developed to facilitate workplace review and is presented in **Attachment A**. The following sections provide general guidelines for workplace review and office safe work practices in addition to references to other applicable SOPs within the NewFields HSE program.

5.1. Basic Life Safety

Many basic life safety elements of workplace and general building safety are presented in the National Fire Prevention Association (NFPA) 101 Life Safety Code (NFPA 2018). Other sources of building safety include building construction or occupancy standards, local building codes and federal legislation. Basic life safety considerations in the office workspace include:

- Ensure emergency exit routes (e.g. corridors, stairways, etc.) are free from obstruction and remain accessible from the office workspace. Emergency exits must remain unlocked or may be opened from within the workspace at all times. Emergency lighting and illuminated exits signs must also be available and functioning properly.
- Office aisles, hallways and stairs must be free from obstruction that may inhibit routine employee movement or egress in the event of an emergency. Minimum safe passage distances for corridors and stairways is 44 inches, aisles 36 inches and doors 32 inches (NFPA 2002).



- In the absence of an automated building fire suppression system, fire extinguishers must be easily accessible and checked monthly. Fire extinguishers must be mounted to ensure travel distance from employees to any extinguisher is 75 feet or less (NFPA 2002).
- Establishing emergency exits routes, workplace alarm systems and muster point locations are discussed in more detail in **SOP 8 Emergency Action Plan** (OSHA 2002).

5.2. General Office Safety

General office safety and periodic workplace inspections are key administrative safe work practices for ensuring a safe and comfortable working environment. General office safety work practices include:

- Keep the office work area free from obstructions to permit visibility and movement. Ensure there is adequate lighting for movement and in local work areas.
- Keep file cabinet drawers closed while not in use. Only open one drawer at a time to prevent the cabinet from tipping over. File cabinets that allow for multiple drawers to be opened should be bolted to the wall whenever possible. File cabinets should be filled from the bottom first then to the top, if needed.
- Use caution when lifting boxes or other objects of unknown weight. Ask for assistance to lift any object that is greater than 50 pounds or use mechanical lifting assistance (e.g. a dolly or cart). Do not attempt to move office furniture alone.
- Ensure potentially flammable office products are properly stored and Safety Data Sheets (SDSs) are available for products that may be in use such as cleaning products or other chemicals. See **SOP 13 Hazard Communication** for additional information.

5.3. Trip and Fall Hazards

Potential tripping or falling hazards should be considered periodically in the office workspace and in conjunction with safe work practices. Considerations to minimize trip or fall hazards may include:

- Periodically inspect office floor surface to ensure floor coverings are level and undamaged. Office aisles, hallways and stairs must be maintained in a clean and dry condition and kept free of debris to minimize the risk of slips, trips and falls. Carpeted areas must be maintained to prevent rips, tears or uneven surfaces. All observed defects will be taped down or otherwise repaired to reduce tripping hazard.
- Depending on office location and environmental conditions, ensure walkways and walking surfaces encountered from parking areas to the office entrance are free from tripping or slipping hazards including water, ice or snow, when possible.
- A stepladder will be available and used to reach objects in an elevated location. So not stand on chairs, boxes, desks or other items not designed for the task. All step ladders must be in good working condition. Any ladder missing feet, rungs, supports or with broken rungs will be removed from service.



5.4. Fire and Electrical Hazards

Office and workplace reviews should consider potential fire sources or electrical hazards within the office workspace. Workplace examinations for these potential hazards may include:

- Power outlets within six feet of a water source are required to be Ground Fault Circuit Protected (GFCI). This type of outlet is required for power sources within kitchens, break areas, restrooms or laboratories where water sources may be present.
- Periodically inspect cords and electrical equipment to ensure all cords are grounded with a third grounding prong in plug. Do not place into service any equipment utilizing only two prongs or an adapter to two prongs.
- Combustible materials should be kept at least two feet away from portable space heaters.
- Space heaters, coffee makers, photocopiers and other potentially heat generating equipment should be turned off in the evening or when not in use.
- Use only electrical equipment and cords that are in good condition. Any item with frayed cords, cut or damaged insulation, or missing ground prong must be removed from service. See **SOP 7 Electrical Safety and Energy Control and Appendix A, Electrical Inspection and Testing**.

5.5. Office and Workplace Maintenance

A key component to the safety, security and environmental control of the office workspace is routine inspection and maintenance. Office and workplace maintenance needs include consideration of the following:

- Ensure all doors and locks are in good working order. Periodically inspect all windows to ensure they are unbroken, free from damage and operate properly for opening and closure, if equipped.
- Ensure ceiling tiles (if present) are in place, intact and undamaged. Missing or damaged tiles may effect workspace Heating, Ventilation and Cooling (HVAC) system and reduce building fire suppression system efficiency.
- HVAC systems may be inspected annually to ensure proper operation. Periodic maintenance (such as filter replacement and condensation pan cleaning) are also needed to ensure the system is functioning properly.
- Periodically review parking area for potential safety concerns such as uneven waling surfaces, overgrown landscaping, traffic hazards, etc.

5.6. Local Work Areas and Employee Health

Properly establishing and maintain the local work area can have positive effects on efficiency and employee health and minimize potential strains when performing office work activities. Components of preparing and maintaining the local work area or workstation may consider the following work practices.



5.6.1. Ergonomics

Employees may consider the following procedures to establish a comfortable work station configuration;

- Position, arrange and adjust furniture (especially chairs) to minimize awkward postures and undue strain on the body.
- A lumbar (lower back) support may be used to relieve strain on the lower back when seated. Adjust chair height so that weight is shifted forward off the spine and arms are at desk level.
- Shift position throughout the day to keep muscles loose and relax tension do to immobility. Keep feet flat on the floor to help maintain a good seated posture and aid circulation in legs.
- Use glare resistant screens or position computer monitors away from windows to minimize glare.
- Rotate routine tasks to minimize the potential impact of repetitive motion on the body.

More information about ergonomics and local work area set up is available from OSHA [Computer Workstation eTool](#). Contact your local Office HSC if you need assistance with your workstation or if you should have any concerns about repetitive motion tasks that may be associated with your job.

5.6.2. Repetitive Motion

Employees may consider the following procedures to reduce potential adverse effects of repetitive motions at work stations;

- Be sure to keep wrists straight (neutral) when you work. By avoiding bent, extended or twisted positions for long period, less pressure is applied to hands and wrists.
- Use as much of your hand as possible to grasp and hold an object, reducing the use of your fingers to pinch the object.
- Work within the range between shoulder and hand height at rest. Reduce reaching outside of this range, if possible.
- Establish the work area to properly position your wrists and hands. Stand above work pieces, or sit if necessary to maintain the best work position.
- Use power tools with the least amount of vibration possible. Contact your local HSC about means and methods to reduce vibration.
- Use tools that are the right size and length for your hands to avoid awkward hand positions to hold them.

6. TRAINING

All NewFields employees will receive, at a minimum, office orientation training during new employee orientation or when induction training is required for a new work site or location. Additional training for an office or work location emergency is also a requirement of OSHA and facilitated by review of a site specific Emergency Action Plan for the workplace. See **SOP 8 Emergency Action Plan** for additional information about employee training requirements with respect to the office EAP.



7. REFERENCES

National Fire Prevention Association (NFPA) 2018, Life Safety Code, accessed December 2017.

Occupational Health and Safety Administration (OSHA) 2002, United States Department of Labor, Title 29 Code of Federal Regulations (CFR) [1910 Subpart E App](#), Exit Routes, Emergency Action Plans and Fire Prevention Plans, accessed December 2017.

OSHA 2009, 29 CFR [1910.94, Subpart G](#), Occupational Health and Environmental Control, Ventilation, accessed December 2017.

OSHA 1981, 29 CFR [1910 Subpart L App A](#), Fire Protection, accessed December 2017.



APPENDIX A
Office Safety Checklist

Office Location: _____

Date of Review: _____

**APPENDIX A
OFFICE SAFETY CHECKLIST**



Complete the checklist below to review the office space safety. Check "YES", "NO", "NA" and fill in the blanks.

CHECKLIST CATEGORY	YES	NO	NA	COMMENTS	CORRECTIVE ACTION TAKEN	CORRECTION COMPLETED
BASIC LIFE SAFETY						
Are exit signs illuminated, visible and emergency lighting present to illuminate exit routes?						
Are corridors and exits free from obstructions and unlocked?						
Access to exit doesn't require travel through high hazard area?						
Is there adequate walking and egress clearance? (At least 44 inches for corridors and stairways) (At least 32 inches for doors) (At least 36 inches for aisles)						
Stairways are in good repair with handrails and non-slip tread?						
Stairways not being used for storage?						
Stair steps of uniform size?						
Is the Emergency Evacuation Route and Action Plan posted?						
Are exit doors closed and not propped open?						

Office Location: _____

Date of Review: _____

**APPENDIX A
OFFICE SAFETY CHECKLIST**



Complete the checklist below to review the office space safety. Check "YES", "NO", "NA" and fill in the blanks.

CHECKLIST CATEGORY	YES	NO	NA	COMMENTS	CORRECTIVE ACTION TAKEN	CORRECTION COMPLETED
Are there items within 18 inches of a sprinklers head or is there obvious damage to a sprinkler head?						
Are fire extinguishers easily accessible, checked monthly and operational?						
Are fire extinguishers mounted so that travel distance from employees to any extinguisher is 75 feet or less?						
GENERAL OFFICE SAFETY						
Are aisles, doorways and corners free from obstructions to permit visibility and movement?						
Lighting in work areas and walkways adequate?						
Are chairs in safe condition?						
Are all equipment and office supplies in their proper place?						
Are carts, dollies, etc. available for use in transporting heavy objects or boxes?						
Is housekeeping being adequately maintained?						

**APPENDIX A
OFFICE SAFETY CHECKLIST**



Office Location: _____
Date of Review: _____

Complete the checklist below to review the office space safety. Check "YES", "NO", "NA" and fill in the blanks.

CHECKLIST CATEGORY	YES	NO	NA	COMMENTS	CORRECTIVE ACTION TAKEN	CORRECTION COMPLETED
Are potentially flammable or hazardous chemicals or products safely stored? (potentially flammable products may need to be stored in flammable / metal cabinet)						
Are Safety Data Sheets (SDSs) available for office and housekeeping chemicals or products in use?						
Are OSHA and Federal labor law posters and forms prominently displayed? (OSHA 300 forms are required to be posting from 1 February to 30 April)						
TRIP AND FALL HAZARDS						
Is the office floor surface level and undamaged?						
Are carpeted areas clean, carpets secured to floor and free of worn or frayed seams?						
Can the office floor surface potentially become wet or slippery? (Warning sign available in case of spills?) (Cleanup supplies readily available?) (Non-slip mats in entryways available, if needed?)						
Is any equipment or supplies protruding into walkways?						
Are there cords or cables causing a tripping hazard?						

Office Location: _____

Date of Review: _____

**APPENDIX A
OFFICE SAFETY CHECKLIST**



Complete the checklist below to review the office space safety. Check "YES", "NO", "NA" and fill in the blanks.

CHECKLIST CATEGORY	YES	NO	NA	COMMENTS	CORRECTIVE ACTION TAKEN	CORRECTION COMPLETED
Can the parking area or walking route to office become slippery or uneven? (Snow or ice possible?) (Salt, shovel or maintenance service available, if needed?)						
Is there a step stool or ladder available to facilitate reaching high objects?						
FIRE AND ELECTRICAL HAZARDS						
Are Ground Fault Circuit Interrupter (GFCI) outlets installed within 6 feet of water sources? (Bathrooms, break areas or kitchen sinks?)						
Is access to electrical panels or electrical room unobstructed? (At least 36 inches?)						
Are outlets potentially overloaded?						
Extension cords in use when should be a permanently wired power source available?						
A maximum of one power strip per electrical receptacle in use?						
Electrical cords are in good condition? (Not frayed, taped, spliced or missing grounding prong?)						

Office Location: _____

Date of Review: _____

**APPENDIX A
OFFICE SAFETY CHECKLIST**



Complete the checklist below to review the office space safety. Check "YES", "NO", "NA" and fill in the blanks.

CHECKLIST CATEGORY	YES	NO	NA	COMMENTS	CORRECTIVE ACTION TAKEN	CORRECTION COMPLETED
Electrical receptacles are in good working condition? (No cracked, broken or missing faceplates?)						
Are electrical closets free of storage?						
Are personal appliances such as space heaters or coffee makers compliant with the building electrical system?						
Are space heaters turned off every evening?						
Are space heaters equipped with a multi-directional tip over off switch?						
Are space heaters equipped with an overheating sensor?						
Are potentially flammable materials kept at least 2 feet away from space heaters?						
OFFICE AND WORKPLACE MAINTENANCE						
Are doors and locks in good working order?						
Are ceiling tiles intact, undamaged and in place?						
Are there any signs of weather damage or mold growth in the facility?						

Office Location: _____

Date of Review: _____

**APPENDIX A
OFFICE SAFETY CHECKLIST**



Complete the checklist below to review the office space safety. Check "YES", "NO", "NA" and fill in the blanks.

CHECKLIST CATEGORY	YES	NO	NA	COMMENTS	CORRECTIVE ACTION TAKEN	CORRECTION COMPLETED
Are there any signs of pests? (Rodents, pigeons or other potential biologically harmful vectors?)						
Are all windows unbroken and free from any type of damage?						
Do air conditioning / heating vents and ducts appear to be clean upon visual inspection?						
Are outside and parking area lights in good working order?						
Does the exterior of the building present any potential safety concern?						
Is the parking lot area present any potential safety concern? (Overgrown landscaping, uneven pavement, traffic hazards?)						

Recommendations or Comments:

Completed by: _____ Reviewed by: _____ Approved by: _____

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1. PURPOSE

To establish guidelines for the selection of personal protective equipment (PPE) for use at NewFields sites.

2. SCOPE

This procedure will be used as a tool for selecting the appropriate PPE for job tasks performed by NewFields personnel.

3. DEFINITIONS

Degradation - The loss of or change in the fabric's chemical resistance or physical properties due to exposure to chemicals, use, or ambient conditions (e.g., sunlight).

Penetration - The movement of chemicals through zippers, stitched seams or imperfections (e.g., pinholes) in a protective clothing material.

Permeation - The process by which a chemical dissolves in and/or moves through a protective clothing material on a molecular level.

PPE – Personal Protective Equipment is any equipment worn by an individual that is used to protect the individual from a hazard. This includes gloves, respirators, ear plugs, etc.

4. RESPONSIBILITIES

Corporate Health & Safety Coordinator (CHSC) – CHSC will periodically review this program and the use of PPE at NewFields and update this procedure as needed.

Project Principal (PP) – The PP is responsible for providing appropriated types and amounts of PPE required for the potential hazards employees may be exposed to during the performance of their job duties. The PP will provide employees with appropriate training prior to being required to use any PPE. The PP or designee will use these guidelines in conducting PPE assessments and selecting PPE for job tasks. The PP will enforce the use of required PPE.

Employee – The employee is responsible for properly wearing, cleaning, maintaining and disposing of PPE as required by this program, H&S Checklist or site-specific HASP.

5. GUIDELINES

NewFields employees will wear PPE when it is reasonably expected that the use of the equipment would prevent illness and/or injury and when required by contract or regulation. The use of appropriate PPE can save lives and prevent injuries.

The use of PPE can create some worker hazards, such as heat stress, physical and psychological stress, impaired vision, mobility, and communication. Therefore, equipment and clothing should be selected that provide an adequate level of protection with a minimal degree of created hazards. Over-protection as well as under-protection can be hazardous and should be avoided.

NewFields will provide required PPE at no cost to the employee. The employee will be responsible for the maintenance and sanitation of all company owned and/or issued PPE. Employee owned PPE will not be used on NewFields sites.

5.1. Types of PPE

The following types of PPE form the basis of the protective clothing scheme:

- 1) Head Protection. Regulated by 29 CFR 1910.135; specified in ANSI Z89.1, Safety Requirements for Industrial Head Protection and 30 CFR 56.15002. Head protection equipment includes hard hats, hardhat liners, hoods, and protective hair coverings.
- 2) Eye and Face Protection. Regulated by 29 CFR 1910.133(a); specified in ANSI Z87.1, Eye and Face Protection and 30 CFR 56.15014. Eye and face protection equipment includes face shields, safety glasses with side shields, splash hoods, goggles, and sweatbands.
- 3) Ear Protection. Regulated by 29 CFR 1910.95; specified in OSHA regulation. Ear protection equipment includes earplugs, canal caps and earmuffs. Please refer to NewFields SOP #15 *Hearing Conservation Program*.
- 4) Foot protection. Regulated by 29 CFR 1910.136; specified in ANSI Z41.1, Safety Toe Footwear and 30 CFR 56.15003. Foot protection equipment includes safety shoes, boots, and overboots.
- 5) Hand (and arm) protection. 29 CFR 1910.138. Hand and arm protection equipment includes inner disposable gloves, overgloves and sleeves.
- 6) Protective clothing. Regulated only in 1910.120 HazWOPER and 30 CFR 56.15006-7. Protective clothing equipment includes fully encapsulating suits, non-encapsulating suits, aprons, leggings, sleeve protectors, blast and fragmentation suits, radiation contamination protective suits, flame/fire retardant coveralls, flotation gear, visibility vests and cooling garments.
- 7) Respiratory Protection. Regulated by 29 CFR 1910.134 and 30 CFR 56.5001(a)(5) 56.5005: please see NewFields SOP #21 *Respiratory Protection*.

5.1.1. Foot Protection

Foot protection shall be required when there is a reasonable probability of injury that can be prevented by such equipment.

- 1) Safety shoes or boots will meet the specifications of American National Standard for Personal Protection-Protective Footwear, ANSI Z41.1-1999. The manufacturer of the shoe shall stamp the class on the interior, which defines the minimum requirements for compression and impact.
- 2) Specifically constructed shoes may be required for specific work environments. Reinforced soles, inner soles of flexible metal, or steel soles are to be used for construction work and other work with the potential for protruding hazards.
- 3) Overboots may be required for chemical protection.

5.1.2. Eye and Face Protection.

Eye and/or face protection (safety glasses, goggles, face shields) shall be required where there is a reasonable probability of injury. Eye protection will be worn on any field site where construction operations are in progress and may potentially cause flying objects.

Eye protection equipment referred to includes protection against impact, penetration, molten metal splashes, chemical splashes, dusts, glare, and injurious light radiation (infrared and ultraviolet) It does not include the special protection required to prevent damage from x- rays, gamma rays, and high energy particulate radiation such as alpha, beta, or neutron.

- 1) All eye and face protective equipment must meet the standard established by the Occupational Safety and Health Act as detailed in the American National Standard for Occupational and Educational Eye and Face Protection, ANSI Z87.1 - 1989.
- 2) The protective equipment must be appropriately selected for the hazard. All safety glasses must have side shields.
- 3) Employees requiring correction (prescription) lenses will be provided safety prescriptive glasses with permanent side shields (not slide-ons).
- 4) Visitors on sites where eye protection is required will also be required to wear eye protection.

5.1.3. Head Protection

Head protection (hardhats) is required where employees are subject to head injuries from falling of flying or moving objects, from splashing hazardous chemicals and other liquids, from limited electric shock and burns, and from bumps caused by working in limited space where the head may come in contact with equipment or objects or when other individuals are working above them.

- 1) The protective equipment must be appropriately selected for the hazard. Hardhats will be required on any operating construction site.
- 2) The hardhat suspension will be properly installed and maintained in clean and sanitary condition. It will be changed when it shows signs of wear.
- 3) All head protection equipment must meet the standard detailed in the American National Standard for Industrial Head Protection, ANSI Z89.1 - 1997.
- 4) Head protection, when not assigned to an individual, shall be sanitized after each use or disposable head covering shall be utilized.
- 5) Chinstraps should be used if a person will be stooping over frequently and the hard hat may fall off.

5.1.4. Visibility Vests

Visibility vests are required whenever employees are working on sites where there is potential for being struck by vehicle traffic and/or moving equipment. This is especially important in situations where vehicle and equipment operators have limited visibility. These vests will be worn when working on or near highways, streets, railways, or construction sites where heavy

moving machinery is operating. All visibility vests will comply with the Manual on Uniform Traffic Control Devices.

5.2. Chemical Protective Clothing

Chemical protective equipment is used to minimize or eliminate chemical contact and make decontamination easier. The proper selection of personal protective equipment is important in preventing chemical exposures. The selection depends on the hazardous conditions, cost, availability, compatibility with other equipment and performance. An accurate assessment of all these factors must be made.

5.2.1. Chemical Protection Selection Criteria

The most important factor in selecting chemical resistant PPE is determining the potential chemical exposures. Once the chemical(s) have been identified and the type of work to be performed has been considered the most appropriate clothing can be selected.

Garments are selected for use by their resistance to permeation, degradation, and penetration of the chemical. No material protects against all chemicals or combinations of chemicals, or is an effective barrier to prolonged chemical contact.

Charts are available from most manufacturers indicating the resistance of their products to a wide array of chemicals. Limited permeation data is currently available for chemical mixtures. Chemical mixtures can be significantly more aggressive towards PPE materials than any single chemical.

Selection should be based upon the most hazardous chemicals, potential for skin contact, absorption across the skin, and expected concentrations. Sometimes layering of several different types of protective PPE or PPE laminated of two or more materials affords the best protection.

When selecting chemical protective clothing the following criteria should be evaluated:

- 1) Concentration and types of chemical(s)
- 2) Physical State:
 - 3) The physical state of a chemical determines the exposure route and potential toxicity.
 - 4) Length of Exposure:
 - 5) The length of time the PPE is exposed to a chemical increases the probability of breakthrough. During permeation testing a pure (100% composition) liquid is placed in direct contact with the PPE material producing a worst-case situation.
- 6) Abrasion:
 - 7) The use of leather gloves, or a heavy apron over regular protective clothing will prevent damage to the PPE and protect against exposures during manual material handling.

- 8) Dexterity
- 9) Ability to Decontaminate/ Disposal
- 10) Climatic Conditions:
- 11) Protective clothing adds weight, and restricts movement, prevents the natural cooling process, and contributes to heat stress. Some materials act differently when they are very hot or very cold.
- 12) Work Load

6. PPE USE

PPE can offer a high degree of protection only if it is used properly.

- 1) The protective equipment must be appropriately selected for the specific hazard.
- 2) Protective equipment should be inspected for wear, tears, and defects before and after each use.
- 3) Chemical protective clothing must be adequately decontaminated after each use.
- 4) All PPE have limitations in performance. Known performance limitations must be understood and considered when selecting PPE.
- 5) Management is responsible for providing appropriate PPE with the exception of personal clothing (i.e. safety shoes).

6.1. Donning and Doffing

Donning and doffing PPE is to put it on and take it off, respectively. While it may sound simple, the donning method must prevent damage and ensure that the PPE is properly worn. Exact doffing procedures for removing PPE must be established, practiced, and followed to prevent damage to PPE, and to reduce/eliminate a transfer of contaminants to the wearer's body, the PPE assistant, and clean areas. Each site specific HASP will contain information on procedures for donning, doffing, and decontamination or disposal of PPE.

6.2. Defective and/or Damaged Equipment

Defective or damaged PPE shall not be used by NewFields employees and will be immediately removed from service. If PPE is found to be defective or damaged while in use, the employees will immediately remove themselves from the hazardous environment and don new PPE before returning to the task. The employee should report any suspected over-exposure to the PP and medical attention will be provided, if required.

Defective or damaged equipment will be tagged as such and either promptly repaired or discarded, as appropriate. Repair and service shall only be performed by properly trained, preferably manufacturer approved or certified, technicians.

7. WRITTEN HAZARD ASSESSMENT

A written hazard assessment must be prepared for each non-construction related task that requires the use of PPE. The PP is responsible for documenting required hazard assessments for PPE. Appendix A and the information contained in this procedure should be used to complete the required hazard assessments.

Employees operating on construction sites are required to wear appropriate PPE based on the hazards. However, a written hazard assessment is not needed to document the selection of PPE unless non-construction related tasks require it. Typical PPE required on a construction site include hardhat, safety glasses, visibility vest, and safety shoes. Additional PPE may be needed based on the hazards of a specific task.

8. TRAINING

NewFields shall provide training to each employee who is required to use PPE. Training will be completed prior to PPE use in a potentially hazardous environment and will be repeated periodically and/or as needed. At a minimum, employees will be trained to know:

- 1) When PPE is required (review of applicable Hazard Assessments).
- 2) What PPE is required for each specific task.
- 3) The potential hazards and the consequences of not using required PPE.
- 4) The human factors influencing PPE performance.
- 5) The limitations of the PPE.
- 6) The proper use, fit, useful life, care, maintenance, storage, and disposal of PPE.
- 7) How to properly inspect, don, doff, adjust, and use PPE.
- 8) Emergency procedures and self-rescue in case of PPE failure.

In addition, training should also include hands-on instruction on inspecting, donning, doffing, fitting, and using PPE.

Employees shall demonstrate a working knowledge of required PPE, including use and effectiveness, before being allowed to perform such work. Refresher training will be conducted periodically and when certain circumstances require it. Circumstances where refresher training is required include, but are not limited to, situations where:

- Changes in the workplace render previous training obsolete
- Changes in the types of PPE to be used render previous training obsolete
- Inadequacies in an employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill

The trainer shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training, and the certification subject.

9. INSPECTION OF PPE

PPE should be inspected at the following times:

- 1) Upon receipt from the factory or distributor.
- 2) When PPE is issued and prior to each use.
- 3) After each use, including use during training or fitting activities.
- 4) Prior to maintenance.
- 5) After maintenance, decontamination or repair.
- 6) On a regularly scheduled basis, especially for stored and emergency PPE and supplies, such as spill kits and respirators.

The frequency of inspections will vary depending on the type of equipment and the equipment condition. PPE inspection procedures and frequency will occur according to manufacturers' guidelines, whenever they are available. In the event that a manufacturer does not provide such guidelines, inspection procedures and frequency will be developed.

Individual identification numbers should be assigned to all reusable PPE and records of inspection should be maintained. Each inspection should record the ID number, date, inspector, and any unusual conditions or findings. Periodic review of these records should be conducted to identify potential improvements in this program.

10. STORAGE

PPE must be stored properly to prevent damage or malfunction due to exposure to dust, moisture, sunlight, damaging chemicals, extreme temperatures, and abrasion. PPE should be stored according to manufacturers' recommendations. All PPE should be cleaned prior to storage.

Prior to storage, contaminated PPE should be decontaminated. In the event that PPE cannot be fully decontaminated, the following guidelines should be followed:

- Potentially contaminated PPE should be stored in an area separate from street clothing or "clean" PPE
- Potentially PPE should be stored in a well-ventilated area
- PPE and protective clothing should be stored in accordance with manufacturers' recommendations

11. ADDITIONAL CONSIDERATIONS

Cold temperatures - natural material clothing should be worn under the protective clothing. Protective clothing should be removed prior to allowing a person "to get warm."

Hot weather - cotton undergarments should be worn to absorb moisture and cooling devices should be worn under protective suits.

Taping - Protective suits should be taped to the boots to prevent anything from running into the boot. Gloves should be taped also to prevent substances from entering the top of the glove.

Weather Conditions - Atmospheric conditions such as precipitation, temperature, wind direction, wind velocity, and pressure can affect the behavior of air contaminants and the potential for volatile material becoming airborne.

Proper Fitting of PPE - Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes.

Care should be taken to ensure that the right size is selected. Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of hardhats is important to ensure that it will not fall off during work operations. In some cases a chinstrap may be necessary to keep the helmet on an employee's head (Chin straps should break at a reasonably low force, so as to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.

APPENDIX A – PPE HAZARD ASSESSMENT CERTIFICATION FORM

NEWFIELDS PERSONAL PROTECTIVE EQUIPMENT HAZARD ASSESSMENT CERTIFICATION

Department			Work Area:								
Exposure Group			Job Task:								
Hazards to Employee		Potential Site of Injury	Probability of Injury	Severity of Injury	Risk Assessment Code	Personal Protective Equipment Selection					
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
Comments:											
Hazard Assessment and PPE Selection Performed by:					Date:						
Hazard Assessment and PPE Certification Performed by:					Date:						
Severity of Injury			Probability of Injury			Probability of Injury				Risk Category	
Class.	Description	Code	Class.	Description	Code	Severity of Injury	A	B	C	D	
Catastrophic	Irreversible illness or total disability	I	Frequent	Likely to occur immediately	A	I	1	1	2	3	High B 1&2
Critical	Temporary disability in excess of 3 months or permanent partial	II	Probable	Probably will occur in time	B	II	1	2	3	4	Medium B 3
Marginal	Reversible Injury limited to less than 3 months of disability	III	Occasional	Possible to occur in time	C	III	2	3	4	5	Low B 4&5
Negligible	First Aid Treatment Only	IV	Remote	Unlikely to occur	D	IV	3	4	5	5	

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1. PURPOSE

This program provides guidelines to protect the health and safety of employees whose project work activities may require the use of a respirator and to comply with OSHA Respiratory Protection Standard 1910.134 and MSHA Respiratory Standard 56 Subpart D.

2. SCOPE

This program applies to NewFields employees whose project work activities may require the use of a respirator. It is expected that respirator use will be required only rarely for NewFields employees.

2.1. Permissible Practice

When feasible, employee exposures to a hazardous atmosphere will be controlled by accepted engineering controls. When engineering controls are not feasible or are not effective, respirators suitable for the hazards present will be used. NewFields will provide appropriate respirators at no cost to the employee. These respirators will be utilized by employees as defined by the Site Specific HASP, PP, or a designee.

NewFields employees should have very limited use of respirators and any project which requires their use must have the approval of the PP in advance of beginning that work. NewFields encourages the use of certified subcontractors where there is an identified need for respiratory protection.

3. DEFINITIONS

Air Purifying Respirator - A respirator that is designed to remove air contaminants (i.e. dust, fumes, mists, gases, vapors, or aerosols) from the ambient air as the air enters the respirator.

Approved Respirator - A respirator that has been tested, found to meet established performance criteria, and listed as being approved by an authority such as MSHA (Mine Safety and Health Administration) or NIOSH (National Institute of Occupational Safety and Health).

Atmosphere Supplying Respirator - A respirator that supplies the wearer with air or oxygen from a source independent of the immediate ambient atmosphere. This includes supplied-air respirators and self-contained breathing apparatus (SCBA) units.

End-of-Service Life Indicator (ESLI) – A system that warns the respirator user of the approach of the end of adequate respiratory protection.

Filtering Facepiece (Dust mask) – A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Immediately Dangerous to Life or Health (IDLH) - An atmospheric concentration of any toxic, corrosive or asphyxiating substance that poses an immediate threat to life or would cause irreversible or adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

Maximum Use Concentration (MUC) - The maximum concentration of an air contaminant in which a particular respirator can be used, based on the respirator's assigned protection factor. The

MUC cannot exceed the use limitations specified on the NIOSH/MSHA approval label for the cartridge, canister, or filter..

Negative Pressure Respirator - A respirator in which the air pressure inside the facepiece is negative during inhalation in respect to the ambient air pressure outside the respirator.

Oxygen Deficient Atmosphere - An atmosphere with an oxygen content of less than 19.5% by volume (an IDLH atmosphere).

Permissible Exposure Limit (PEL) - the airborne concentration of a chemical to which an employee may be exposed without the use of controls. PEL is published and enforced by OSHA and MSHA.

Positive Pressure Respirator – A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

Powered Air Purifying Respirator - An air-purifying respirator that uses a blower to deliver air through the air-purifying element to the inlet covering.

Protection Factor - The value regarded as applicable for an achievable ratio of average ambient concentration of an air contaminant in a workplace to the average concentration of the contaminant measured inside the respirator facepiece for a specific class of respirators.

Qualitative Fit Test – A pass/fail fit test to assess the adequacy of a respirator fit that relies on the individual's response to the test agent.

Quantitative Fit Test – An assessment of the adequacy of a respirator fit by numerically measuring the amount of leakage into the respirator.

Respirator - Any device worn by an individual and intended to provide the wearer with respiratory protection against inhalation of airborne contaminants or oxygen-deficient air.

Self-Contained Breathing Apparatus (SCBA) - An atmosphere supplying respirator for which the source of air or oxygen is carried by the wearer.

Service Life – The period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

Supplied Air Respirator - A respirator that receives breathable air through an air line or hose from a portable or stationary source of compressed air.

Threshold Limit Value (TLV) - the airborne concentration of a chemical to which it is believed that an employee may be exposed for 8 hours per day for the duration of a working lifetime and experience no irreversible health effects. These exposure limits are reviewed and published annually by the American Conference of Governmental Industrial Hygienists (ACGIH). They are not regulatory limits, but are acknowledged as best practice in industry since they are current.

4. RESPONSIBILITIES

Corporate Health & Safety Coordinator (CHSC) –CHSC will act as the Respiratory Program Administrator and is responsible for administrating and overseeing the Respiratory Protection Program, and for periodic review and evaluation the program. HR is responsible for administrating

the medical surveillance program. HR is also responsible for maintaining fit testing and training records.

Project Principal (PP) – The PP is responsible for the overall implementation of this program at NewFields sites overseen by the PP. The PP will provide proper respiratory protection for the job, determine that the employees have been trained and medically qualified for respirator use, confirm that facilities are provided for the cleaning and storage of respirators, and that appropriate procedures are used. In addition, the PP is responsible for reviewing the on-site use of respirators for proper use and maintenance.

Employees - Employees must use the provided respiratory protection in accordance with this program and the training received. The employee must check the facepiece seal each time the respirator is worn. The employee must routinely inspect and clean the respirator as instructed, protect it from damage, and report any damage, malfunctions or problems.

5. RESPIRATOR SELECTION

Respirators certified by the National Institute for Occupational Safety and Health (NIOSH) must be selected and used in compliance with the conditions of its certification. Respirators must be selected on the basis of the respiratory hazard(s) at the site and user factors that affect respirator performance and reliability. Respirator selection criteria include:

- General use conditions, including determination of contaminants, oxygen deficiency, or IDLH atmospheres
- Physical, chemical, and toxicological properties of the contaminant(s)
- Warning properties of the contaminant(s)
- Exposure Limits (PELs, TLVs see definitions in section 3.0)
- Assigned Protection Factors
- Maximum Use Concentrations
- Eye irritation potential
- End of service life determination
- Location of "safe" area
- Duration of respirator use

Respirators may be needed on NewFields project sites that are engaged in hazardous waste remediation. Specific selection of respirators will be documented in the site specific HASP for that project.

5.1. Air Purifying Respirators

Air purifying respirators do just what the words imply; they purify the air, but they do not supply oxygen if there is a deficiency. Air purifying respirators with cartridges are designed to remove particulates (dusts, mists, and/or fumes) and contaminants such as organic vapors or acid gases.

Do not use air-purifying respirators under the following conditions:

- When the contaminant has poor warning properties; that is, when it cannot be recognized by taste, smell, or irritation at or below the PEL
- In oxygen deficient atmospheres
- In atmospheres immediately dangerous to life or health.

Employees may request the use of a PAPR (Powered air purifying respirator) where it is required for use in exposures that are above the AL or PEL. PAPR may also be required by the evaluating physician based on the reduced breathing resistance provided by this equipment.

5.2. Air Supplied Respirators

NewFields employees are not expected to use air-supplied respirators or to enter IDLH atmospheres. If this is required at a later date, this procedure will be updated to add the requirements of using air supplied respiratory protection.

5.3. Voluntary Use of Respirators

There may be circumstances when employees may wish to use a respirator voluntarily, even though the atmospheric conditions do not require its use. This may be due to odors, dust, allergies, sensitivities, or other issues not related to occupational exposure limits. In these cases, employees may be allowed to wear such equipment under the following conditions:

- Filtering face pieces are used (dust masks) and Appendix D is provided to them for information
- An employee has been medically cleared and trained in Respiratory Protection may wear the equipment they were issued
- All other voluntary use of respiratory protective equipment is prohibited

6. RESPIRATOR TRAINING

Employees required to wear respirators must be trained before wearing a respirator. Training will be comprehensive and understandable. It will be performed prior to fit testing or use of a respirator and **annually** thereafter.

The following, as a minimum, shall be included in the training:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator
- The limitations and capabilities of the respirator
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions
- How to inspect, put on and remove, use, and conduct negative and positive pressure seal checks
- The procedures for maintenance and storage of the respirator
- The medical signs and symptoms that may limit or prevent the effective use of respirators
- The general requirements of the Respiratory Protection Standard

7. RESPIRATOR FIT TESTING

Fit tests are required to determine if the respirator mask forms a good seal against the wearer's face to prevent leakage. Each employee required to wear a respirator will be fit tested using accepted fit test methods as described in 29 CFR 1910.134, Appendix A. Fit tests shall be performed using the same make, model and size of respirator to be worn.

Qualitative or Quantitative fit testing must be performed prior to initial use of respirators and at least annually thereafter. A qualified person must administer fit testing. The person performing the fit testing will provide required documentation of the fit test protocol(s) used and results. The forms in Appendix C may also be used. Fit test records will be maintained until the next fit test.

A user seal check following Appendix B-1, of 1910.134 must be performed immediately after donning and adjusting the respirator, each time a respirator is used.

8. RESPIRATOR MAINTENANCE AND CARE

Respirators will be properly maintained and be in working order. Respirators that are not functioning properly shall be immediately removed from use and either repaired or discarded, as appropriate. Employees in hazardous areas will leave the area if the need to wash, change cartridges, or if they experience higher breathing resistance or chemical breakthrough (smell/taste the chemical).

8.1. Inspection

Respirators must be inspected as follows:

Routine use:	Before each use and during cleaning.
Emergency use:	At least monthly and before and after each use.
Emergency-escape	Before being carried into the workplace for use.

The inspection must include a check of respirator function, tightness of connections, and the condition of the various parts of the respirator, including a check of the elastomeric parts for pliability.

8.2. Cartridge/Filter Changing or Replacement

Filters/cartridges used on air-purifying respirators must be replaced when one of the following occurs:

- Change is scheduled according to a cartridge replacement schedule created by the PP, which will be documented in the site-specific HASP
- Increase of breathing resistance for particulate cartridges

- End-of-service-life indicator shows a change color change

8.3. Cleaning And Disinfecting

Respirators will be properly cleaned and disinfected in accordance with Appendix B-2, 1910.134 and at the following intervals:

- 1) Respirators issued for the exclusive use of an employee will be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.
- 2) Respirators issued to more than one employee will be cleaned and disinfected before being worn by different individuals.
- 3) Respirators maintained for emergency use will be cleaned and disinfected after each use.
- 4) Respirators used in fit testing and/or training will be cleaned and disinfected after each use.

8.3.1. Cleaning Procedure

- 1) Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
- 2) Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
- 3) Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain.
- 4) When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
 - a. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,
 - b. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,
 - c. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
- 5) Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
- 6) Components should be hand-dried with a clean lint-free cloth or air-dried.
- 7) Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

- 8) Test the respirator to ensure that all components work properly.

8.4. Repair

Respirators that fail an inspection or are otherwise found to be defective will be immediately removed from service, and discarded or repaired as follows:

- Repairs are made only by properly trained individuals
- Only original manufacturer's NIOSH-approved parts are used
- Repairs are conducted according to manufacturer recommendations and specifications

8.5. Proper Respirator Storage

Respirators must be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. They must be stored to prevent deformation of the facepiece and exhalation valve. A cleaned respirator should be kept in a plastic bag and box or hung in a closed locker.

Storage for emergency respirators must meet the above requirements, plus:

- Be kept accessible to the work area
- Stored in compartments or in covers that are clearly marked as containing emergency respirators
- Stored in accordance with the manufacturer recommendations

9. MEDICAL SURVEILLANCE

Employees required to wear respiratory protection must be medically evaluated to determine if they are physically able to wear the respirator without posing a hazard to their own health. Employees will be required to have a pre-placement physical evaluation prior to being issued respiratory equipment. Some of the factors considered during the medical evaluation will include:

- Pulmonary health - Does the individual have a history of asthma or emphysema, difficulty with normal breathing, or previously documented lung problems? These conditions coupled with the wearing of a respirator will further restrict already difficult breathing.
- Cardiac health - Does the individual have high blood pressure, artery diseases or documented heart problems? The use of a respirator will add stress on the heart that will aggravate these conditions.
- Other - Facial hair such as a beard or sideburns that project under the face piece will cause a poor seal. Missing or arthritic fingers that would make it difficult for the individual to properly adjust and operate the respirator. Facial scars or other physical factors that would prohibit a proper fit. Claustrophobia and poor eyesight are also considered.

Medical evaluations will be conducted during working hours and at no cost to the employee. All findings during the evaluation are confidential, except for factors restricting an employee's respirator use. These determinations must be made prior to any use, including fit testing, and must be completed by a physician. In some states, a licensed health care professional (LHCP) other than a physician may conduct the evaluation. These medical evaluations will be reviewed

periodically as deemed appropriate by the physician or if there are medical reasons to re-evaluate the employee.

The following information will be provided to the physician for the evaluation:

- A written recommendation must be obtained from the physician prior to respirator use. The recommendation will provide information on any limitations on respirator use. Additional medical evaluations must be provided if any of the following occurs:
- An employee reports medical signs or symptoms that are related to the ability to use a respirator,
- A LHCP, PP, or the Respirator Program Administrator determines that an employee needs to be reevaluated,
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation, or
- A change occurs in workplace conditions that may result in a substantial increase in the physiological burden placed on an employee.

10. RECORDKEEPING

HR is responsible for maintaining respiratory program records and the PP will provide copies of records that are accurate and up to date. Records should include:

1. Employee Exposure Records, if available:
 - The route of exposure
 - The hazard(s) to which the employee was exposed
 - Dates of exposure
 - PPE worn
 - Any actions taken, including first aid and emergency response.
2. Monitoring Records, if available:
 - The names and/or types of hazards monitored
 - Names of employees monitored
 - Dates of monitoring
 - The type, make, model, and serial or ID number of monitoring equipment
 - Actual monitoring results.
3. Medical Surveillance Records:
 - The recommendations of the LHCP regarding respirator use, per medical evaluation
 - Any restrictions on respirator use
 - Copy of the information provided the LHCP
 - LHCP authorization to lift respirator use restrictions, per medical evaluation.
4. Fit Test Records: (Fit test forms are available in Appendix C.)
 - Type of fit test performed
 - Name of employee being fitted

- Name and signature of qualified person administrating test
 - Manufacturer, model and size of respirator
 - Date of test
 - Results of fit test.
5. Training Records:
- Name of trainer
 - Topics discussed
 - List of attendees
 - Date of training
 - Reason for refresher training.
6. Inspection and Maintenance Records:
- Name of the inspector/technician
 - Results of the inspection/maintenance

11. PROGRAM EVALUATION

The PP at each site will make a routine review of respiratory equipment during routine site inspections. The questionnaire in Appendix B can be used for this evaluation. The Respiratory Program Administrator will also consult with users to determine program acceptance.

12. SPECIAL CONSIDERATIONS IN RESPIRATOR USE

12.1. Facial Hair

Respirators shall not be worn when conditions prevent a good respirator facepiece-to-face seal. Persons with facial hair that interferes with the facepiece-to-face seal or the operation of the inhalation or exhalation valves shall not be permitted to wear or be fitted with a respirator until such conditions are corrected.

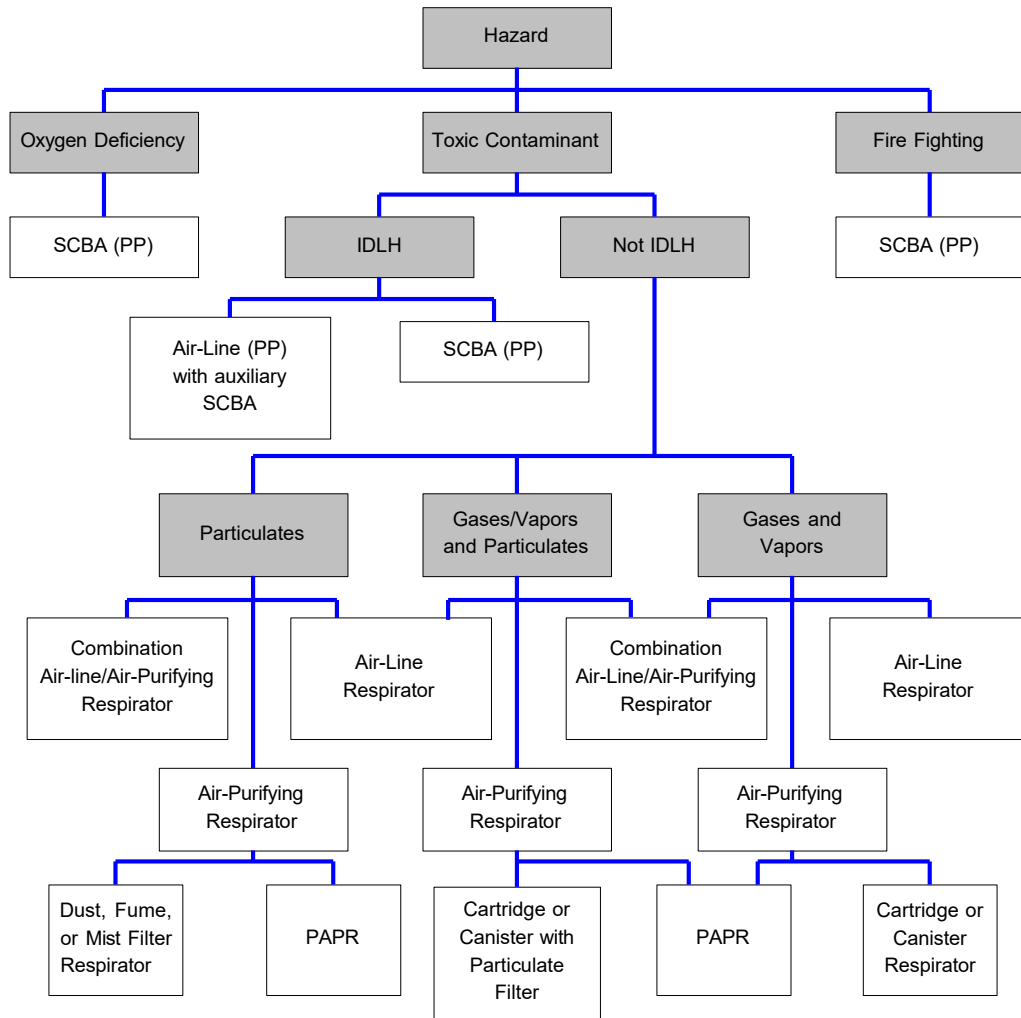
12.2. Corrective Lenses

Employees with eyeglass temple pieces that interfere with the facepiece-to-face seal of the respirator shall not be permitted to wear or be fitted with a respirator until such conditions are corrected. If corrective lenses are required, contact lenses or special lens holding devices which do not interfere with the facepiece-to-face seal may be utilize

12.3. Oxygen Deficiency

Normal air contains 21 percent oxygen by volume. Oxygen levels must be at least 19.5 percent by volume if air purifying respiratory protective equipment is to be used. Oxygen levels below 19.5 require the use of an air-supplied respirator (airline or SCBA). NewFields employees are not expected to be exposed to oxygen deficient atmospheres and therefore, would not enter areas defined as such.

APPENDIX A-RESPIRATORY PROTECTION SELECTION DIAGRAM AND EQUIPMENT LIST



RESPIRATOR TYPE	MANUFACTURER	MODEL	USER	LOCATION

**APPENDIX B—RESPIRATORY PROTECTION PROGRAM EVALUATION CHECKLIST /
QUESTIONNAIRE**

Employee Name: _____

Identification: _____

Position: _____

Description of Work Activities:

1. What jobs/activities require the use of respiratory protection?

2. Is respiratory protection used every time that it is required?

3. What type of respiratory protection is used?

4. Where is the respiratory protection stored?

5. How is the respiratory protection cleaned and maintained?

6. What was date of the last fit test?

7. When did employee last receive respiratory protection training?

8. Are other employees that are required to use respiratory protection using it properly/effectively?

List any problems/concerns/comments here or on back of form.

APPENDIX C - FIT TEST RECORDS

QUANTITATIVE FIT TEST RECORD

Name: _____ Respirator Type: _____

I.D. Number: _____ Manufacturer: _____

Test Date: _____ Size: _____

Next Test Due: _____

Fit-Test Protocol Used: _____

Test Exercises¹

Exercise	Fit Factor
Normal Breathing	
Deep Breathing	
Turning Head Side to Side	
Moving Head Up and Down	
Read Rainbow Passage	
Grimace	
Jog in Place or Bend Over and Touch Toes	
Normal Breathing	
	Overall Fit Factor:

Test Administered by: (print name): _____ Date: _____

(signature): _____

¹ All test exercises should be performed for one (1) minute duration, except Grimacing -- which should be performed for 15 seconds.

QUALITATIVE FIT TEST RECORD

Name: _____ Respirator Type: _____
 I.D. Number: _____ Manufacturer: _____
 Test Date: _____ Size: _____
 Next Test Due: _____

Fit-Test Protocol Used:

Sensitivity Check Performed? Yes _____ No _____

Saccharin:	10	20	30	Irritant Smoke:	Yes / No
Bitrex:	10	20	30	Isoamyl acetate:	Yes / No

Test Exercises²

Normal Breathing	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
Deep Breathing	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
Turning Head Side to Side	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
Moving Head Up and Down	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
Read Rainbow Passage	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
Jog in Place or Bend Over and Touch Toes	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
Normal Breathing	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail

Test Administered by: (print name): _____ Date: _____

(signature): _____

² All test exercises should be performed for one (1) minute duration

APPENDIX D - INFORMATION TO VOLUNTARY RESPIRATOR USERS

This has been excerpt from the OSHA Respiratory Protection Standard.

Appendix D to Sec. 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker.

Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator. [63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998]

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1. PURPOSE

The purpose of this site evaluation procedure is to establish a system to identify areas of non-conformance with the NewFields H&S Program and Site-Specific HASPs, as well as to monitor the effectiveness of these programs and provide corrective action as needed.

2. SCOPE

This procedure applies to field site evaluations conducted on any site where NewFields employees operate.

3. RESPONSIBILITIES

Corporate Health & Safety Coordinator (CHSC)- The CHSC is responsible for periodic review of the guidelines in this policy. HR will provide appropriate information from this evaluation process to all HSC to improve the Health and Safety Program and reduce accidents.

Project Principles (PP) - The PP or HSC are responsible for conducting site evaluations and determining the frequency of evaluations based on the size, degree of hazards, duration, and complexity of the project. They will document and distribute the appropriate evaluation checklist as described in Appendix A. The PP is also responsible for following up on identified deficiencies and providing copies to HR and the HSC. Progress on specific and identified corrective actions must be documented and monitored on an ongoing basis, identifying responsible individuals and implementation schedules. Progress reports will be sent to the Human Resources Director.

Health and Safety Coordinator (HSC) – The PP or HSC are responsible for conducting site evaluations and determining the frequency of evaluations based on the size, degree of hazards, duration, and complexity of the project. They will document and distribute the appropriate evaluation checklist as described in Appendix A. The HSC is responsible for providing assistance in developing and implementing corrective actions within their areas.

Employees – Employees will fully cooperate with the site evaluations including participating in interviews with evaluators.

4. GUIDELINES

Field Evaluations will be conducted periodically on specific projects as determined by the PP/HSC. The frequency of evaluations will depend upon the job requirements, responsibilities, degree of hazard and findings on previous evaluations.

If deficiencies in field H&S procedures are identified, the PP will document that appropriate corrective action has been implemented. All corrective actions will be documented and a copy provided to HR.

4.1. Conducting Site Evaluations

The evaluator should attend a daily safety briefing if available. The time and location of briefings should be determined prior to the site visit. The evaluator must comply with all requirements on the site including PPE, training, medical evaluations, etc.

The evaluation will consist of three parts:

- Verifying that required documentation is present and accurate
- A site walk-through to look for any unsafe acts or conditions
- Employee interviews to determine if they understand the hazards, PPE or other controls that apply, and emergency procedures.

Complete the Evaluation Checklist (Appendix A). The evaluation will cover all activities that affect the health and safety of NewFields employees and direct subcontractors.

Any imminent danger situations (possibility of serious injury or death) must be corrected immediately, or all exposed personnel must be removed from the hazard until it is corrected.

Items that can be easily corrected should be corrected during the site walk-through inspection.

Deficiencies and corrective action for activities performed by contractors and subcontractors must be handled as specified in SOP #23 Subcontractor Safety. All deficiencies shall be brought to the attention of the appropriate party that is responsible for correcting the deficiency.

4.2. Closing Conference

The evaluator should always have a closing conference with NewFields employees onsite. All findings should be reviewed and a schedule for completion of control items should be determined.

4.3. Evaluation Report

The Evaluator will complete the Evaluation Checklist and written documentation of any deficiencies identified. All deficiencies will have suggested corrective action, individuals responsible for completion and target dates for completion. Suggestions for improvements to the H&S Program, SOPs or this evaluation procedure are also encouraged.

Evaluation reports will be distributed to the HSC and HR.

4.4. Follow up

The PM is responsible for tracking all deficient items to completion and for providing the Evaluator and HR with documentation that the items are completed.

The PP will follow up on any unfinished corrective actions. HR may make updates to the H&S Program and SOPs based on feedback from the evaluations of field operations as needed.

5. TRAINING

All NewFields employees who conduct site evaluations will be trained to recognize field hazards.

6. RECORDKEEPING

Site evaluation reports will be maintained in the project file.

7. REFERENCES

OSHA 1926.20 Construction General Safety and Health OSHA Safety and Health Management Guidelines

APPENDIX A – FIELD SITE EVALUATION CHECKLIST

The following Field Site Evaluation Checklist is a tool to assist the Evaluator in conducting job site evaluations. It does not provide a complete list of all hazards or requirements and the main purpose is to provide a reminder to the Evaluator of the general requirements. Please use the comments sections or the back to add hazards identified that are not found on the checklist or to list recommendations for corrective action.

SITE EVALUATION CHECKLIST

Date: _____ Completed by: _____

Job # _____ Job Name _____

Evaluator _____

Project Principle _____

Other _____ Assigned _____ Personnel _____

Estimated Start date and duration _____

Documents: (Required prior to beginning work.)	Completed	Available	Posted
Site-Specific HASP, if applicable			
Applicable SOPs (reviewed and implemented)			
Emergency Contact Information			
Notes/Comments:			
PPE	Yes	No	N/A
Site- and task-appropriate PPE are provided. (See "Hazard Assessment")			
Personnel are trained in PPE use, maintenance, and storage.			
Personnel use PPE properly and consistently.			
Training			
Personnel have received required training.			
Training documentation is on file.			
Medical Surveillance			
Personnel have received required medical surveillance.			
Medical surveillance records are on file.			
Subcontractor Safety			
Contractor safety procedures reviewed and being followed.			
Notes/Comments:			

HAZARD ASSESSMENT:

Indicate potential hazards associated with this project. Circle PPE required for each potential hazard. PPE in italics are always required for the given hazard. Circle if specific training was provided for the hazards on the site. Indicate in the last column if any area was found to be deficient in either PPE/equipment provided or training of employees. For each deficiency provide details in the comments section or on the back.

Hazard	Y / N	SOP	PPE/Equipment	Training	Deficient
Asbestos *	Y / N		Respiratory protection	Y / N	
Biological Hazards	Y / N		Insect repellent	Y / N	
Chemical Contact	Y / N		Chemical resistant clothing: gloves; overboots; respiratory protection	Y / N	
Confined Space Entry	Y / N		Fall arrest system; mechanical retrieval system	Y / N	
Construction Activities	Y / N		<i>Hard hat; safety glasses; safety shoes; Hi-visibility vest</i>	Y / N	
Electricity	Y / N		LOTO equipment	Y / N	
Entering Excavations/Trenches	Y / N		Ladder	Y / N	
Falls from heights 6' or greater	Y / N		<i>Fall arrest system</i>	Y / N	
Flying/falling debris or objects	Y / N		<i>Hard hat; safety glasses; safety shoes</i>	Y / N	
Hazardous Waste/Materials *	Y / N		Respiratory protection; protective clothing; gloves; overboots; safety glasses or goggles; chemical resistant clothing	Y / N	
Ladder usage, 24' or higher	Y / N		<i>Fall arrest system</i>	Y / N	
Lead *	Y / N		Respiratory protection	Y / N	
Noise *	Y / N		Ear plugs; ear muffs	Y / N	
Respiratory *	Y / N		Respiratory protection	Y / N	
RF Exposure *	Y / N		Radman unit	Y / N	
Vehicle/Equipment Traffic	Y / N		<i>Hi-visibility vest</i>	Y / N	
Weather – Cold Stress *	Y / N		Warm area	Y / N	
Weather – Heat Stress *	Y / N		<i>Potable water, cool area</i>	Y / N	
Working over/near water	Y / N		PFD; fall arrest system, life boat	Y / N	
Notes / Comments:					

* Monitoring and/or medical surveillance may be required for these hazards, see SOP.

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1. PURPOSE

The purpose of this guideline is to provide information regarding the requirements for working with subcontractors on project sites.

2. SCOPE

This SOP applies to project sites where NewFields is working with subcontractors directly or where the site is a multi-employer site that NewFields employees are required to work in or near areas that are under the control of other employers. NewFields does not intend to manage the health and safety program and procedures of the subcontractor and shall not, in any way, direct the means and methods of the contractors. However, NewFields may identify hazards that are caused or controlled by other employers and may need to confirm health and safety practices for the safety of NewFields employees or to provide “reasonable care” to other employees on the site.

3. DEFINITIONS

Creating employer - The employer who creates the hazard, or creates the potential exposure by bringing employees into contact with a hazard, regardless of who the employees work for.

Competent Person – A competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authority to take prompt corrective measures to eliminate the hazard.

Controlling employer - The employer who has control (or ability to exercise control) over the exposing, creating, or correcting employers, and may also be an exposing, creating, or correcting employer.

Correcting employer - The employer who is responsible for correcting the hazard, regardless of whom created the hazard or whom the employees work for.

Decontamination area – means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated.

Exposing employer - The employer whose own employees are exposed to a hazard, regardless of who may have created the hazard.

Imminent Danger – This is any condition or practices where a danger exists which could reasonably be expected to cause death or serious physical harm immediately or before it can be eliminated through corrective actions.

Site-Specific Health and Safety Plan (HASP) - The site-specific health and safety program developed for NewFields employees working on a hazardous project.

Contractor/Subcontractor - A business firm contracted to perform support work on a NewFields job site.

4. RESPONSIBILITIES

Corporate Health & Safety Coordinator (CHSC) - CHSC is responsible for periodic review of the guidelines in this policy.

Project Principles (PP) – The PP is responsible for the overall implementation and enforcement of this procedure for the employees in their area of responsibility. The PP is responsible for establishing safe work practices when working on multi-employer sites. It is up to the PP to determine that the subcontractors are meeting the requirements of this SOP and other safety requirements that may affect NewFields employees. The PP may be responsible for confirming the documentation and use of training and safety procedures of the subcontractor.

Employees – Employees will notify the PP of any identified H&S hazards or unsafe acts or conditions caused by a contractor/subcontractor.

Contractor/Subcontractor – The contractor will provide a Competent Person responsible for site safety and documentation of applicable documents if requested. Contractors will adhere to their own H&S program that meets the requirements of the NewFields program. They will conduct daily safety inspections of their work area and will correct any safety violations identified by the contractor competent person or NewFields employees.

5. GUIDELINES

A growing number of workplace safety agencies and legal jurisdictions are adopting a framework of employer categories for the interpretation and assignment of safety responsibilities on multi-employer work sites. If employers fail to fulfill their responsibilities, confusion may result between the onsite parties. This could in turn lead to hazards that are not recognized or corrected, and potentially increase the risk of worker injury. If employers fail to satisfy standards of reasonable care, they are potentially subject to citation and assignment of responsibility for a regulatory violation, or worker injury, or both.

OSHA defines the role of employers working on a multi-employer site based on the hazard identified as one of the following (defined above in section 3.0):

- Controlling employer
- Correcting employer
- Creating employer
- Exposing employer

Based on these definitions, OSHA can give citations to different employers who may have nothing to do with the identified hazard, except that their employees are exposed to the hazard. All employers on the site must provide “reasonable care” of any person who may be exposed to the hazards. This SOP provides guidelines to assist the NewFields PP and employees in working with other employers and determining appropriate actions on multi-employer sites.

5.1. Coordination of H&S Plans

The PP should be aware of the activities of other contractors on the site that may affect NewFields employee's safety. It may be necessary on some projects to coordinate H&S functions between NewFields and other contractors. This is especially important when defining emergency action plans. The PP is responsible for identifying potential hazards and conflicts when working on multi-employer sites to coordinate needed functions (i.e., emergency signals and procedures).

On multi-employer sites, NewFields personnel will contact the site's competent person or Construction Manager to determine required or suggested safety measures or potential hazards that could impact NewFields work or personnel. NewFields personnel will determine if the contractor has provided identified safety equipment.

NewFields will in no way define the means and methods of the contractor's operations and is not responsible for the health and safety of others, including without limitation any contractor, sub-consultant, testing firm or subcontractor or their employees.

5.2. Selection of Subcontractors

The PP is responsible for subcontractor selection and should evaluate the prospective subcontractor's safety performance. Criteria for subcontractor selection process should include:

- Check the subcontractor's safety history (EMR, Incident rate, OSHA 300 log, OSHA citation, MSHA 7001 log and inspection history)
- Review the subcontractor's safety procedures
- Get references of health and safety performance from past projects.

NewFields should not hire contractors who do not follow proper safety procedures in future projects. Each office should consider developing a list of subcontractors who exhibit good safety compliance.

5.3. Contract Language

It is important for the PP to understand the contract language as it relates to the responsibilities and authority for health and safety on the site. In some cases NewFields may have some responsibility for oversight of the subcontractor and may retain stop work authority if hazardous conditions or operations exist. These issues need to be reviewed with the field staff before starting field activities.

5.4. Subcontractor/Contractors Safety Procedures

NewFields should request copies of the subcontractor's site specific HASP (when required) or safety procedures prior to the start of field activities to establish that they reflect industry standards, are site-specific and consistent with NewFields health and safety procedures. The PP will communicate any deficiencies to the subcontractor for resolution.

The NewFields PP should verify that the subcontractor's employees have been provided applicable training and medical monitoring prior to beginning field operations. Documentation of training or a letter stating that the employees have been trained would be sufficient.

On multi-employer sites, where additional contractors are operating that are not under contract with NewFields, the PP should review the general contractor's HASP or procedures to identify activities that may expose NewFields personnel to hazards. Such hazards will then be added to the NewFields hazard assessment and/or HASP and control methods implemented.

Subcontractors will be required to attend pre-job safety meetings and will be included in any site specific safety training, tailgate meetings, Job Safety Analysis (JSA), and jobsite inspections conducted by NewFields.

Post-job safety performance reviews may be conducted on NewFields' subcontractors to determine their specific and overall control of hazards and response to identified unsafe acts or conditions caused by their operations. These reviews will be used as a basis for subcontractor selection for future project work.

6. PROJECT OPERATIONS

6.1. Normal Operations

PP or a designee will:

- a) Conduct periodic site inspections
- b) Confirm the contractor is conducting daily safety inspections to identify and evaluate safety hazards
- c) Confirm that the contractor is in compliance with safety procedures or the site HASP, if appropriate;
- d) Notify the contractor in writing if there are any violations of safety procedures or the HASP; and
- e) Follow-up with each notice of violation to confirm that the contractor has corrected the violation in a timely manner.

The contractor or subcontractor will:

- a) Conduct daily safety inspections of the work site to identify and evaluate safety hazards
- b) Promptly correct any safety violations identified by the contractor or NewFields employees and notify the PP of what corrective action has been taken
- c) Provide follow-up training for employees as needed

It is essential that oversight activities, corrective actions, and observations be well documented. Routine oversight activities and observations can be adequately documented in clear concise field log notes. However, any formal reviews of subcontractor operations, and any notifications to the subcontractor of deficiencies needing correction, require that separate documentation (a letter or other written notice) be prepared.

6.2. Actions for Identified Hazards

NewFields PP or employees should take the following actions: For NewFields Subcontractors:

- When apparent non-compliance or unsafe conditions or practices are observed, notify the subcontractor's supervisor or safety representative and require corrective action. The subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When an apparent imminent danger is observed, immediately stop work, if authorized, and alert all affected individuals. Remove all affected NewFields employees and subcontractor staff from the danger, notify the subcontractor's safety representative, and do not allow work to resume until adequate corrective measures are implemented. Notify the PP as appropriate.
- When repeated non-compliance or unsafe conditions are observed, notify the subcontractor's safety representative and stop affected work until adequate corrective measures are implemented. Termination of the subcontract is available as a final option.

For Contractors outside NewFields responsibility:

- If a contractor's unsafe condition or practice is observed by any NewFields employee, inform the contractor and the client. NewFields's obligation is strictly limited to informing the third party and the client of our observation. The contractor is solely responsible for determining and implementing necessary controls and corrective actions.
- If an apparent imminent danger is observed, immediately warn the contractor's employee(s) in danger, remove NewFields employees and subcontractors from the vicinity, and notify the contractor's safety representative and the client. NewFields's obligation is limited strictly to immediately warning the affected individual(s), protecting our employees and subcontractors, and informing the third party and the client of our observation.

When the contractor's unsafe conditions or practices pose a risk to NewFields employees or subcontractors:

- Notify the contractor's safety representative.
- Request contractor determine and implement corrective actions.
- If needed, stop affected NewFields work until contractor implements necessary controls and corrective actions. Notify the client and PP, as appropriate.

NewFields employees always have the authority and responsibility to stop work of NewFields employees and subcontractors if unsafe conditions or failure of the subcontractor to adhere to safe work practices is observed. This authority and action does not in any way relieve the subcontractor of its responsibilities for the means and methods of the work, and therefore, any corrective actions. Failure to comply with safe work practices can be the basis for restriction or removal of the subcontractor from the job, termination of the subcontract, or restriction from future work.

6.3. Hazardous Waste Operations

NewFields subcontractors will provide on request, written documentation of the following:

- A site-specific HASP for the applicable project, or agreement in writing to abide by the NewFields HASP
- All applicable employees have received 40 hour (or 24 hour) initial HazWoper training and three (or 1) days on the job training with a supervisor
- All applicable employees have received 8 hour refresher training within the last 12 months
- All applicable supervisors have received 8 hour supervisor training
- All applicable employees have received training in the use of all respiratory and personal protective equipment identified in the site HASP
- All applicable employees have been medically screened and approved to work on the site
- All applicable employees have been briefed on the HASP and site conditions
- All safety equipment, including PPE, required is provided by the contractor and available on site.

7. RECORDKEEPING

Records regarding safety violations or corrective action will be maintained in the project file.

8. REFERENCES

29 CFR 1926.16 Rules of Construction

29 CFR 1926.20 General Safety and Health Provisions

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1. PURPOSE

To establish procedures for the implementation of a safe driving program for NewFields employees.

2. SCOPE

This policy applies to all NewFields employees while operating a company vehicle or a personal vehicle on company business.

3. DEFINITIONS

Company Vehicle – A vehicle owned, leased or rented by NewFields and provided to a NewFields employee for business use.

Personal Vehicle – A vehicle owned or leased by a NewFields employee for their personal transportation that may be used for company business.

4. RESPONSIBILITIES

Human Resources Director (HR) – HR is responsible for confirming employee drivers licensing status and documenting a valid driver's license for employees who drive on company business. HR will maintain appropriate records.

Corporate Health & Safety Coordinator (CHSC)– CHSC is responsible for periodic review of this procedure and for updating this SOP as needed.

Project Principal – The Project Principle is responsible for the overall implementation of this SOP. The Project Principle is also responsible for providing appropriate personnel and resources so that operations can be conducted in compliance with this SOP. The Project Principle is also responsible for establishing safe work practices and enforcing the requirements of this SOP when employees operate vehicles for business purposes.

Health and Safety Coordinator (HSC) – The HSC is responsible for making required training available to personnel who may drive company vehicles or personal vehicles for business purposes.

The HSC's responsibilities may also include:

- Review monthly vehicle inspections to verify that required and preventive maintenance are being performed (company-owned and leased).
- Conduct accident investigations on all vehicular accidents to determine possible corrective actions.
- Verify personnel have been properly briefed on driving safety guidelines required by states and localities.

- Verify all required state inspections have been performed on all company owned, leased or rented vehicles.

Employees – All employees authorized to operate company-owned or leased vehicles must understand and comply with the requirements of this policy.

Employees are responsible for:

- Conducting daily or pre-use inspections of the vehicle
- Operating the vehicle in a safe manner
- Reporting any problems with the vehicle or accidents to the Project Principle
- Notifying the Project Principle/HSC of any medical condition that may affect your ability to drive
- Reporting all accidents and injuries to the Project Principle/HSC and HR

5. GUIDELINES

5.1. Pre-Use Inspection

The following pre-use inspection is provided to promote safe and proper vehicle maintenance and operation. These items should be checked before each day's operation of any vehicle.

- Confirm the headlights, tail-lights, and turn signals are working properly.
- Check gauges, and listen for unusual sounds that could indicate a need for maintenance.
- Check tire pressure and condition.
- If pulling a trailer, check the trailer hitch and safety chain in addition to the trailer lights and tires.
- Be sure all loose equipment is secured.
- Confirm that the windshield and side windows are clean and that rear/side view mirrors are clean and adjusted for proper vision.
- Start the engine and observe all instruments, gauges and indicating lights for proper operation. Do not operate a vehicle if any warning light is illuminated.
- Check the brake system for proper operation.
- Check windshield wipers and horn.
- Driver and all passengers must fasten their seat belts before moving.

5.2. Vehicle Operation Standards

The standards of operation are designed to prevent vehicle accidents, comply with federal, state, and local regulations, prevent injury to employees and the public, and reduce vehicle operating and repair costs.

5.2.1. Proper Vehicle Usage

- Only authorized persons may operate or ride in NewFields company vehicles.
- All vehicles, drivers and operation of the vehicle must comply with NewFields policies, as well as local, state, and federal laws.
- Driver and all passengers must always wear seat belts when moving.
- Proper vehicle usage is the responsibility of the driver.
- All mandatory state inspections are to be performed on a timely basis.
- The use of hand-held cellular phones and other devices while driving is prohibited. In addition, texting, emailing, and programming a Global Positioning System is prohibited while driving. While hands-free cellular is an option, their use does not reduce the number of cellular involved accidents. It is safer to pull over and park when talking. It is NewFields's policy and laws in many states require that if a cell phone is used during vehicle operation, a hands-free device must be utilized.

5.2.2. Safe Operation

The principle causes of accidents are distracted drivers, excessive speed, following too closely, not keeping your eyes on the road, and backing up. Most accidents occur in intersections. Tips to avoid accidents at intersections include:

- Look to the left, then the right and again to the left before crossing intersections.
- Establish eye contact with other drivers or pedestrians. Remember that pedestrians have the right-of-way.
- Watch out for traffic lights that have been green for some time. Anticipate the change.
- Maintain a safe driving distance: use the 2-second rule. You should be able to count 2 seconds before reaching a stationary point after the car in front has passed that point.
- Reduce speed in congested area or during poor driving conditions (weather, rough road, darkness).
- Always be alert. Reduce the potential distractions while driving (cell phone, conversation, loud music, eating, drinking, shaving, and reading). Multitasking should not be done while driving.
- Vehicles stopped, parked, or left standing should be left in a manner that prevents

damage to the vehicle, other vehicles, equipment or personnel in that area.

- Vehicles will not be left unattended until the motor has been shut off, the key removed, the parking brake set and appropriate gear engaged.
- Backing a vehicle is discouraged and requires a spotter when backing into congested areas or pedestrian traffic.
- No employee shall operate a company or personal vehicle used for company business in a reckless manner.
- Drivers of company vehicles are responsible for keeping the vehicle and equipment clean and free of trash.
- The operator of a vehicle must secure equipment and materials before moving the vehicle.
- Loads projecting beyond the sides of a vehicle or more than 4 feet beyond the rear of a vehicle must be properly marked by a red light at night or a red flag (12" square in size) in the daytime.

5.2.3. Fueling Operation

Do not refuel the vehicle with the engine running. The individual performing the fueling must remain outside of the vehicle during the fueling operation. This is to prevent static buildup that can cause gas vapors to flash and burn. Do not smoke while refueling the vehicle.

5.2.4. Driver Qualifications

All drivers must meet the following qualifications:

- All vehicle operators must have a valid driver's license, which is appropriate for the type of vehicle being driven.
- Operating a vehicle under the influence of drugs or alcohol is strictly prohibited. Even some prescription or over-the-counter medications can cause impaired driving.
- Drivers with restricted licenses or with more than two moving violations on their license should not be driving on company business.

5.3. Safety Equipment in Vehicles

Company vehicles should contain:

- First-aid kit
- Reflective safety vests
- Flares
- Safety Data Sheets (SDS), if any chemicals are being used, stored, or transported in

the vehicle

- Emergency response procedures including telephone numbers
- Flashlight
- Proper container (cooler) with fresh, clean water for drinking as appropriate.
- Fire extinguisher

Additional safety equipment that may be required:

- Traffic signs, flags, cones for work in right of ways and roadsides
- High intensity yellow flashing beacons for vehicles on construction sites, performing survey on high volume roadways, or as appropriate for field conditions or required by state regulations.
- Any other equipment specified by client contract or other standard (generally accepted) safety procedures.

5.4. All-Terrain Utility Vehicles (ATUV's)

ATUVs are not toys and should be operated with care, in a safe manner. Prior to operating an ATUV, an employee must:

- Obtain approval from the client (if appropriate)
- Obtain approval from the Project Principle and HSC
- Receive task and ATUV specific training
- Must wear-approved high visibility safety vests (see Personal Protective Equipment SOP)

ATUVs will be equipped with appropriate safety devices including but not limited to:

- Roll cages, Seat belts, Headlights and Taillights

The following safety precautions are to be followed while operating ATUVs:

- Fueling will only be conducted after the ATUV that has been shut down for a minimum of 5 minutes.
- Speeds will not exceed 25 mph.
- ATUVs are not licensed and are for off-road use only. Therefore, ATUVs will not be operated on public roadways. Trailers or alternative methods of transportation must be used on public roadways.
- Avoid steep inclines and extremely rough terrain.
- Do not carry passengers unless the ATUV is specifically designed for passengers AND they are protected by roll-over and seat belts.

A pre-operation inspection in accordance with the manufacturer's instructions will be performed prior to operation. Additionally, a documented inspection must be completed monthly, at a minimum. The following items are to be checked during a pre-operation ATUV inspection:

- Safety systems are fully operational and in good condition. This may include: Head- and tail-lights, Brakes, Seatbelts and Roll cage.
- Tire pressure meets manufacturer's requirements and is equal on all tires. (May require the use of a low pressure tire gauge.)
- Fluids are at the proper levels. This may include: Coolant, Brake fluid, Engine oil and Drive shaft/transaxle oil
- Engine compartment is free of excessive dirt and debris
- Wheel nuts are present and tight
- Ignition and kill switches are functioning properly
- Drive belt/chain are properly adjusted and lubricated and free of excessive wear

An example checklist is included in Appendix A – ATUV Inspection Checklist.

5.5. Vehicle Maintenance

Vehicles must be maintained in a good working condition. Preventative maintenance will be conducted in accordance with the vehicle manufacturer's recommendation. Company vehicles will be maintained by NewFields. Personal vehicles that are used on company business must be maintained by the owner in a safe manner and in compliance with state and local regulations. It is recommended that personal vehicles used for company business be equipped with a first aid kit. State required inspections will be completed in a timely manner. PODs may have specific procedures for vehicle maintenance requirements, which should be followed in addition to the requirements specified in this document.

At least monthly, a documented inspection will be conducted on company vehicles. The Vehicle Inspection Checklist form in Appendix B will be completed and copies sent to the Project Principle/HSC. The vehicle inspection includes, but is not limited to:

- Tire pressure and condition
- Horn operation
- Brake and head lights
- Mirrors and glass
- Appropriate safety equipment
- Oil and all other fluid levels

- Wiper conditions

Any identified problems with the vehicle that might affect its safe operation will be reported to the Manager and prevent the vehicle from being operated. Examples of these deficiencies would include, but are not limited to, problems braking, steering difficulty, horn or lights (turn signals, head or brake) inoperable, seat belt malfunction, missing mirrors, badly worn tires. Vehicles will not be operated if any warning light is on, until appropriate repairs can be made.

5.6. Accidents/Citations

Report vehicle accidents to your Project Principe/HSC as soon as possible. This includes vehicle accidents to personal vehicles on company business. Report traffic citation within 24 hours to your Manager. This applies equally to citations received operating company or personal vehicles during or after work hours.

Any change in the status of an employee's driving privileges must be reported to management within 24 hours. NewFields reserves the right to take independent disciplinary action depending upon the nature of a violation received while operating a company vehicle and to deny privileges of company vehicle use to employees with unsafe driving records.

5.7. Parking

Always park the vehicle in a safe location and observe all local laws. When parked along a busy public street, warning triangles or cones should be placed in front of and behind the vehicle. The parking brake should be set. Company vehicles will be parked overnight at NewFields facilities unless specific authorization is approved for it to be garaged by an employee. Please see Appendix C MSHA specific guidelines for parking at mine sights.

5.8. Chemical Transportation

If chemicals are transported, DOT regulations requiring hazmat endorsed licenses, proper shipping papers and placarding must be observed. Appropriate spill response materials and SDS should be available. Hazardous waste will not be transported in NewFields vehicles.

6. TRAINING/QUALIFICATIONS

- Before operation of company or personal vehicles on business, employees must:
- Have a valid US driver's license for the type of vehicle assigned
- Be able to safely operate the vehicle assigned

- Be familiar with state-specific vehicle operation requirements and company vehicle inspection requirements
- Be knowledgeable of this SOP and the Accident/Citation and Vehicle Maintenance reporting policies
- Be briefed on the responsibilities outlined in this SOP

7. REFERENCES

John Deere product website <http://www.deere.com>

OSHA <https://www.osha.gov> Health And Safety Topic: Motor Vehicle Safety

MSHA <http://www.msha.gov/>

APPENDIX B – MONTHLY VEHICLE INSPECTION CHECKLIST

Inspector Name:

Inspection
Date:Vehicle
Make/Model/Year:

Mileage:

<i>Proper operation of:</i>	
Brakes	Yes / No
Emergency brake	Yes / No
Horn	Yes / No
Headlights	Yes / No
Taillights	Yes / No
Brake lights	Yes / No
Turn signals	Yes / No
Back-up lights	Yes / No
Windshield wipers	Yes / No
<i>Acceptable condition of:</i>	
Vehicle interior (clean)	Yes / No
Vehicle exterior (clean)	Yes / No
Mirrors (clean & intact)	Yes / No
Windshield (clean & intact)	Yes / No
Rear window (clean & intact)	Yes / No
Windows (clean & intact)	Yes / No
Tires – Condition & Tread	Yes / No
Tires – Inflation	Yes / No
<i>Proper fluid levels:</i>	
Brake	Yes / No
Coolant/Antifreeze	Yes / No
Oil	Yes / No
Steering	Yes / No
Transmission	Yes / No
Windshield	Yes / No
<i>Safety equipment present and in good condition:</i>	
First-aid kit	Yes / No
Reflective safety vests	Yes / No
Flares or reflective warning triangles	Yes / No
MSDSs	Yes / No
Emergency response procedures	Yes / No
Flashlight	Yes / No
Fire extinguisher	Yes / No

APPENDIX C - 30 CFR § 56.14207 – PARKING PROCEDURE

MSHA has very specific requirements for parking at mine sites. - 30 CFR § 56.14207.

Parking procedures for unattended equipment.

Mobile equipment shall not be left unattended unless the controls are placed in the park position and the parking brake, if provided, is set. When parked on a grade, the wheels or tracks of mobile equipment shall be either chocked or turned into a bank. Unattended mobile equipment parked on a grade must have the wheels or tracks chocked or turned into bank in addition to setting the park brake (if provided) in order to prevent equipment from unexpectedly rolling and striking miners working in the area. Grade can be determined a number of ways, to include testing the equipment to determine if it rolls when the transmission is placed in neutral. This standard applies to all off-road and on-road self-propelled equipment used on mine property, including vehicles such as vans, suburbans, and pick-up trucks that are used at mine sites. Any piece of mobile equipment used on the mine site will have to comply with the standard. The standard would allow for mobile equipment parked on a grade to be turned into a bank, chocked, parked with the front or rear wheels in a ditch or trough. The PPM does not address 30 CFR § 56.14207. There are no new interpretations. Section 56.14207 is one of the Priority Standards under the Rules to Live By initiative, <http://www.msha.gov/focuson/rulestoliveby/rulestoliveby.asp> that began in March 2010. This standard was cited during 3 fatal accident investigations between 2000 and 2008.

APPENDIX D - MSHA 1005 (BP-5) HIGHWAY TRUCK PRE-OPERATION INSPECTION

The following inspection must be done prior to driving at a mine site.

Right Side of Tractor/Trailer

- Inspect all items on the right side of the tractor and trailer just as you did on the left side.
- **Exhaust System** - Check for secure mounting and leaks under the cab. Verify that fuel, air lines, or electrical wires do not touch the exhaust system. Look for carbon deposits around seams and clamps that indicate exhaust leaks.
- **Spare Tire** - Ensure that the spare tire is secure, inflated, and in good condition.
- **Landing Gear or Dollies** - Ensure that landing gear or dollies are fully raised. Check for missing, bent, or damaged parts, and be certain that the crank handle is secured.
- **Paperwork** - Check to see that the machine is properly registered, licensed, placarded, etc.
- If applicable, update the machine's logbook, complete the inspection report, and verify that you have permits, inspection stickers, and medical certificate and waiver (if required) before starting on your trip.

Right Side of Tractor/Trailer

- Inspect all items on the right side of the tractor and trailer just as you did on the left side.
- **Exhaust System** - Check for secure mounting and leaks under the cab. Verify that fuel, air lines, or electrical wires do not touch the exhaust system. Look for carbon deposits around seams and clamps that indicate exhaust leaks.
- **Spare Tire** - Ensure that the spare tire is secure, inflated, and in good condition.
- **Landing Gear or Dollies** - Ensure that landing gear or dollies are fully raised. Check for missing, bent, or damaged parts, and be certain that the crank handle is secured.
- **Paperwork** - Check to see that the machine is properly registered, licensed, placarded, etc.
- If applicable, update the machine's logbook, complete the inspection report, and verify that you have permits, inspection stickers, and medical certificate and waiver (if required) before starting on your trip.

Right Side of Tractor/Trailer

- Inspect all items on the right side of the tractor and trailer just as you did on the left

side.

- **Exhaust System** - Check for secure mounting and leaks under the cab. Verify that fuel, air lines, or electrical wires do not touch the exhaust system. Look for carbon deposits around seams and clamps that indicate exhaust leaks.
- **Spare Tire** - Ensure that the spare tire is secure, inflated, and in good condition.
- **Landing Gear or Dollies** - Ensure that landing gear or dollies are fully raised. Check for missing, bent, or damaged parts, and be certain that the crank handle is secured.
- **Paperwork** - Check to see that the machine is properly registered, licensed, placarded, etc.
- If applicable, update the machine's logbook, complete the inspection report, and verify that you have permits, inspection stickers, and medical certificate and waiver (if required) before starting on your trip.

Inside the Cab

Check emergency equipment

- Ensure that you have a fully charged fire extinguisher, 3 red reflective emergency triangles, and spare fuses. Flares, lanterns, and flags are optional.
- Set the parking brake, place the transmission in "neutral," start the engine, and listen for unusual noises.

Condition of Controls

- Check for looseness, sticking, damage, or improper setting of:
- Steering wheel excessive play – refer to the manufacturer's or the Commercial Vehicle Safety Alliance (CVSA) manual for allowable play clutch for excessive free travel, accelerator, foot brake, trailer brake, parking brake, inter axle differential lock and engine brake.
- Check all gauges and warning devices for proper range, level, and operation.
- Check horn(s), backup lights, backup alarm, headlights, dimmer switch, turn signals, 4-way flashers, and clearance and running lights for condition and operation. Use a buddy system to check lights.
- Ensure that there is a serviceable seat that is firmly attached.
- Check to see that the seat is adjustable to accommodate maximum use of all controls.
- Clean and check the windshield for cracks and damage.
- Clean and adjust mirrors.
- Make sure windshield wipers and washers are working.

Outside the Cab

Front and Left/Right Side

- **Steering System** - Look for loose, worn, bent, broken, or missing parts.
- **Suspension (Both Sides)** - Check leaf spring and/or shock strut mounting hardware for broken or missing parts.
- Examine leaves for misalignment or contact with the machine's body, and check for flat or damaged shock struts.
- **Front and Rear Brakes** - Check brake lines for damage and insecure mounting. Check brake linings, if visible, for large cracks and missing pieces, and verify that there is no oil or grease on linings, drums, or discs. Listen for air leaks and with the aid of a coworker who can apply/release the brakes, check for excessive slack adjuster travel. If equipped, visually inspect the main air supply tank and lines. Drain any moisture from the tank using the appropriate draining procedures. Check condition of dust boots on slack adjusters.
- **Front and Rear Machine Tires** - Check tires for bulges, leaks, sidewall separation, cuts, exposed fabric, worn spots, and evidence of misalignment. In case of bulges or separation, move away from the tire and notify the appropriate supervisor. See that tires are properly inflated and do not contact any part of the machine.
- **Dual Wheels** - Tires should be the same type and evenly matched, with no debris stuck between them.
- **Front and Rear Wheels** - Check for defective welds, cracks or breaks, especially between stud holes; unseated locking rings; broken, missing or loose lugs, studs or clamps; bent or cracked rims. Look for scrubbed or polished areas on either side of the lug indicating a slipped rim. The valve stem should be sitting straight between the wheel spokes.
- **Frame** - Look for cracked or sagging rails. Check for broken or loose bolts or brackets.
- **Battery** - Be sure the battery and battery box is securely mounted to the machine, battery fluid is at the proper level, and all caps are on and securely tightened.

Left Side of Tractor/Trailer

- **Fuel Tank** - Check fuel level. Look for unsecured mounting, leaks, or damage. Make sure that the fill cap is tight and the fuel crossover line is secure.
- **Air and Electrical Lines** - Check all lines between the tractor and the trailer for tangles, crimps, chafing, or dragging. Check connections and listen for leaks.
- **Hose Couplers** - Check connections for damage, and look and listen for leaks.
- **Fifth Wheel Connection** - Check for cracks along the fifth wheel plate and mounting area. Be certain that locking jaws are properly engaged. Check for loose or missing nuts and bolts. The operating handle is to be closed and latched.

- **Cargo** - Ensure that all doors, latches, compartments, blocking and bracing, chains, straps, etc., are secured. Make sure that the load has not shifted.

Rear of Trailer

- **Lighting** - Check stop lamps, turn signals, emergency flashers, reflectors, and clearance and marking lights for proper operation, color, and cleanliness. Ensure that the license plate is visible and lighted. Use a buddy system to check lights.
- **Suspension** - Check the condition of springs, spring hangers, shackles, and U-bolts. See that the axle is properly aligned.
- **Wheels, brakes, suspensions, tires** - Inspect these items as described earlier.

Right Side of Tractor/Trailer

- Inspect all items on the right side of the tractor and trailer just as you did on the left side.
- **Exhaust System** - Check for secure mounting and leaks under the cab. Verify that fuel, air lines, or electrical wires do not touch the exhaust system. Look for carbon deposits around seams and clamps that indicate exhaust leaks.
- **Spare Tire** - Ensure that the spare tire is secure, inflated, and in good condition.
- **Landing Gear or Dollies** - Ensure that landing gear or dollies are fully raised. Check for missing, bent, or damaged parts, and be certain that the crank handle is secured.
- **Paperwork** - Check to see that the machine is properly registered, licensed, placarded, etc.
- If applicable, update the machine's logbook, complete the inspection report, and verify that you have permits, inspection stickers, and medical certificate and waiver (if required) before starting on your trip.

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1. PURPOSE

The purpose of this guideline is to provide safe procedures for the use of hand and power tools.

2. SCOPE

This SOP applies to NewFields personnel who may be required to use hand or power tools for work activities.

3. DEFINITIONS

Ground Fault Circuit Interrupter (GFCI) – A Ground Fault Circuit Interrupter (GFCI) is a device to protect against electric shock should someone come in contact with a live wire and a path to ground which would result in a current through his/her body. The GFCI operates by sensing the difference between the currents in the hot and neutral conductors.

Hand Tool – A tool that is manually powered.

Power Tool – A tool that is powered electrically, pneumatically, hydraulically, or by liquid fuel. Power tools may be portable or permanently installed.

4. RESPONSIBILITIES

Corporate Health & Safety Coordinator (CHSC) – CHSC will periodically review this program and the use of PPE at NewFields and update this procedure as needed. CHSC is responsible for making appropriate training and personal protective equipment (PPE) available to NewFields employees. HR is responsible for the maintenance of training records.

Project Principal (PP) - The PP is responsible for the overall implementation of this program within the operations under their control. The PP is also responsible for providing appropriate resources in personnel and equipment required to complete these operations safely. The PP is responsible for communicating the safety requirements, including PPE requirements, of this program to NewFields personnel required to use hand or power tools.

Employee – NewFields employees are responsible for complying with the requirements of this program, using required PPE properly, and following applicable safety procedures.

5. GUIDELINES

In general, NewFields employees will:

- Be trained in the proper use of tools
- Only qualified employees operate equipment
- Maintain tools in good, safe working condition
- Use the right tool for the job
- Inspect tools for damage/defects prior to use
- Inspect materials and equipment frequently by a competent person
- Immediately remove damaged/defective tools from service and tag as out of service.

- Verify that safety mechanism/guards are in place prior to use
- Operate tools in accordance with manufacturers' instructions
- Use required PPE properly

5.1. Hand Tools

NewFields employees may be required to use a variety of hand tools, including but not limited to hammers, screwdrivers, machetes, and brush knives and box knives. Eye and/or face protection is required when using hand and power tools.

Cutting tools:

- Inspection
 - Handle (securely attached to blade, free of splintering or cracks)
 - Blade (sharp, free of nicks)
- Use & handling
 - Cut away from oneself and other people
 - Cover cutting blades during transport
 - Do not carry unprotected cutting tools in pockets or backpacks
 - Store cutting tools with blade points/edge down

Impact tools:

- Inspection
 - Handle (securely attached to head, free of splintering or cracks)
 - Head (not mushroomed, free of cracks)
- Use
 - Keep hands and fingers clear of the strike area
 - Check that the swing is clear

Hand tools with special safety properties may be required in some situations.

- Non-sparking hand tools in potentially flammable atmospheres
- Electrically insulated tools when working on or near energized electrical equipment

5.2. Electric Power Tools

5.2.1. Portable Electric Power Tools

Portable electric power tools must be double insulated or grounded. Only power tools approved by an accredited testing laboratory such as UL, ETL, or CSA are permitted.

Inspection

The housing, power cords, and plugs of portable power tools will be inspected for damage prior to use. Damaged or defective power tools will be removed from service immediately and disposed of or repaired, as appropriate.

- Housings will be inspected for cracks, holes, or other damage
- power cords for loose parts, damaged plugs including missing ground pins, damaged insulation, and pinched or crushed outer jacket which may indicate internal damage

Use

- Power cords will be handled to prevent damage during use, transportation, or storage.
 - Power cords are not to be used for raising, lowering or carrying equipment or tools.
 - Do not secure cords with staples or by any means that may result in damage to the cord.
 - Do not run cords in areas with pedestrian or vehicle traffic; across or through doorways; under carpets; or through windows. If cords must be placed in any of these locations, they must be protected from damage with an appropriate cord runner or other safety device.
 - Do not knot, crush, or kink cords.
 - Do not place cords in contact with hot or sharp objects.
 - When equipment is in use, cords should not be covered, coiled, or compressed in any way.
 - Disconnect equipment by grasping and pulling the plug, not the cord.
- Prior to connection, check power cord plugs and receptacles to confirm compatibility. Incompatible plugs and receptacles will not be connected. Altering incompatible plugs (e.g. removing ground pins) or receptacles or using adapters is strictly prohibited.
- Power tools and extension cords used in wet areas must be approved for use in those locations and must have GFCI protection.
- Workers' hands must be dry when connecting or disconnecting power tools

5.2.2. Permanently Wired Electric Power Tools

Electric power tools that are permanently wired are typically used for routine industrial tasks. This may include but are not limited to:

- Lamps and measuring instruments
- Drill presses

In all instances, connecting equipment and tools to power mains must be performed by a licensed electrician.

Permanently wired equipment and tools will be inspected prior to use. If equipment is found to be defective or damaged, it should be tagged as out of service and not used until repaired or replaced. Repair and maintenance of permanently wired equipment should be conducted using appropriate lockout methods by trained individuals.

5.2.3. Ground Fault Circuit Interrupters (GFCIs)

GFCIs are required when power tools are operated:

- Within three feet of a water source or in wet conditions
- Connected to extension cords
- Used outdoors
- On construction sites

GFCI equipment will be tested on a periodic basis (i.e. monthly) and replaced if defective.

6. TRAINING REQUIREMENTS

NewFields employees who will use hand and/or power tools will receive training in their proper use. The training will include PPE requirements, inspection procedures, safe use and procedure for removing a tool from service.

7. REFERENCES

29 CFR 1910, Subpart P

29 CFR 1926, Subpart I

30 CFR 56.6700, 56.7052 and 56.14205

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1. PURPOSE

The purpose of this guideline is to establish procedures for the use of stop work authority on construction worksites.

2. RESPONSIBILITIES

Corporate Health & Safety Coordinator (CHSC) - The CHSC is responsible for periodic review of the guidelines in this policy.

Project Principals (PP) - The PP is responsible for the overall implementation and enforcement of this procedure for employees in locations under their area of responsibility. The PP is responsible for providing review of stop work reports and for providing positive reinforcement for employees who initiate stop work actions.

Field Employees – It is the responsibility of all field employees to apply stop work authority in accordance with this SOP and in the event of unsafe conditions or unsafe acts that may cause injury to themselves or co-workers. Employees are responsible for identifying hazards and effecting controls within their ability or notifying the HSC or contractor management of hazards beyond their control.

3. GUIDELINES

NewFields field employees have the responsibility to stop work of NewFields employees and subcontractors whenever a potential unsafe condition or unsafe actions are identified. Employees will not be reprimanded or in any way disciplined for initiating a stop work action and NewFields will not allow intimidation of employees by subcontractors, hosts or other entities. If the employee is unsure of the potential risk, a temporary stop can be called while clarifications of the risks are established. This may be accomplished by:

- Contact with PP or other management
- Contact with EHS professional on or off site
- Review of H&S Plan, SOPs, or other documentation
- Discussion with subcontractor

In either case, the Stop Work Procedure will follow the steps outlined below.

3.1. Stop Work Procedure

In any stop work situation, the following steps will be taken to determine appropriate control of hazards:

- 1) Stop work will be initiated by the employee who identifies the potential hazards or by the PP or HSR, if they are onsite.
- 2) All affected employees and subcontractors will be notified.
- 3) All affected work will cease.
- 4) Review of identified hazards will be discussed; clarification of hazards/risks will be made if needed.

- 5) Corrective action plan will be developed.
- 6) Corrective action will be implemented.
- 7) Work may only resume when corrective actions have been completed and reviewed to determine effective control of hazards.
- 8) Documentation of all stop work actions will be maintained by the field employee, PP or HSR.
- 9) Work may resume.

3.2. Documentation

Stop work action reports will include the following:

- 1) Date and time of initiation
- 2) Employee initiating stop work
- 3) Subcontractors and other employees affected
- 4) Identified hazards, unsafe acts or conditions
- 5) Individuals or companies notified
- 6) Responses to notifications
- 7) Corrective action plan(s)
- 8) Date and time corrective action plan completed
- 9) Signature of documenter

Copies of these reports will be provided to the PP and HSC and to the host/client if requested. The PP or HSC will review the report and provide feedback to the initiating employee/PP.

3.3. Follow-up

It is important that follow up of the implemented corrective actions occur to confirm the control of the identified hazards and the continued effectiveness of those controls. The employee/PP/HSR will follow up with the involved parties to confirm continued control and document follow up in field notes or on the stop work report.

4. TRAINING

Field employees and those supervising field employees will be provided appropriate Stop Work Authority training during basic NewFields safety training and prior to initiation of any fieldwork. All training will be documented.

NewFields Health, Safety and Environment Program



**Updated
January 2017**



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Appendix A Standard Operating Procedures (SOPs) I - 26



HEALTH, SAFETY AND ENVIRONMENT MISSION STATEMENT

NewFields Companies LLC and its affiliates are committed to business practices, operations and projects that protect both people and the environment. The foundation of our Health, Safety and Environment program is the firm belief that incidents that cause injury or illness, or endanger the environment are preventable. We are expected to conduct business in a manner that integrates all applicable elements of NewFields' Health, Safety and Environmental Program into all operations. Additionally, NewFields is committed to complying with all appropriate client side health, safety, and environment requirements, as well as applicable federal, state and environmental regulations. Our corporate Health, Safety and Environment policies and staff training extend our company best practices to international projects considering the most stringent performance requirements of the US, international or host country rules and regulations.

Incident prevention continues to be of paramount importance to our firm. To this end, safety will always take precedence over expediency. NewFields has established procedures that provide all employees with direction on health, safety and environmental matters. These procedures are periodically evaluated in light of current case law, new regulations, and emerging industry practices and standards. Internal subject matter experts review and when necessary revise our procedures to ensure accuracy and applicability. NewFields has and will continue to maintain a Safety, Health and Environment program designed to assess, recognize and mitigate potentially unsafe working conditions.

Each manager/supervisor, by setting an example, is responsible for fostering and maintaining a climate in which everyone shares a concern for his or her own safety and the safety of fellow workers, whether in the field or in the office. All managers and supervisors are expected to understand and adhere to best safety practices and applicable environmental regulations.

~ NewFields Companies



I. HEALTH, SAFETY AND ENVIRONMENT PROGRAM ORGANIZATION

The management of the Health, Safety and Environment (HSE) program will be conducted in a manner similar to existing NewFields Project Management practices. The Senior Management (Partners, Principals and Senior Project Managers) are responsible for identifying, understanding and monitoring the health, safety and environment elements of each project. All NewFields employees are ultimately responsible for the on-going implementation and success of the HSE program.

I.1. Project Management and Responsibilities

The basic responsibilities of NewFields personnel for managing the HSE program are outlined below:

I.1.1. Partners and Principals

The Partners and Principals are responsible for implementing the HSE program in their operations. They are responsible to ensure sufficient staffing and resources are available on a daily and project level basis to meet NewFields and our clients HSE program performance requirements. They are also responsible for the provision of appropriate employee training and personal protective equipment for compliance with this program and as required for site conditions. They are responsible for conducting or providing for review of job site evaluations and follow up for any required corrective actions that may be required for projects under their management. They are also responsible for establishing and maintaining staff accountability for safety awareness and compliance. The NewFields Partners and Principals are also responsible for implementation this HSE program as it pertains to projects, field conditions and office environments. The Partner, Principal or their management delegate is responsible for project planning, hazard identification and assessment, mitigation alternative development and implementing appropriate safety and environmental management procedures. They are responsible for reviewing and understanding applicable Standard Operating Procedures (SOPs), **Attachment A**, ensuring the appropriate safety equipment is available for staff to ensure NewFields work complies with the HSE program and Federal, state and local regulations. The Partner, Principal or management delegate are responsible for determining that personnel have been provided appropriate training and equipment to perform required project tasks. The Partner or Principal are responsible for auditing and updating site safety procedures, for following project delivery to determine continued compliance with the HSE program, and to initiate corrective action if deficiencies are identified. Responsibilities of Partners or Principals may be delegated to Senior Management including Senior Project Managers and local Health and Safety Coordinators (HSCs) or an on-site Health and Safety Representative (HSR), when appropriate.

I.1.2. Senior Project Managers

Senior Project Managers, as designated by Partners or Principals, are also charged with responsibilities for ensuring projects consider appropriate HSE management requirements. They are responsible for providing appropriate personnel and resources so planned work activities and project operations are conducted in a safe manner and in compliance with this program. They are responsible for identification of project related HSE considerations including identification and assessment of potential HSE hazards associated with proposed project activities and potential mitigations including the need for site specific Health and Safety Plan (HASP) preparation.



1.1.3. Local Health and Safety Coordinator

Local Health and Safety Coordinators (HSCs) are designated by Partners or Principals or Senior Management for each office/region or NewFields Companies subsidiary. Each regional HSC is responsible for providing required information and assistance as needed for implementation of the NewFields HSE program during project planning, on work sites and within office locations. The HSC will periodically conduct HSE field and office evaluations, and will provide hazard identification, mitigations and control assistance as needed. The local HSC coordinates staff training for their office or subsidiary to comply with the NewFields HSE program and the job or task specific needs of their coworkers.

1.1.4. On-Site Health and Safety Representative

An on-site Health and Safety Representative (HSR) may be designated for projects that warrant additional HSE site organization, monitoring or support. The HSR is be responsible for the review and coordination of HSE functions on a project the site and any other responsibilities delegated by Partners, Principals, Senior Project Managers or the local HSC.

1.1.5. Employees

All staff within NewFields Companies and its subsidiaries are responsible for conducting their work in accordance with the requirements of this HSE program, and Federal, state and local rules and regulations. Employees may also be required to follow client driven HSE standards (if appropriate) in addition to federal law including rules, regulations and guidance as established by the Occupation Safety and Health Administration (OSHA) and the Mines Safety and Health Administration (MSHA). Local staff are responsible for attending or completing assigned training prior to beginning duties that require job or site specific training. Employees will inform the Partner, Principal, Senior Managers, HSC or the HSR if they become aware of a deficiency between the requirements for a new task, duty or function and their current level of training, experience or capability to perform the task assigned.

Local staff, office administrators and on-site personnel are also responsible for reporting recognized hazards or potential safety problems to Partners, Principals, Senior Managers, HSR or local HSC, as appropriate. If an employee identifies a hazard that poses a danger to themselves or another coworker's health, safety or welfare, the employee(s) should immediately stop work and contact the appropriate project representative above for guidance and direction before resuming work activities. The Partners, Principals and their management delegates are responsible for providing appropriate guidance to the employee or consulting with the HSC or HSR for assistance. Employees will also notify the Partner, Principal and HSC regarding any accident or near miss incident as soon as possible and complete the appropriate report (**Attachment A, HSE SOP 17 – Accident or Incident Investigation Jan 2016**) within 24 hours.

1.1.6. Corporate Health and Safety Coordinator

The Corporate Health and Safety Coordinator (CHSC) is responsible for NewFields Companies HSE program administration and HSE program assistance for subsidiaries companies, including Partners, Principals, Senior Managers and local HSCs as required or requested. Program administration duties may include but are not limited to updates to or revising existing HSE program elements, developing new program systems as needed, providing for or coordinating appropriate training for employees, and in



general supporting the on-going project and administrative HSE needs of NewFields Companies, its subsidiaries and clients.

I.2. Contractor and Subcontractor Health, Safety and Environment Responsibilities

The NewFields HSE program is designed to provide for the health and safety NewFields employees. The NewFields HSE program does not extend or make provision for the health and safety of employees with other companies, contractors or subcontractors. However, any existing information NewFields may have about potential hazards on a project site must be made available to its subcontractors. In addition, evidence of appropriate subcontractor training may also be requested by NewFields personnel.

Project contractors and subcontractors shall manage their own staff health and safety program and procedures independent of NewFields program. NewFields shall not, in any way, direct the means and methods of any contractor, subcontractor, or third-party on any site for the purpose of health and safety compliance. Independent contractors and subcontractors shall document or demonstrate that:

- They have knowledge of site hazards and are familiar with practices necessary for safe work;
- Personnel who are assigned to the project are competent and technically able to implement their own health and safety programs and procedures;
- Contractor operations personnel meet required project and regulatory health and safety requirements; and,
- Adequate resources are available to meet project health and safety requirements.

NewFields project personnel may be required to determine if a contractor's health and safety program meets these minimum guidelines. This may require that the NewFields Partner, Principal or their management delegate complete the subcontractor safety checklist.

NewFields projects and field activities may require observation and interface with another company's site work and personnel. Any observations or potentially unsafe conditions which NewFields staff may observe should be reported directly (and only) to the company's management (Project Manager, Field Supervisor or designated Team Leader). NewFields staff are encouraged not to direct a separate companies employees directly with respect to health and safety matters. Such direction may imply NewFields Companies or its subsidiaries are responsible for the health and safety of all site employees, regardless of employer. Therefore, it is critical that the role of NewFields personnel with respect to the health and safety responsibility of other organizations be clearly understood.

2. HAZARD ASSESSMENT

2.1. Purpose

This section provides guidance for conducting hazard assessments of field operations.



2.2. Responsibilities

- The Partner, Principal or management delegate will be responsible for completing a project site specific health and safety hazard assessment or site specific Health and Safety Plan (HASP) and for ensuring compliance with the NewFields Health, Safety and Environment (HSE) program and Standard Operating Procedures (SOPs), **Attachment A**, for each project. They will also be responsible for assessing any new hazards recognized after initiating the project and adopting appropriate hazard controls;
- The Partner, Principal, Senior Project Manager or local Health and Safety Coordinator (HSC) may designate a site Health and Safety Representative (HSR) for any project where known, anticipated or potential conditions require the development of a site specific HASP. The responsibilities of the HSR will be defined in the HASP. HSR duties may be added to other project responsibilities depending on the potential severity of the hazards and the number or nature of additional duties assigned.
- The HSR is responsible for reviewing any site specific HASP. Any deficiencies noted must be addressed to the appropriate project authority in a timely manner.
- NewFields employees assigned to field duties are responsible for observing safe work practices and alerting other staff members of potential safety concerns.

2.3. Conducting Hazard Assessments

The first step in controlling potential hazards is recognition and assessment of the potential safety and hazards concerns associated with planned work activities and project execution. NewFields projects vary significantly by location, environment and task. Hazard assessment will be conducted prior to commencement of fieldwork.

2.3.1. Health and Safety Hazard Assessment

Hazard assessment for each project should be conducted during the proposal stage, but no later than initial planning to conduct a new project. The Partner, Principal or management delegate needs to identify and document any known or expected hazards to be encountered on the project, especially those that maybe outside known or anticipated potential hazards.

The process will assist the Project Management team with identifying potential hazards that may be associated with the proposed project in the proposal or planning phase of the project. This assessment describes various hazards, controls, and resources available for additional information.

The assessment also includes a Job Safety Analysis (JSA) form, which may be used to documentation potential hazards associated with a proposed task and identify safety controls. The hazard assessment documentation should be provided to field personnel assigned to the project to improve their understanding of potential hazards and mitigation controls to be used on the project. Completion of JSAs by those expected to perform work assignments or project task may be completed in the field or project setting prior to commencing work activities. The JSA should be reviewed periodically by those performing the task and updated as necessary to reflect changes in the job or work process. JSAs may be reviewed and signed by employees participating in the initial and on-going job analysis update process.



2.3.2. Site Specific Health and Safety Plan

Field operations conducted on sites designated as regulated hazardous materials sites, hazardous waste sites will require development of a site specific Health and Safety Plan (HASP) that addresses both the potential for hazardous materials and other potential hazards on the site. The process for development of a site specific HASP is described in **SOP 14 – Hazardous Waste Operation and Emergency Response, Attachment A**. Most potentially hazardous materials or hazardous waste operations will also require an on-site HSR as designated by the Partner, Principal or management delegate.

A field project with no potential for encountering hazardous material or hazardous waste may still require the development of a site specific HASP, if there are other significant hazards. The Partner, Principal, management delegate or HSC will determine if a HASP is warranted following review of the proposed project as presented in **Section 2.3** above.

2.4. Site Evaluation

Site evaluations will be conducted periodically to monitor the effectiveness of the HSE program including site specific HASP and JSA accuracy and mitigation effectiveness, identify new or improved training needs, and areas of non-conformance with the HSE program, site specific HASP, JSAs and to provide corrective action if required. The frequency of evaluations will depend upon the specific job requirements, responsibilities and risk of hazard and findings of previous evaluations. Please refer to **SOP 22 – Field Site Evaluations** for review procedures and checklists (**Attachment A**).

2.5. Management of Change

NewFields utilizes the Management of Change process to prevent or mitigate degradation of the HSE program. Review of the HSE program is conducted periodically to ensure it matches work, programs and projects being pursued by NewFields Companies and its subsidiaries. The plan is also updated to reflect changes in industry best practices, revisions to Federal, state or local regulations and considers new or enhanced technologies to ensure worker safety and work environments.

3. HEALTH, SAFETY AND ENVIRONMENT TRAINING

3.1. Purpose

This section identifies HSE training requirements and recommendations for each NewFields employee to identify and control health, safety and environmental hazards, meet regulatory requirements and reduce injuries.

3.2. Responsibilities

- The Partners and Principals will provide or make provision for appropriate training for employees as described in this program and Standard Operating Procedures (SOPs), **Attachment A**. They will also facilitate supplemental training as may be required to mitigate risks identified in project specific Health and Safety Hazard Assessments or site specific Health and Safety Plans (HASPs);
- Partners, Principals and Senior Project Managers are responsible for verifying that personnel assigned to their projects have received and remain current in all required HSE training;



- Employees are responsible for completing assigned training. Employees will inform the Project Principal, management delegate or local Health Safety Coordinator (HSC) of any discrepancy between the training requirements for a project or assigned task and their training; and,
- The HSC is responsible for coordinating training and updating or refreshing training, as needed.

3.3. Training Requirements

All employees will be provided basic health and safety training including, but not limited to:

- Emergency action and evacuation;
- Hazard recognition and control;
- NewFields HSE program overview (this document); and,
- Accident / incident reporting, including medical monitoring and record keeping.

3.3.1. Job Specific Health and Safety Training

Job specific health and safety training will be provided as appropriate for employees who may be exposed to specific job hazards. Examples include:

- Personal protective equipment;
- Respiratory protection;
- Hazardous waste operations (HAZWOPER) (24-hour, 40-hour, 8-hour refresher);
- Hazardous chemical communications;
- Trenching and excavation;
- 10-hour Occupational Safety and Health Administration (OSHA) construction standard;
- Fall protection and scaffolding;
- Confined space entry;
- Mine Safety and Health Administration (MSHA) new surface miner training; and,
- MSHA newly hired experienced miner training.

3.3.2. Project Manager / Local Health and Safety Coordinator Training

Project Managers and local HSCs may be provided additional training to meet regulatory requirements, improve their understanding of supervisory responsibilities and to maintain review skills as required for on-going assessments and control of hazards. This additional training may include but is not limited to:

- Safety and health management;
- 8-hour supervisor for hazardous waste operations;
- Conducting safety training for other employees; and,



- Health and safety evaluations / audit procedures.

3.3.3. Training Recordkeeping

Training records will be maintained by local HSC or delegate at the local office level. Evidence of employee training will be periodically provided to office managers, NewFields Companies Health and Safety Manager and Human Resources (HR). Offices are encouraged to use the Training Tracking form or similar tracking system to record employee training attendance.

4. MEDICAL SURVEILLANCE PROGRAM

4.1. Purpose

This section provides guidance in meeting regulatory requirements, qualifying personnel to work on specific projects and maintaining the safety and health of NewFields personnel. This includes emergency medical care, non-emergency treatment, and periodic medical surveillance. The medical surveillance program will accomplish the following:

- Initially qualify personnel to work on various field projects, “Fit for Duty” authorization;
- Initially qualify personnel to wear respiratory protection;
- Establish a medical baseline for each employee based on job assignment;
- Continually re-qualify personnel through periodic medical evaluation, “Fit for Duty”;
- Evaluate personnel through medical consultation and evaluation prior to international travel or travel to remote locations, “Fit for Duty and International Travel”;
- Evaluate the overall results of periodic medical examinations relative to baselines to determine if improvements or changes to the HSE program are warranted;
- Provide employment exit medical examination to determine any potentially job related effects to personnel leaving NewFields employment; and,
- Provide needed emergency and non-emergency medical treatment for employees injured or who become ill due to their job duties.

4.2. Responsibilities

The Corporate Health and Safety Coordinator (CHSC) and Corporate HR team will coordinate the medical surveillance program. The CHSC and Corporate HR team will:

- Assist with designate appropriate physician(s) for evaluations;
- Maintain list of participating employees, including dates of medical exams; and
- Provide documents to be completed by staff and physicians when medical monitoring is performed.



Partners, Principals or management delegates will review and provide for personnel to have appropriate medical evaluation, as required for job duties, prior to international travel (if appropriate) and should any employee request an evaluation potentially due to work related illness.

4.3. Medical Surveillance Program Participation

Employees whose job responsibilities require inclusion in the medical surveillance program are required to undergo initial (upon employment) and periodic (annually or prior to international travel) examinations to protect employee health and as a condition of employment. All NewFields employees who work or conduct surveys and investigations on designated hazardous waste sites are required to participate in the medical surveillance program. In addition, a medical evaluation may be required for employees who:

- Work at project sites or abatement projects involving lead, asbestos, or other special or potentially hazardous materials;
- May be required to use respiratory protection;
- Are a designated emergency first responder;
- Perform strenuous exertion and/or have physical requirements more strenuous than normal work activities;
- Have the potential for exposure to special or hazardous materials in excess of the OSHA Permissible Exposure Limits (PELs) during routine or emergency situations;
- Show signs or symptoms of overexposure to hazardous material which may be attributed to work related activities; or,
- Others as determined by Partners or Principals in consultation with the CHSC / HSC / HR.

The medical surveillance program also includes the provision of emergency and non-emergency medical treatment for employees who are injured or become ill as a result of their job duties. Please refer to the **SOP 17 – Incident / Accident Investigation and Reporting** for the appropriate procedure.

4.4. Medical Surveillance Program Exams

The medical surveillance program may consist of the following exams for participating employees:

- Initial or pre-assignment exam, “Fit for Duty” authorization;
- Periodic exams including evaluation prior to international travel or travel to remote locations, “Fit for Duty and International Travel”;
- Non-emergency treatment for over-exposure or signs and symptoms of over-exposure to hazardous chemicals; and / or,
- Termination of project or employment exit exam.

The purpose for such exams vary and may include providing a baseline of the employee’s health, identify pre-existing conditions that may affect or restrict the employee’s job duties, and maintain employee health. The content of the exams will be determined by the physician based on the information provided by the



Partner, Principal, management delegate, HSC or the employee regarding potential job duties, potential or previous exposures to hazardous chemicals, and the conditions typical of the project(s) the employee may be assigned to. International travel consultations may include country designation information, potential for disease, recommended vaccinations, and verification of vaccination or prescribing recommended medical chemoprophylaxis prior to or during travel.

4.5. Physician Selection

Medically related evaluations will be conducted by or under the direct supervision of a licensed physician with experience in occupational medicine. Recommended physicians and physicians designated by NewFields will conduct pre-deployment and periodic evaluations.

4.6. Medical Records

All employee medical records will be kept confidential as required by Federal, state and local regulations. Medical records generated by the examining physician must be routed directly from the examining physician's office to NewFields Companies HR Manager for secure and confidential record keeping. A copy of the findings of the examining physician may also be provided directly to the employee's home directly by the examining physician's office or by NewFields Companies HR department upon request. The examining physician will also provide a "Physicians Written Opinion" to the employee and NewFields Companies HR department. The opinion will contain the physician's opinion stating the employee is or is not "Fit for Duty" as the duties were described or presented to them. This document represents to only "non-confidential" document which may be circulated in the company as necessary. OSHA [29 CFR 1910.120](#) requires retention of medical records to the termination of employment plus 30 additional years.



5. REFERENCES

Department of Health and Human Services (DHHS), National Institute of Occupational Safety and Health (NIOSH), Building Safer Highway Work Zones – Measures to Prevent Worker Injuries from Vehicles and Equipment, publication number 2001-128, [accessed February 2016](#)

Department of Transportation (DOT), Federal Highways Administration, Manual on Uniform Traffic Control Devices, updated May 2012, [accessed February 2016](#)

Mine Safety and Health Administration (MSHA), United States Department of Labor, [accessed February 2016](#)

Title 30 Code of Federal Register (CFR)

Part 46, Training and Retraining of Miners Engaged in Shell Dredging or Employed at Sand, Gravel, Surface Stone, Surface Clay, Colloidal Phosphate or Surface Limestone Mines

Part 47, Hazard Communication (HazCom)

Part 48, Training and Retraining of Miners

Part 56, Safety and Health Standards, Surface Metal and Nonmetal Mines

Part 57, Safety and Health Standards, Underground Metal and Nonmetal Mines

Part 58, Health Standards for Metal and Nonmetal Mines

Part 62, Occupational Noise Exposure

Occupational Health and Safety Administration (OSHA), United States Department of Labor, [accessed February 2016](#)

Title 29 Code of Federal Regulations (CFR)

1910.95, Occupational Noise Exposure

1910.120, Hazardous Waste Operations and Emergency Response

1910.132, Personal Protective Equipment

1910.146, Permit Required Confined Space Entry

1910.147, Control of Hazardous Energy (Lockout / Tagout)

1910.212, General Requirements for all Machines

1910.300, Subpart S, Electrical and 1926.300, Tools – Hand and Power

1910.1001, Asbestos

1910.1025, Lead



1926.59, Hazard Communication

1926.65, Hazardous Waste Operations and Emergency Response

1926.200, Signs, Signals and Barricades

1926.500, Fall Protection

1926.650, Excavations



APPENDIX G

SCHEDULE



**Project Schedule
January Adit Sediment Removal
Santa Cruz County, Arizona**

Task	Year	2019																				2020+	
	Month/Week Ending	12/23	2/10	3/10	4/7	5/5	6/9	7/7	7/14	7/21	7/28	8/4	8/11	8/18	8/25	9/1	9/8	10/6	10/13	10/20	10/27	11/24	
1.0	Voluntary Remediation Work Plan																						
1.1	Conduct Scope Meetings	█	█																				
1.2	Submit Version 1 VRP Work Plan to ADEQ			█																			
1.3	Review and Receive Written Comment from ADEQ				█																		
1.4	Forest Service Review				█	█																	
1.5	Submit Public Notice				█	█																	
1.6	Submit Final VRP Work Plan to ADEQ					█																	
1.7	Final VRP Work Plan Approval from ADEQ						◇																
2.0	Implement Remediation																						
2.1	Conduct Sediment Removal Kick Off Meeting						◇																
2.2	Install Sediment Control Structures							█															
2.3	Access Modifications (Turnaround Area)							█	█														
2.4	Excavate Sediment and Place in TSF								█	█													
2.5	Receive Confirmation Sample Results											◇											
2.6	Place Backfill and Reclaim Sediment Removal Area											█	█	█									
2.7	Survey and Document Post-Construction Conditions														◇								
3.0	Reporting																						
3.1	Prepare Draft Completion Report																█						
3.2	ADEQ Provides Comments																	█	█	█			
3.3	Finalize Completion Report																					█	
4.0	Post Remediation Revegetation																						

Notes:

D - Deliverable

◇ - Milestone

ADEQ - Arizona Department of Environmental Quality



APPENDIX H

COMMUNITY NOTICE



**NOTICE OF 45-DAY PUBLIC COMMENT PERIOD
ASARCO JANUARY ADIT (NORTON MINE)
VOLUNTARY REMEDIATION PROGRAM (VRP) SITE
REMEDIAL ACTION WORK PLAN:
SEDIMENT REMOVAL**

The Arizona Department of Environmental Quality (ADEQ) has received a work plan for remedial actions to be conducted at the ASARCO January Adit (Norton Mine) VRP Site (VRP Site Code 505143-02). The Work Plan was submitted in accordance with Arizona Revised Statutes (A.R.S.) §49-175 and §176. The Work Plan will address the removal of sediment from the constructed passive treatment wetland system used to treat drainage from the January Mine Adit. This action will be achieved through the following elements that are described in the Work Plan:

- Excavation, confirmation testing, backfilling/grading, and revegetation.

The work plan is available for review online at: <http://www.azdeq.gov/notices>, at the Patagonia Public Library, 346 Duquesne Ave., Patagonia (520) 394-2010 and at the ADEQ Records Center, 1110 W. Washington St., Phoenix, (602) 771-4380, or (800) 234-5677, ext. 6022345677. Please call for hours of operation and to schedule an appointment.

PARTIES WISHING TO SUBMIT WRITTEN COMMENTS regarding the Work Plan for the ASARCO January Adit (Norton Mine) VRP Site may do so to Arizona Minerals Inc., attn: Johnny Pappas at 2210 East Fort Lowell Rd, Tucson, AZ 85719. Comments may also be submitted to ADEQ, attn: John Patricki, VRP, 1110 W. Washington St., Phoenix, AZ 85007, or jp10@azdeq.gov and reference this listing.

Comments must be postmarked to Arizona Minerals and/or ADEQ no later than June 19, 2019.

Dated this 5 and 12 day of May, 2019

Johnny Pappas, Arizona Minerals Inc.

ADEQ will take reasonable measures to provide access to department services to individuals with limited ability to speak, write, or understand English and/or to those with disabilities. Requests for language interpretation services or for disability accommodations must be made at least 48 hours in advance by contacting: 7-1-1 for TDD; (602) 771-2215 for Disability Accessibility; or Ian Bingham, Title VI Nondiscrimination Coordinator at (602) 771-4322 or idb@azdeq.gov. **Disclaimer: Any ADEQ translation or communication in a language other than English is unofficial.**

ADEQ tomará medidas razonables para proveer acceso a los servicios del departamento para personas con capacidad limitada para hablar, escribir o entender Inglés y / o para las personas con discapacidad. Las solicitudes de servicios de interpretación del lenguaje o de alojamiento de discapacidad deben hacerse por lo menos 48 horas de antelación poniéndose en contacto con Ian Bingham, Title VI Nondiscrimination Coordinator al (602) 771-4322 o idb@azdeq.gov. **Cualquier traducción o comunicado de ADEQ en un idioma diferente al inglés no es oficial**